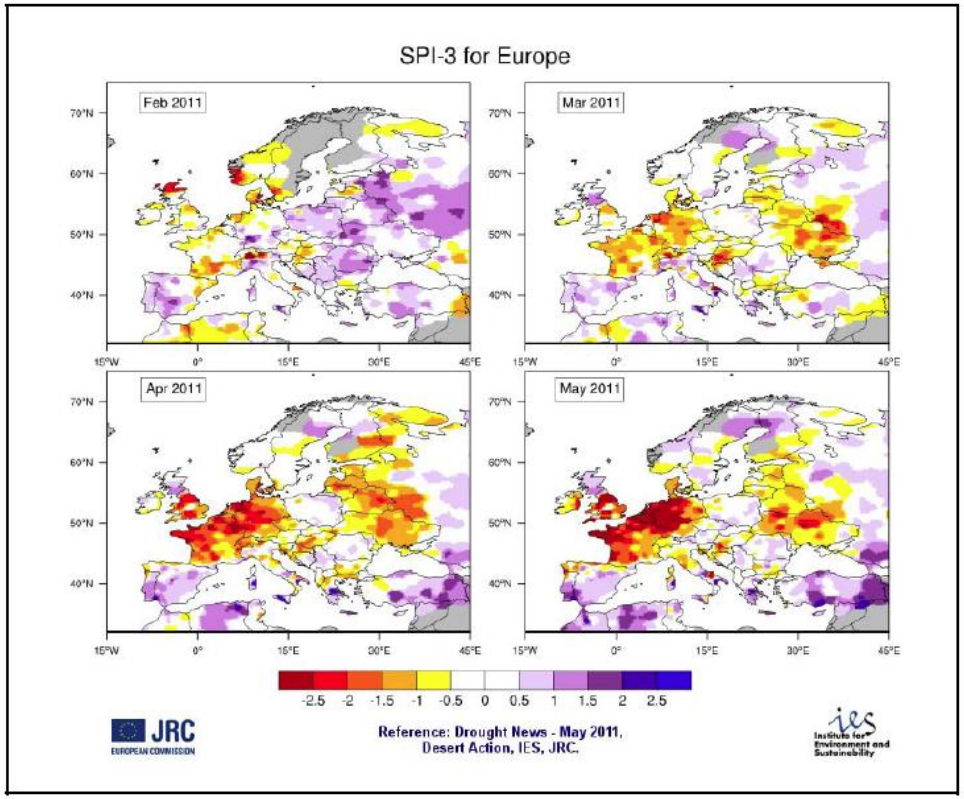
Vulnerability

- 3 components – Water scarcity and drought, floods, water quality
- Currently exist as separate assessments
- To be integrated into one for 2012
- Focus on State and Pressures, with hints to Policy messages for the Blueprint. Relative contribution on adaptation/measures to be clarified
- Close links to 2012 Climate Change Impacts report – Inland Waters Chapter
- Very large floods and WS&D background documents can be made available

Water Scarcity and Drought

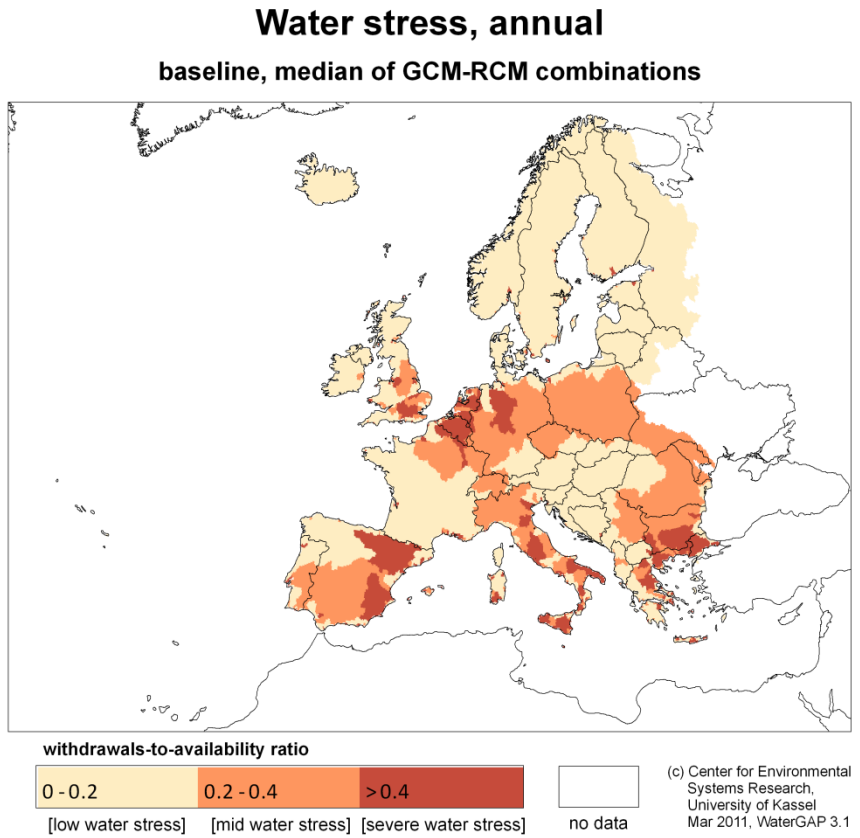
- Conceptual distinction between drought and scarcity



http://edo.jrc.ec.europa.eu

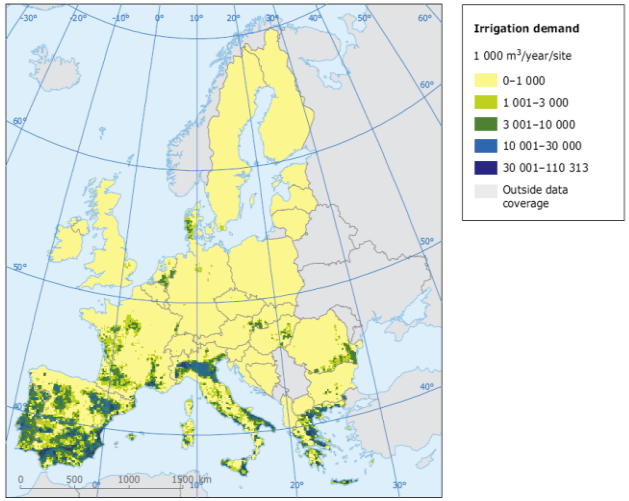
Water Scarcity and Drought – current 'stress' status

- Describe current levels of water stress (annually, seasonally) including hotspots.
- Various potential information sources to do this; a challenge since each has strengths, weaknesses and slightly different outcomes
- Impacts arising on freshwater ecosystems and increasingly upon those sectors using water



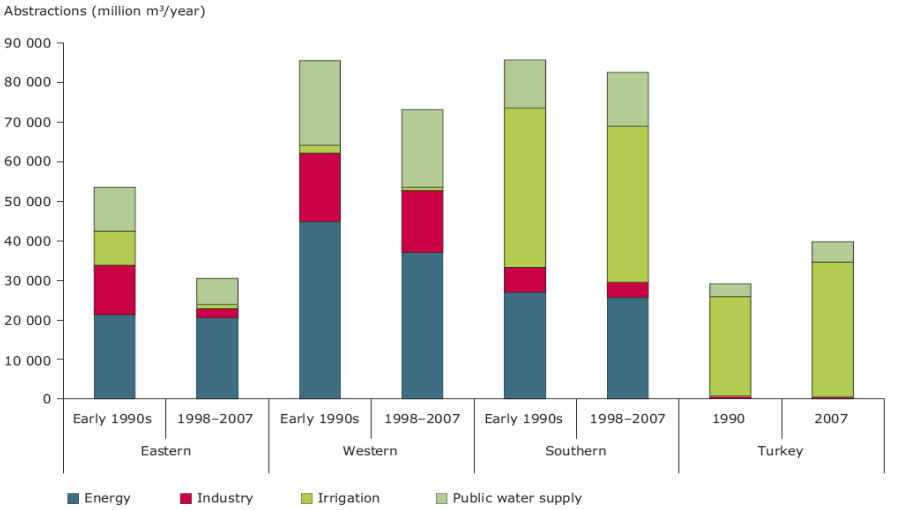
Water Scarcity

Map 6.2 Average irrigation demand per site (10 x 10 km cell) in the EU and Switzerland (1 000 m³/year/site over a simulation period 1995–2002)



Source: Wriedt *et al.*, 2008.

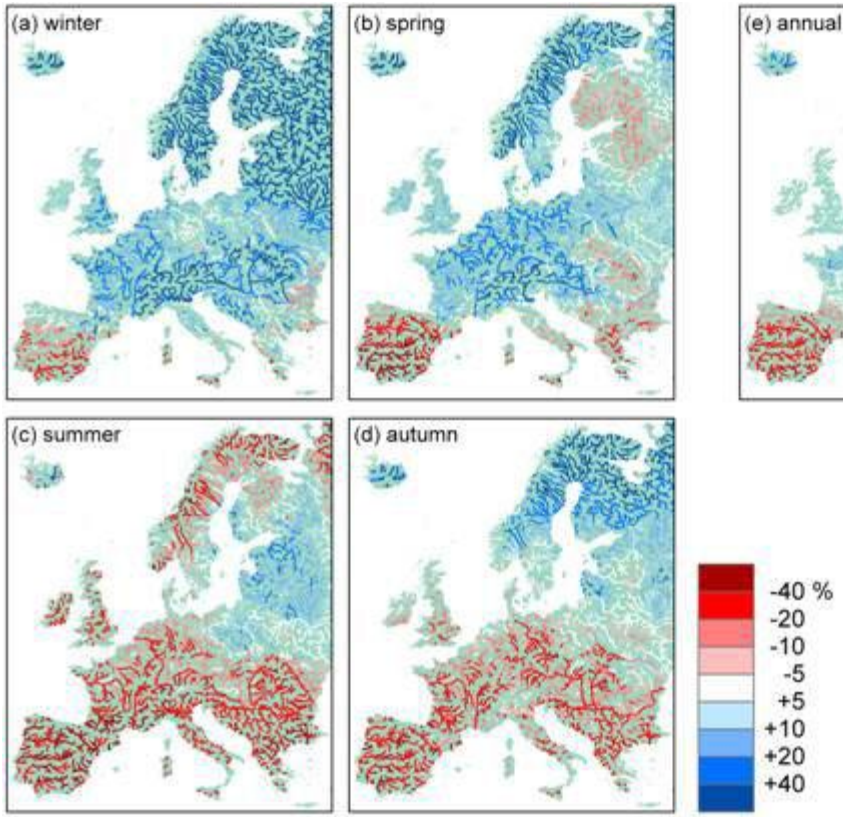
Figure 2.2 Water abstraction for irrigation, manufacturing industry, energy cooling and public water supply (million m³/year) in the early 1990s and 1998–2007



Source: EEA CSI 018 — Figure 2 Sectoral water use www.eea.europa.eu/data-and-maps/figures/water-abstractions-for-irrigation-manufacturing-industry-energy-cooling-and-public-water-supply-million-m3-year-in-early-1990s-and-the-period-1997-2005.

- Describe abstracting sectors, regional variations.
- Information from RBMP's is relatively limited

Climate Change to exacerbate the situation, but there are other driving forces too



Floods

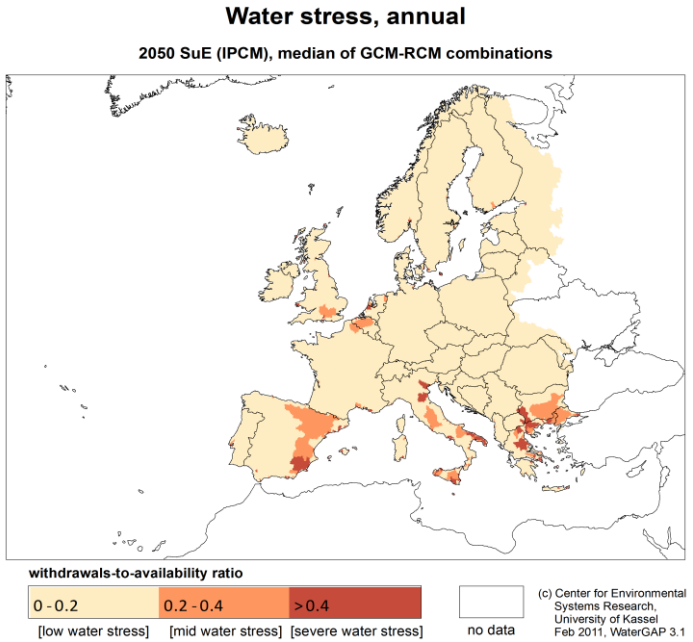
- Types of floods and their impacts
- Case studies of European floods
- Scenarios
- Flood risk management

Water Quality

- Climate change to enhance flushing of pollutants from agricultural and urban land
- Predicted increase in severity and frequency of urban storm overflows
- Higher temperatures – greater growth of harmful algal blooms
- Global growth in demand for food and increase in bioenergy crops to increase potential for greater use of water and chemicals in agriculture

Response including Adaptation

- With respect to scarcity, close link to efficient use of water
- Floods – protect with holistic approach including structural and 'soft' measures as far as technically and financially possible, identify tolerable risk, adapt. SUDS etc
- Further EEA-DG ENV dialogue needed to clarify relative contributions on this issue, across all 3 issues.



Water Resource Efficiency

- Why?
- Currently overexploiting natural capital stocks including freshwater, diminishing services provided
- Current levels of water stress and pollution to be exacerbated by growing global demand for food and climate change
- Economic sectors increasingly competing for depleting resources
- Resources are finite – e.g. phosphorus and becoming more expensive

Sustainable demand-controlled approach is required to managing Europe's water resources

Focus on conserving water and using it more efficiently

Account for the need for healthy freshwater ecosystems

Less water use also means lower energy consumption, contributing to climate change adaptation

Examples across all sectors

Improved irrigation efficiency, use of techniques such as deficit irrigation

Identification of high value, low water demand crops

Improved building water efficiency – appliances and fittings.

Reuse, recycling of industrial water/wastewater

Tackling leakage

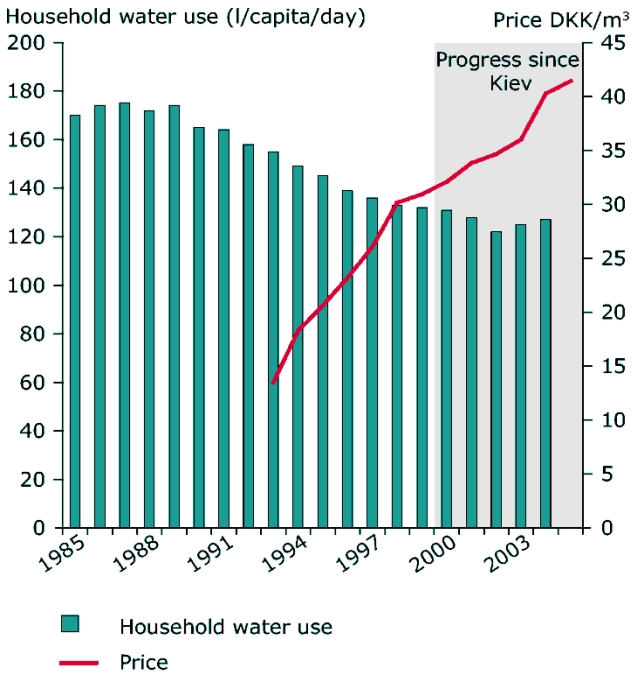
Greater Efficiency leads to improved water quality too

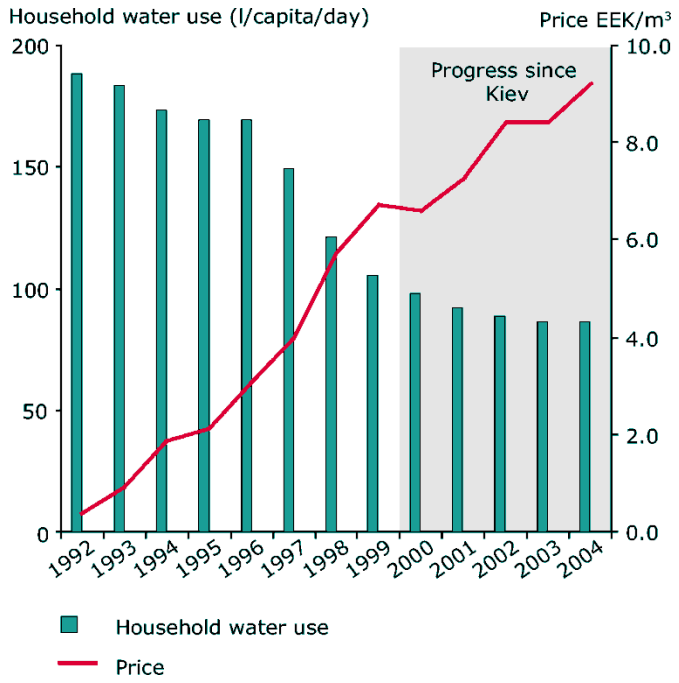
- Improved efficiency in use of agricultural chemicals – fertilisers and pesticides; replacement of P in foodstuffs – nearly cost neutral; minimal application of P onto soils that are P-saturated
- Recovery of P (and energy) from municipal wastewater treatment
- Source controls to reduce emissions of industrial pollutants including hazardous substances

Water Pricing across all sectors

Based on volume used to optimise incentive to use less.

This requires metering





Water Pricing across all sectors

- Recover environmental costs – e.g. pollution, water scarcity. Recognise and value (regulating and provisioning) ecosystem services
- Currently this is not the case. X-subsidies arise, e.g. citizens pay the cost of treating drinking water contaminated by agriculture or industry
- Challenge in setting the right price is recognised
- Innovation – seasonal variation in tariffs, tariffs that vary with scarcity. Water trading etc.

Targets

- Water Quality targets set through the WFD
- Water Quantity targets to be underpinned by environmental flows
- Thereafter…….

Information Requirements

- Underpinning the implementation of a more sustainable, equitable and efficient use of water resources is the need to quantify water use and its environmental impacts.
- Three broad but complementary approaches
- Water Accounts – stocks and flows of water, linked to economic variables at RBD scale
- Can quantify water stress (e.g. exploitation index) since both water availability and use are incorporated. Quantify distance to target in terms of environmental flows/WEI
- Must also quantify natural capital stocks 'ecosystem accounts'

Information Requirements

- Water Footprint/Virtual/Embedded Water – Important for trade decisions. Water poor nations or regions can import water rich products
- WF – Fails to account for environmental impacts of water scarcity at point of abstraction
- Role for certification and labelling?
- LCA – water performance of products and services across their lifecycle