
ICPDR and Climate Changes in Danube River Basin



International Commission
for the Protection
of the Danube River

Internationale Kommission
zum Schutz der Donau

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EDO user meeting
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Danube River Basin District Overview

DRBM Plan - Update 2015 - MAP 1



This ICPR product is based on national information provided by the Contracting Parties to the ICPR (AT, BA, BG, CZ, DE, HR, HU, ME, MD, RO, RS, SI, SK, UA) and CH. EuroGlobalMap data from EuroGeographics was used for all national borders except for AL, BA, ME where the data from the ESRI World Countries was used; Shuttle Radar Topography Mission (SRTM) from USGS Seamless Data Distribution System was used as elevation data layer; data from the European Commission (Joint Research Center) was used for the outer border of the DRBD of AL, IT, ME and PL.

Vienna, December 2015

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icpr ikd
International
Commission
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of the Danube River

Danube River Protection Convention



signed 29 June 1994, Sofia (Bulgaria)



Protection of water &
ecological resources



Sustainable use
of water



Reduce nutrients &
hazardous substances



Manage floods
& ice hazards

**ICPDR coordinates implementation of
EU Water Framework Directive & EU
Floods Directive on basin-wide level**



Contracting Parties



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Germany



Austria



Czech Republic



Slovakia



Hungary



Slovenia



Croatia



Bosnia & Herzegovina



Serbia



Montenegro



Romania



Bulgaria



Rep. of Moldova



Ukraine

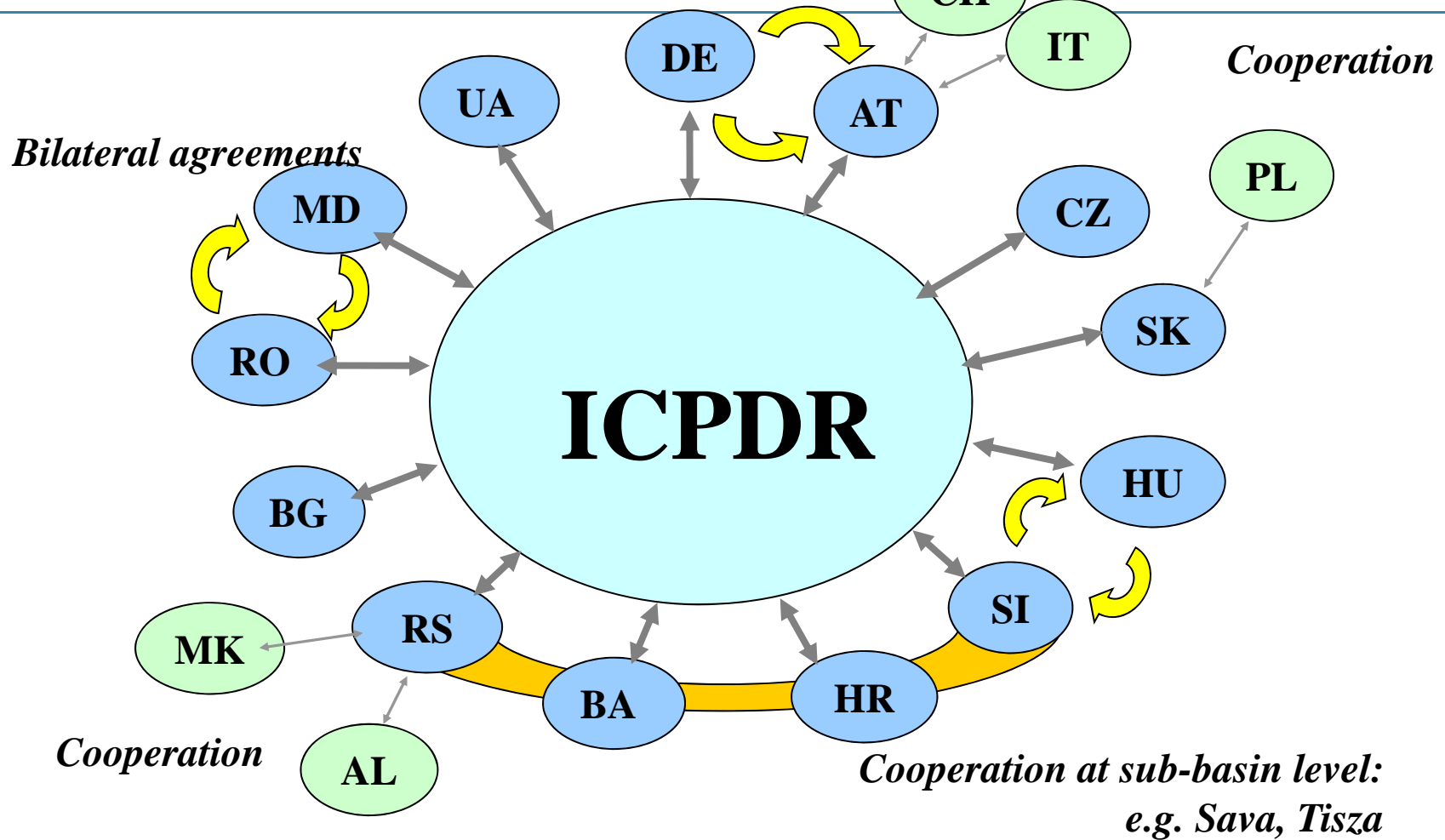


European Union

Coordination Mechanism



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CLIMATE CHANGE



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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

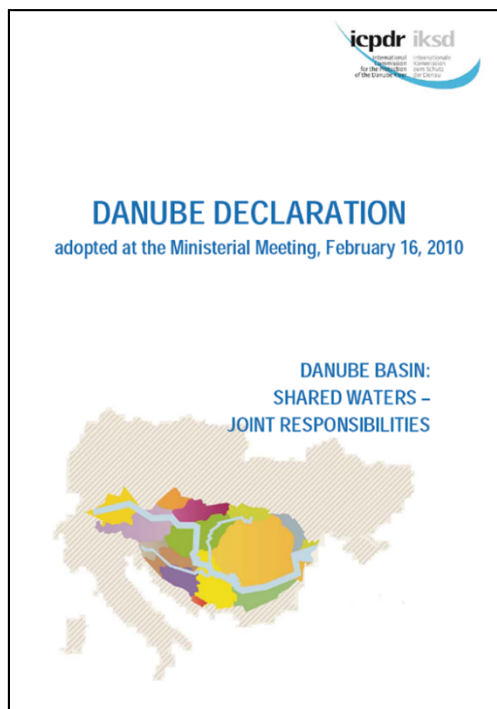
Flash floods



The population of the Danube River Basin suffered from severe floods in 2002, 2005 ,2006, 2014 ...

Climate change adaptation

Starting point



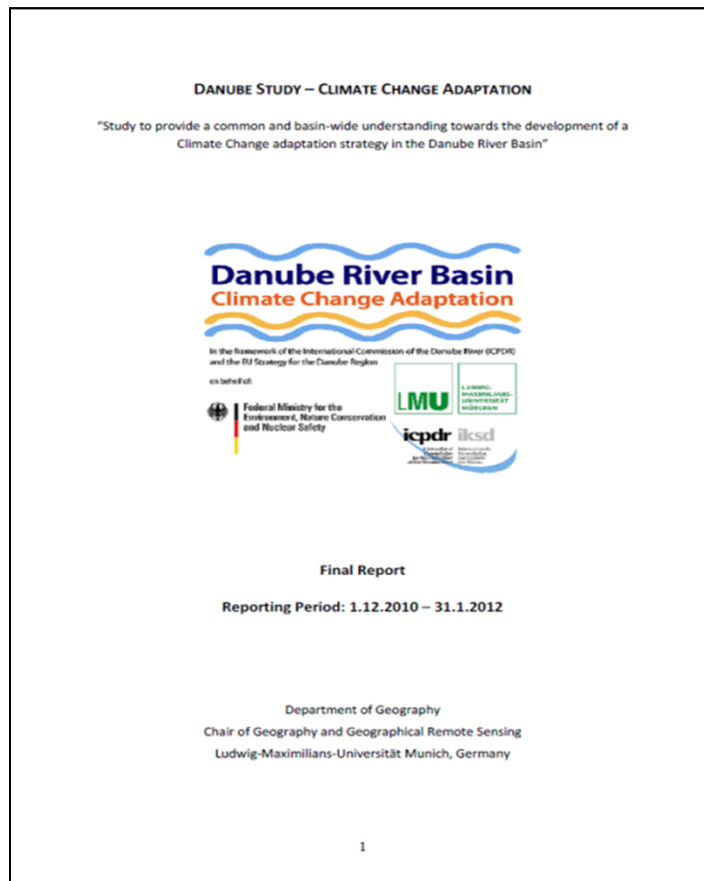
- (...) impacts of **climate change** will increase and develop into a **significant threat** in the Danube River Basin
- ask the ICPDR to develop until 2012 a **Climate Adaptation Strategy** in the Danube River Basin (...) and ensure that climate adaptation issues are **fully integrated** in the second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

Danube Climate Adaptation Strategy

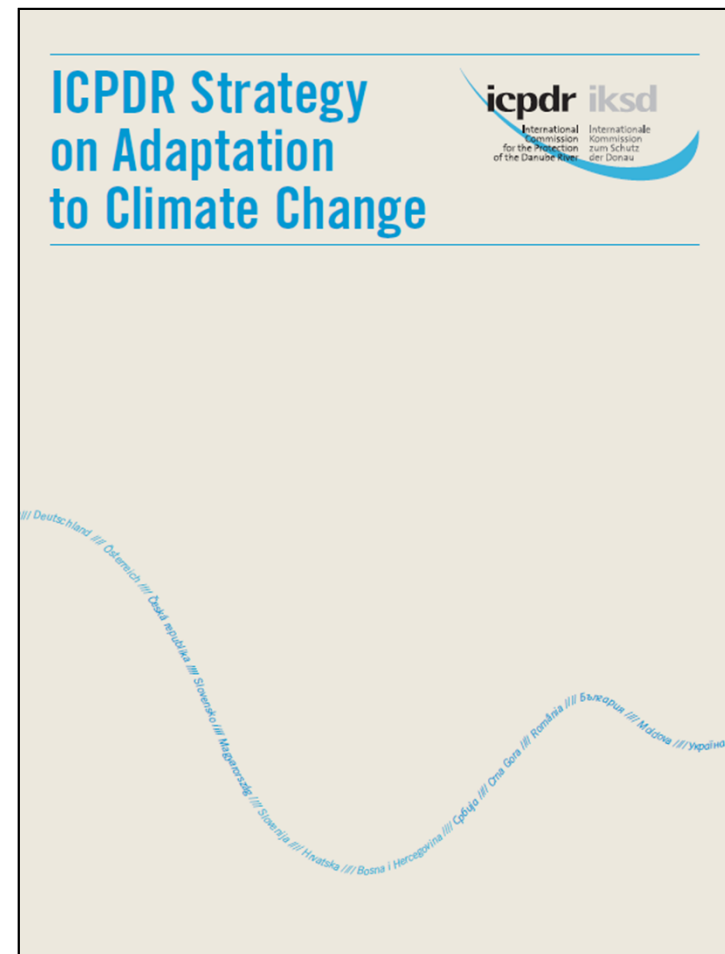
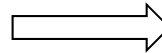


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Danube Climate Adaptation Study



National Adaptation Strategies & National Management Plans

ICPDR **IKSD**

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Revision and update of the Danube Study



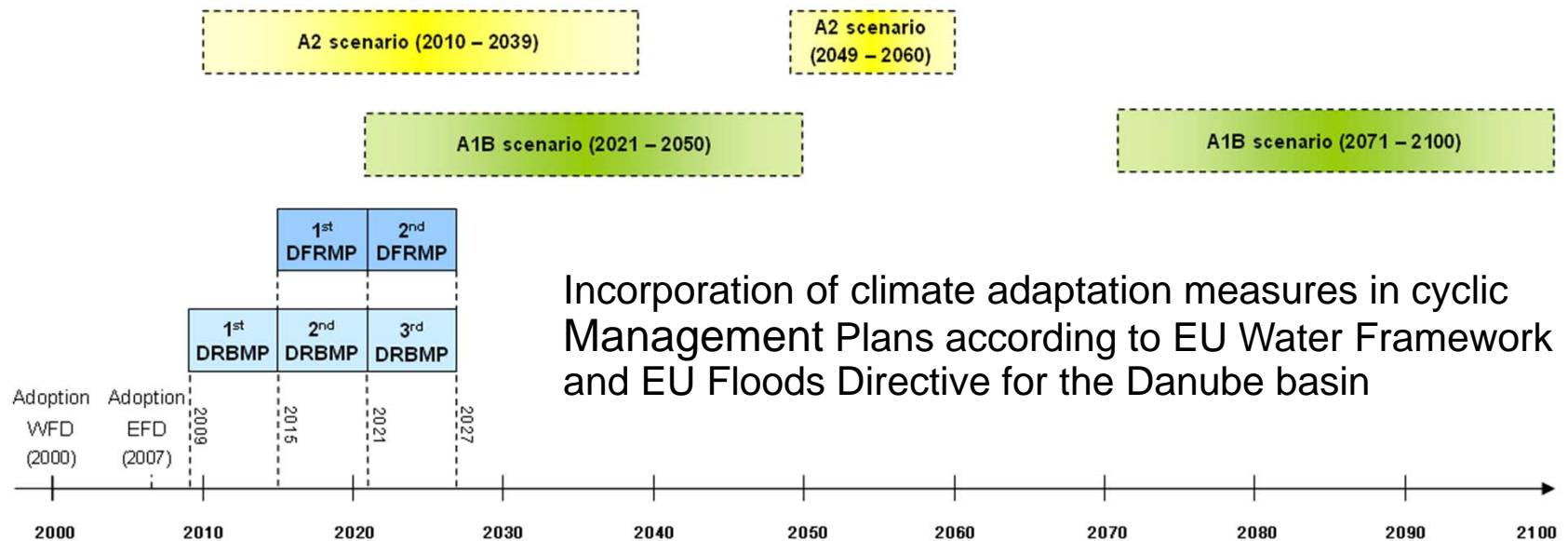
- **Using the same methods** to make the results comparable:
 - No further model calculations
 - Results are solely based on the analysis of the findings of on-going and finalized research and development projects, studies and guidances
- **Evaluating changes** in the scientific knowledge base and documenting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

ICPDR timetable

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)



Climate Change impacts on the water sector in the DRB



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/>