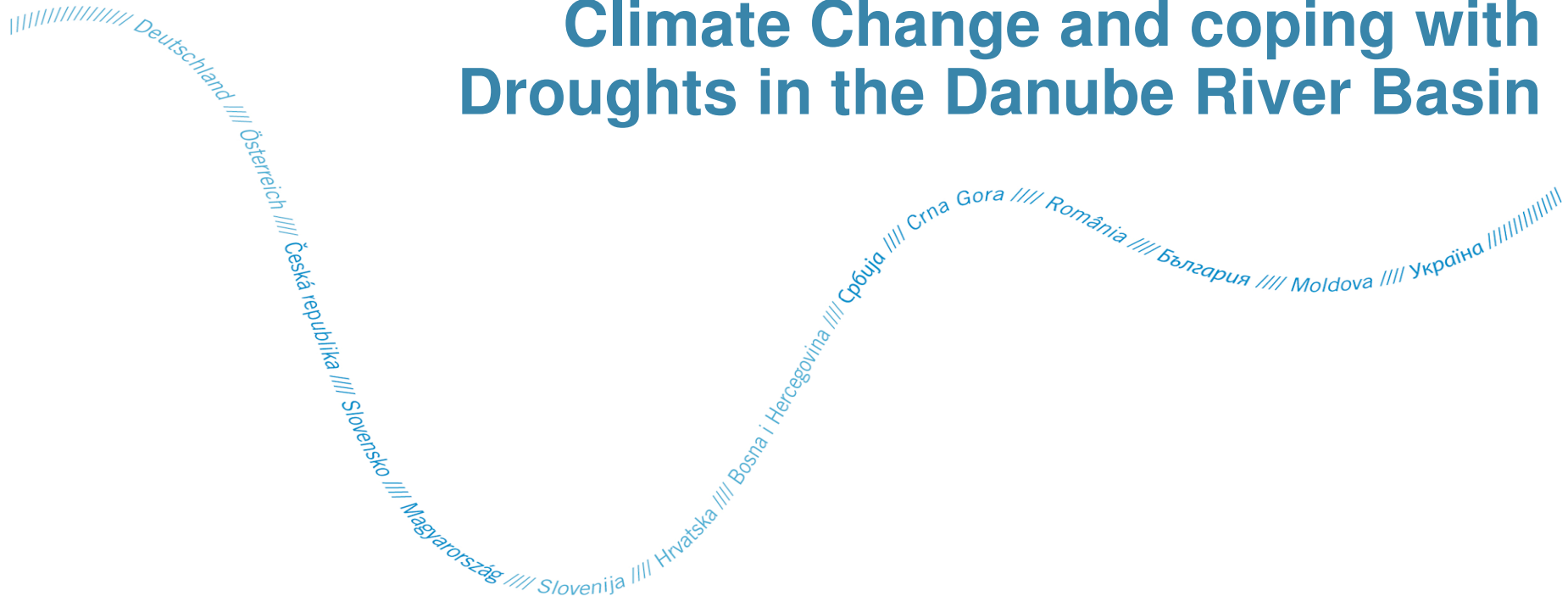

International Conference: „Effective utilization of water resources in the conditions of climate change, drought and water scarcity“

17-18 May 2016, Bratislava, Slovakia

icpdr iksd

International
Commission
for the Protection
of the Danube River
Internationale
Kommission
zum Schutz
der Donau

Activities of the ICPDR on Adaptation to Climate Change and coping with Droughts in the Danube River Basin

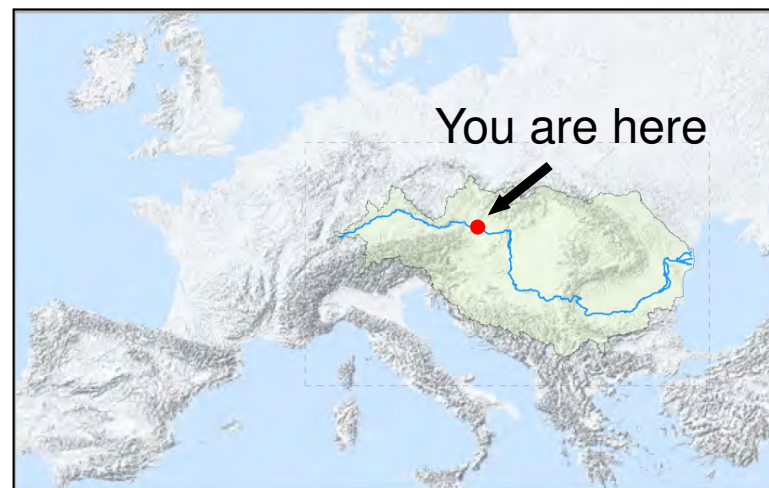


Raimund MAIR
International Commission for the Protection of the Danube River (ICPDR)
Raimund.MAIR@unvienna.org | www.icpdr.org

International Commission for the Protection of the Danube River (ICPDR)



- 19 countries: Most international River Basin in the World
- Water cooperation: International Commission for the Protection of the Danube River (ICPDR)

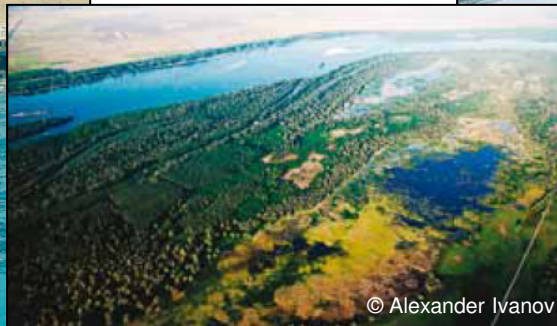
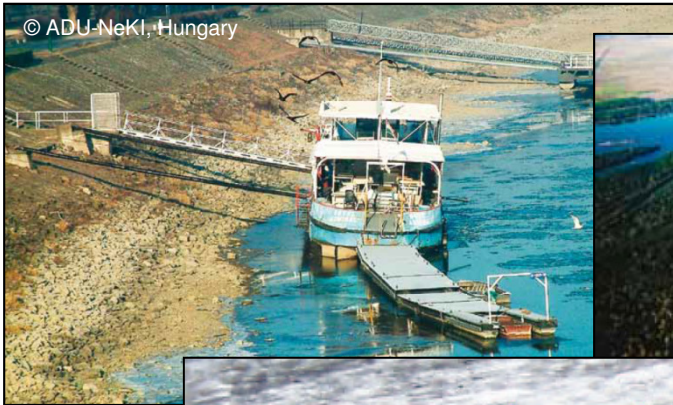


- Contracting parties: 14 countries - 9 EU Member States, 5 Non EU Member States + European Union
- ICPDR: The platform for countries to draft and adopt the **Danube River Basin** and **Danube Flood Risk Management Plans** (EU Water Framework Directive and EU Floods Directive)

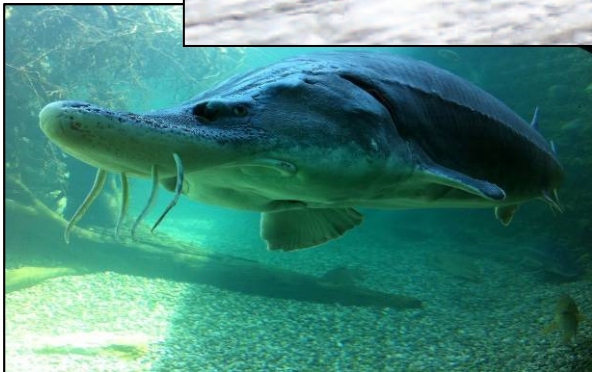
Water is in the focus of climate change adaptation

icpdr iksd

International Commission for the Protection of the Danube River
Internationale Kommission zum Schutz der Donau



“Water and its availability and quality will be the main pressures on, and issues for, societies and the environment under climate change”
(IPCC Technical paper “Climate Change and water”, June 2008)



Climate change / water scarcity and droughts Cooperation EUSDR & ICPDR



EUSDR Action Plan (selection):

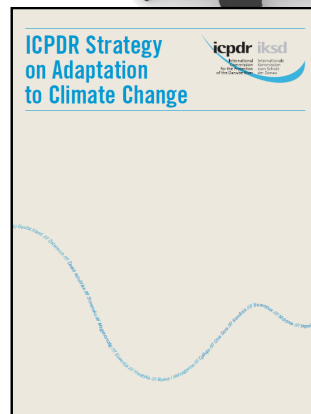
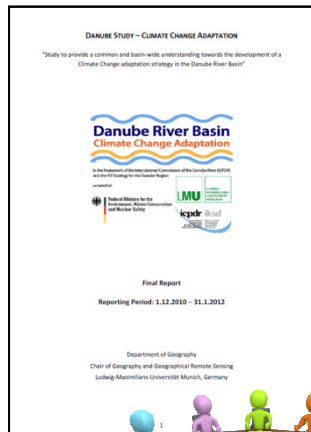
- “Anticipate regional and local impacts of **climate change** through research”
- “To **foster transnational cooperation via ICPDR** in order to develop a **Climate Change Adaptation Strategy** for the Danube Region”

(New) EUSDR Targets (PA5):

- “To address the challenges of **water scarcity and droughts** in line with the **Danube River Basin Management Plan – Update 2015**, the **report on the impacts of droughts** in the Danube Basin in 2015 (due in 2016) and the ongoing work in the field of climate adaptation”
- “Provide and enhance continuous support to the implementation of the **Danube Flood Risk Management Plan** – adopted in 2015 in line with the EU Floods Directive – to achieve significant reductions of flood risk events by 2021, also taking into account potential impacts of **climate change** and adaption strategies”

Adaptation to Climate Change

Important steps taken



Danube Climate Change Adaptation Study

Step 1

- Summarising all existing scientific and research studies
- Knowledge base on impacts and possible adaptation measures



Workshop

Step 2

- Broad discussion with countries and stakeholders
- Acceptance of results on basin-wide level



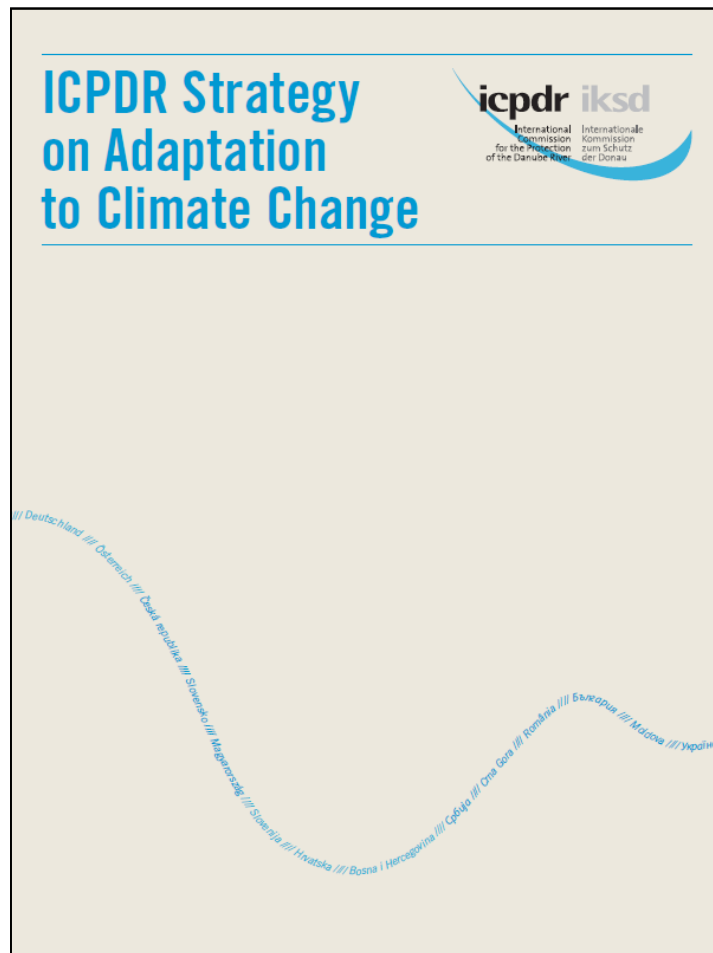
Climate Change Adaptation Strategy

Step 3

- Jointly elaborated with input from ICPDR Expert Groups
- Building on existing structures and water management planning instruments

ICPDR Climate Change Adaptation Strategy

Main elements



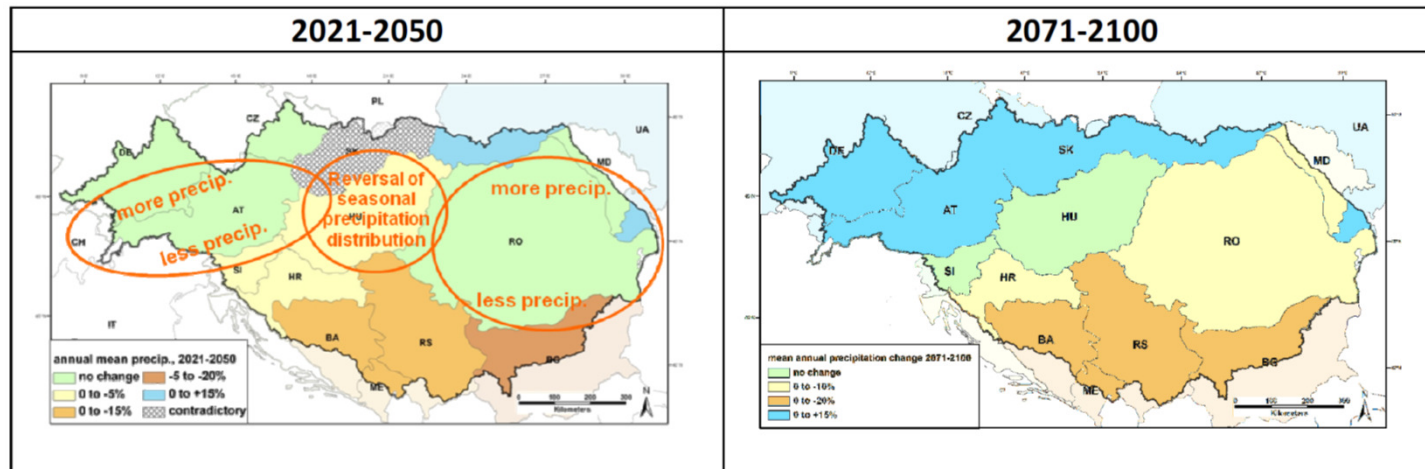
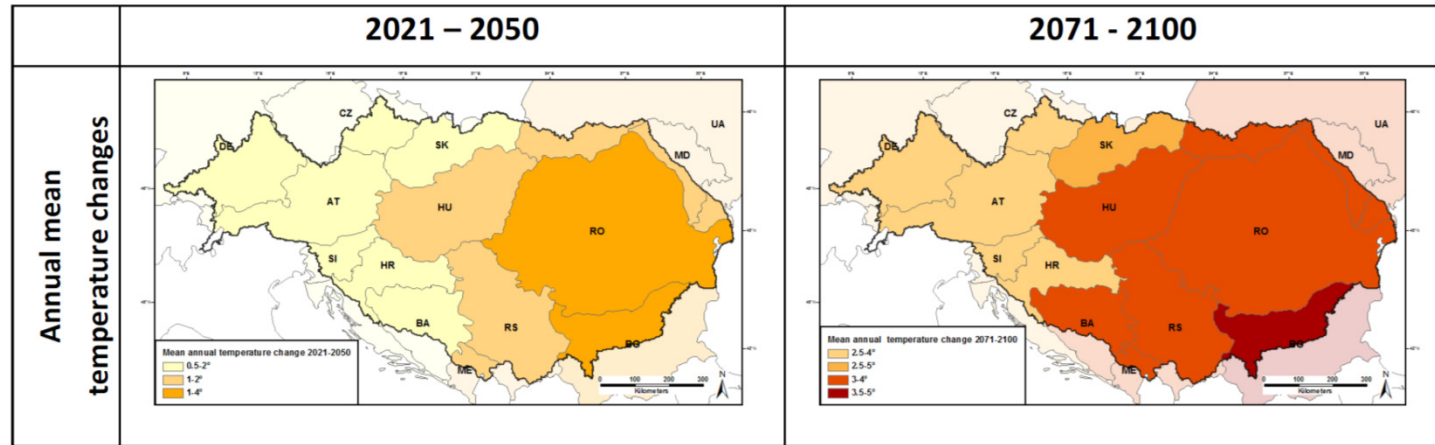
Contents:

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



Water-related impacts



- **Changes** in seasonal **runoff patterns**
- **Droughts**, low flow situations and **water scarcity** likely to become **more intense**, longer and more frequent
- Local and regional **increased heavy rainfall**, however, **no clear picture for changes in flood** magnitude and frequency
- **Changes for ecosystems** and biodiversity predicted with shifts of aquatic and terrestrial flora and fauna
- **Sectors** as agriculture, forestry, navigation and water related energy production **likely to suffer**

Adaptation measures “tool box”

icpdr ikisd

Example: Water scarcity and drought

International Commission for the Protection of the Danube River
 Internationale Kommission zum Schutz der Donau

| 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 |

ICPDR Climate Change 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

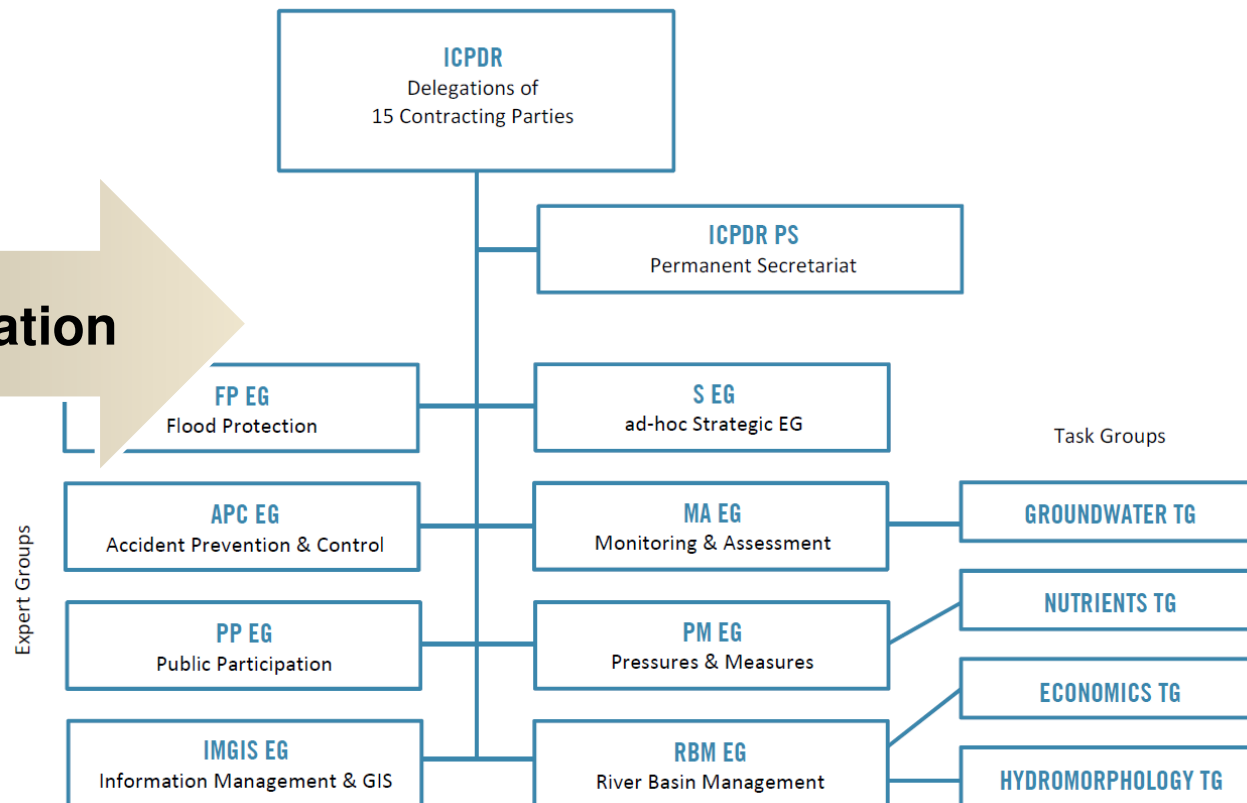
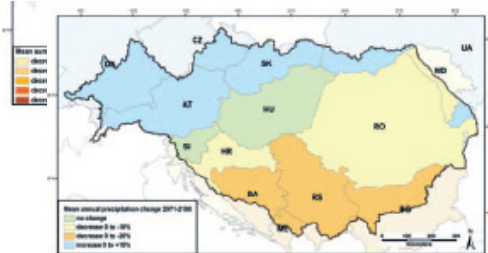
Integration of adaptation in water management planning

icpdr ikisd

International Commission for the Protection of the Danube River
 Internationale Kommission zum Schutz der Donau



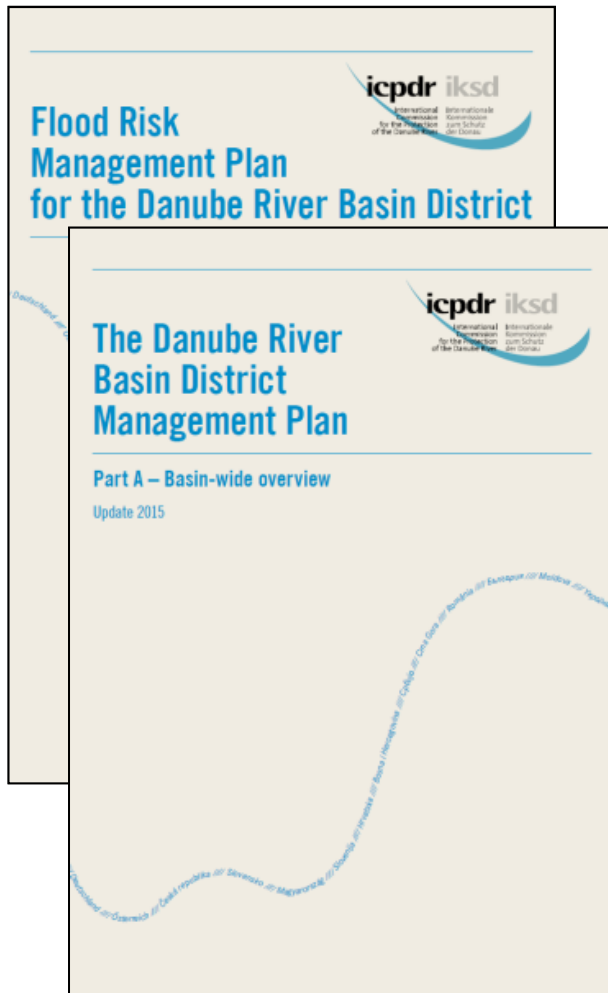
Mainstreaming adaptation



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

Tools for adaptation on basin-wide level

Danube River Basin and Flood Risk Management Plans 2015 - 2021



- **Adopted** by ICPDR in December 2015
- **Politically endorsed** at Danube Ministerial Conference 2016
- Addressing **6-years planning period** 2015-2021
- Climate change **adaptation integrated**
- **“Climate check”** of Joint Program of Measures
- **Next steps** outlined and agreed

EXAMPLES

Joint Program of Measures 2015 - 2021



- Flood hazard and risk mapping
- Flood risk management measures



- Improvement ecosystem status and resilience
- Regulations on groundwater abstraction
- etc.

Important issue

Improved investigative monitoring

icpdr ikasd

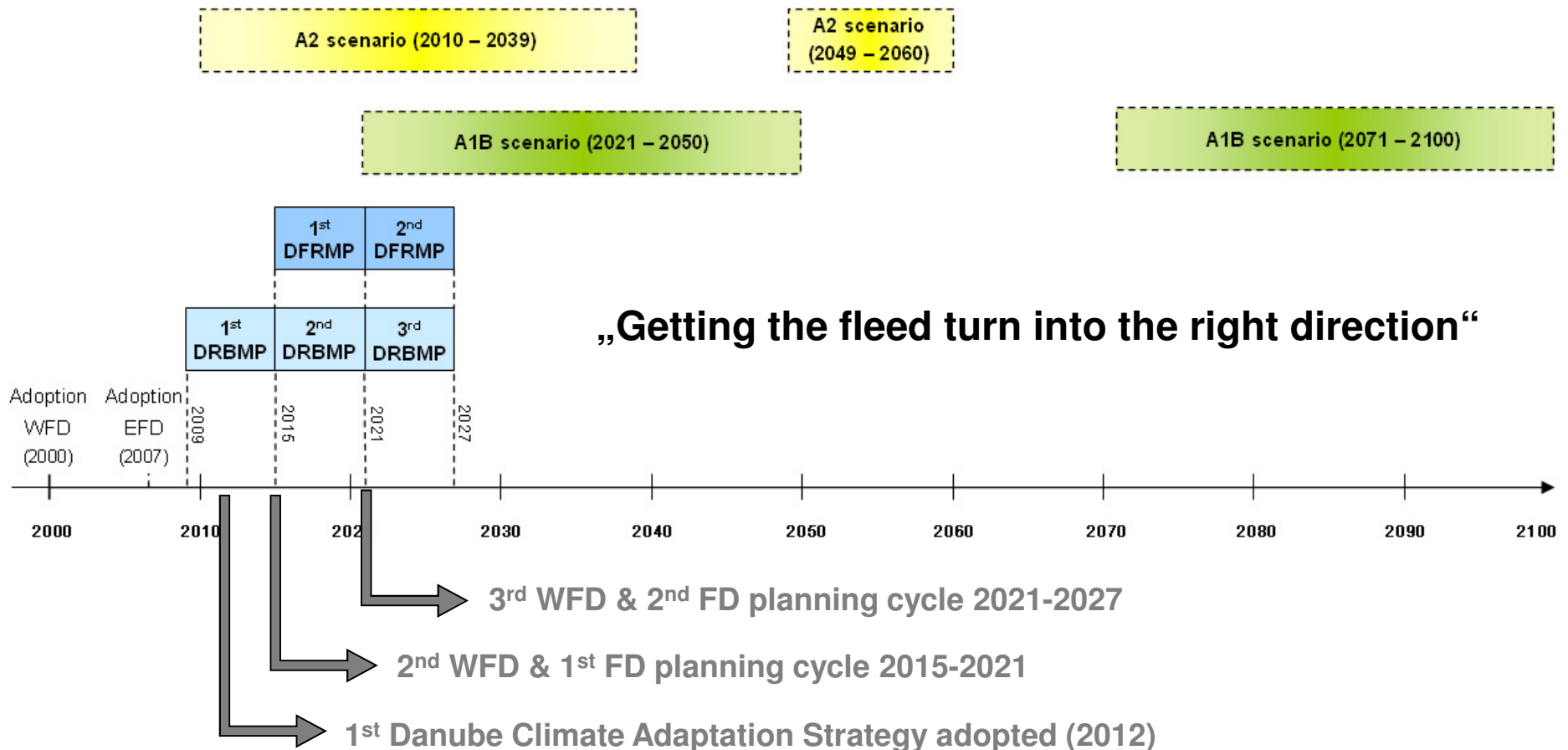
International
Commission
for the Protection
of the Danube River
Internationale
Kommission
zum Schutz
der Donau

- **Catastrophic floods but also droughts** during last years, however
- Challenge to **distinguish climate variability from climate change**
 - ➔ **Effective long-term monitoring** to better identify climate change signals
 - ➔ **Candidate sites** for climate change impacts monitoring selected
 - ➔ **Different parameters agreed** to be monitored in the frame of the Danube Transnational Monitoring Network (TNMN), e.g.
 - Water and air temperature
 - Water level and discharge
 - pH and oxygen

Danube Transnational Monitoring Network (TNMN)



Adaptive approach for adaptation – time horizons



ICPDR's 2016 Danube Ministerial Meeting



ICPDR was asked to **update its Climate Change Adaptation Strategy by 2018** in time for the next WFD and FD planning cycle and to maintain its activities expanding the knowledge (...) on **water scarcity and drought.**

Adaptation to Climate Change

Next steps and outlook



Step 1

- **Update scientific knowledge base** scheduled for **2017**
 - Latest research studies on CC for Danube River Basin
 - Update climate change scenarios and water-related impacts
 - Update potential adaptation measures
 - etc.



Step 2

- **Update ICPDR Strategy** on Adaptation to Climate Change during **2018**
 - Based on updated scientific knowledge base
 - Refinement of strategic approach and potential adaptation measures



Step 3

- **Integration of climate change** into further improved River Basin and Flood Risk Management Plans in 2021

National Climate Change Adaptation Strategies 2015

(+ EU activities...)

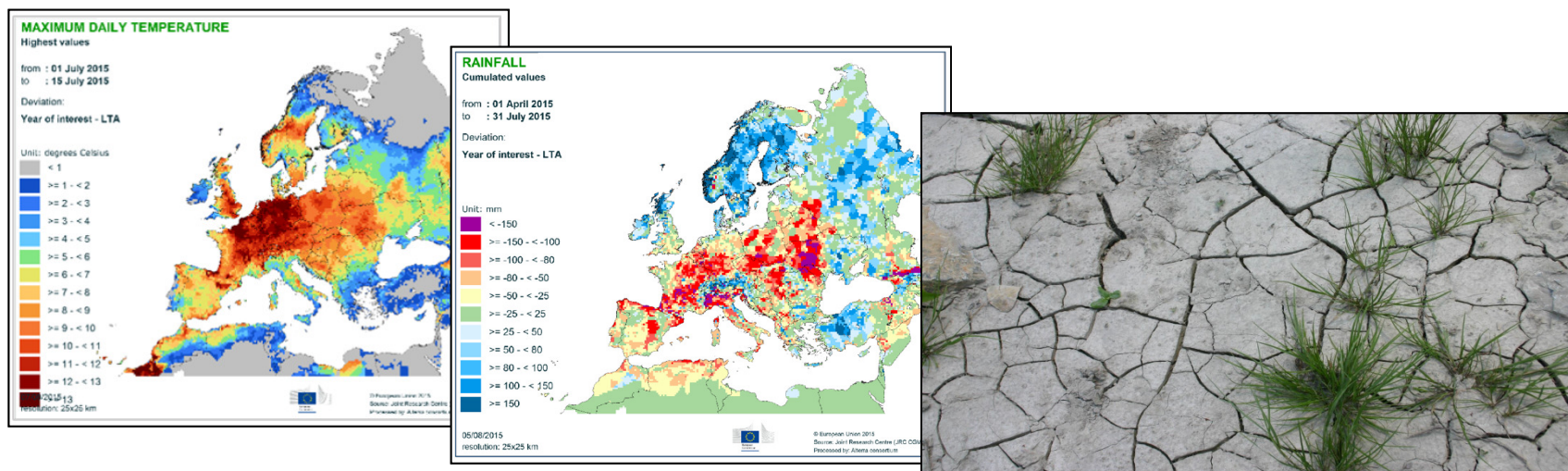


Launch of new activity

Report on 2015 Droughts

Danube River Basin hit by Drought in 2015!

- Impacts on economic sectors and environment
- ICPDR agreed to elaborate report on impacts, measures taken and lessons learned
- Elaboration ongoing – (Policy) Report to be finalised by December 2016



Conclusions



- Adaptation to **Climate Change is key issue** – important steps taken
 - ➔ Danube Climate Change Study and Adaptation Strategy in 2012
 - ➔ Integration into River Basin and Flood Risk Management Plans 2015-2021
 - ➔ Decision on next steps – Update of knowledge base and strategy by 2018
- **Droughts increasingly important** issue – important steps under way
 - ➔ Report on 2015 Droughts in the Danube River Basin under elaboration
 - ➔ Further work planned to be undertaken
- Cross-cutting issue requiring **interdisciplinary approach**
- Making best use of existing structures and water management instruments (**RBM and Flood Risk Management Plans**)
- **Not duplicate efforts** – building on what is in place based on **Joint Document EUSDR PA4/5 and ICPDR and EU CIS process!**

Thank you for your kind attention!

For more information please consult the ICPDR website

<http://www.icpdr.org>

ICPDR Secretariat / Vienna International Centre, D0412 / P.O. Box 500 / 1400 Vienna / Austria
Phone +43 1 26060-5738 / Fax +43 1 26060-5895 / icpdr@unvienna.org / www.icpdr.org

