

Workshop - Auswirkungen des Klimawandels auf das Flussgebiet Rhein

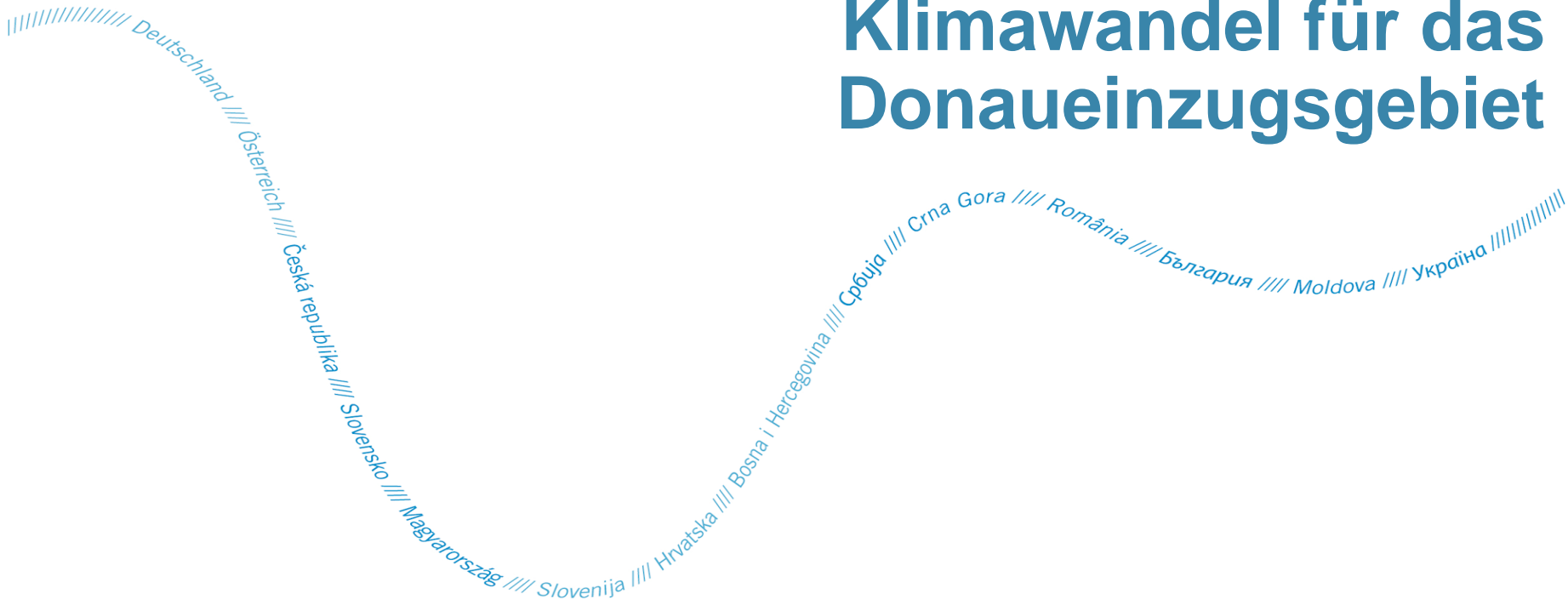
30-31 Jänner 2013, Bonn

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for the Protection
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zum Schutz
der Donau

Anpassungsstrategie an den Klimawandel für das Donaueinzugsgebiet



Raimund MAIR

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

Raimund.MAIR@unvienna.org | www.icpdr.org

Danube River Basin From the Black Forest to the Black Sea

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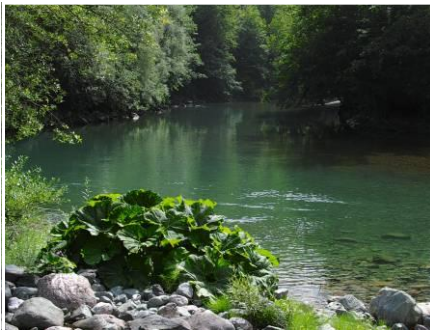
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Danube River Protection Convention

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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**



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Contracting Parties

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Germany



Austria



Czech Republic



Slovakia



Hungary



Slovenia



Croatia



Bosnia & Herzegovina



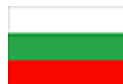
Serbia



Montenegro



Romania



Bulgaria



Rep. of Moldova



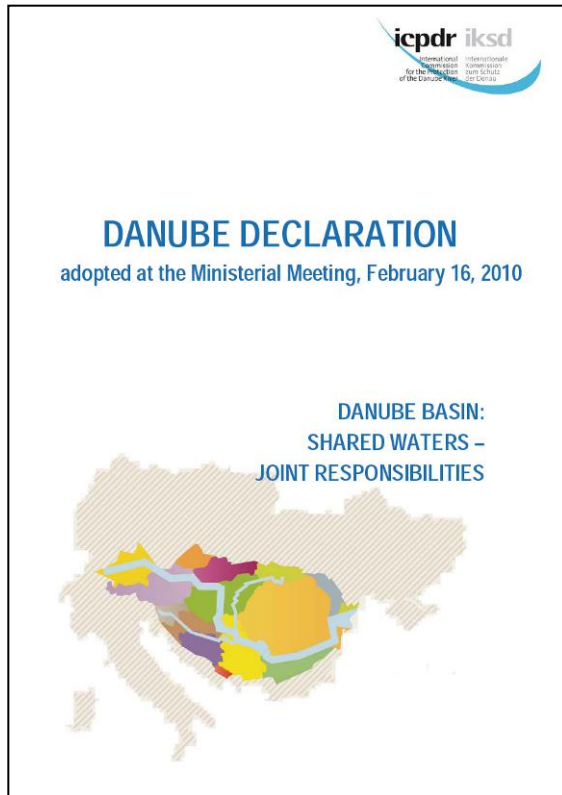
Ukraine



European Union

- **EU Member States (8)**
- **Non-EU Member States (6)**

Climate Change Adaptation Background and Mandate



- (...) 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

Germany volunteered acting as “**Lead Country**” for the elaboration of the Adaptation Strategy in the frame of the ICPDR

Climate Change Adaptation Steps

Step 1 (during 2011)

Danube Climate Adaptation Study



Step 2 (March 2012)

Climate Adaptation Workshop



Step 3 (during 2012)

Danube CC Adaptation Strategy



Step 4 (until 2015)

Implementation of Strategy

- Study elaborated by Ludwig-Maximilians-University Munich, based on existing studies / projects
- Knowledge base, summarising expected impacts information on possible adaptation measures
- Presentation and discussion of study results
- First discussions and step towards elaboration of Strategy
- Adaptation Strategy developed with input from ICPDR Expert Groups and Team of Experts
- Adopted in December 2012
- Making Strategy operational
- Implementation in 2nd Danube River Basin Management Plan and 1st Danube Flood Risk Management Plan

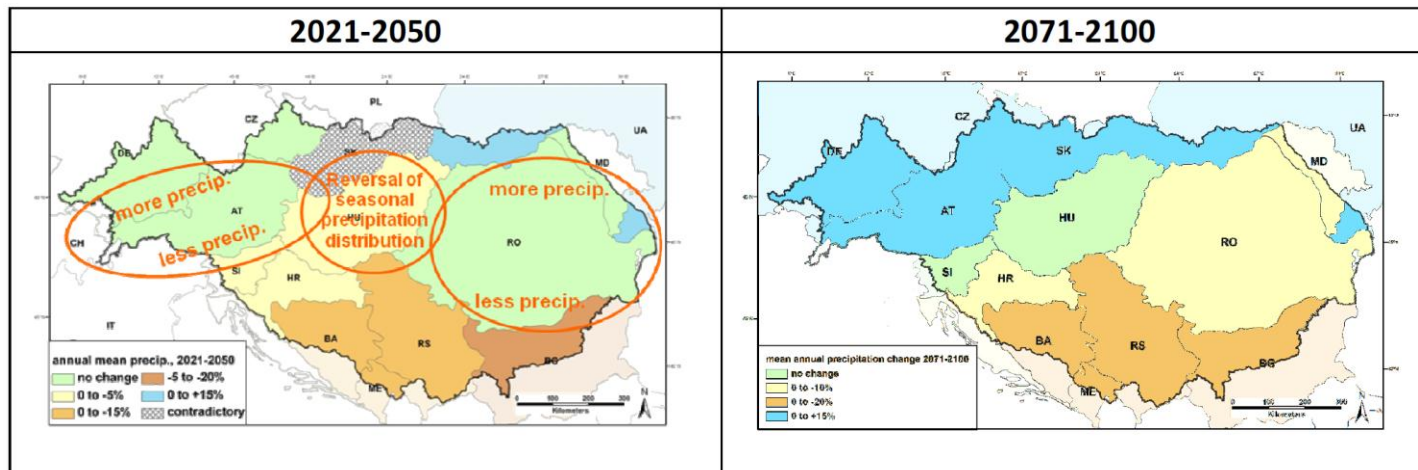
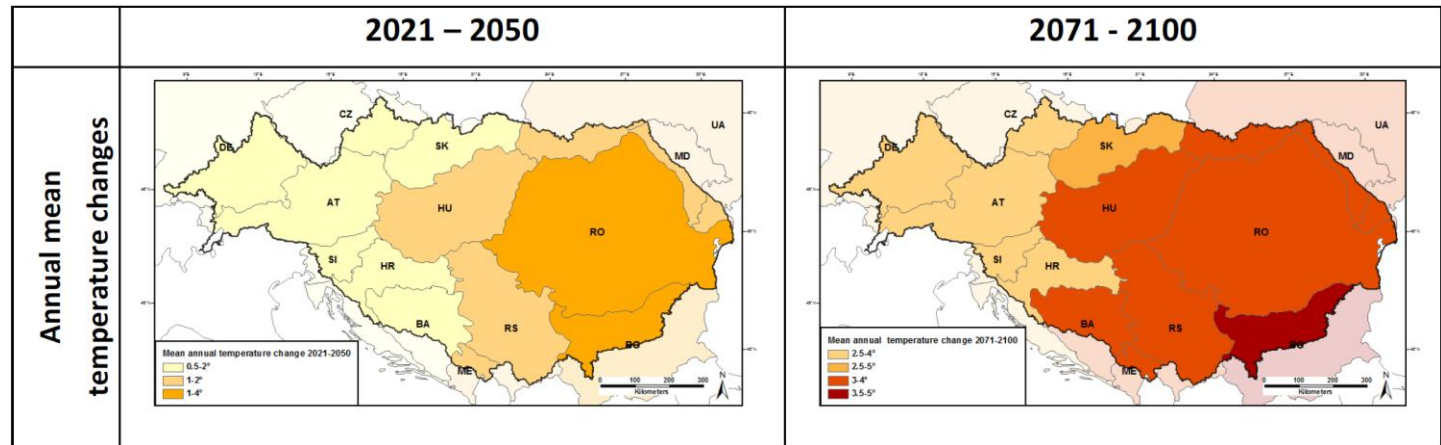
Climate change scenarios

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**Annual
mean
temperature
changes
(A1B)**



**Changes in
mean
annual
precipitation
(A1B)**

Main impacts

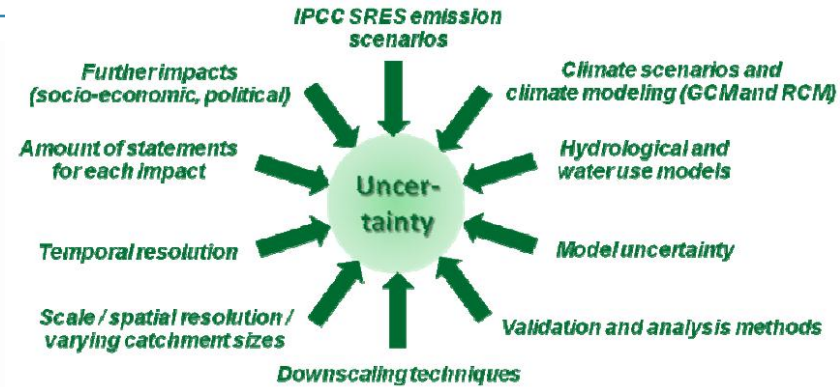
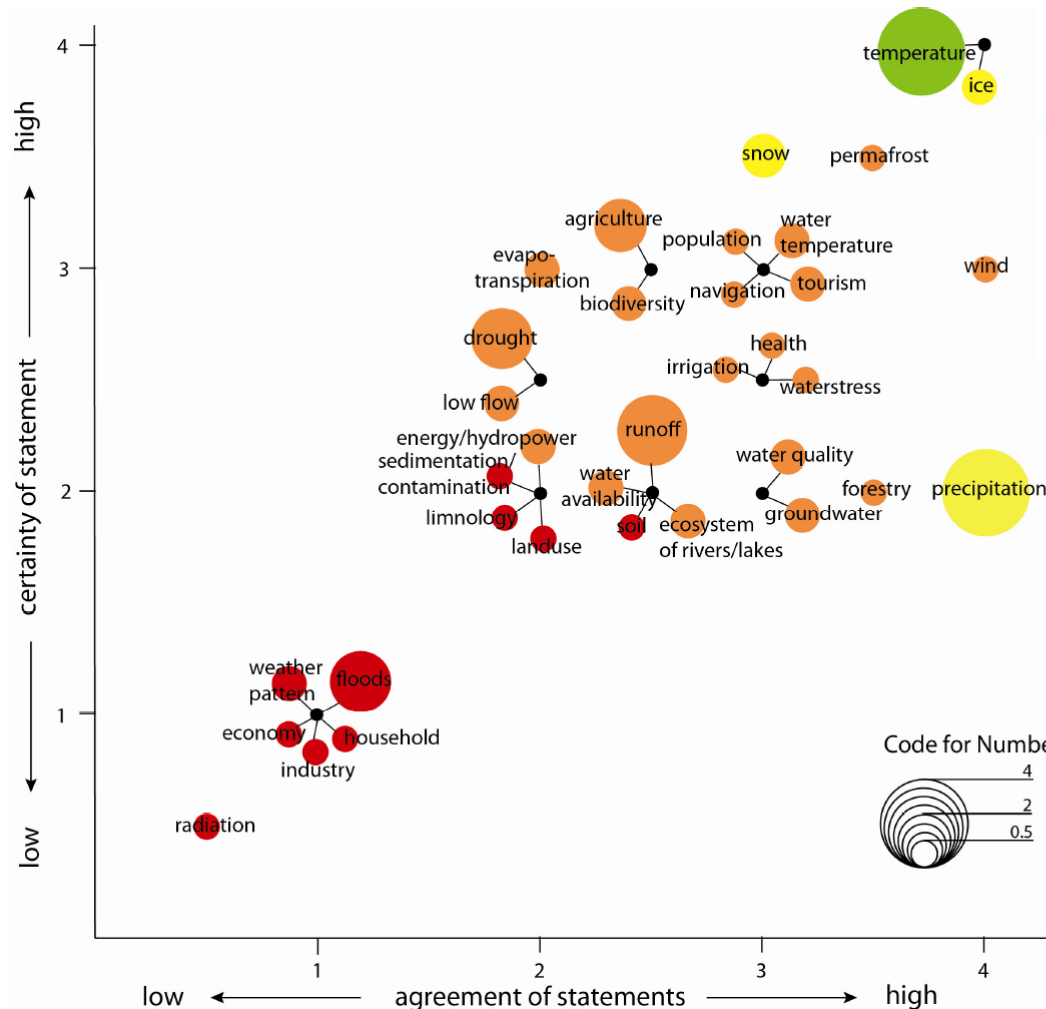
- **Changes** in seasonal **runoff patterns**
- **Droughts**, low flow situations and **water scarcity** likely to become **more intense**, longer and more frequent
- Local and regional **increased heavy rainfall**, however, **no clear picture for changes in flood** magnitude and frequency
- **Changes 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**

Uncertainty

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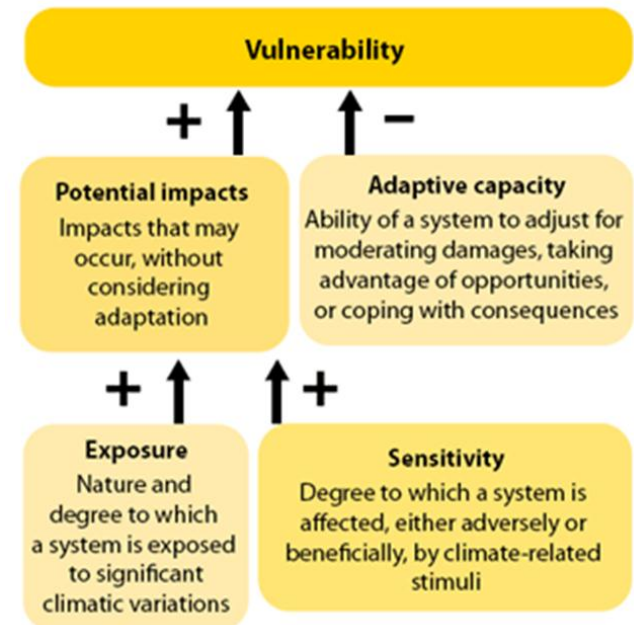
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| Number of projects | Code |
|--------------------|------|
| 1-7 | 0,5 |
| 8-14 | 1 |
| 15-21 | 1,5 |
| 22-28 | 2 |
| 29-35 | 2,5 |
| 36-42 | 3 |
| 43-49 | 3,5 |
| > 50 | 4 |

Vulnerability

- **Vulnerability assessment (VA)** helps to design suitable adaptation measures
- Currently **no consistent and homogenous VA in place** for the whole basin - complex, time and resource intense
- VA for whole basin not seems to be feasible option on the short term
- **First step** towards VA is **existing impact analysis** – well set to create common understanding and knowledge base

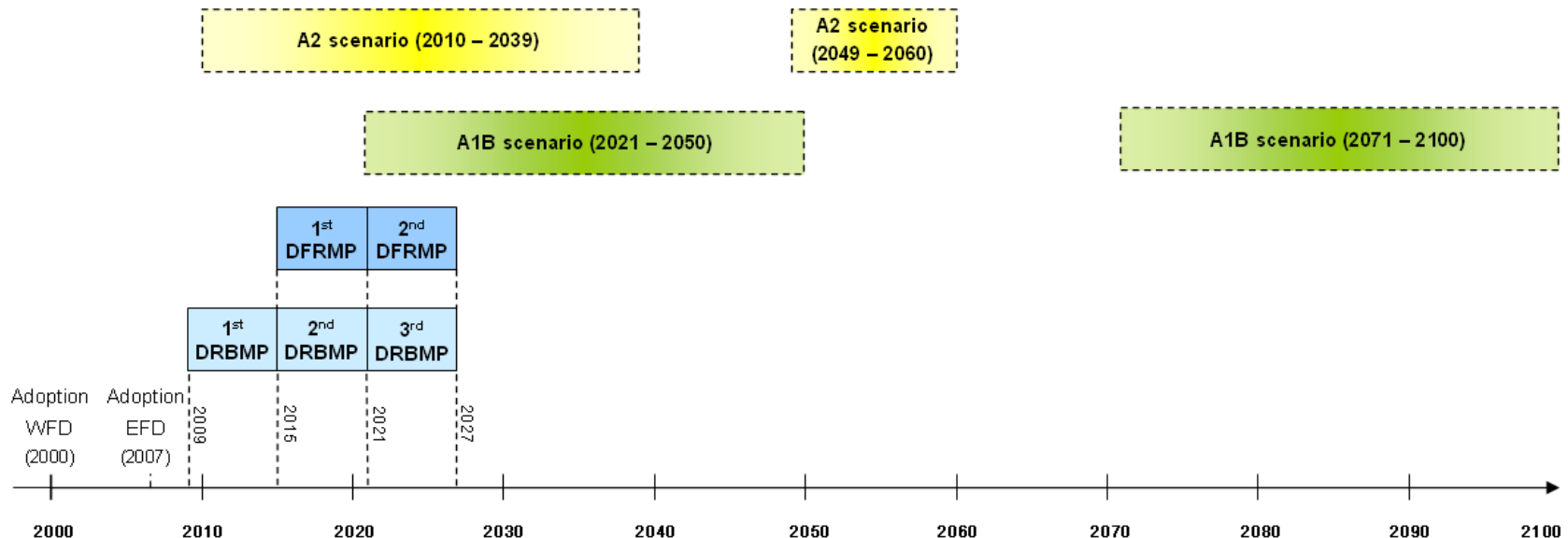


Adaptation measures

- Overview on **possible adaptation measures** included in Strategy - further detailed list available in Study (“tool box”)
- Make best use of **existing structures** and **water management instruments**
- Strategy **guides the way towards** adaptation and decision on **adaptation measures**
- Start now with priority on **win-win, no-regret and low-regret measures**

ICPDR approach for adaptation

- River Basin Management Plan and Flood Risk Management Plan - main tools for adaptation
- Integration of adaptation to climate change in work of existing ICPDR Expert and Task Groups
- Step-wise and cyclic approach – adaptive management



Guiding principles on adaptation



Strategy **includes guiding principles** (from CIS Guidance Document No. 24), supporting ICPDR Expert Groups and Task Groups in adaptation

- I. Climate modelling, projections, scenarios, potential impacts and uncertainty
- II. How to build adaptive capacity for management under climate change?
- III. Water Framework Directive (WFD) and adaptation
- IV. Flood risk management and adaptation
- V. Drought management, water scarcity and adaptation

Integration between levels of management and sectors

Integration between **different levels**

- ▶ WFD and EFD approach – Level A-B-C

Integration between **different sectors**

- ▶ WFD and EFD planning process – 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

Example potential synergies: Green infrastructure - extension of natural areas, reconnection of wetlands and floodplains

- ▶ Positive effect on reduction of flood peaks
- ▶ Improved linkage between surface- and groundwater and increased robustness during water scarcity and drought periods

Example potential conflicts: Structural adaptation measures for the improvement of navigation or for balancing water availability and water demand during future drought periods

- ▶ Potential impacts on biodiversity
- ▶ Potential conflict with achievement of WFD objectives

Next steps and follow-up

- Mandate relevant ICPDR Expert Groups and Task Groups to fully integrate adaptation to climate change in WFD and EFD planning process
- Adaptation measures to be included in 2nd Danube River Basin Management and 1st Danube Flood Risk Management Plan by 2015
- Closing of knowledge gaps – indication of further research requirements included in Strategy
- Proposal to check need for revision and update of Strategy in 2018 (linked with 6-years management cycles)

In summary...

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- Danube Climate Adaptation **Strategy** finalised and **adopted in December 2012**
 - Knowledge base: **Danube Study**, summarising **existing information** on Climate Change and Adaptation relevant for the Danube River Basin
 - Making best use of **existing structures and planning instruments**
 - EU **Water Framework Directive** and EU **Floods Directive** main tools for adaptation
 - ICPDR Expert Groups and Task Groups mandated to **incorporate Climate Adaptation** in next Danube River Basin and Danube Flood Risk Management Plan by 2015
 - **Step-wise and cyclic approach** – check need for revision and update of Strategy in 2018

Thank you for your kind attention!

For further information on the ICPDR and Adaptation to Climate Change please consult

<http://www.icpdr.org/main/activities-projects/climate-adaptation>

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

