Adapting to Climate Change: Environment & Water policies

Balázs Horváth

European Commission DG Environment

Workshop on Transboundary Water Resources Management

Budapest, 8-10 February 2011

EUROPEAN COMMISSION

environment

EU Climate Change Adaptation Policy

April 2009: White Paper on Adapting to Climate Change

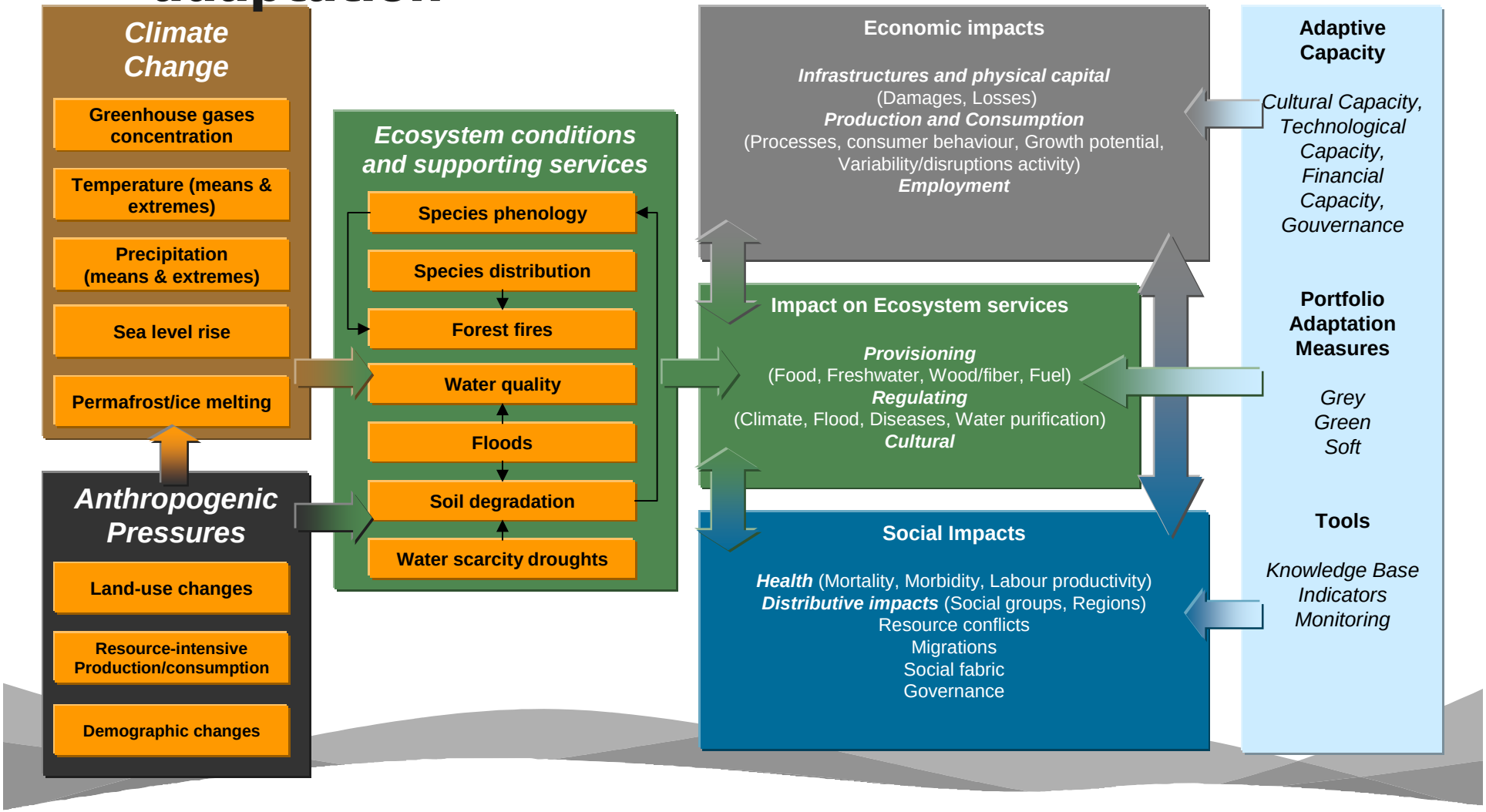
- **Water related issues**
  - Implementation of the Water Framework Directive
  - River Basin Management Plans should be made climate proofed
  - Floods Directive
  - Water Scarcity and Droughts Strategy
  - Efficient water use (CAP)
  - Increase water storage capacity of ecosystems
  - Coastal-marine areas: Marine Strategy Framework Directive, Integrated Maritime Policy
  - Common Fisheries Policy
  - …

- Shared responsibilities with DG Climate Action
- DG Environment focuses on:
  - Assessment of the environmental pathway of vulnerability to Climate Change (and other anthropogenic pressures)
  - Assessment of ecosystem-based approaches
  - Environmental impact of adaptation measures
  - Mainstreaming adaptation into Environmental Policies

EUROPEAN COMMISSION

environment

Environmental pathway of vulnerability and adaptation



EUROPEAN COMMISSION

environment

Impacts of climate induced changes in the water cycle

- **Systemic impacts that result in events, processes and adaptation leading to**
  - Health impacts
  - Biodiversity losses
  - Soil changes
  - Flooding and coastal erosion
  - Repercussions in a number of sectors, e.g. agriculture, transport, energy, housing and industrial and agricultural infrastructure
- **Uncertainty about magnitude of impacts**
- **Certainty: Water cycle changes are "precursors" for impacts:**
  - Increased demand for (clean) water; and
  - Temporary or permanent reductions in water availability
- **Knowledge gaps needing to be plugged**
  - Scientific
  - Technical
  - Economic

EUROPEAN COMMISSION

environment

Key messages for water resources management:

- Keep water resources clean
- Save water and increase water efficiency
- Maintain and boost natural storage capacity for water
- Protect against floods and erosion
- Land use, water and biodiversity – joined up management

EUROPEAN COMMISSION

environment

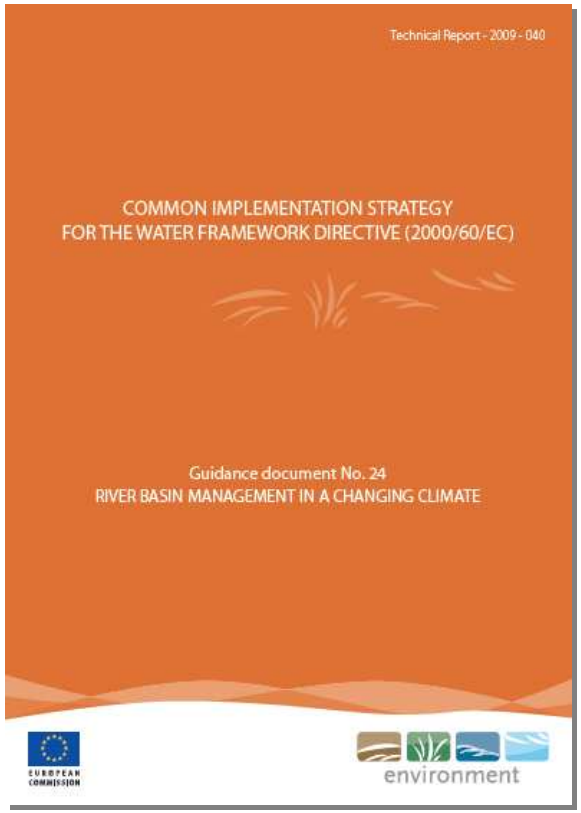
White Paper on Adaptation: Actions under DG ENV responsibility

- Guidelines for River Basin Management Plans (delivered in Dec 2009)
- Measures to enhance water efficiency in agriculture, households and buildings
- Natural water retention measures
- Inclusion of climate change in the implementation of the Floods Directive
- European guidelines on adaptation in coastal and marine areas
- Measures to boost soil storage capacity for both carbon and water
- Integration biodiversity loss and climate change
- Guidelines for the management of Natura 2000 sites
- Follow-up Green Paper on Forest Protection
- Adaptation Guidelines for the EIA and SEA Directives

EUROPEAN COMMISSION

environment

Guidance on Climate Change and Water



- **Produced under Water Framework Directive Common Implementation Strategy**
  - ➔ Target group: river basin managers
- **Practical guidance on how to deal with climate change in EU water legislation**
  - ➔ Focus on coming two River Basin Management Plans (not 2100)
  - ➔ Providing first tools, but further work needed after 2009
  - ➔ Both water quality and quantity, both extreme events and gradual climate change
- **Endorsement of the guidance by Water Directors in November 2009**
  - ➔ Measures for adaptation related to the Water Framework Directive
  - ➔ Flood risk management and adaptation
  - ➔ Drought management and water scarcity and adaptation

http://circa.europa.eu/Public/irc/env/wfd/library?l=/framework_directive/guidance_documents/management_finalpdf/_EN_1.0_&a=d

EUROPEAN COMMISSION

environment

Structure guidance

- The Guidance Document describes 62 guiding principles for adaptation, and relates each to steps in RBMP.
- The principles are intentionally broad to be applicable across all Member States regardless of regional variations in potential impacts.
- Where feasible, entry points have been identified within existing processes and frameworks.
- Examples are provided to show how the principles might be applied in practice.

EUROPEAN COMMISSION

environment

WFD logic stays the same with climate change

- **Pressure analysis** – CC is an additional pressure to water bodies
- **Water status monitoring and assessment –** closely monitor CC impacts and, based on robust long-term monitoring, assess whether type changes or changes in reference conditions may occur (not likely until 2027)
- **Objective setting -** Criteria for applying exemptions (e.g. disproportionality/technical infeasibility) are not affected
- **Consideration of measures in 2015 Management Plans** – in case of CC pressures
- **In all cases: „climate check" of Programme of Measures**

EUROPEAN COMMISSION

environment

WFD logic stays the same with climate change

The 2nd and 3rd cycle of RBMP, Member States should clearly demonstrate:

- **how climate change projections have informed assessments of WFD pressures and impacts,**
- **how monitoring programmes are aligned to detect climate change impacts, and**
- **how choices of measures are as far as possible robust to future projected climate conditions.**

EUROPEAN COMMISSION

environment

Floods management in a changing climate

- **Use Floods Directive for addressing CC impacts**
  - ➔ Preliminary flood risk assessment (2011)
  - ➔ Include climate change in flood scenarios and flood risk maps (2013)
  - ➔ Include long-term climate change impacts in flood protection measures
  - ➔ Favour flood measures that provide room to the river and pay attention to WFD Article 4.7 when defining measures

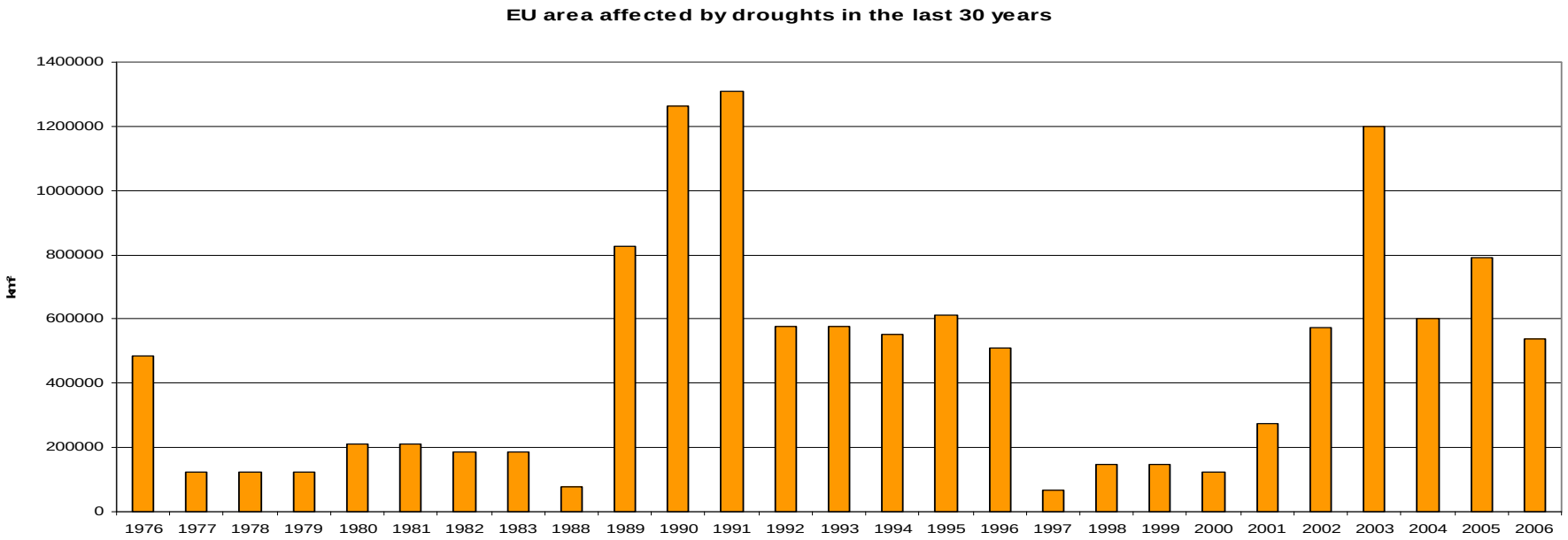
- **Floods Directive requires drawing up flood risk management plans by 2015**

  These will include:
  - prevention (avoid buildings in risk zones)
  - protection (restoring flood plains and wetlands)
  - preparedness (public action plan in case of flooding)

EUROPEAN COMMISSION

environment

Increasing impacts of water scarcity and droughts in past 30 years



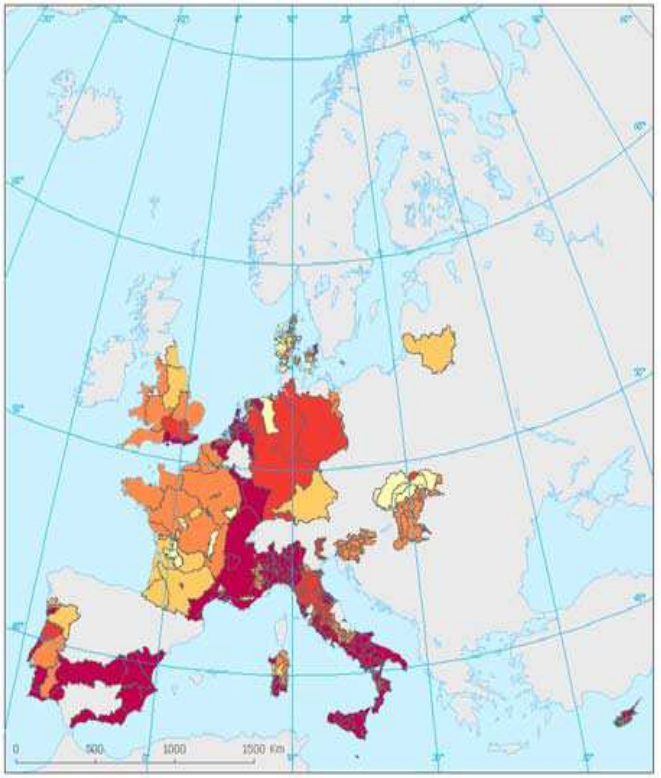
Droughts

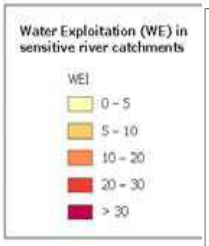
- **Cost to the EU economy:**
  - Min € 100 billion in past 30 years
  - In 2003: Min 100 Mio inhab., 1/3 of EU territory, cost of € 8.7 billion to the EU economy
- **Increase in frequency and intensity of droughts in many regions of Europe**
- **Southern and south eastern Europe are most prone to an increase in drought hazard, but minimum river flows will also increase in many other regions**

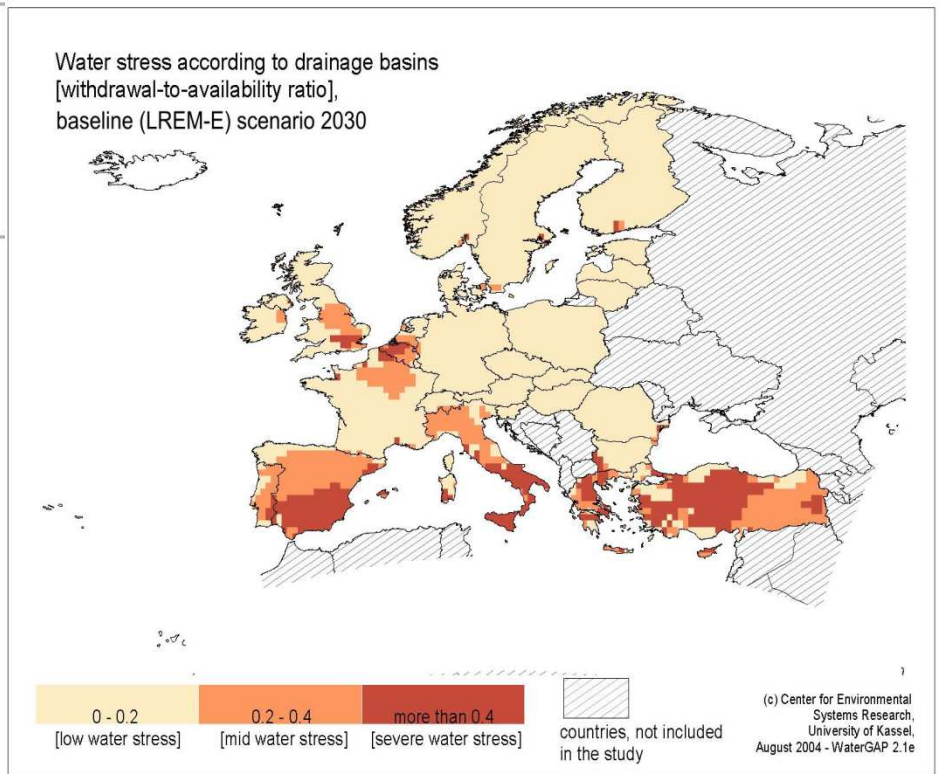
EUROPEAN COMMISSION

environment

Water scarcity







- **33 EU river basins affected so far, Min 100 Mio inhab., 17% of EU territory**

EUROPEAN COMMISSION

environment

Strategy on water scarcity and droughts

- Was adopted in 2007
- Complements the WFD
- Aims at further develop adaptation measures to address expected increasing impacts of water scarcity and droughts
- Stresses the importance of a water hierarchy
  (Water demand management should come first and alternative supply options should only be considered once the potential for water savings and efficiency has been exhausted).
- Will be reviewed in 2012

EUROPEAN COMMISSION

environment

Strategy on water scarcity and droughts
Solutions

- Full implementation of existing EU instruments and policies
- Policy integration
- Ensuring effective water pricing policies and applying ‘user pays’ principle
- Water efficiency and demand management
- Sustainable land–use planning (priority in water scarce river basins) - Address the impacts of all economic activities (IA)
- Drought management & early warning
- Targeted use of EU and national funds to improve land-use planning, promote sustainable agriculture and encourage water saving
- Raise awareness among both businesses and consumers: information, education and training
- Better knowledge and data collection to back up policy making

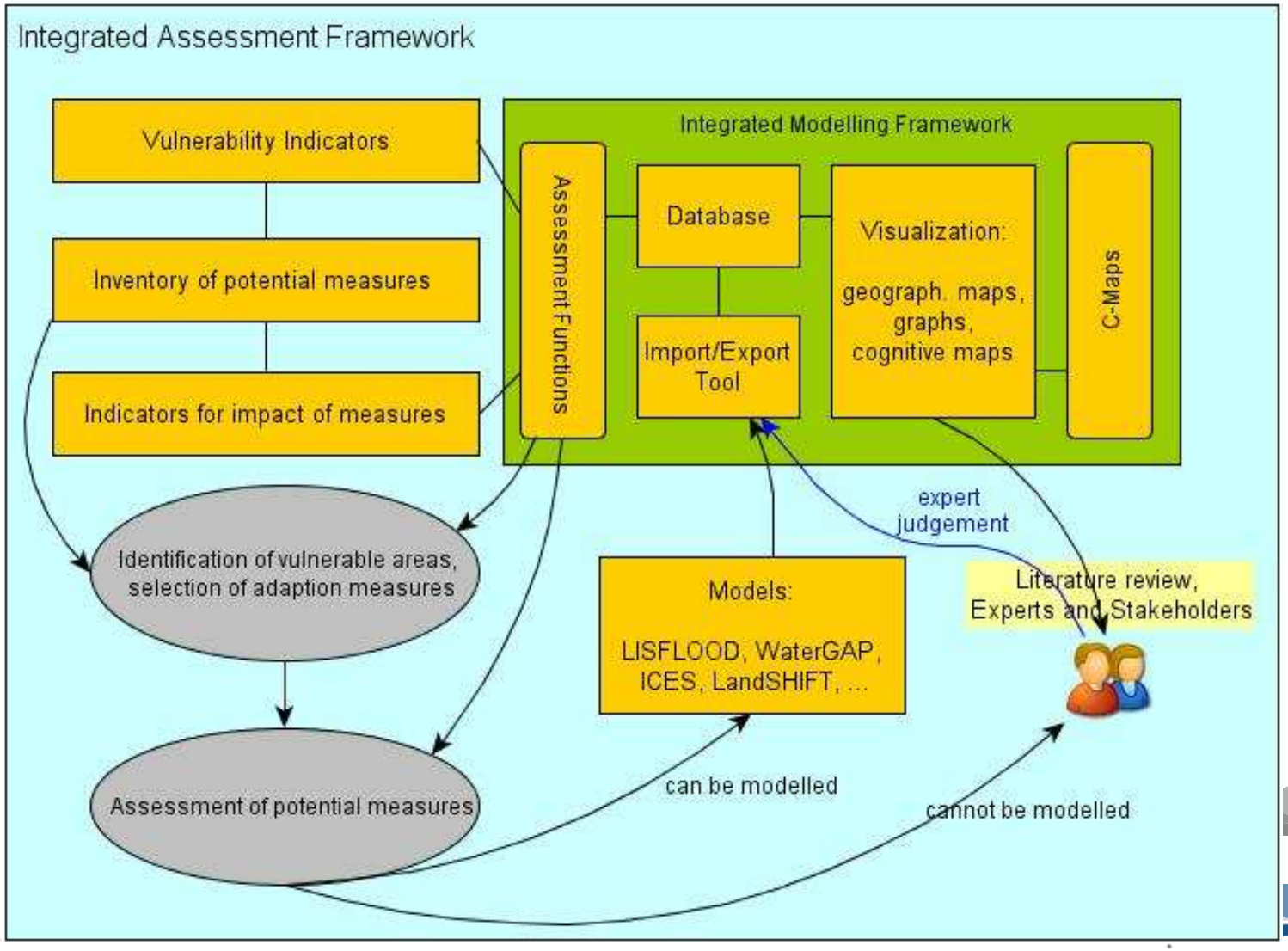
EUROPEAN COMMISSION

environment

Water and Adaptation Modelling

- **“Climate Adaptation – Modelling Water Scenarios and Sectoral Impacts” (ClimWatAdapt)**
- **20 months contract: ends August 2011**
- **Partners: Centre for Environmental Systems Research (CESR) Kassel, Ecologic, Alterra, Centro Mediterraneo per I Cambiamenti Climatici (CMCC)**
- **Aim:**
  - ➔ to improve our understanding of climate change vulnerability and adaptive capacity, in different sectors and across European river basins
  - ➔ to provide analytical basis for assessment of vulnerability of water resources and adaptation measures
- **Objectives:**
  - ➔ put in place an integrated assessment framework
  - ➔ analyse a set of comprehensive scenarios used to assess the vulnerability to climate change
  - ➔ identify and assess potential adaptation measures to reduce vulnerability to climate change
  - ➔ assess the effectiveness of climate change adaptation measures
- **combines relevant existing model results (including those already available at the Joint Research Center - JRC), datasets, climate, hydrological, land use change, water use and other development scenarios as well as expert/stakeholders’ judgments.**
  - ➔ Ad-hoc integrated assessment and modelling framework, making use of JRC outputs.
  - ➔ The models and dataset developed in the context of this contract should enable further in-house modelling.

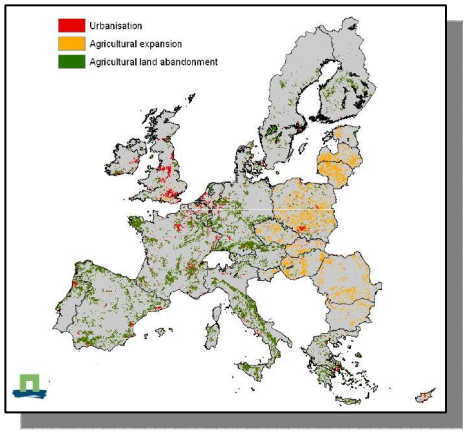
Water and Adaptation Modelling ClimWatAdapt project (2010-2011)



EUROPEAN COMMISSION

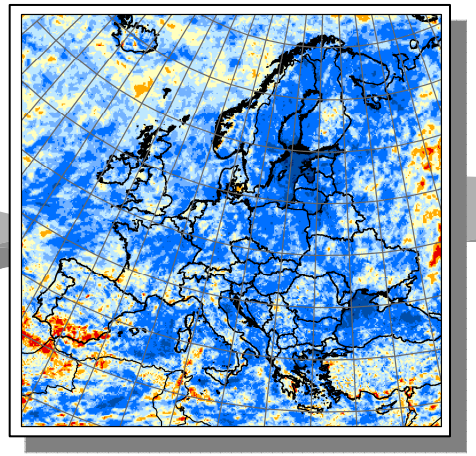
environment

Integrated assessment Framework



socio-economic & land-use scenarios

Climate scenarios



Water use model (WaterGAP)

Hydrological model (LISFLOOD)

Vulnerability Assessment

(Floods, Water Scarcity, Droughts, Water quality)

EUROPEAN COMMISSION

environment

Expert stakeholder workshops of the modelling project

- **1st expert stakeholder workshop was held on 4-5 October 2010**
- **Topics of the first meeting:**
  - ➔ The project team will present and explain the **scenarios** that will be **used in the project**. Scenarios provide plausible descriptions of how the future may unfold and deliver input for the vulnerability assessment and the assessment of adaptation measures;
  - ➔ The project team will present and discuss **first results of the vulnerability assessment**. Input from stakeholders will directly feed in to future work on this issue;
  - ➔ The project team will present and discuss a **first list of adaptation options**. Stakeholder knowledge and evaluation of adaptation measures will be incorporated into the inventory and assessment of adaptation measures.
- **2nd stakeholder meeting: 30-31 March 2011, Budapest**
- **www.climwatadapt.eu**

EUROPEAN COMMISSION

environment

Natural Water Retention Measures

- **Study on costs and benefits of natural water retention measures in rural and urban areas**
  - ➔ Linked with other studies on ecosystem-based approach and green infrastructure
- **Link to key DG ENV Initiatives:**
  - ➔ Post-2010 Biodiversity Policy and a Strategy on Green Infrastructure.
  - ➔ Resource Efficiency (2011)

• costs and benefits of natural water retention measures
• the potential impact of climate change on the need, scope and scale of these measures

• natural water retention measures:
  • restoration of floodplains
  • natural flood defence measures
  • sustainable urban drainage systems
  • natural water retention in upstream parts of river basins by reforestation
  • wetland restoration
  • soil management, etc.

http://ec.europa.eu/environment/water/adaptation/ecosystemstorage.htm

EUROPEAN COMMISSION

environment

European Parliament Preparatory Action Climate of Carpathian region

- **Objective: Investigate the detailed weather-related and spatial structure of the Carpathians region with integrated or at least comparable methods.**
- **2009 allocation 1 (sub-delegated to JRC)**
  - ➔ collection and elaboration of relevant data in view of getting a real-time monitoring of drought in the Carpathian region
  - ➔ developing an information exchange protocol/platform
- **2010 allocation**
  - ➔ Analysis on the vulnerability of the region to climate change impacts and on identifying potential adaptation measures, focusing on impact on ecosystems, and ecosystem-based adaptation approaches
  - ➔ Contribute to concrete policy proposals in line with the Commission White Paper on Adapting to Climate Change:
  - ➔ 2 Open calls for tender published in August 2010. Overall budget €2.000.000

EUROPEAN COMMISSION

environment

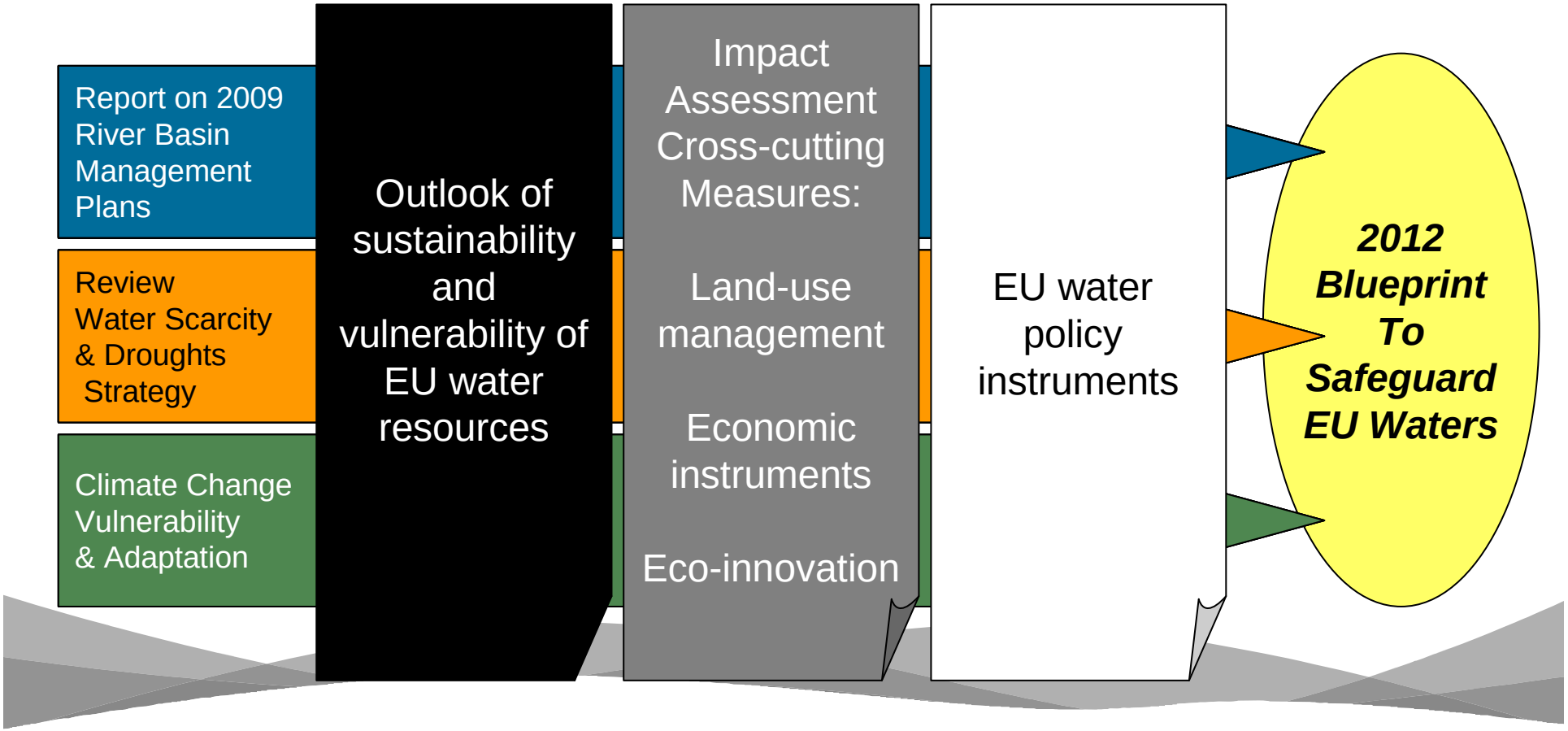
2012 Blueprint to safeguard EU Waters

- **The Blueprint will include:**
  - ➔ Assessment of river basin management plans
  - ➔ Review of the Strategy for Water Scarcity and Droughts
  - ➔ Review of the vulnerability of water and environmental resources to climate impacts and man-made pressures.
- **It will examine:**
  - ➔ The balance between water demand and the supply of clean water, taking into account the needs of both human activities and of natural ecosystems.
  - ➔ The effectiveness of current policies, and the need for further policies or measures necessary to strengthen the resilience of EU water policy
  - ➔ How this new ambition level should be supported by data collection, scientific and technological development.

EUROPEAN COMMISSION

environment

Impact Assessment



EUROPEAN COMMISSION

environment

Thank you for your attention!

More information:

http://ec.europa.eu/environment/climat/adaptation/index_en.htm

http://ec.europa.eu/environment/water/index_en.htm

EUROPEAN COMMISSION

environment