

Adapting to Climate Change and Water policies

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Climate Change Adaptation: A new agenda for public policy

■ Vulnerability

- Build pro-active adaptation policies not restricted to the analysis of the **impacts**, but also assessing the uneven **adaptive capacity** of sectors, regions or social groups.

■ Uncertainty

- Need to build **robust** adaptation policy by considering a wide range of **scenarios**.

■ Integrated assessment

- Need to go beyond the direct impacts and economic repercussions of climate change, and take on board the role of **ecosystem services** and the **social dimension** of climate change.

Need for taking action at EU level

- **Many climate change impacts AND adaptation measures have a cross-border dimension**
 - E.g. forest fires, effects on migratory species, infectious diseases, floods, etc.
 - Need to identify “upstream” adaptation measures
- **Climate impacts and adaptation will affect single market and common policies.**
 - Transport, energy networks, forestry, agriculture, water, biodiversity, fisheries, etc.
- **Climate change vulnerabilities and adaptation trigger a new paradigm for solidarity**
 - Impact on future cohesion policy, social agenda, etc.
- **EU spending programmes could complement the resources spent by the Member States for adaptation.**
- **Potential economies of scale for capacity building, research, information and data gathering, knowledge transfer, etc.**

2009: EU Climate Change Adaptation Policy

April 2009: White Paper on Adapting to Climate Change

■ Water related issues

- Implementation of the Water Framework Directive (climate proofing of River Basin Management Plans)
- Inclusion of climate change in the implementation of the Floods Directive
- Water Scarcity and Droughts Strategy
- Efficient water use (agriculture, urban environment, industry, tourism etc.)
- Increase water storage capacity of soil and ecosystems
- Coastal-marine areas: Marine Strategy Framework Directive, Integrated Maritime Policy –guidelines on adaptation
- Common Fisheries Policy
- ...

Shared responsibilities with DG Climate Action

2012: A Blueprint to safeguard EU Waters

- **The Blueprint is the convergence of 3 assessments scheduled for 2012**
 - Assessment of 1st river basin management plans under Water Framework Directive
 - Review of the Strategy for Water Scarcity and Droughts
 - Assessment of the vulnerability of water and environmental resources to climate impacts and man-made pressures.

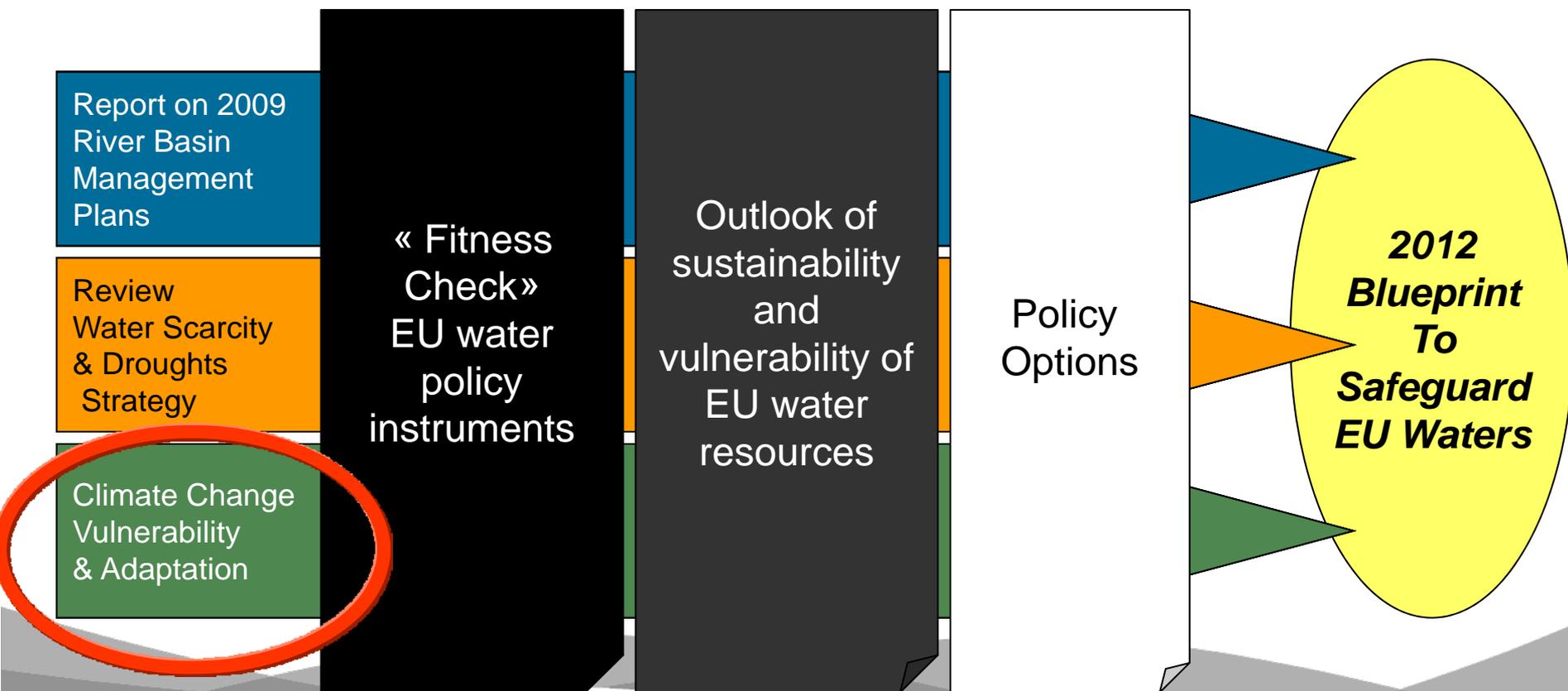
- **The Blueprint will:**
 - **Look back** and assess the implementation and achievements of policies and measures in place to ensure the protection and availability of EU water resources
 - **Look forward** at the evolving vulnerability of the water environment to assess the sufficiency of existing measures and tools, and evaluate potential new instruments to ensure a sustainable use of good quality water in the EU in the long term.
 - The Blueprint will synthesise **policy recommendations** drawing from the evaluation and impact assessment exercises, and will be accompanied by a number of reports and new initiatives, including of a legislative nature if appropriate.

Water and environmental resources vulnerability - One of the pillars of the Blueprint

- **Assessment of vulnerability of water resources and ecosystems to impacts of climate change (quality and quantity)**
 - both medium term (2020, 2030) and long term (2050 or further)
 - High level of geographical and sectoral detail

- **Adaptation measures to be promoted/prevented at EU level**
 - Cost-effective measures
 - Measures to strengthen resilience

Impact Assessment

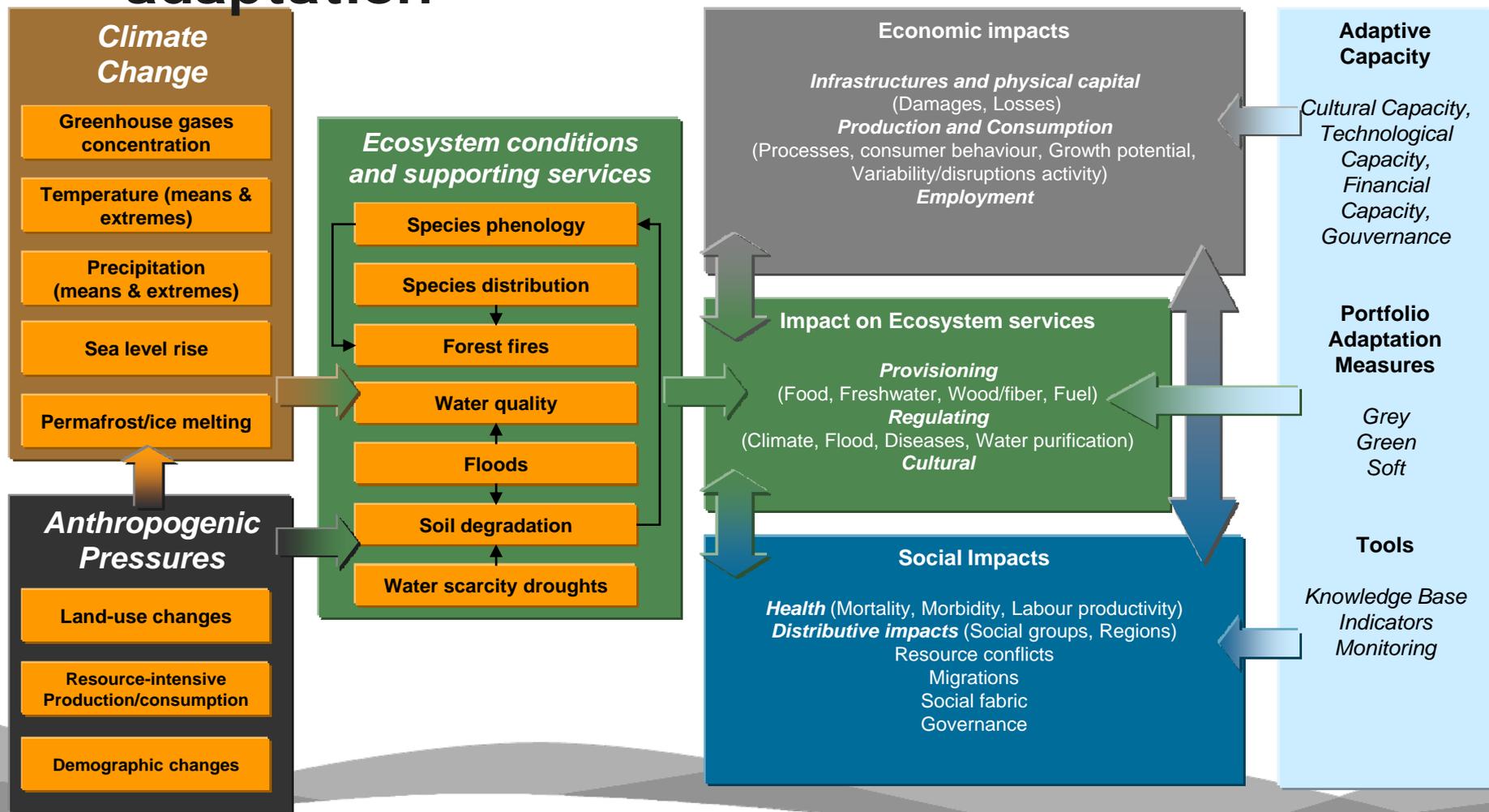


Vulnerability of Water & Environmental Resources and Adaptation (1/2)

■ White Paper on Adaptation: Actions under DG ENV responsibility:

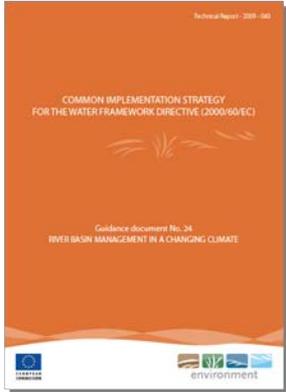
- Guidelines for River Basin Management Plans (delivered in Dec 2009)
- Measures to enhance water efficiency in agriculture, households and buildings
- Natural water retention measures
- Inclusion of climate change in the implementation of the Floods Directive
- European guidelines on adaptation in coastal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

Environmental pathway of vulnerability and adaptation



Vulnerability of Water & Environmental Resources and Adaptation (2/2)

■ Adaptation measures



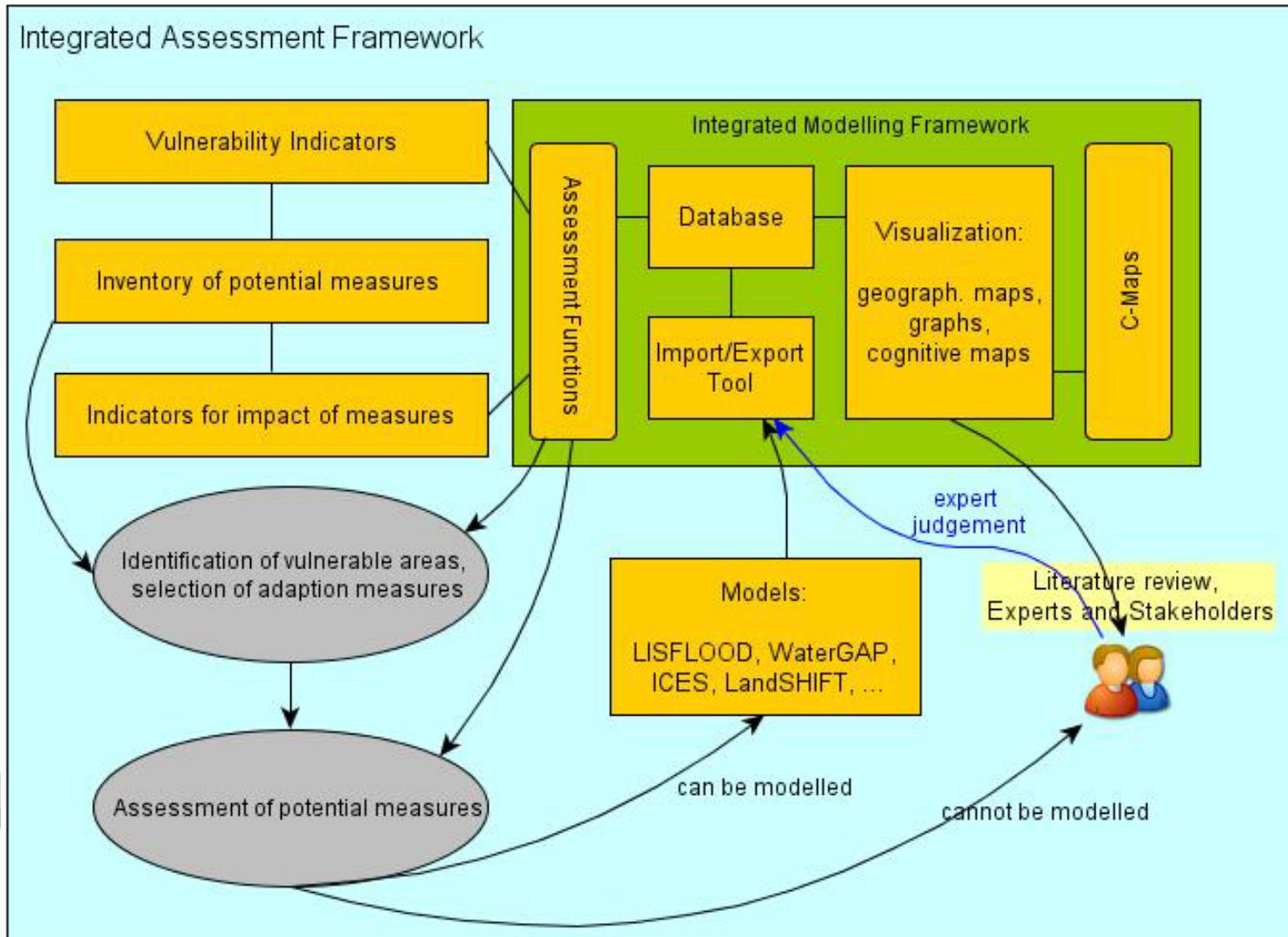
- Provide a concrete follow-up to 2009 guidance document
- EU-wide analysis of potential for implementation, impacts and links with EU policy instruments
- Further work at River Basin level for inclusion in 2015 Management Plans
- Database of measures from ClimWatAdapt project (September 2011)
- Work on natural water retention measures
 - Elements of cost-benefits analysis
 - Modelling at JRC with EU Clue Scanner and LISFLOOD
- Work at regional level (Carpathian Region)
- Link to vulnerability assessment
- Practical tools/databases available in WISE/ACE

[http://circa.europa.eu/Members/irc/env/wfd/library?l=/framework_directive/guidance_documents/management_finalpdf/ EN 1.0 &a=d](http://circa.europa.eu/Members/irc/env/wfd/library?l=/framework_directive/guidance_documents/management_finalpdf/EN_1.0_&a=d)

Project 1. - Water and Adaptation Modelling (1/2)

- **“Climate Adaptation – Modelling Water Scenarios and Sectoral Impacts” (ClimWatAdapt)**
- **20 months contract: ends August 2011**
- **Provide analytical basis for assessment of vulnerability of water resources and adaptation measures**
- **Capacity Building**
 - 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.
- **Contribute to EU Adaptation Framework**
 - Mainstreaming adaptation into EU Water policy
 - Link with EU Clearinghouse on CC Impacts Vulnerability and Adaptation
- **2 stakeholder meetings (October 2010, March 2011)**
 - to identify and possibly fill knowledge gaps in terms of qualitative information
 - to compile stakeholder knowledge and evaluations on relevant aspects of the individual adaptation measures,
 - to evaluate and consolidate the scientific credibility and policy relevance of the modeling results.
 - to evaluate both the attitudes (for/against) of different stakeholders regarding a particular measure, as well as the intensity of their support for/rejection of a particular measure.
 - Role of WFD-CIS EG Climate Change & Water

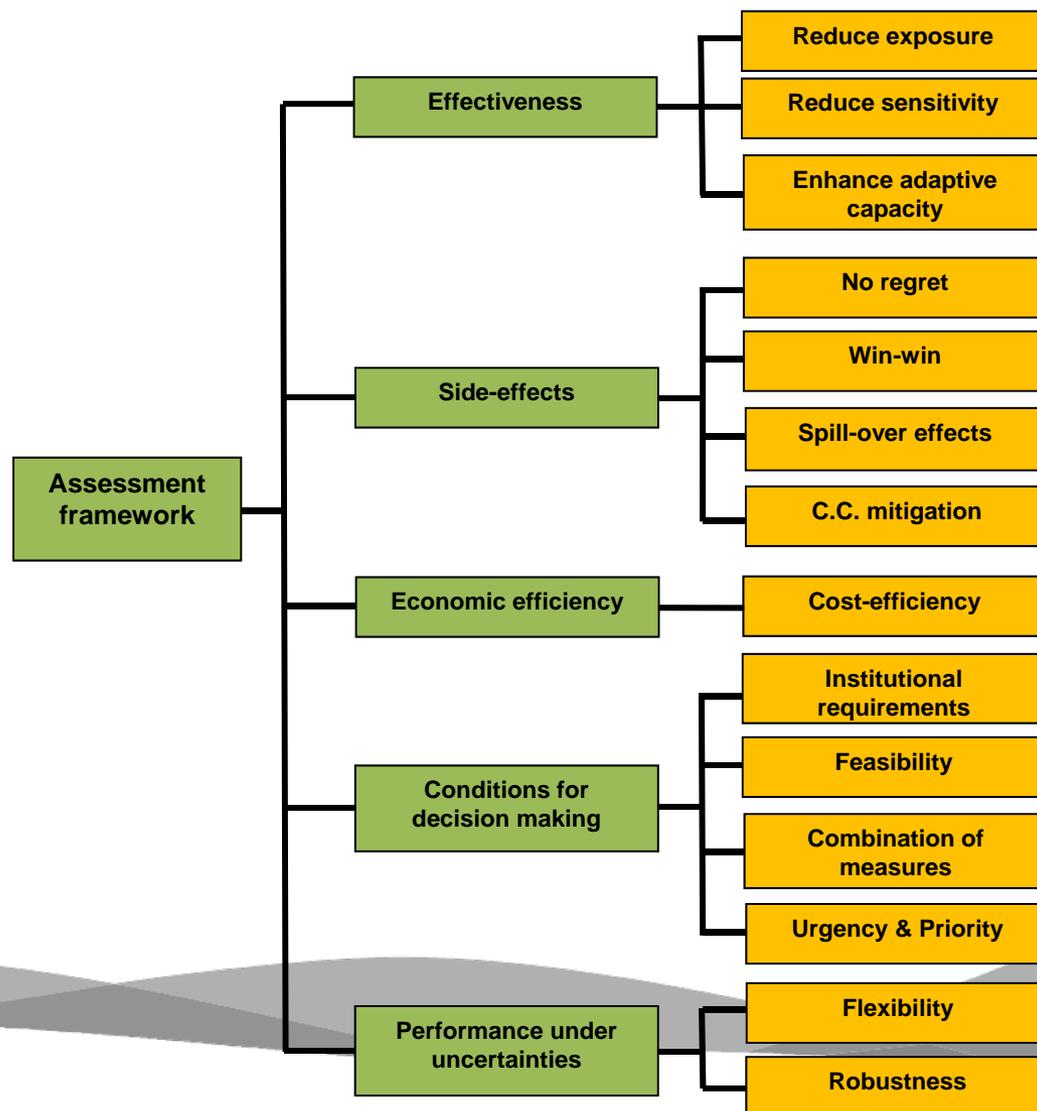
Water and Adaptation Modelling ClimWatAdapt project (2010-2011)



Project 1. - Water and Adaptation Modelling (2/2)

■ Outputs:

- Vulnerability assesment at EU level
- Database of adaptation measures
 - Preliminary assessment, mixing quantitative modelling, case studies and expert judgement
- Tools for further mainstreaming of climate change adaptation into River Basin Management Plans



Project 2. - 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>

Project 3. - European Parliament Preparatory Action Climate of Carpathian region (1/2)

■ Main objectives

- To gather information on vulnerability to climate change impacts in the Carpathian Basin, and on that basis identify and assess potential adaptation measures, with a particular focus on ecosystem based approaches;
- To identify knowledge gaps to be filled in by additional field research or case studies (framework contract, research programmes);
- To contribute to on-going national or regional adaptation strategies or related policy processes, and to the EU Knowledge Base on Climate Vulnerability and Adaptation (among others via the Adaptation Clearinghouse of the EU).

■ Potential users:

- European Commission (ENV, CLIMA, REGIO, JRC, etc.)
- EEA
- ICPDR, Carpathian Convention
- National and regional authorities of the Carpathian Region,

■ 26-27 May: presentation at COP-3 Carpathian convention

■ October: 1st interim report

■ End 2013: final report

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 for new modifications

■ Floods Directive requires drawing up flood risk management plans by 2015

These will include:

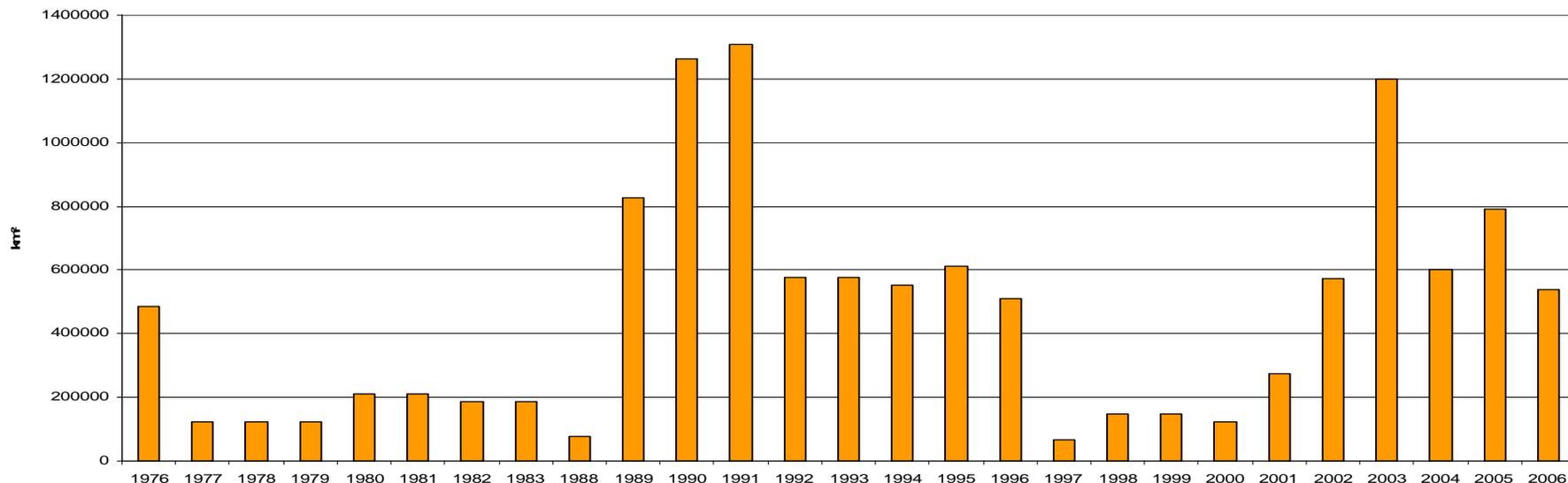
- prevention (avoid buildings in risk zones)
- protection (restoring flood plains and wetlands)
- preparedness (public action plan in case of flooding)

Climate change – extreme weather events



Increasing impacts of water scarcity and droughts in past 30 years

EU area affected by droughts in the last 30 years



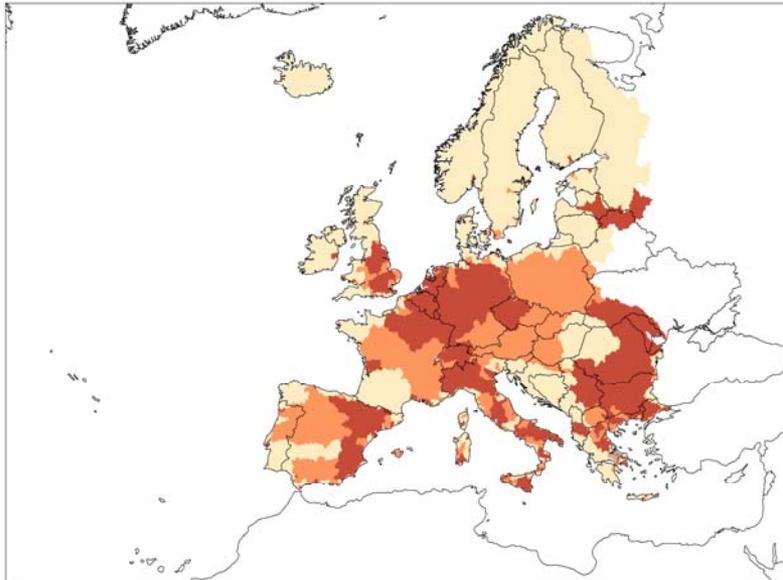
Droughts

- **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**

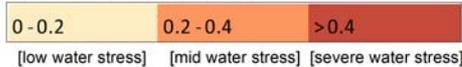
Vulnerability Assessment for water Scarcity: the importance of socio-economic drivers

Water stress, annual

2050 EcF (IPCM), median of GCM-RCM combinations



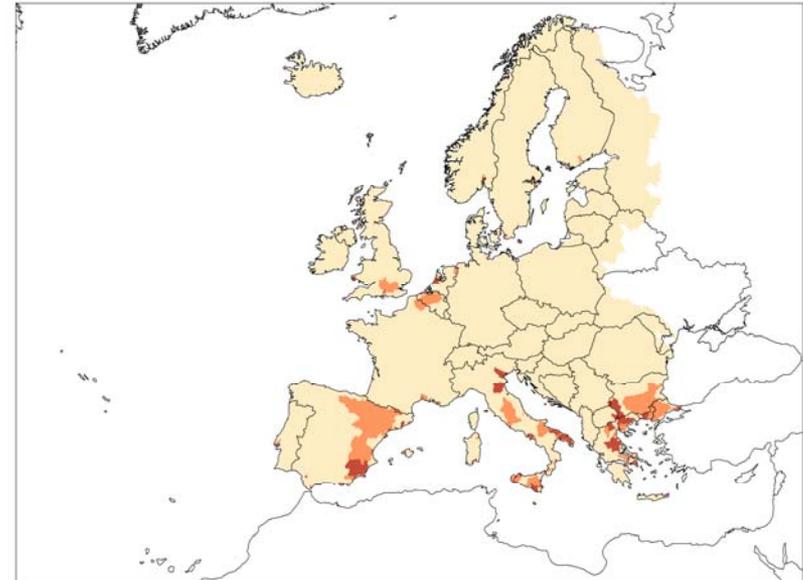
withdrawals-to-availability ratio



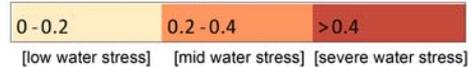
(c) Center for Environmental Systems Research, University of Kassel, Feb 2011, WaterGAP 3.1

Water stress, annual

2050 SuE (IPCM), median of GCM-RCM combinations



withdrawals-to-availability ratio



(c) Center for Environmental Systems Research, University of Kassel, Feb 2011, WaterGAP 3.1

Strategy on water scarcity and droughts

- Was adopted in 2007
- Complements the WFD
- 7 policy options and yearly follow-up reports
- 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 and will be part of the Blueprint
- Vision:
 - to introduce a water-efficient and water-saving culture in Europe and achieve a drought resilient society
 - to ensure demand management allowing to provide good quality water for all essential uses even under aggravated climatic conditions

Strategy on water scarcity and droughts

- 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

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

