

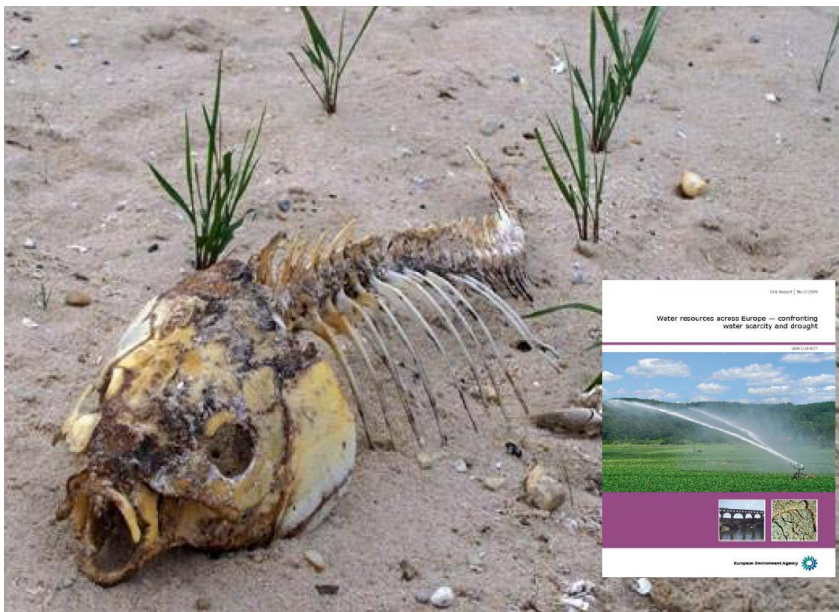


Climate Impacts on Low Flows and Droughts First Responses at European Level

2nd March 2012

Karl Schwaiger

karl.schwaiger@lebensministerium.at



Extreme Low Flows (EEA 2010)



Empty Reservoirs (EEA 2010)

Introductional Remarks

- Droughts + low flows interconnected, CC + WS + Droughts
- Climate change expected to exacerbate future impacts
- Presentation focuses on policies and their drivers

Aim of presentation

- Provide insight in relevant policies based on rather personal experience; no claim to be complete;
- Focus exclusively on water management / water scarcity and droughts and adaptation to climate change





Structure

- **Actions triggered at European Level by summer 2003**
 - Climate Change
 - Water Scarcity and Droughts
 - Action at EU level mirrored at national level in Austria
- **Blue Print to Safeguard Europe's waters**
 - Basis
 - What may be expected?





Summer 2003

- **Unprecedented high temperatures in Europe**
- **Severe droughts**
- **Wide range of negative effects**
 - Enhanced death toll within aged population in France;
 - Severe production losses in agriculture;
 - Exceptional low flows in rivers e.g. in Rhine catchment impacting
 - Thermal energy generation due to lack of cooling water
 - Inland navigation
 - Fish life - wide spread fish kills
 - Unprecedented melting of Alpine glaciers, water stress...





2003 – some spot lights



Elbe at Dresden, summer 2003



Crop damage, summer 2003

Drought events cause damage in the same order of magnitude as floods.

For example, the 2003 drought in Europe caused an economic damage of approx 14 billion €.

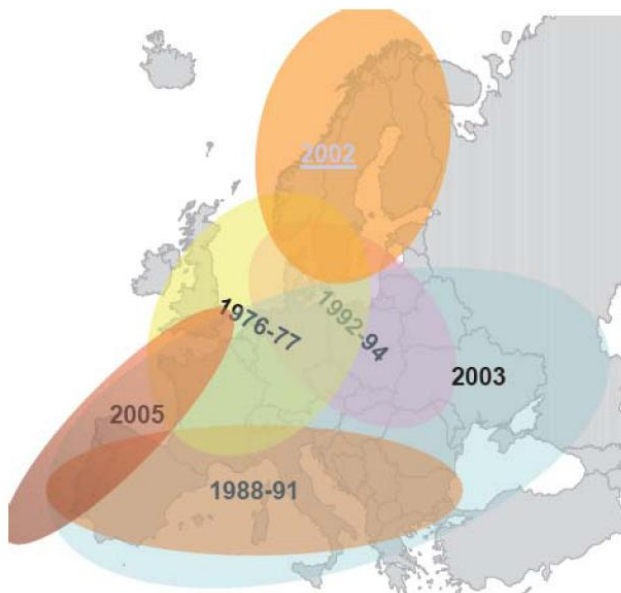
Fatalities due to the heat wave in summer 2003 are estimated as several 10 000 loss of lives

Source: Conference Berlin 2007, Time to adapt,
Presentation: Axel Bronstert, Zbigniew Kundzewicz



2003 was not the only year of droughts - before

Water scarcity and drought in Europe



Reservoir,
Sicily



Reservoir
, Cyprus



River
Elbe,
Dresden

Spring. 2007

Source: presentation
P. Kristensen EEA
How big is the problem
with water scarcity and
droughts in the EU?
Stakeholder Meeting April
2010



and after 2003 – e.g. spotlight on summer 2008

Storage reservoir close to Barcelona



**Cyprus received
water from more
than 30 tankers**

Desalination an
issue!



Strong call for action from southern MS !!!

Source: Presentation P. Kristensen; EEA



Climate Change – EU level





Climate Change – stepping stones EU level

- **2003 – 2004:** EU WD ask JRC for assessment of situation
- **2004:** EEA report „Impacts of Europe’s Changing Climate“; „water availability will change over Europe in the coming decades“
- **2005:** JRC report „Climate Change + the European Water Dimension“
=> Impacts can be reduced by adaptation measures
- **2007:** Conference in Berlin „CC + the European Water Dimension“
=> “time to adapt”- adaptation to effects to CC becomes an issue, apart from mitigation



Climate Change – results EU level

2009 COM (2009) 147 fin

„White Paper on Adaptation to Climate Change“ (highlights the need to promote strategies which increase the resilience to CC i.a. by improving the management of water resources and ecosystems)

2009 EC + WD

CIS Guidance“Adaption to CC in Water Management“ in order to ensure that RBMP are climate proof

=> triggered adaptation strategies (work in progress)

- Rhine Commission
- Danube Commission (WS in preparation)
- Member States Level, i.a. AT





Climate Change – first results Austria

2008 BMLFUW – ÖWAV: Report „Auswirkungen des Klimawandels auf die Ö Wasserwirtschaft – Consequences of CC on Austria's Water Management“ – summarises research results

2009 BMLFUW: Nationaler Gewässerbewirtschaftungsplan – National RBMP; chapter 9 devoted to CC, Ws and droughts

2010 BMLFUW: Report „Anpassungsstrategien an den Klimawandel für Österreichs Wasserwirtschaft –Adaptation strategies to CC for Austria's Water Management“ providing insight into potential changes as well as adaptation strategies; focus i.a. floods and hydropower



Climate Change – first results Austria



Flood protection

Investments > 300 m €/year



Hydro power generation

around 60 % electricity generation



Water Scarcity and Droughts – EU Level



Water Scarcity and Droughts – EU Level

2006 AT EU Presidency: group of S–MS intervene for legal instrument mirroring the „Floods Directive“; WG installed

2007 COM (2007)414 fin: 7 policy options identified i.a. „water pricing – putting the right price tag on water“ and „improving drought risk management“; MS are asked to report; so far 3 reports EC (2008, 2009; 2011– WS + droughts are growing issue across EU not limited to Mediterranean

2009 EEA report: „Water Resources Across Europe – Confronting Water Scarcity and Droughts“ provides a comprehensive overview on water availability, water abstraction, supply and water scarcity in Europe

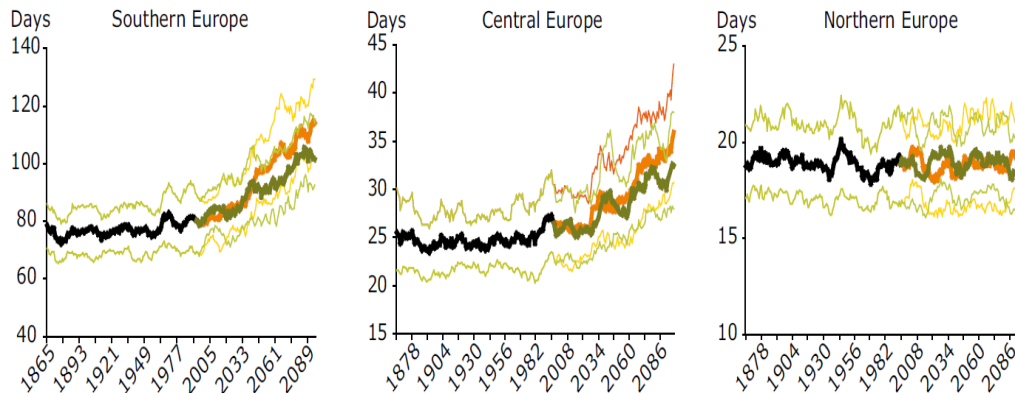
Issue frequently on political agenda (also on next “Env. Council”, PT)





Water Scarcity and Droughts – EU Level

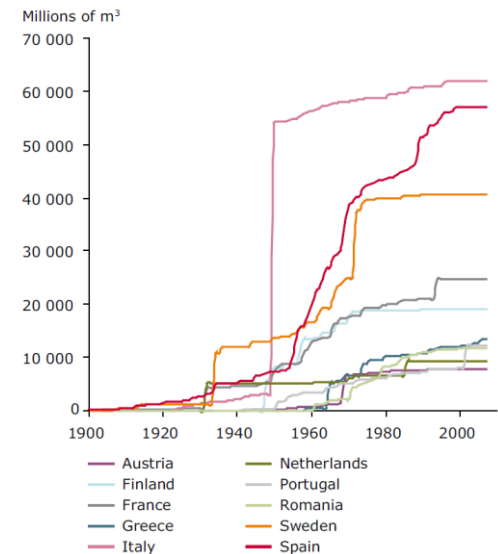
Figure 2.1 Simulated land average maximum number of consecutive dry days for different European regions (1860–2100)



Source: Sillmann and Roeckner, 2008.

Main messages: Challenges will increase, supply side measures limited

Figure 2.4 Growth of total national reservoir volume (millions of m³) for selected EU Member States over the twentieth century



Source: EEA Eldred 2.08 (European Lakes, Dams and Reservoirs Database), 2008.

Source EEA 2/2009



Blue Print to Safeguard Europe's Waters





Blue Print to Safeguard Europe's Waters

Main aim: To ensure good quality water in sufficient quantities for all legitimate uses

Finalisation foreseen end 2012 based on

- Fitness Check of EU Water Policy
- Assessment of RBMP under EU WFD
- Assessment of „Vulnerability of water resources to CC and other man made pressures
- Review of EU Action on Water Scarcity and Droughts (number of studies issued)





Blue Print to Safeguard Europe's Waters

State of play

- Probably no new legislation (stakeholder are not in favour)
- Enhancement of economic instruments, internalization of costs from water use and water pollution
- Enhancement of water efficiency based on
 - water efficiency targets for river basins based on “water and ecosystem accounts – developed by EEA” as well as on
 - indicators such as the Water Exploitation index.





Blue Print to Safeguard Europe's Waters

More results and details to be expected in

3rd European Water Conference, 24 and 25 May, Brussels

Programm: <http://www.waterblueprint2012.eu/programme>

Further links:

- http://ec.europa.eu/environment/water/quantity/scarcity_en.htm
- http://circa.europa.eu/Members/irc/env/wfd/library?l=/framework_directive/directive_directive

Thank you for your attention

