



The futures of Europe's freshwaters

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Hungarian Youth Parliament

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SCENARIO ANALYSIS

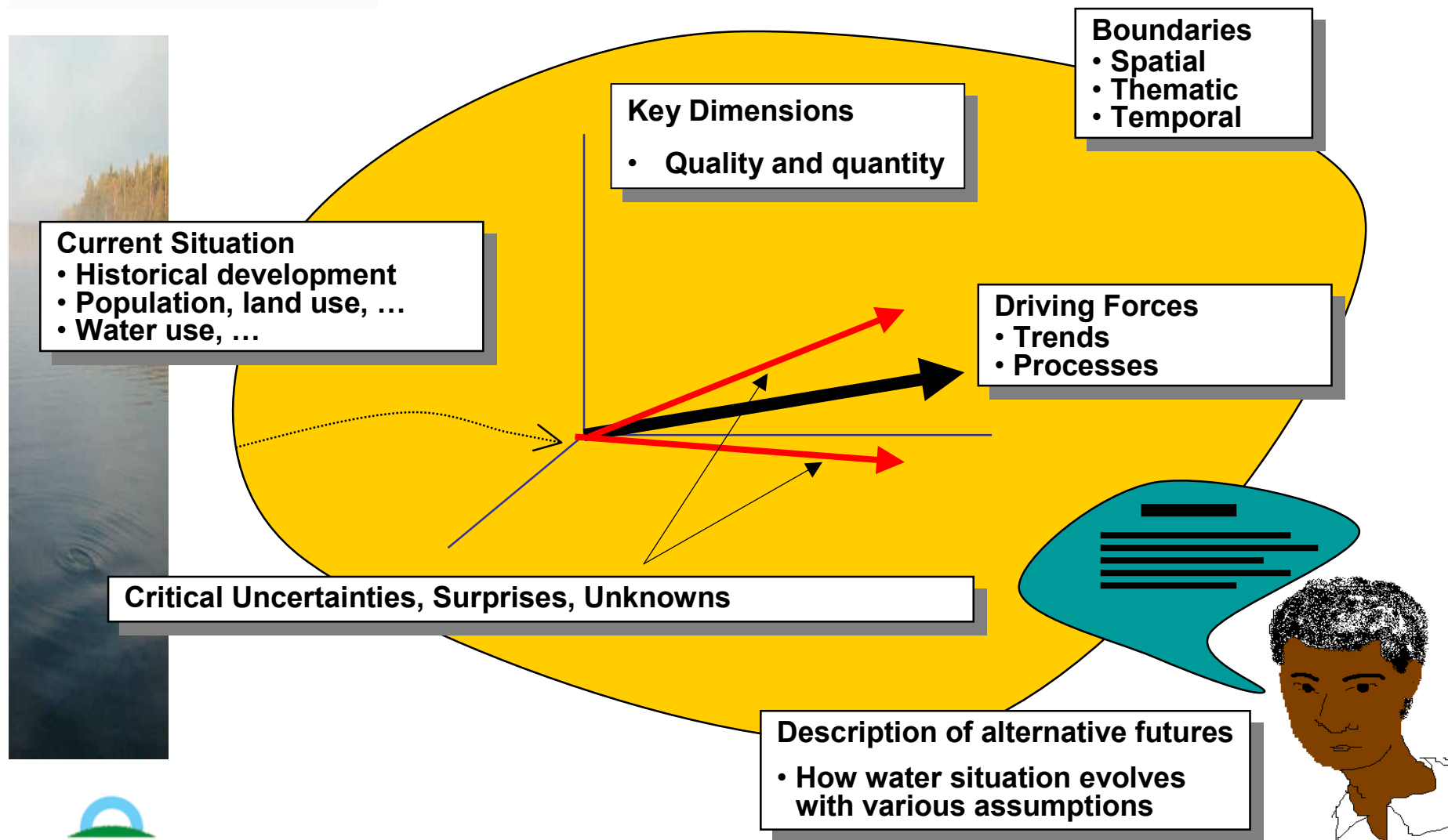
To develop a set of alternative and plausible **scenarios** of Europe's freshwater futures up to 2050

NOT prediction → Possible future





Scenario development

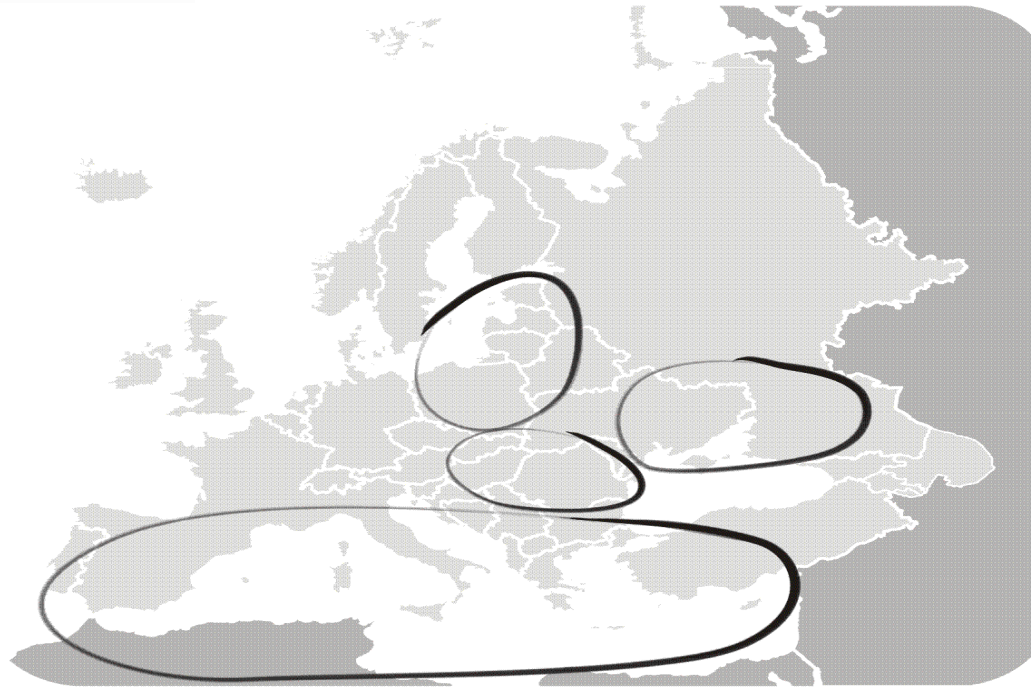


Scenarios constructed together





Different issues in different parts of Europe



BALTIC REGION

- transition of agriculture
- privatization of water supply systems
- mixed trends in water consumption both municipal and industry
- probably increasing GDP and the changes in the life style
- HELCOM future

BLACK SEA REGION

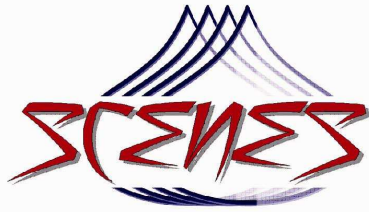
- change in agriculture, unknown future
- salinization of the irrigated fields
- decapitalization of hydraulic structures
- unknown future for the ownership and operation of water supply and sewage treatment plants
- consumption of water by heavy industry
- negative population trends

MEDITERRANEAN REGION

- water stress
- land use change
- water use, irrigation
- population trends, immigration
- change in agricultural policy

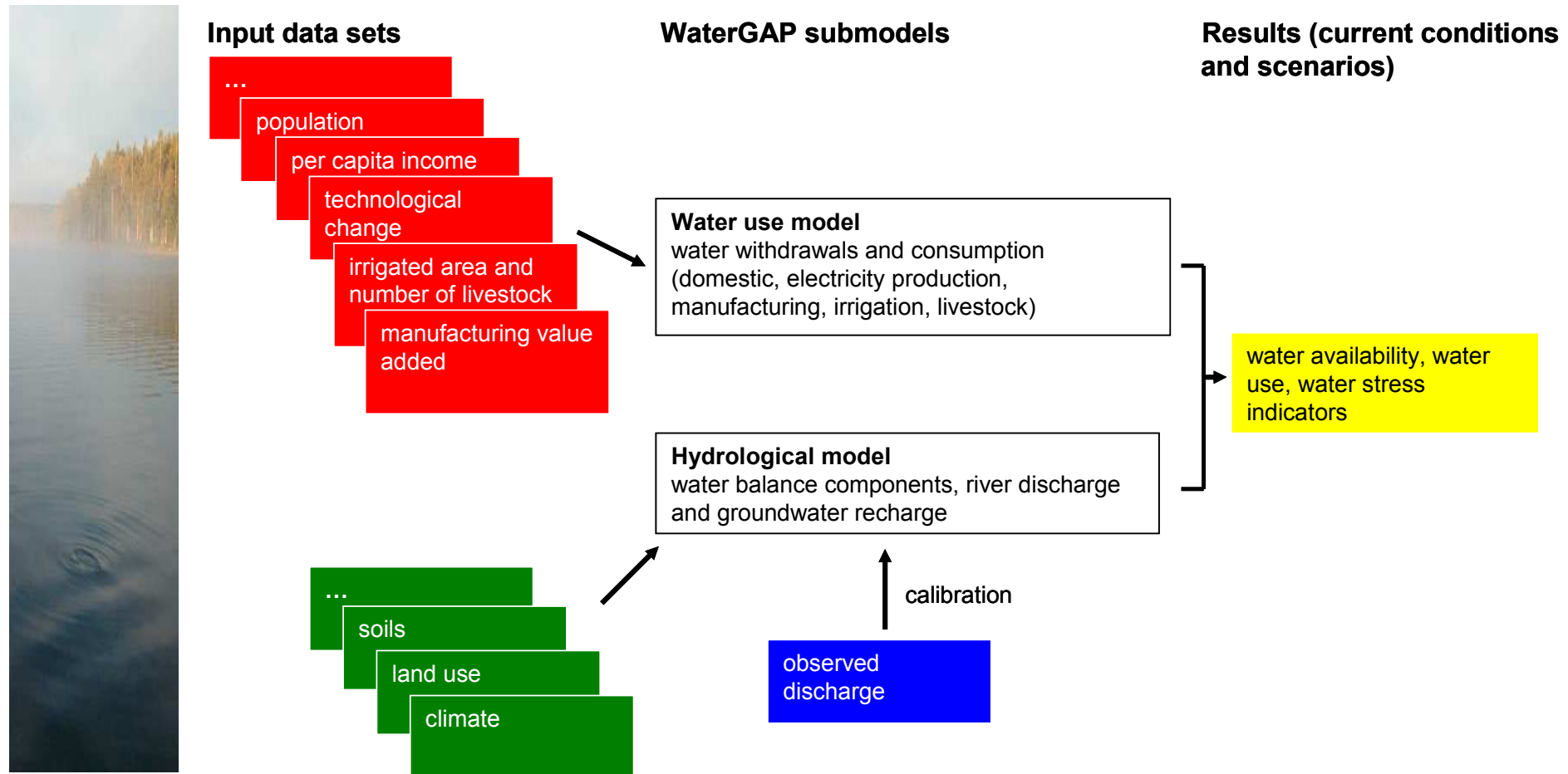
LOWER DANUBE REGION

- economic transition
- water pollution issues
- change in agriculture and land-use
- flood and drought management



Modelling tool: WaterGAP 2

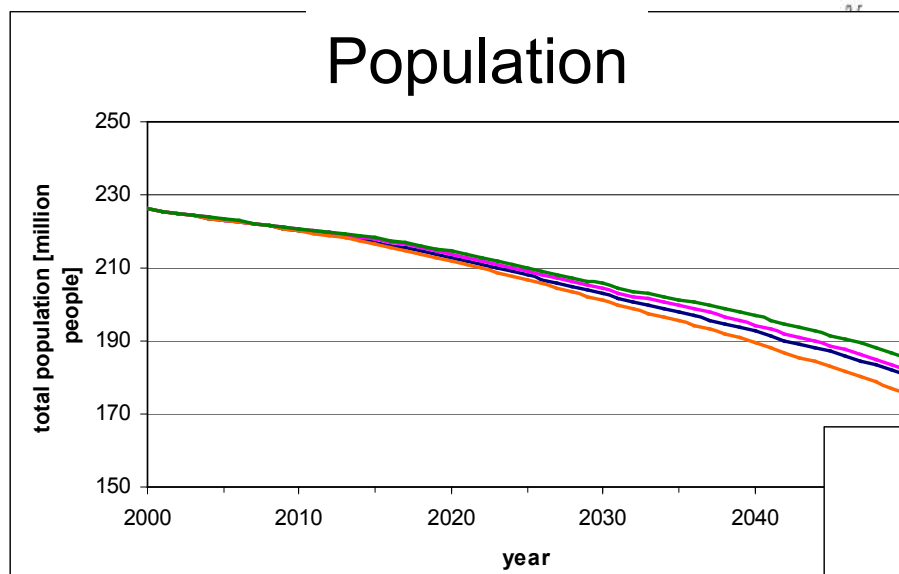
(Water - Global Assessment and Prognosis)



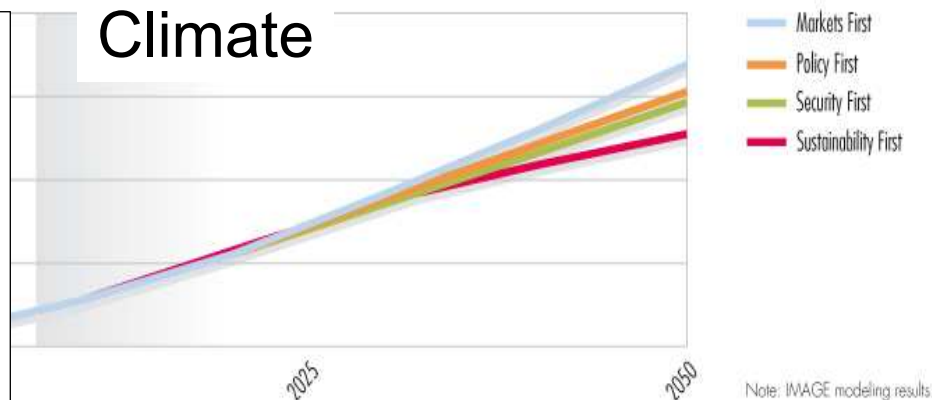


Factors affecting water use and water availability

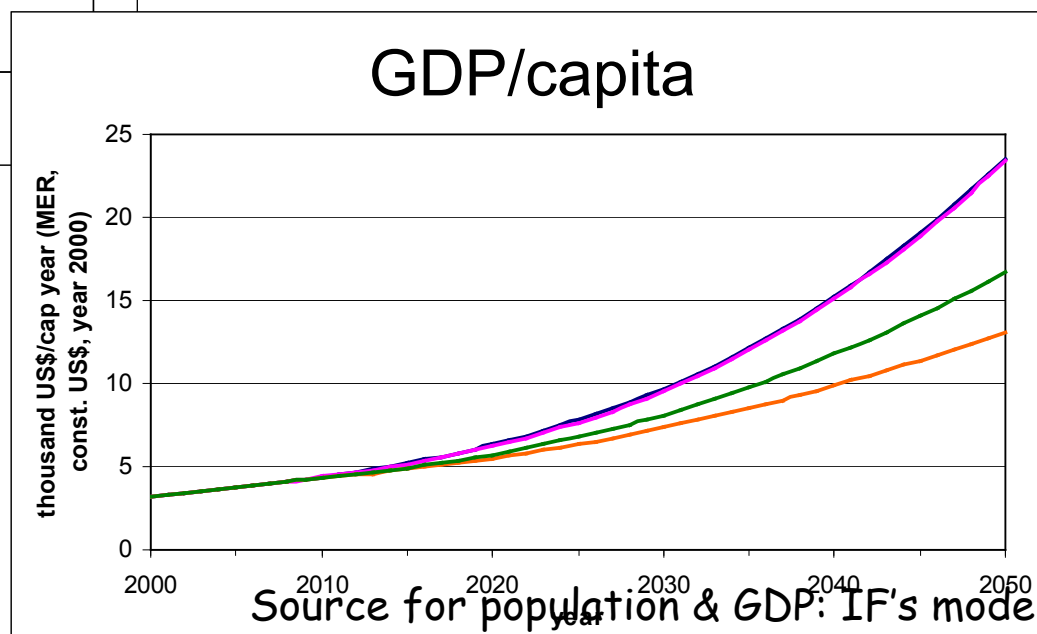
Population



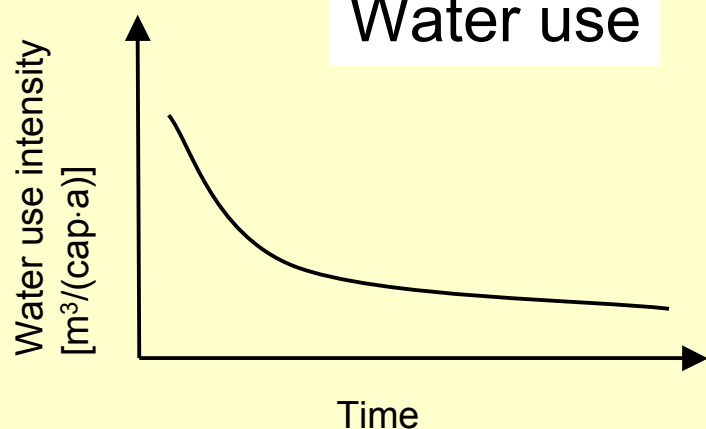
Climate



GDP/capita



Water use

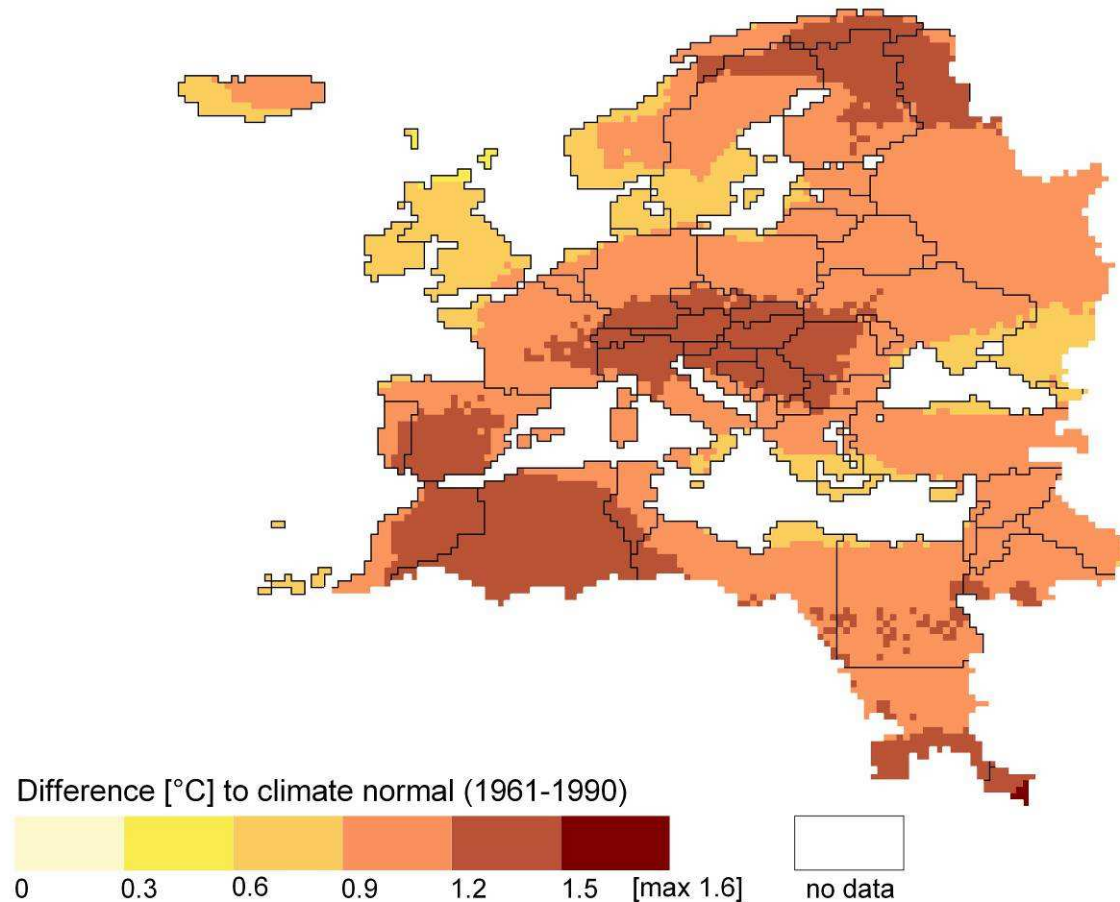




Drivers - climate



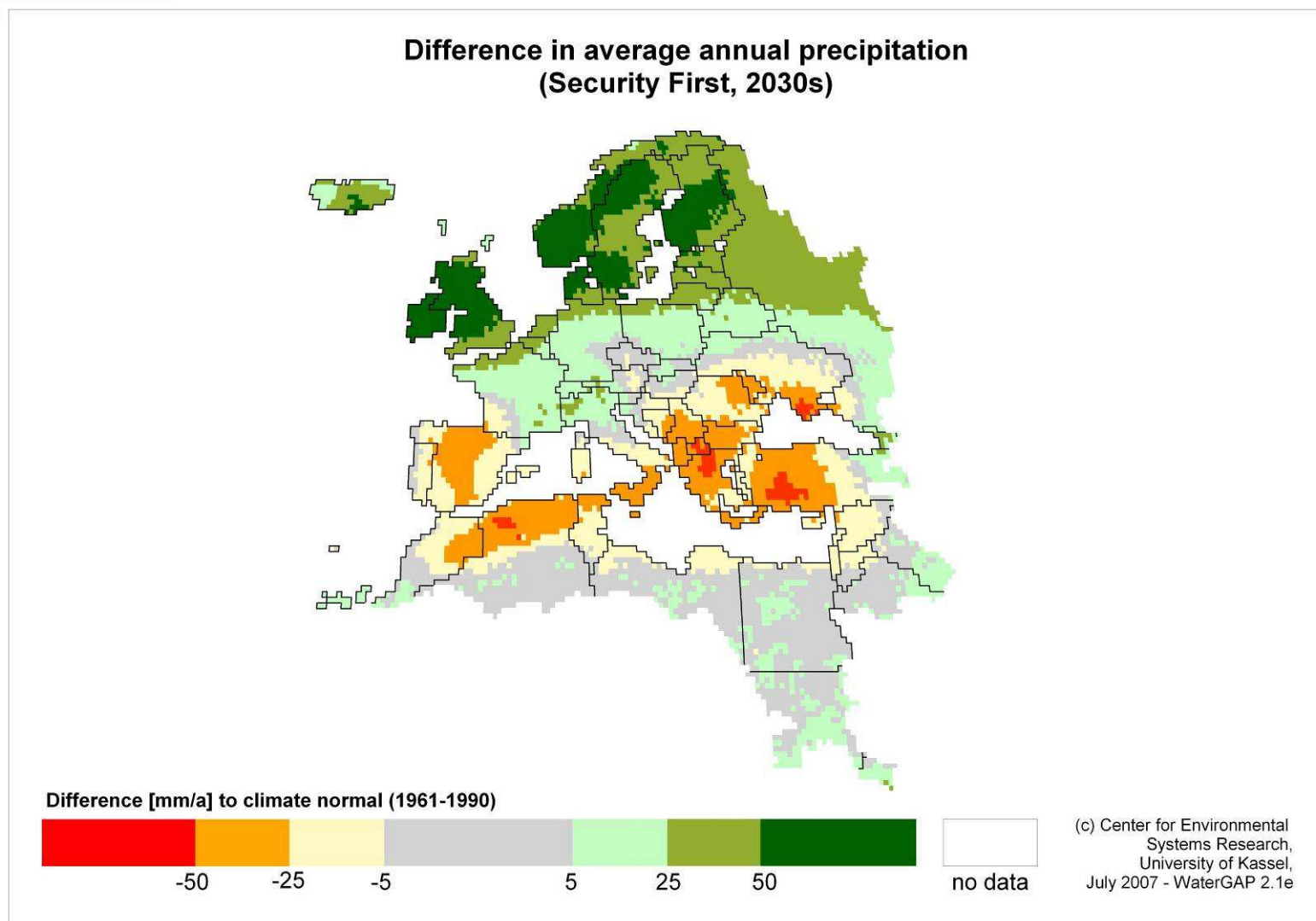
Difference in annual average temperature
(Security First, 2030s, IMAGE2.2)



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Systems Research,
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July 2007- WaterGAP 2.1e



Drivers - climate



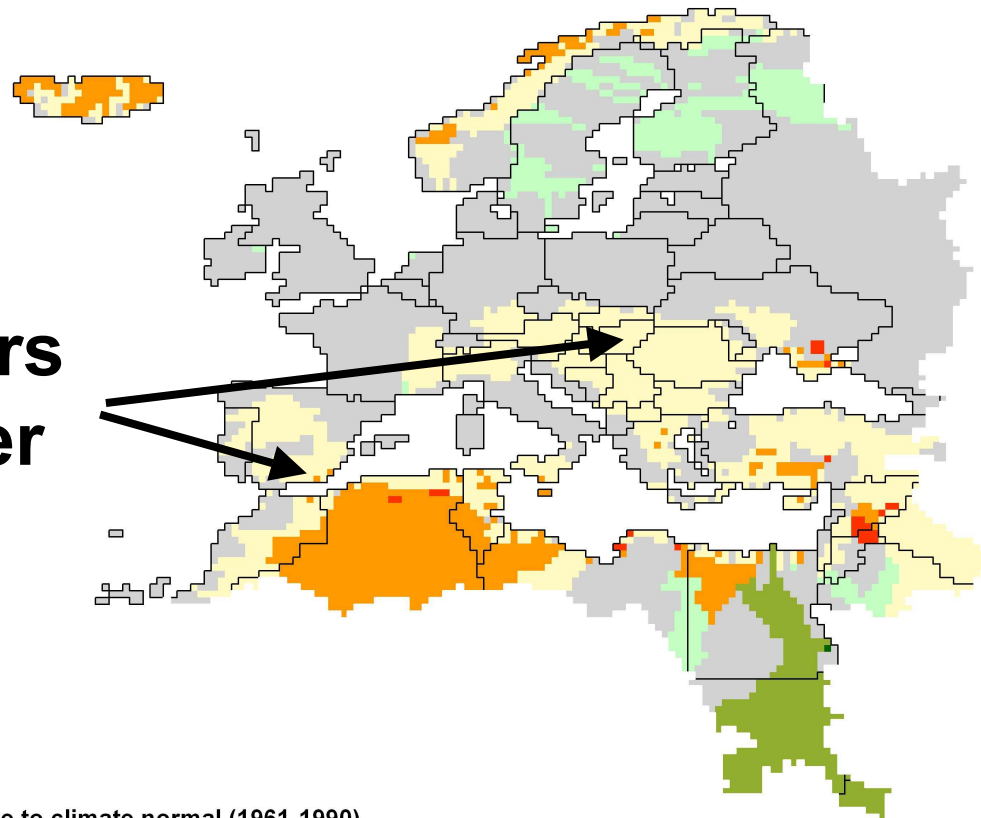


Change in water availability

Climate change leads to different results for summer and winter



Summers are dryer



Percentage change to climate normal (1961-1990)



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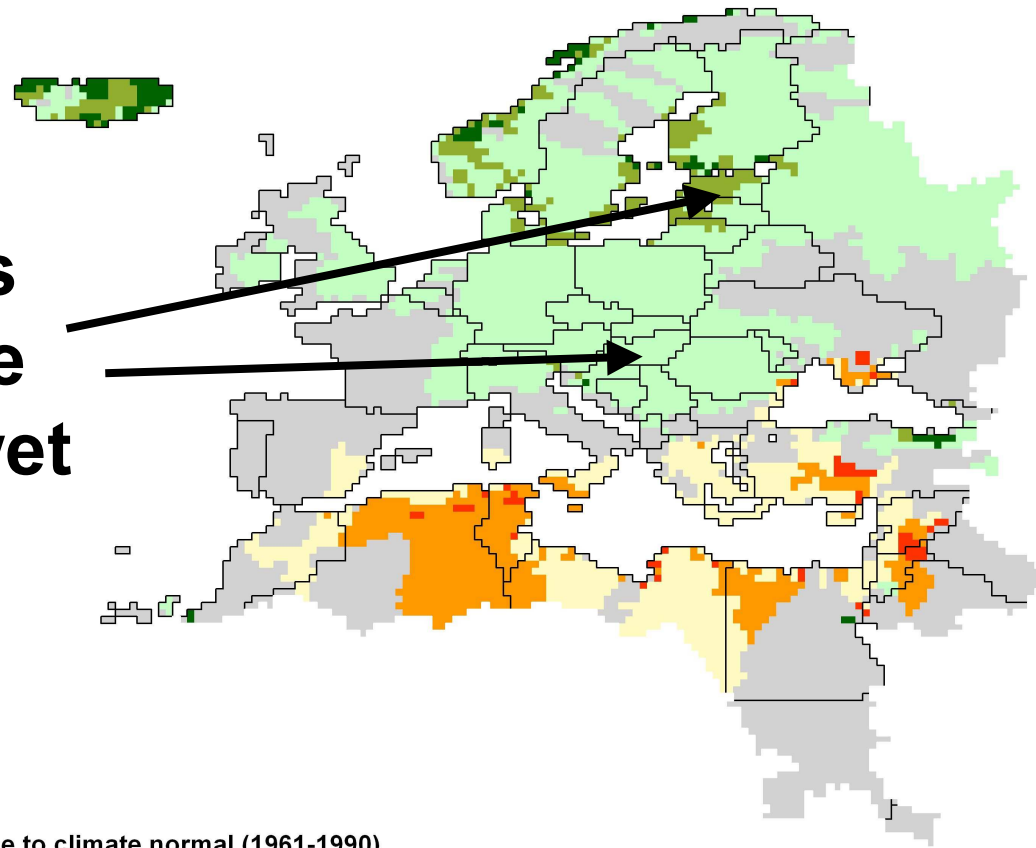
Change in water availability

Climate change leads to different results for summer and winter



**Winters
become
more wet**

Change in average seasonal water availability - winter
(Security First, 2030s)



Percentage change to climate normal (1961-1990)



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Conclusions climate change

Change in Water availability up to 2030

- Annual average changes - drier in the south; not big change over rest of Europe
- Larger seasonal differences
- Cause: Warmer temperatures (higher evapo-transp.) + Trend in precipitation
- Small difference between scenarios





Example - Annual Total Water Withdrawals (2000 - 2030)

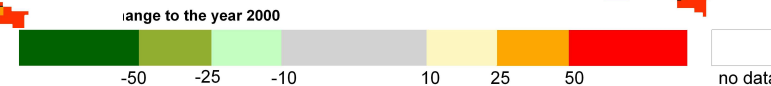
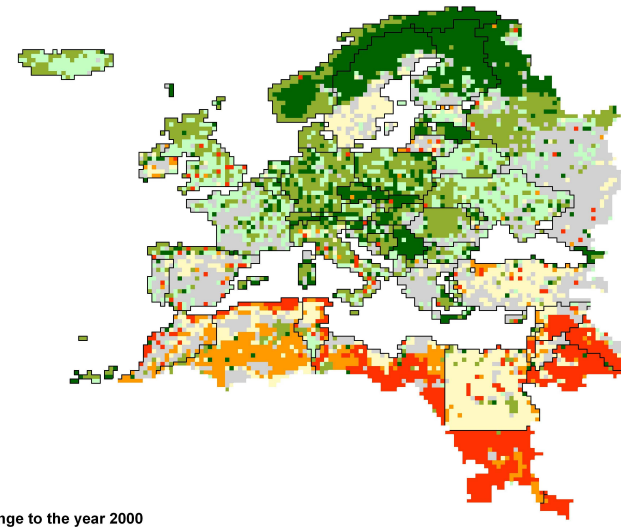
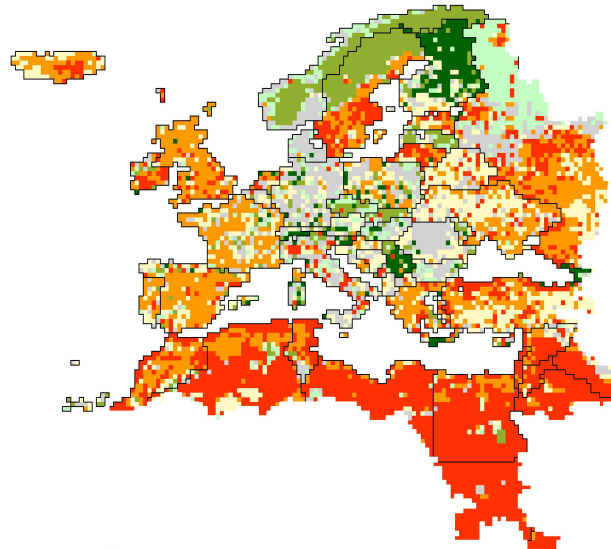
Change (%)

Security First

Sustainability First

Change in total water withdrawals
(Security First, 2030)

Change in total water withdrawals
(Sustainability First, 2030)



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Water for Food: Indicators

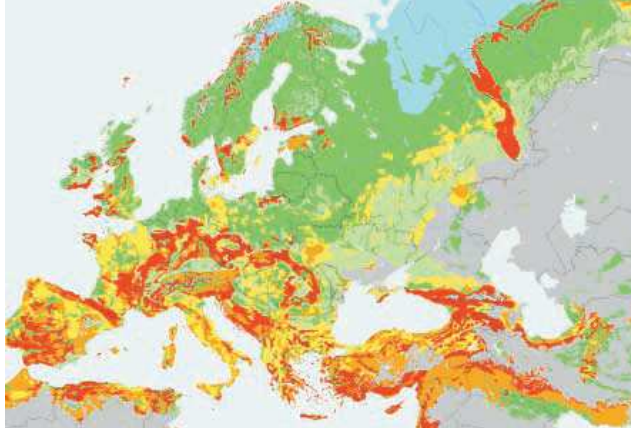
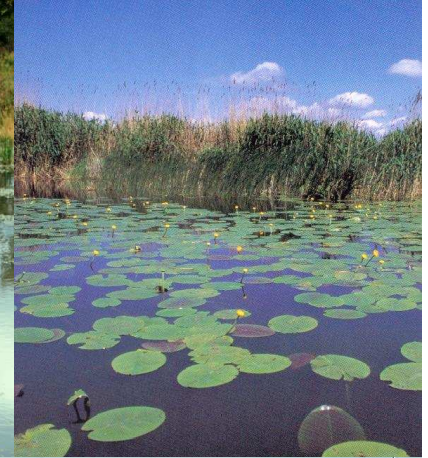
- Food 1: change in irrigation water stress
- Food 2: farmers at risk
- Food 3: biomass production for energy





Water for Nature: Indicators

- Nature 1: wetlands at risk
- Nature 2: environmental flows
- Nature 3: ecosystem services of wetlands





Water for People: Indicators

- People 1: change domestic water availability
- People 2: tourist domestic water stress
- People 3: flood risk





Water for Industry: Indicators

- Industry 1: intake restrictions due to water quantity
- Industry 2: risk for reduced cooling water capacity





THANK YOU



Finnish

<http://www.environment.fi/syke/scenes>