Preparatory action on climate in the Carpathian region

Assessment of vulnerability of environmental resources and ecosystem-based adaptation measures

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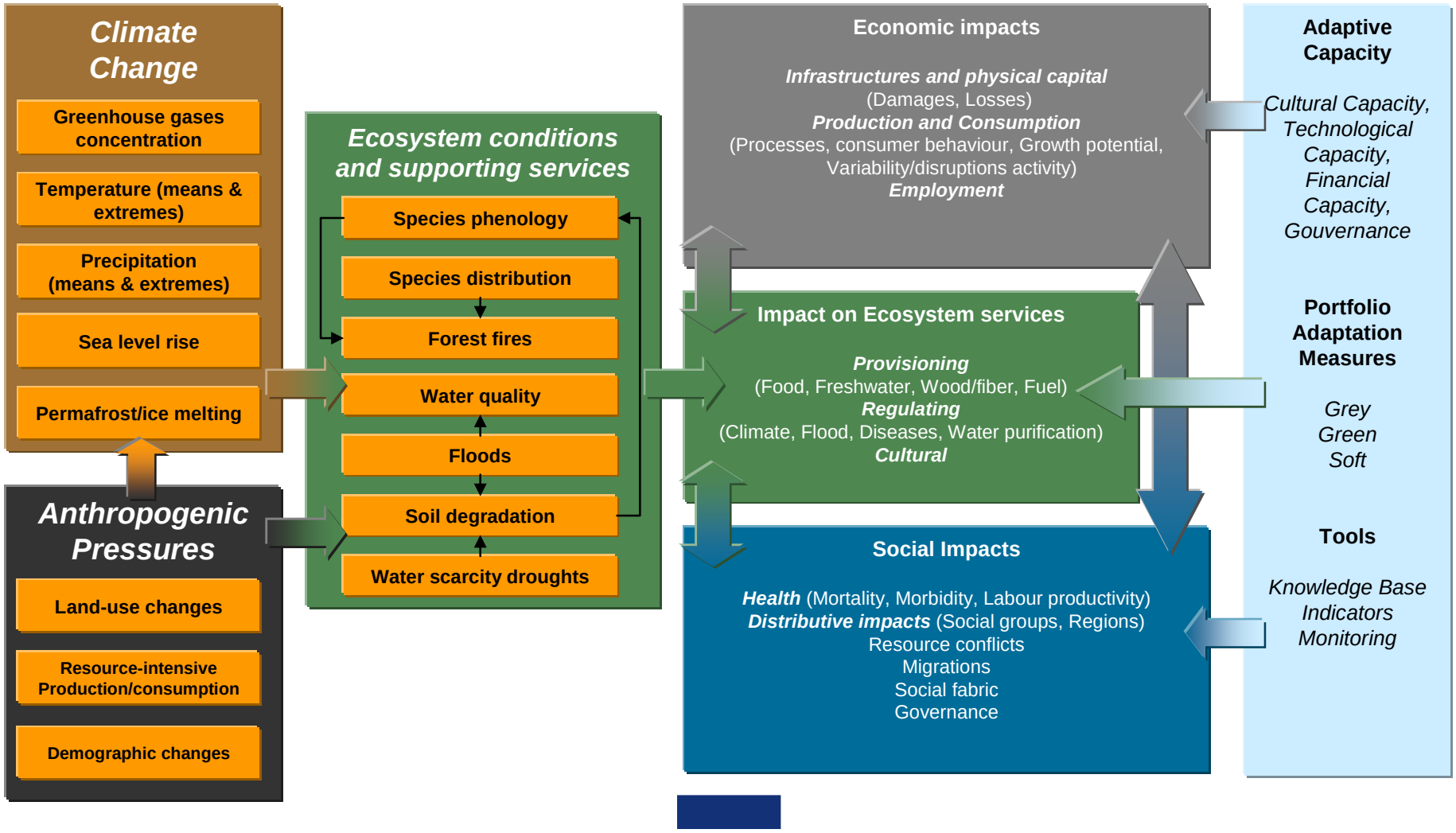
Environmental pathway of vulnerability and adaptation



Preparatory action — Climate of the Carpathian basin

Objective approved by the European Parliament:

- **to investigate the detailed weather-related and spatial structure of the Carpathians Region with integrated or at least comparable methods.**
- **The basic results will be a contribution to regional climate variability and change studies, and applied climatology.**

2009 budget allocation:

- **Service contract (lead by Hungarian Meteorological service)**
  - improve the basis of climate data in the Carpathian Region for applied regional climatological studies
  - Started in December 2010
- **JRC**
  - integration of results into the European Drought Observatory

Preparatory action — Climate of the Carpathian basin

2010 allocation: as a follow-up of the Adaptation White Paper, the European Commission proposed to focus work on:

- **Analysis of the vulnerability of water and ecosystems of the region to climate change impacts and other man-made pressures**
- **Identifying potential adaptation measures, focusing on adaptive water management and ecosystem-based approaches.**

Benefits

- **National or Regional adaptation strategies in the Carpathian Region**
- **Danube Climate Adaptation Strategy**
- **Contribution to the forthcoming EU Information System (Clearinghouse) on Climate Change Vulnerability and Adaptation**

Preparatory action — Climate of the Carpathian basin

2010 budget allocation:

- **Service contract « CARPIVIA » (lead by Alterra)**

  integrated assessment of vulnerability of environmental resources and ecosystem-based adaptation measures.

  Started in December 2010

- **Framework contract « CarpathCC » (lead by Vituki)**

  in-depth assessments of vulnerability of environmental resources and ecosystem-based adaptation measures:

  (1) In-depth study on the key climate change threats and impacts on water resources

  (2) In-depth study on the impacts of climate change threats on ecosystems

  (3) In-depth study on the impact of climate change on ecosystem based production systems

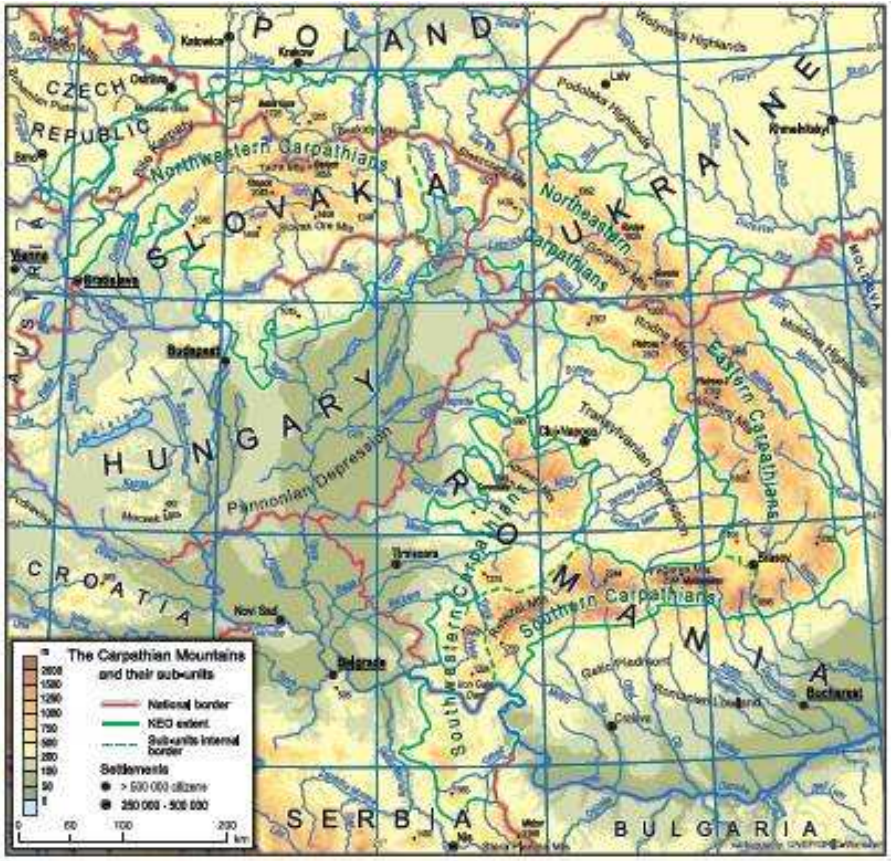
  (4) In-depth study on adaptation measures

  (5) Supporting stakeholder interaction

  (6) Integral vulnerability assessments in focal areas

  Started in January 2012

Scope


POLAND
CZECH REPUBLIC
SLOVAKIA
UKRAINE
HUNGARY
ROMANIA
CROATIA
SERBIA
BULGARIA
Northwestern Carpathians
Northeastern Carpathians
Eastern Carpathians
Pannonian Depression
Transylvanian Depression
Southeastern Carpathians
Southern Carpathians
Wolyńsko Highlands
Podolska Highlands
Moldavian Highlands
Katowice
Kraków
Ostrava
Lviv
Rivne
Vienna
Bratislava
Budapest
Cluj-Napoca
Timisoara
Brasov
Nov Sad
Belgrade
Bucharest
Craiova
The Carpathian Mountains and their sub-units
National border
KECI extent
Sub-units internal border
Settlements
> 500 000 citizens
250 000 - 500 000

Co-ordination with the activity of relevant institutions or networks

- *Convention on the Protection and Sustainable Development of the Carpathians*
- *International Commission for the Protection of the Danube River (ICPDR)*
- *Mountain Research Initiative – Carpathians*
- *United Nations Economic Commission in Europe (UNECE) and in particular the programme of pilot*
- *projects on adaptation to climate change in transboundary basins under the UNECE*
- *Water Convention*
- *ERA-NET CIRCLE-2*
- *Drought Management Centre for South-Eastern Europe (DMCSEE)*

Link to other DG ENV initiatives:

ClimWatAdapt

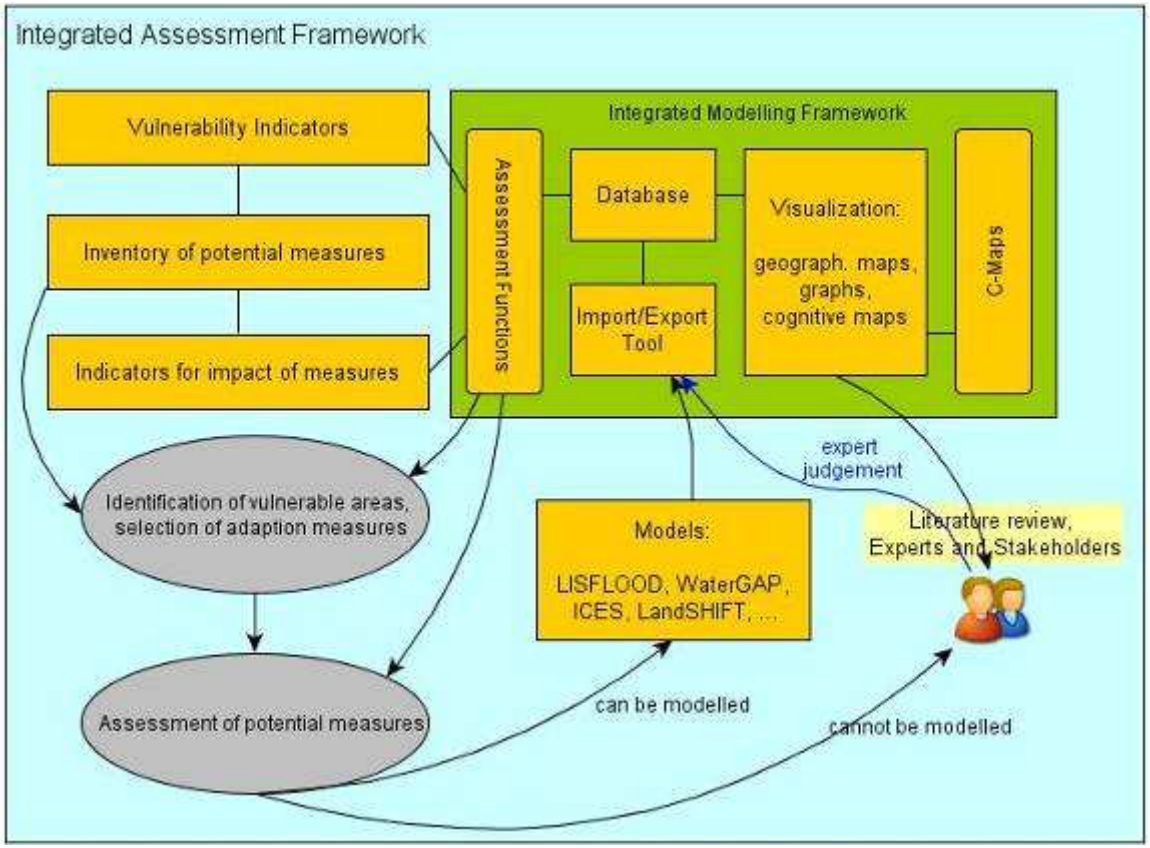
Natural water Retention measures

Blueprint

Further:

Contribition to 2015 River basin Management Plans

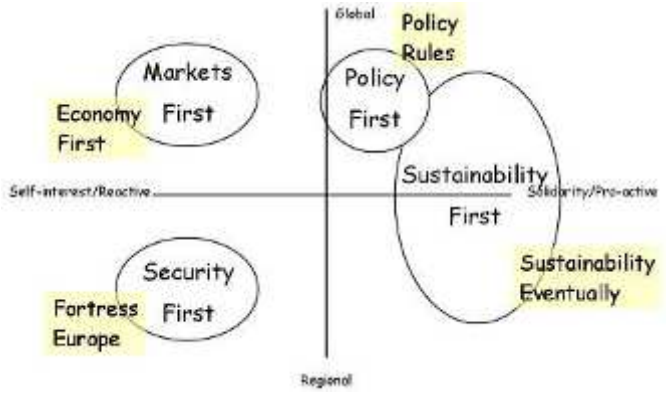
Water and Adaptation Modelling
ClimWatAdapt project (2010-2011)



ClimWatAdapt Scenarios

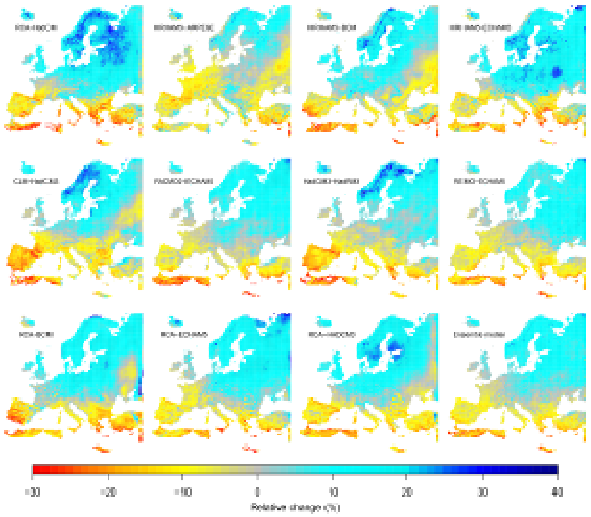
Socio-economic and land use: SCENES.

- **Main drivers (socio-economic, electricity production, technological changes, …)**



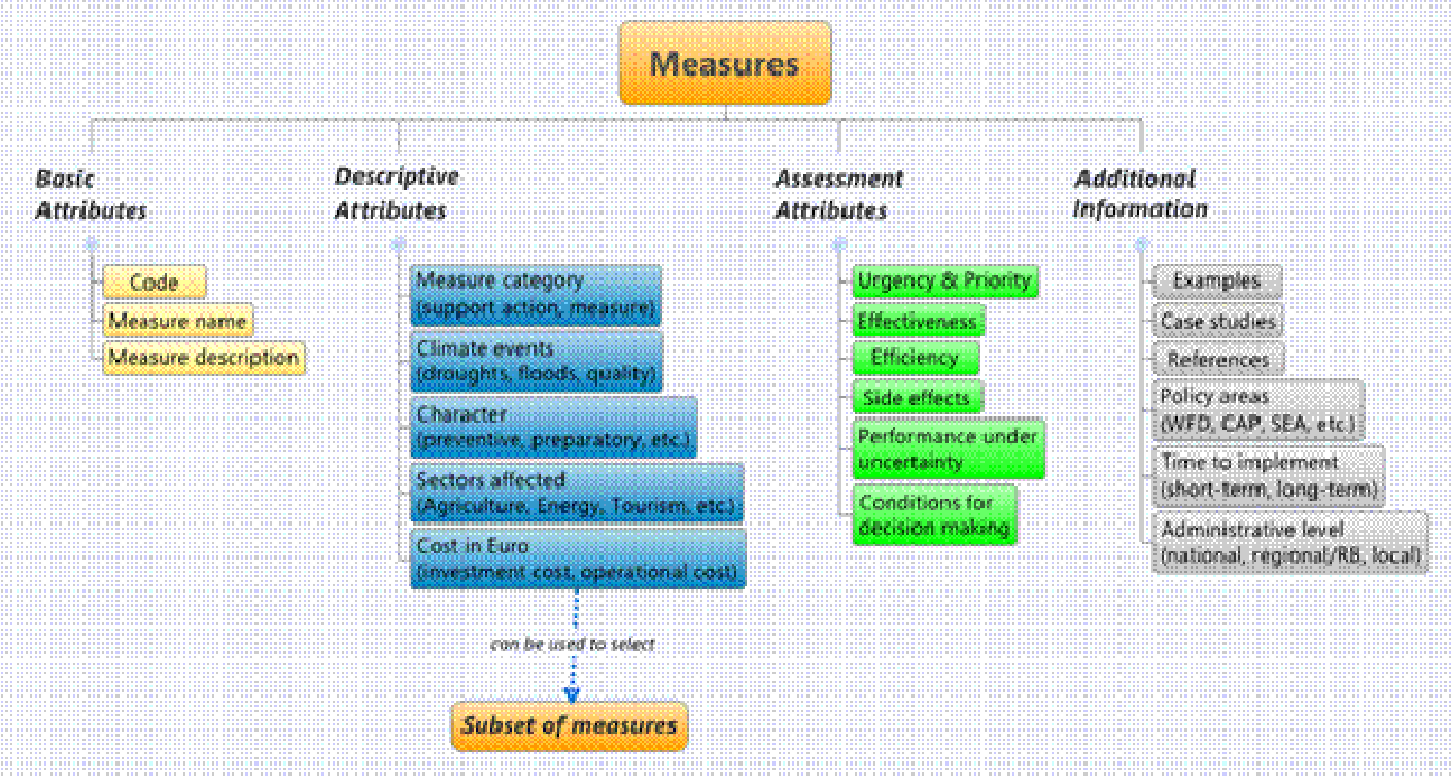
Climate: ENSEMBLES

- **Long-term annual average bias-corrected temperature and precipitation data (baseline, 2025s and 2050s), 11 GCM-RCM combinations, SRES A1B scenario**

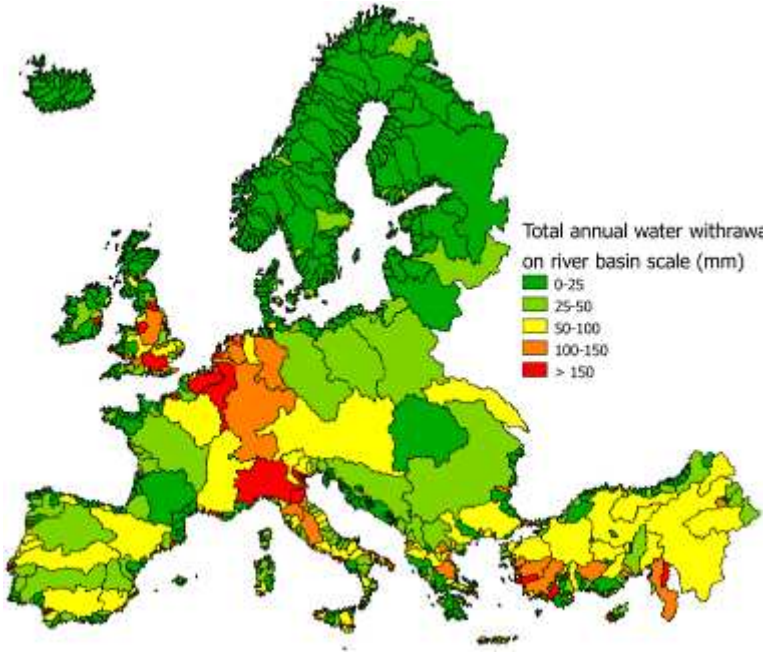


Change in annual precipitation between 2050s and baseline

Adaptation measures inventory



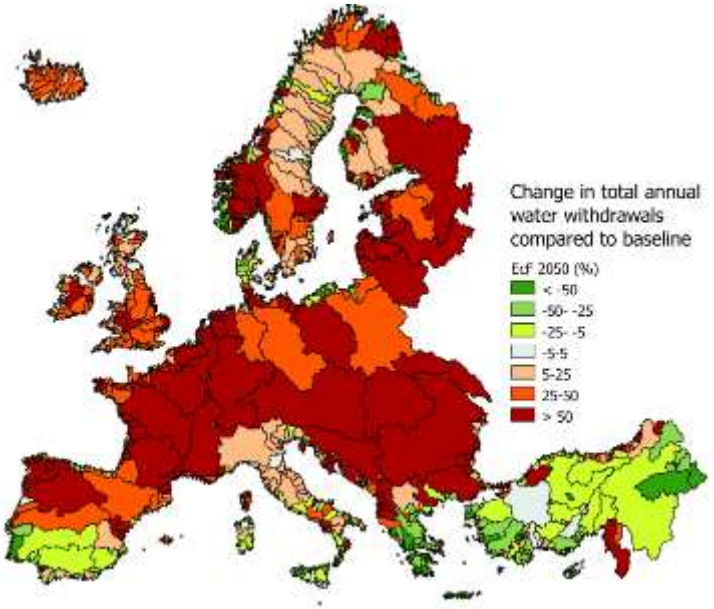
Water withdrawals



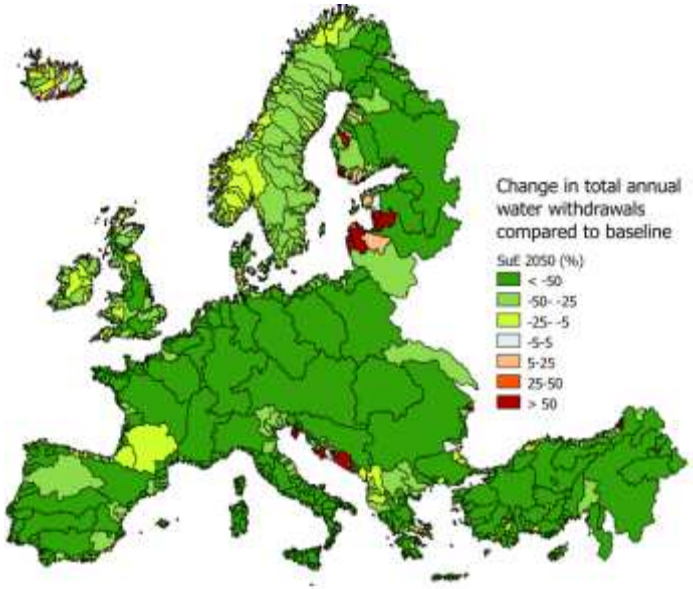
Year 2005

Future?

EcF (2050)

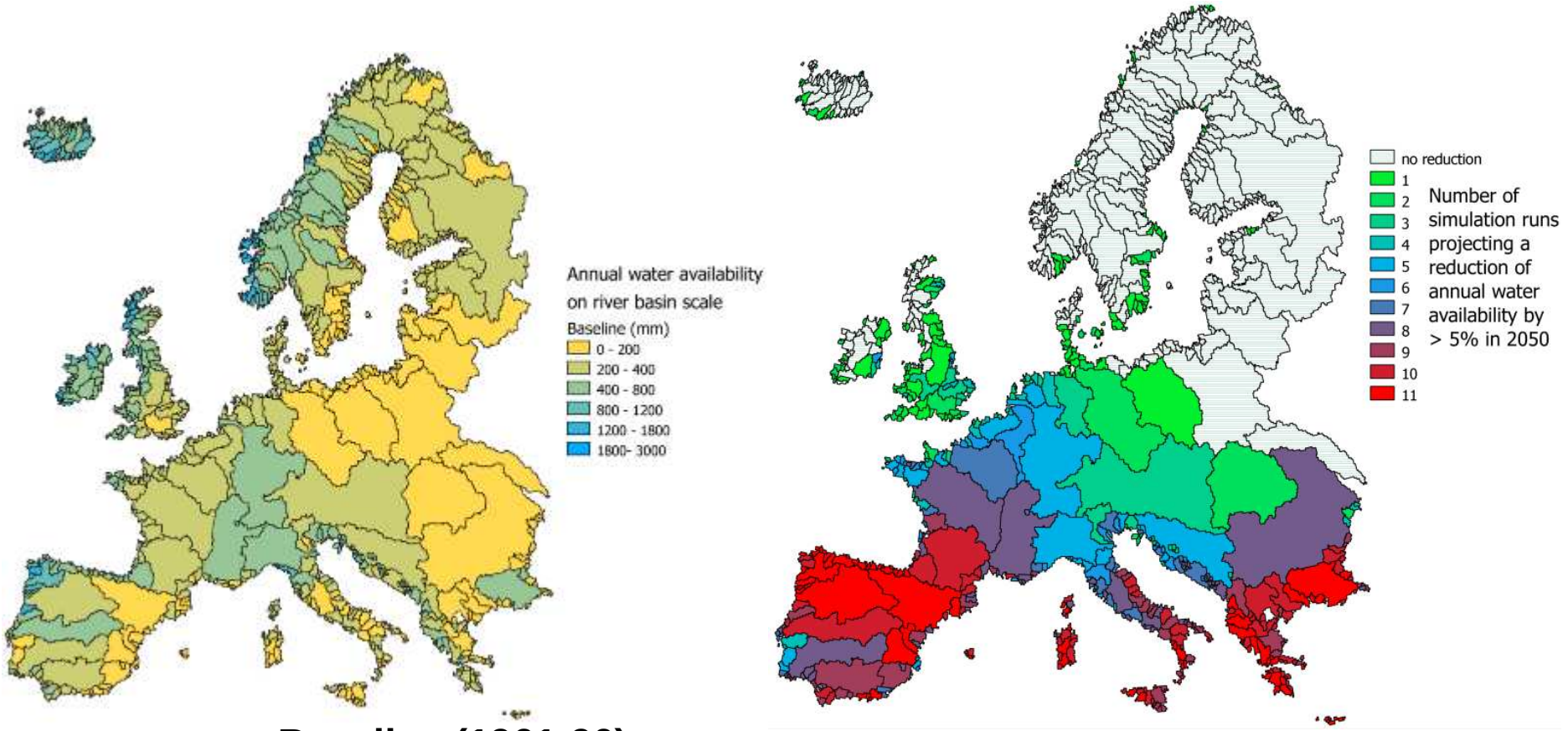


SuE (2050)



Water availability

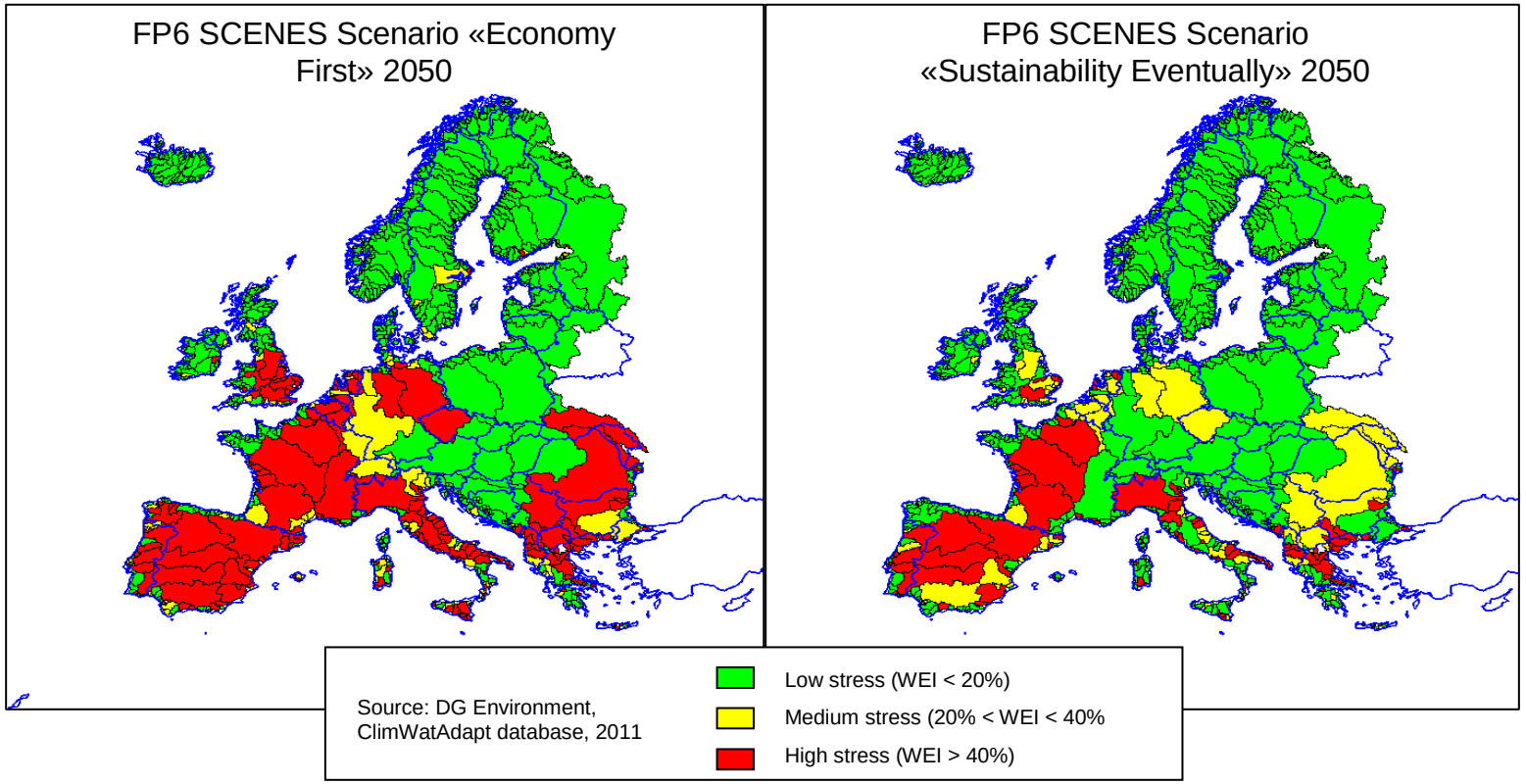
2050s (2041-2070)



Baseline (1961-90)

Example of ClimWatAdapt results:

Summer Water Exploitation Index (excl cooling water)



DG ENV Study on " Costs, benefits and climate proofing of natural water retention measures"

Objectives

- **Provide estimates of the costs and benefits, and potential for increasing resilience to climate change of natural water retention measures.**
  including multi-functionality and impact on Ecosystem Services.
- **Analyse the potential of EU policy and funding instruments to promote no- regret measures.**

Contribute to the Impact Assessment of the Blueprint to safeguard Europe's waters

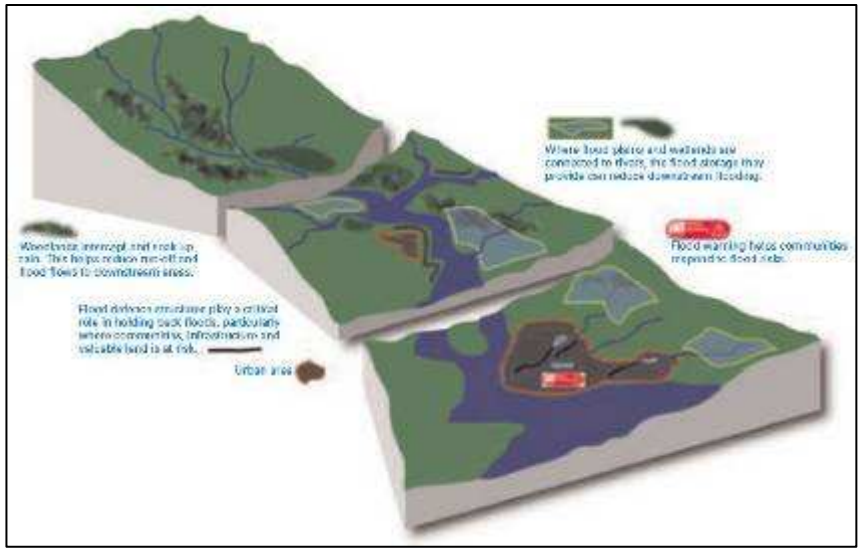
- **Study supported by JRC land use & hydrological modelling**

What do we mean by Natural Water Retention Measures?

Measures that

- **aim to safeguard and enhance the water storage potential of ecosystems and aquifers, by restoring natural features and characteristics of water courses.**
- **use nature to regulate the flow and transport of water so as to smooth peaks and moderate extreme events.**
- **are a component of a multi-functional Green Infrastructure**

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



What is the Blueprint?

The Blueprint to Safeguard Europe's Water Resources will present the policy response to the challenges presented in the State of Water Report,

- **with the long-term aim to ensure sufficient availability of good quality water for sustainable and equitable water use.**

The Blueprint is closely related to the EU 2020 Strategy and in particular to the recent Resource Efficiency Roadmap.

- **The Blueprint will be the water milestone on that Roadmap. However, the analysis underpinning the Blueprint will in fact cover a longer time span up to 2030-2050.**

Why a Blueprint?

Improving the implementation of current EU water policy

- **making full use of the opportunities provided by the current framework;**

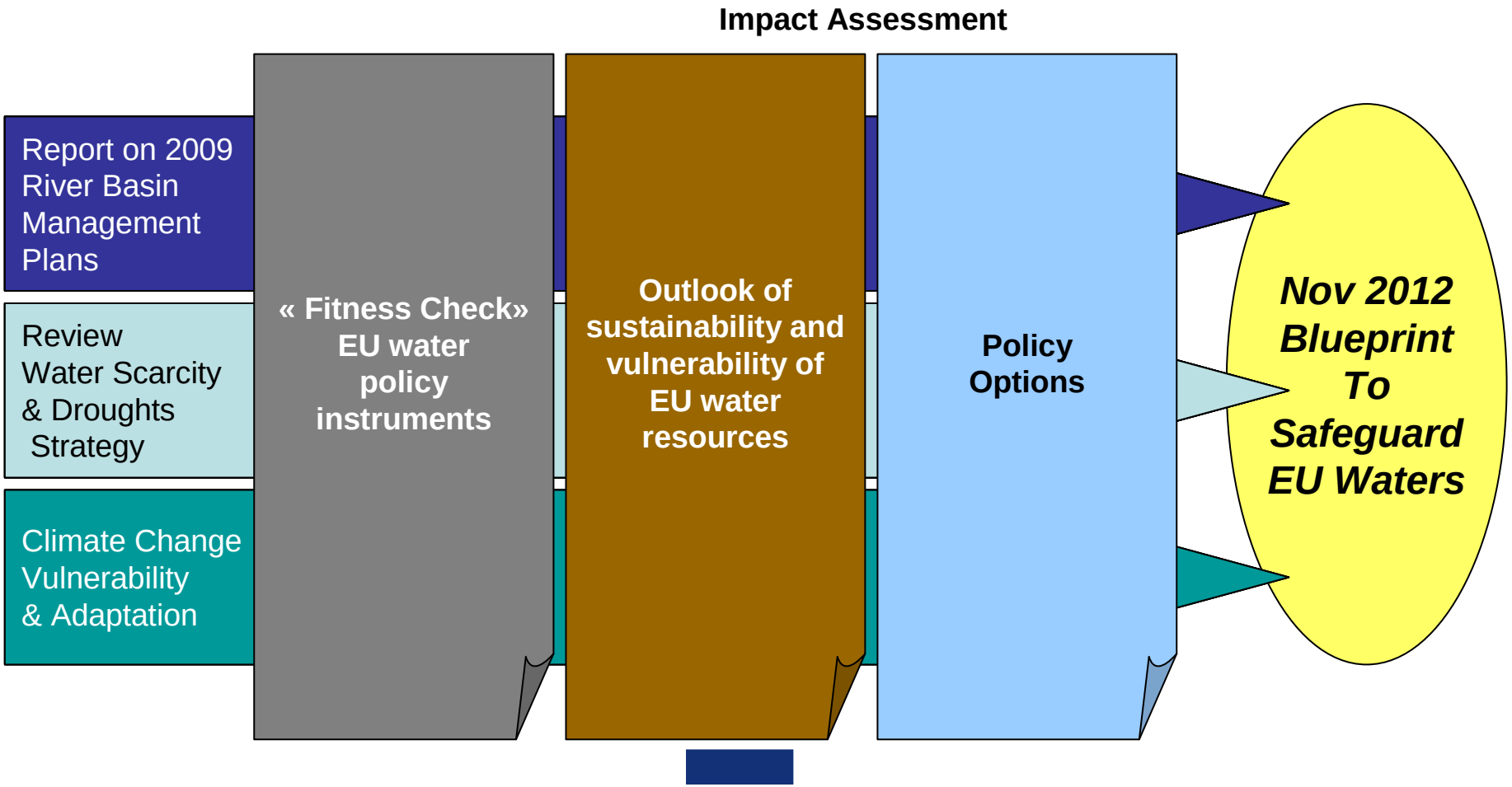
Fostering the integration of water and other policies

- **managing trade-offs through a better understanding of the costs and benefits of both economic activities and water resources management;**

When necessary, seeking the completion of the current policy framework

- **Specially in relation to water efficiency and adaptation to climate change.**

Synthesis of policy recommendations building on on-going assessments



Policy scenarios for safeguarding Europe's water resources

Water resource balances (quantity, quality) for relevant European river basins - SEEAW framework - monthly resolution - ECRINS reference system

Disaggregated information on the **use of water** for the base year by the different economic activities, including estimates on its environmental impact.

Information on technical, non technical or structural **measures** affecting water availability and water use by the different economic activities, including estimates on their environmental impact.

Scenarios for land-use changes, hydrological parameters and use of water by the different economic activities

optimisation model, maximization of net social benefits from the use of water by economic sectors

baseline scenario / sensitivity analysis

Selection of measures

Environmental, Social, Economic **constraints**

Blueprint Specific Objectives

indicative targets at EU level for reducing the vulnerability of water resources

- ***natural water retention,***
- ***water savings,***
- ***reuse/recycling***
- ***water quality***

Policy options in the Blueprint

- **Setting target for the proper integration of water resource management at catchment or sector level**
- **Unlocking most promising measures for demand management, protection of ecosystem and improving the availability of clean water**
- **Securing proper analysis of costs and benefits and reflecting it in economic instruments and financing.**
- **Improving governance, including co-ordination of river basin management, transboundary governance and improved policy coherence.**
- **Ensuring the knowledge base for current and emerging challenges, including improved statistics, better use of WISE and improved policy relevance of research.**

Thank you for your attention!