

Thematic Process

1.3.6 Climate Change Adaptation in Basins: Examples & Good Practices

13 April 2015, Daegu, Korea

Climate Change Adaptation in the Danube River Basin



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Danube Ministerial Meeting 2010



ICPDR was asked to develop until 2012 a **Climate Adaptation Strategy** for the Danube River Basin

Climate Change Adaptation Strategy

Main steps

Step 1 (during 2011)
Danube Climate Adaptation Study



Step 2 (March 2012)
Climate Adaptation Workshop

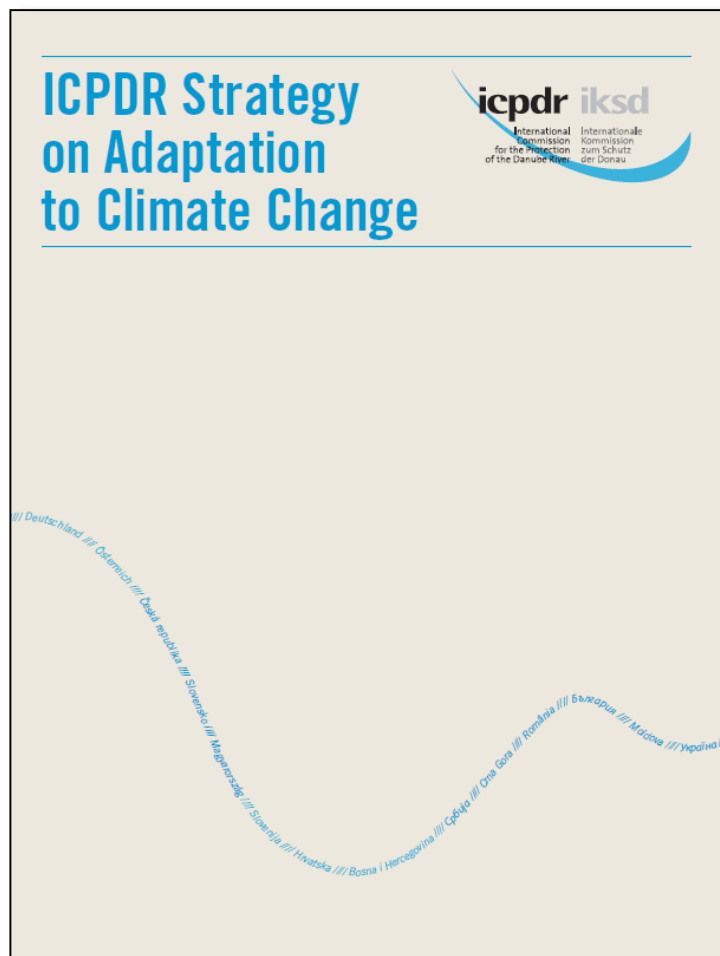


Step 3 (finalised in 2012)
Danube CC Adaptation Strategy

- Knowledge base, summarising expected impacts and possible adaptation measures
- Based on existing climate change studies and projects
- Presentation and broad discussion with countries and stakeholders
- Acceptance of results on basin-wide level
- Joint elaboration of Strategy with input from different Expert Groups
- Adopted in December 2012

Danube Climate Adaptation Strategy

Main elements



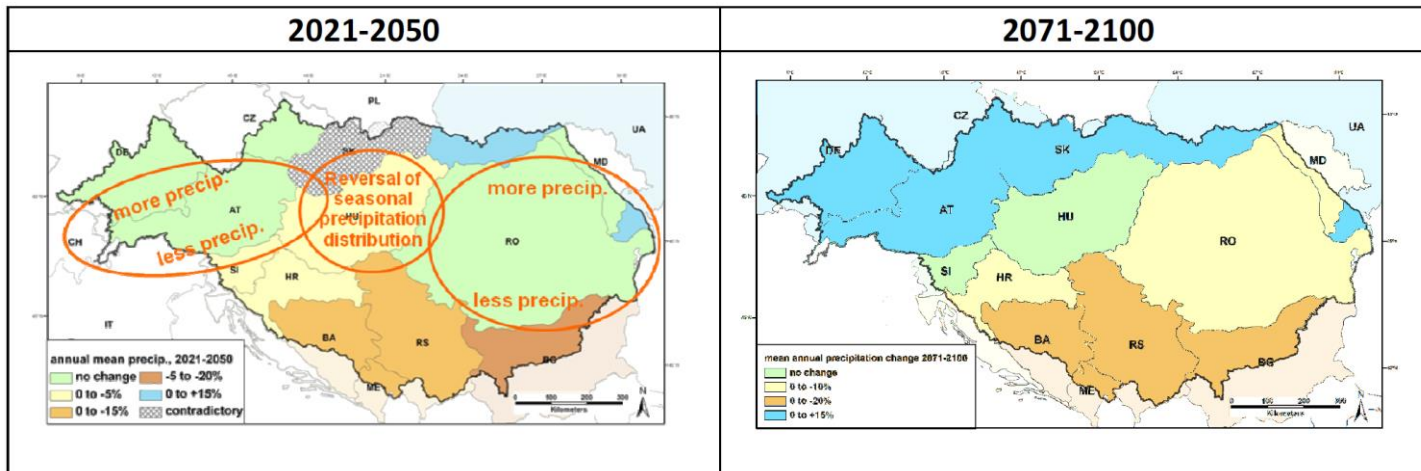
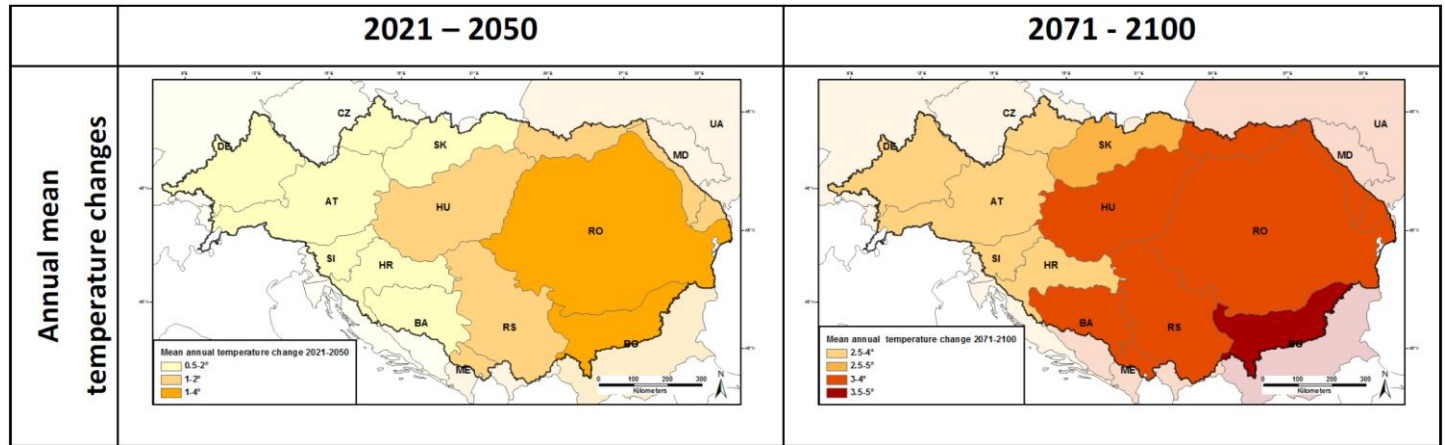
Contents:

1. Introduction
2. Framework conditions
3. Climate change scenarios
4. Water-related impacts
5. Vulnerability
6. Overview of possible adaptation measures
7. Guiding principles on adaptation and integration into ICPDR activities
8. Next steps

Danube Climate Adaption Strategy

Climate change scenarios

Annual mean temperature changes



Changes in mean annual precipitation

Adaptation measures “tool box”

Example: Water scarcity and drought

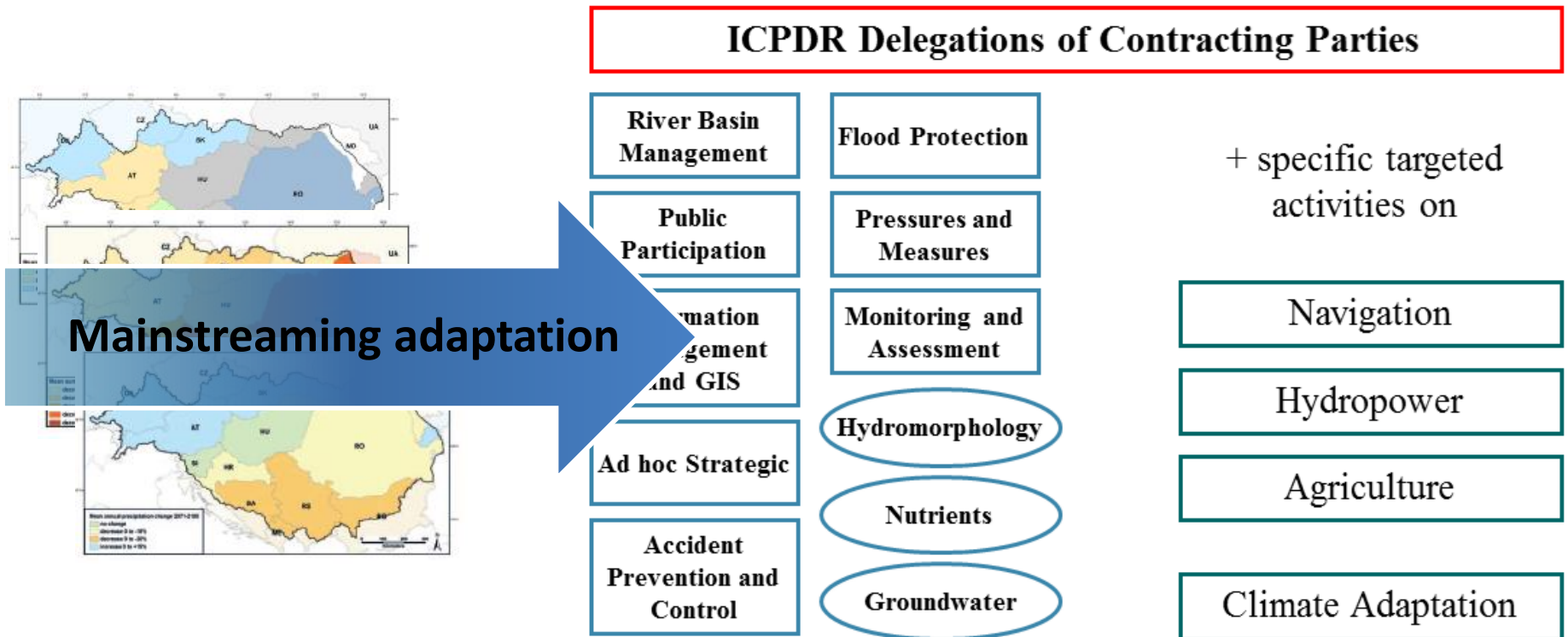
Type	Possible adaptation measures	Time horizon*	Options for cooperation	Challenges	Source (Countries)
Preparation measures for adaptation	Monitoring systems <ul style="list-style-type: none"> Establishment of new and maintenance, optimization and extension of existing monitoring systems Measures are required to improve the quality, spatial coverage and accessibility of meteorological, hydrological, water use, water quality, social and economic data, including the use of remote sensing methods (e.g. improvement of the drought forecasting capacity of the National Weather Forecast Services by providing access to European forecasts and EUMetsat satellite data) Adaptation of the hydrometric networks to track the impact of climate change on water resources, providing enough redundancy to obtain accurate estimations of naturalised stream flow series from observation, closing the water balance in each sub-basin 	m	x		NAS (AT, CZ, MD), WFD 24, EU COM, BAYKLAS, JRC 2005, UNFCCC (BA), UNECE 2010, UNECE 2009, ADAM
	Development of early warning systems on droughts and low flows <ul style="list-style-type: none"> Consideration of European and national levels Provision of information on spatial extent, duration, time of occurrence in relation to the crop calendar, and severity Development of prototypes and set up implementing procedures for an operational European Drought Observatory and early warning system 	s-m	x	x	EU COM, NAS (AT), UNECE 2009, ADAM, JRC 2005, EEA 2007, ST_BLOESCHL_AT
	Carrying out drought risk mapping and development of drought risk vulnerability profiles <ul style="list-style-type: none"> Identification of methodologies for drought thresholds and drought mapping Development of drought status indicators based on indicators for meteorological, agricultural and hydrological droughts and guidelines for indicator thresholds setting for different drought status in specific water distribution systems Identification of the most drought-prone zones at a micro-level in order to develop more specific adaptation measures 	m	x		NAS (CZ), WFD 24, UNECE 2009, EU COM, UNFCCC (BA), NAS (MD), ADAM, ST_BLOESCHL_AT

Danube Climate Adaptation Strategy

Approach for implementation of adaptation measures

- Danube Climate Adaptation Strategy does not include a separate programme of measures!
- Making best use of **existing structures and water management planning instruments**
 - EU **Water Framework Directive** and EU **Floods Directive** are main tools for adaptation
 - ICPDR Expert Groups and Task Groups mandated to **incorporate Climate Adaptation** in Danube River Basin and Danube Flood Risk Management Plan
 - **Cyclic and adaptive** approach
- Strategy includes Guiding Principles (from CIS Guidance Document No. 24), supporting ICPDR Expert Groups and Task Groups in adaptation

Integration of adaptation in water management planning

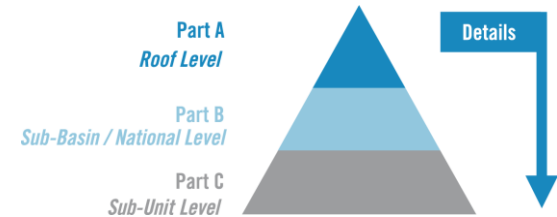


ICPDR Expert Groups were mandated to fully integrate adaptation in water management planning processes

Integration between different levels of management and inter-sectoral cooperation – IWRM approach

Integration between **different levels**

- ▶ WFD and Floods Directive approach – Level A-B-C
- ▶ Focus on key issues and coordination on basin-wide level; more detailed planning on national level



Integration between **different sectors**

- ▶ Strong involvement of different sectors and interest groups (i.e. observers, public participation)
- ▶ Synergies but also potential conflicts need to be addressed at an early stage in the planning process