

# Drought in the Danube region

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*Adapting to Climate change in relation to WATER  
Changes in the qualitative and quantitative parameters of waters  
28 November 2023*

# Drought in the Danube



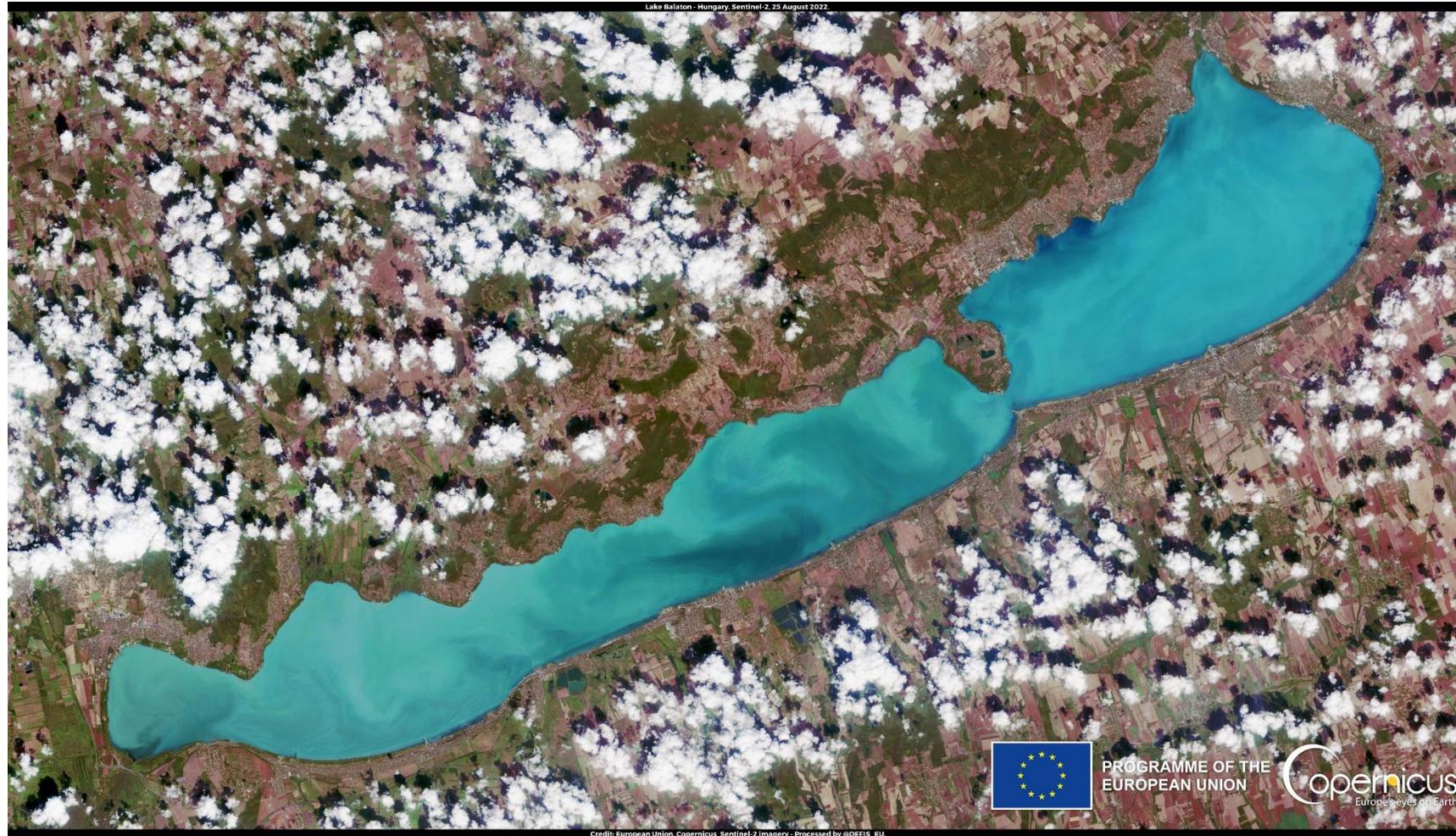
August 2022:

Water scarcity in the Danube River on the border between Bulgaria and Romania.

12 August '22:

- 51 cm water level at Tulcea, Romania
- 6 cm lower than minimum level for navigation
- sections of the Danube are unnavigable
- dredging to allow navigation

# Drought in the Danube



25 August 2022:

Water levels in lake Balaton are at their lowest point in 100 years

Source: European Union, Copernicus Sentinel-2 imagery

# Drought in the Danube



Wreckage of a World War II German warship in the Danube in Prahovo, Serbia. © Fedja Grulovic/Reuters

August 2022:

News: WWII warships emerge,  
hazard to shipping

But also impacts on:

- agriculture / food production
- water supply
- (hydro)power generation
- ecosystems
- ...

# ... and in Europe

Emergency Response Coordination Centre (ERCC) – DG ECHO Daily Map | 29/07/2022

## Europe | Drought, heatwave and wildfires

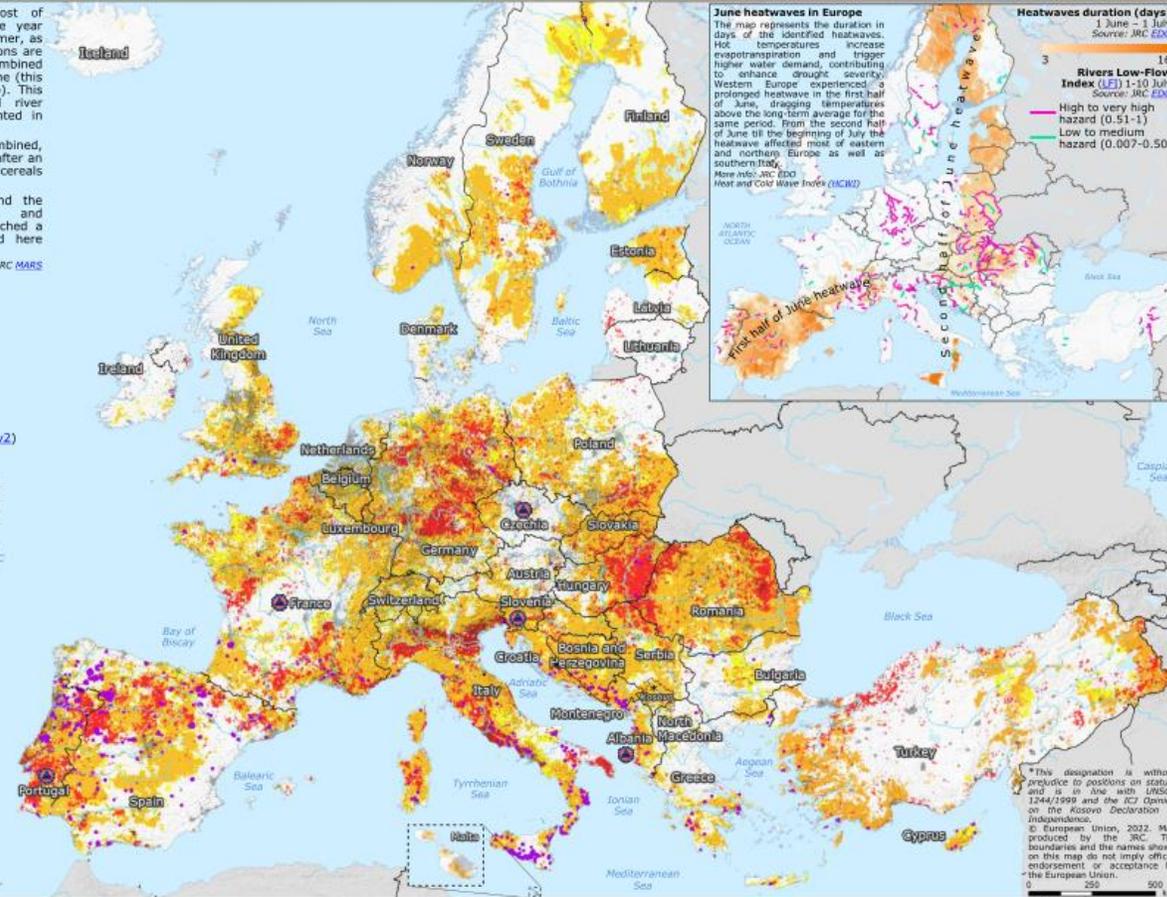


■ The severe drought affecting most of Europe since the beginning of the year continues worsening during the summer, as represented in the map. Dry conditions are related to the lack of precipitation combined with early heatwaves in May and June (this latter represented in the inset map). This precipitation deficit has impacted river discharges across Europe (represented in the inset too).

■ Water and heat stress, alone or combined, are driving crop yields further down after an already negative spring outlook for cereals and other crops.

■ Due to these severe drought (and the relevant vegetation conditions) and heatwaves, wildfire activity has reached a very high level during the period here considered.

Source: JRC EDO, JRC EFFIS/DG ECHO, JRC MARS

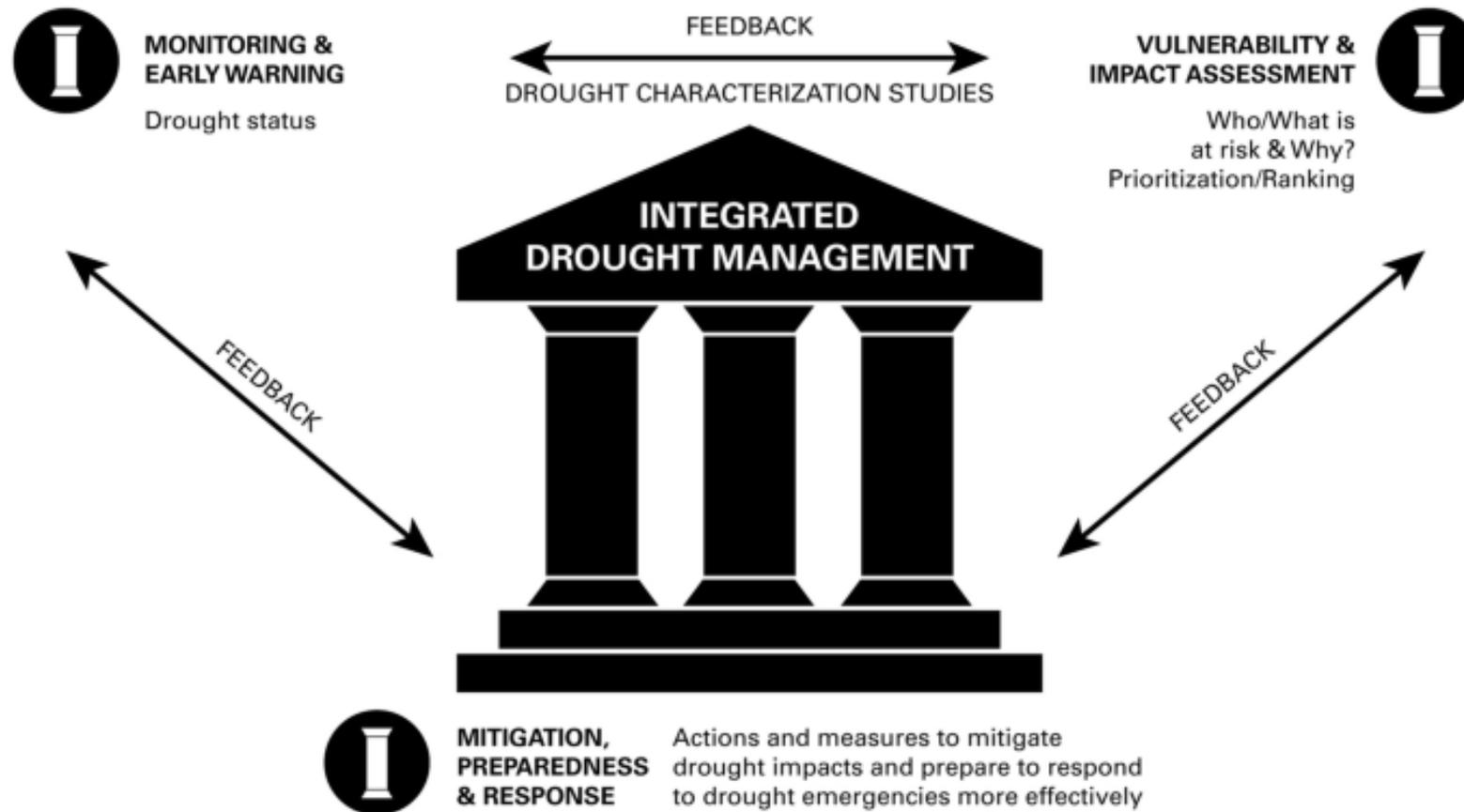


## Summer 2022:

- drought affects over 1/3 of EU
- impacts on several sectors
- coincident with:
  - heatwaves
  - forest fires

# Where are we at?

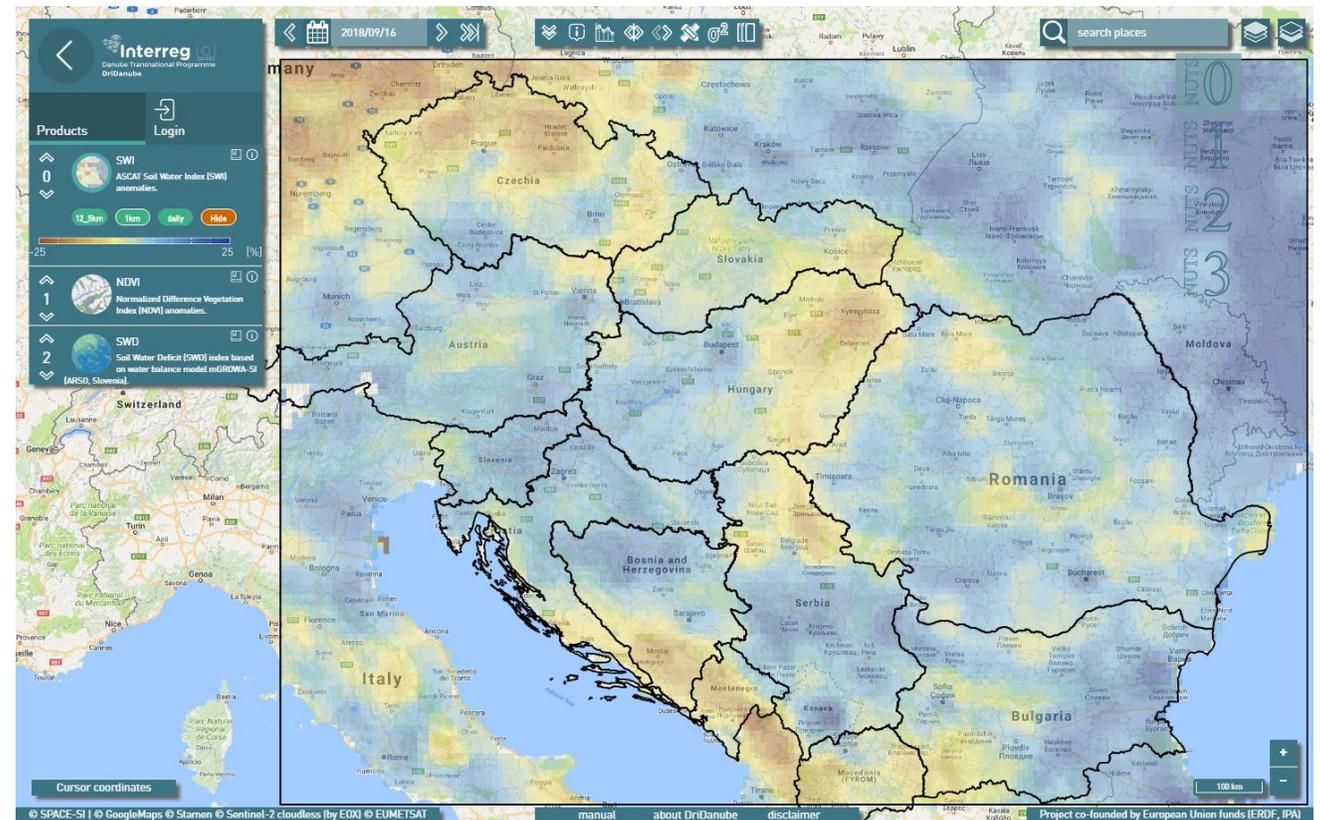
Three pillars of integrated drought management (IDMP)



# DriDanube

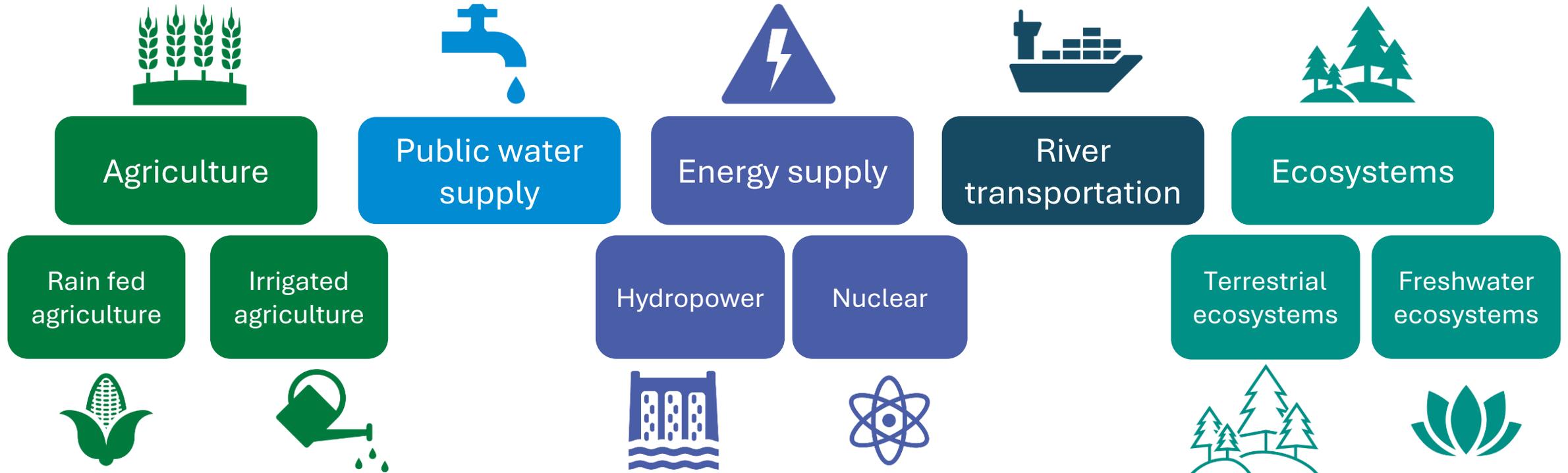
## Shift from crisis management to risk management

- unified risk assessment methodology
- impact-based approach
- reporter network
- early warning for early action



# Impact and risk reduction approach to droughts

Drought impacts on sectors and ecosystems



# Collecting & sharing data on impacts

**w.edid** EUROPEAN DROUGHT IMPACT DATABASE

Filters Panel:

- Textual Search: Start writing something
- From (\*): 01/06/2018
- To (\*): 30/09/2018
- Filter by area of interest:  Draw a rectangle on the map
- Sector/System: -
- Severity Level:  1 - Moderate  2 - Severe  3 - Extreme
- Hazard Event: -
- Source Type: -
- Validation Status: -
- System specific attributes (ASSA)
- QSEARCH

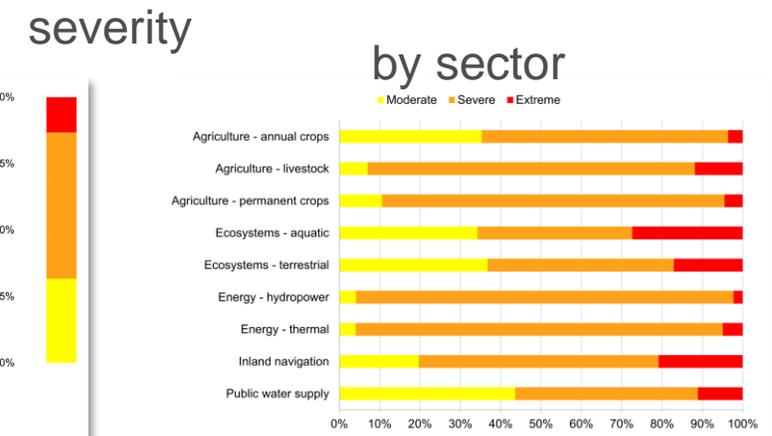
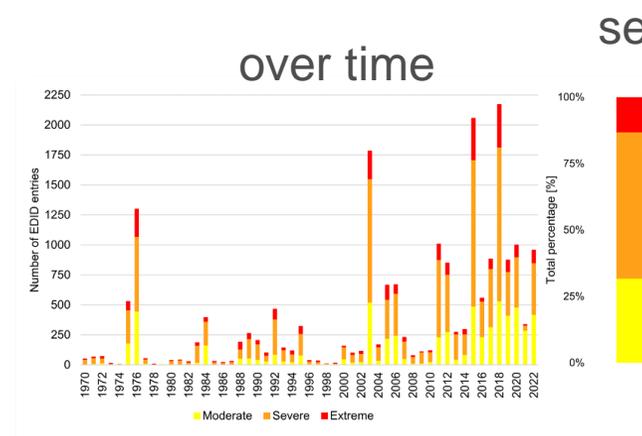
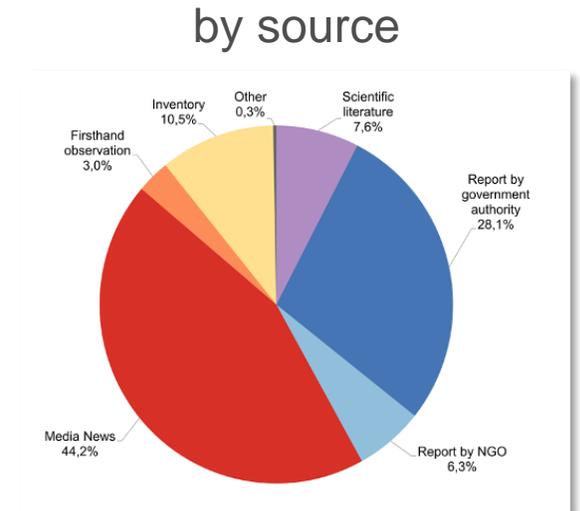
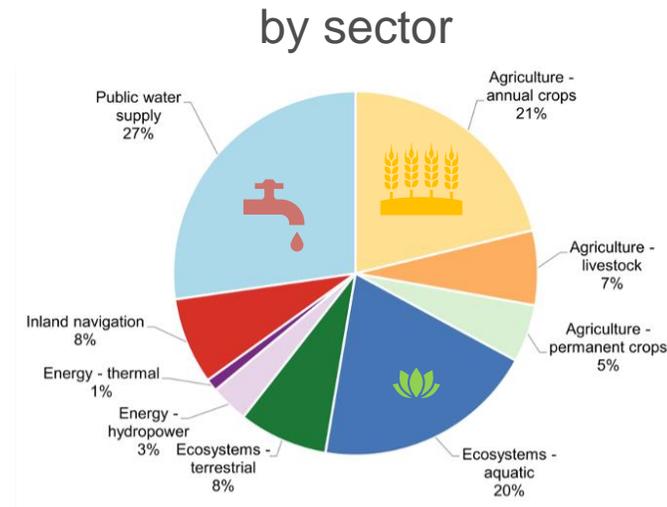
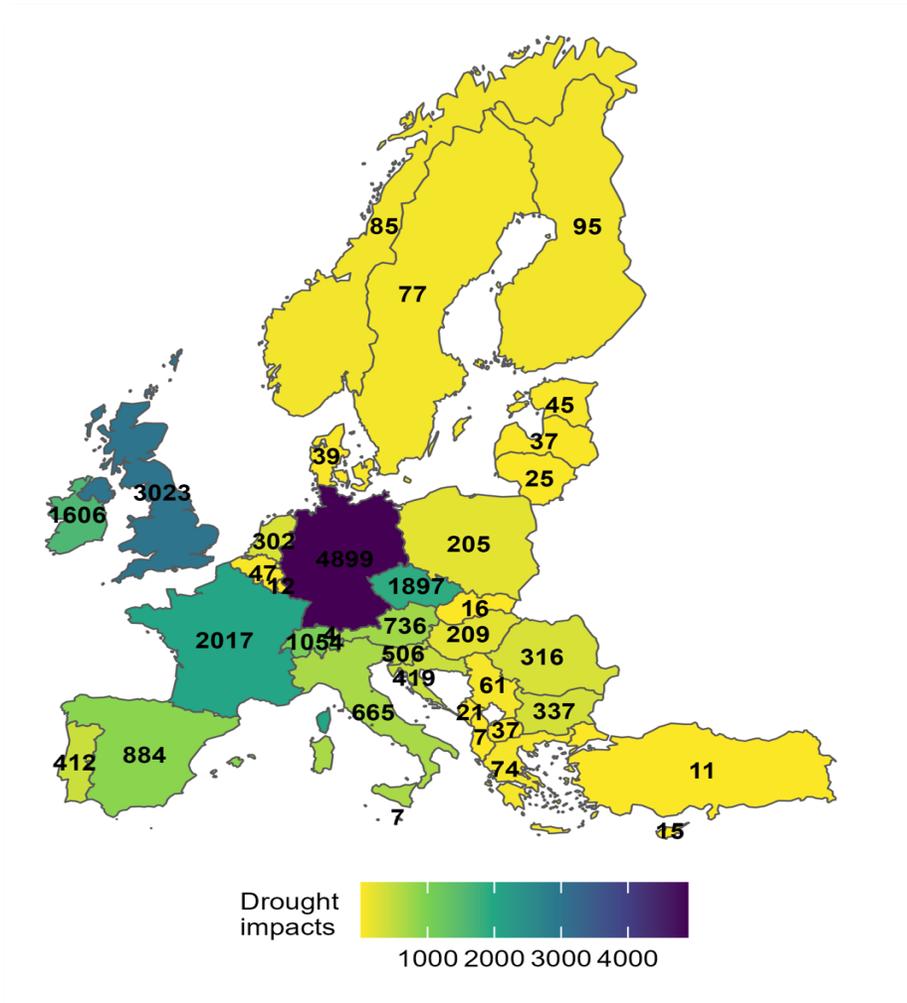
Date	System	Description	Severity	Status
01/07/2018 - 31/07/2018	Ecosystems - terrestrial	slight increase of significantly damaged trees, about 3% to a share of 29%. A distinct increase of the damage level was ...	1	●
01/06/2018 - 30/06/2018	Ecosystems - terrestrial	The secondary growth of spruces stopped between mid-june and mid-july....	1	●
01/07/2018 - 31/07/2018	Ecosystems - terrestrial	from july on, the decolouring and early dropping of leaves started due to the drought stress....	2	●
01/07/2018 - 31/07/2018	Ecosystems - terrestrial	reduced secondary growth, tue to the hot and dry summer. At the end of october there had been an estimated growth reduct...	1	●

Map: Red intensifies with overlapping records. No hazard event selected.

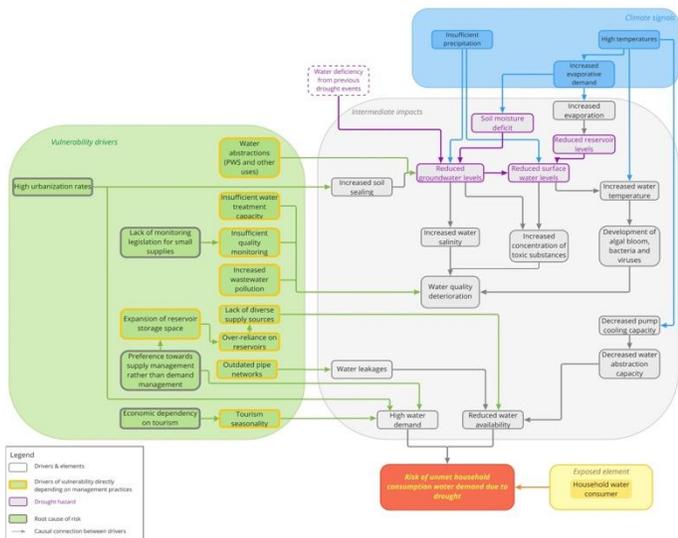
# EDID

<http://edid-test.eu>

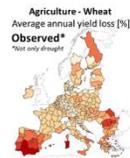
# European Drought Impact Database (EDID)



# Drought Risk Assessment



impact chains



loss

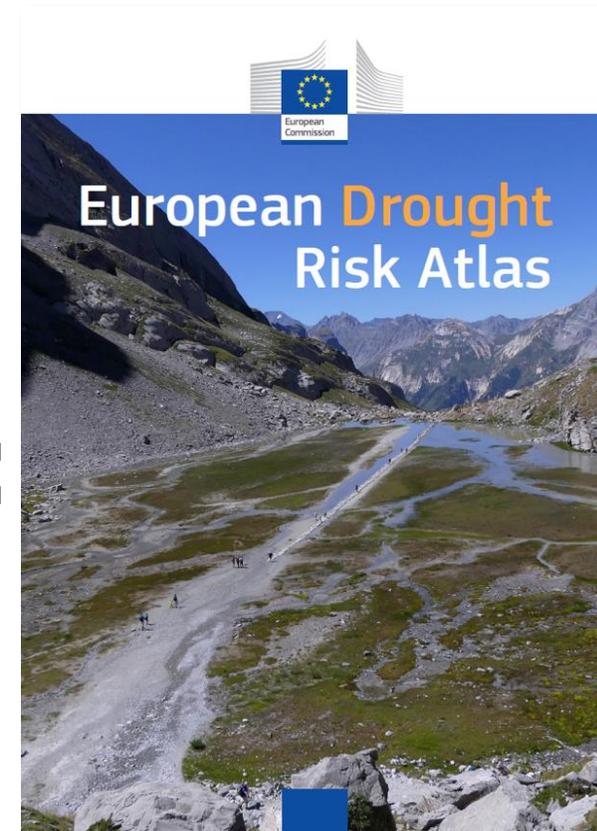


hazard

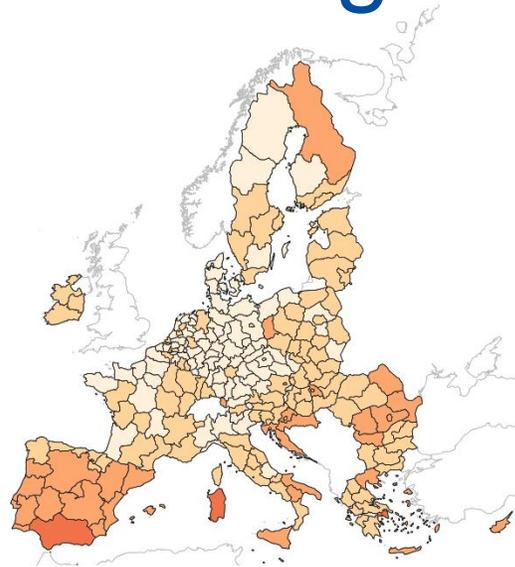
exposure

vulnerability clusters

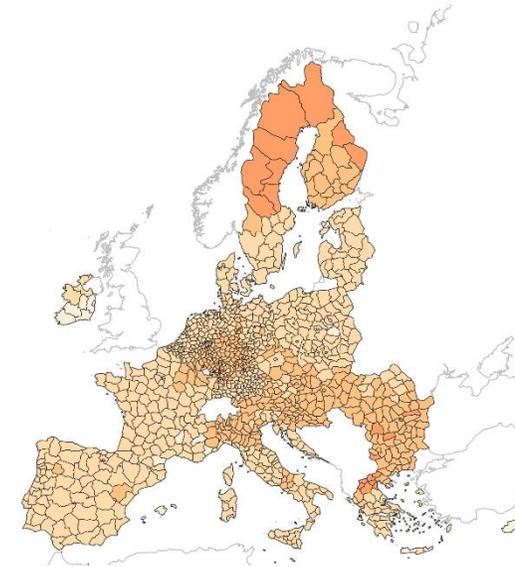
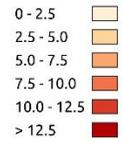
data-driven analysis



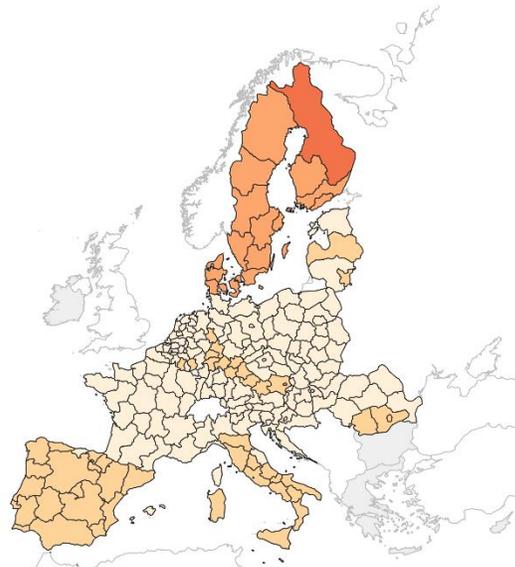
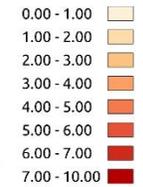
# Current Drought risk



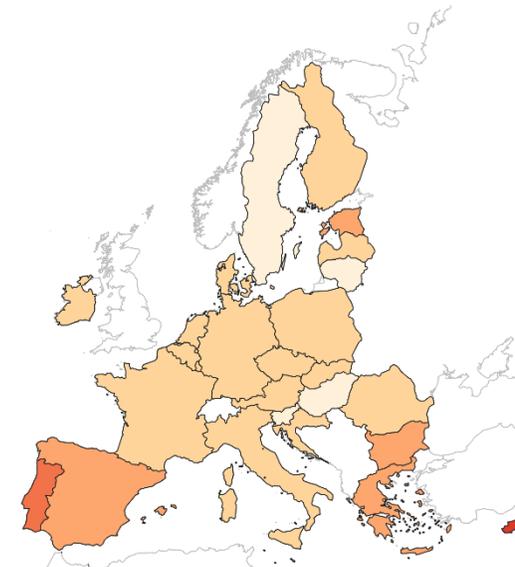
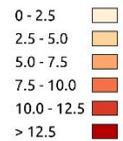
Agriculture - Wheat  
Average Annual Loss  
Reduction in yield [%]



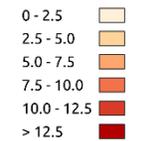
Terrestrial ecosystem  
Average Annual Loss  
Reduction in  
Net Primary Production [%]



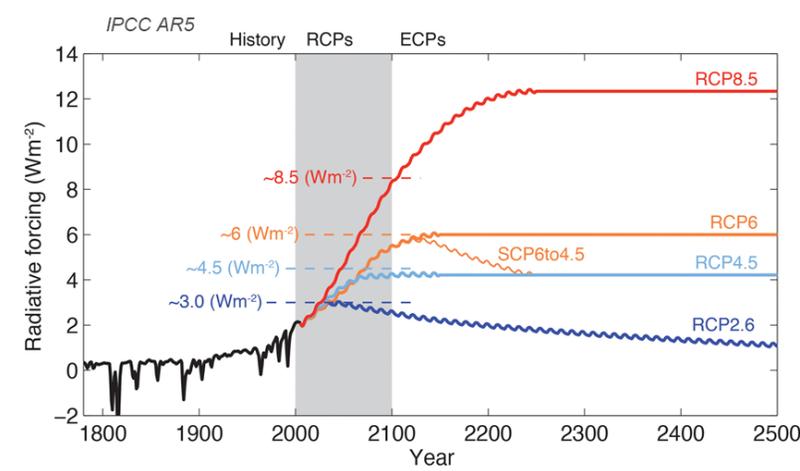
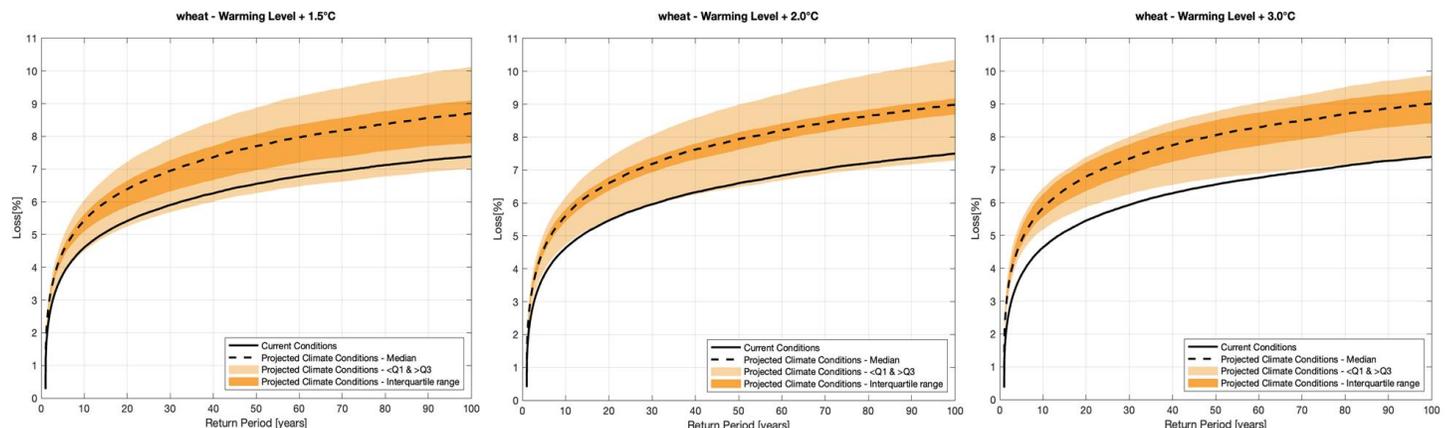
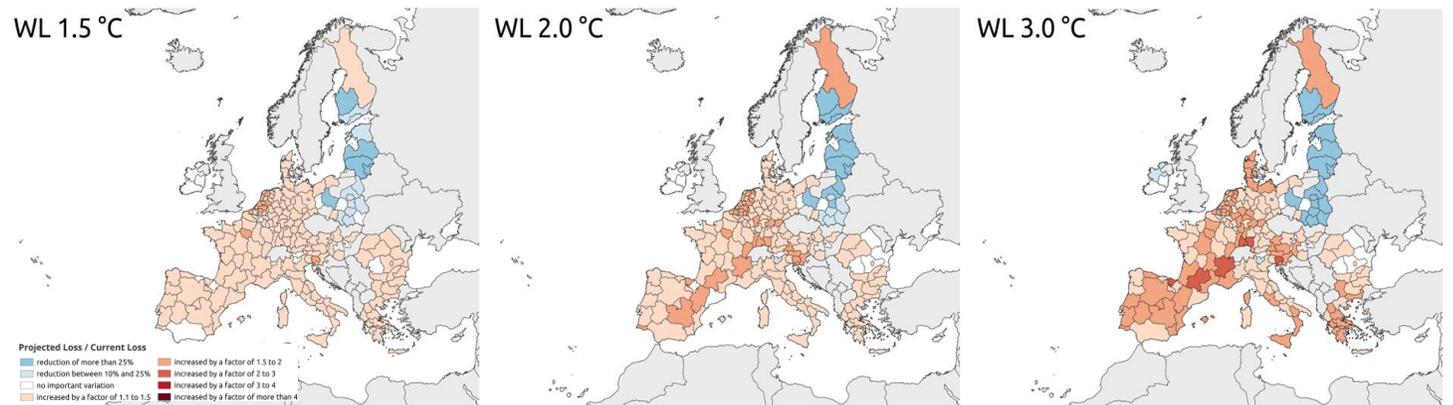
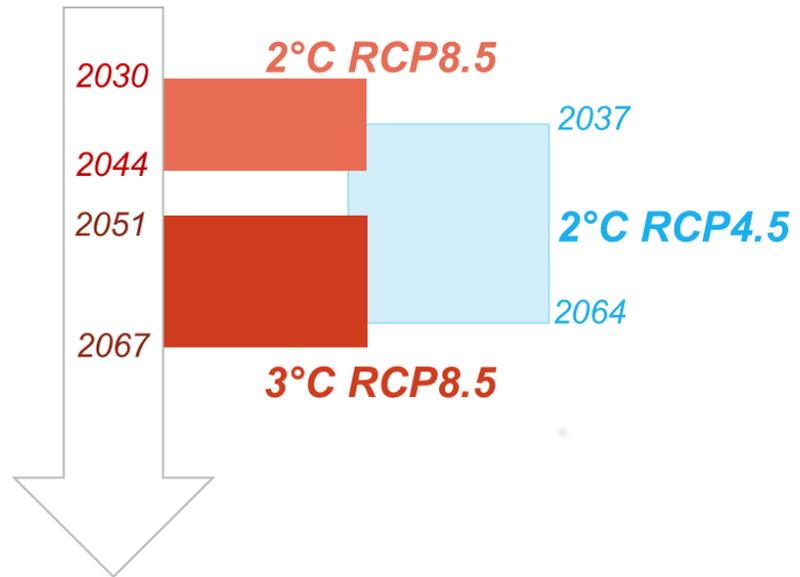
Water Supply  
Average Annual Loss  
Increase in  
water abstraction [%]



Energy - Hydropower  
Average Annual Loss  
Reduction in production [%]



# Drought Risks under climate change



But: no adaptation is currently integrated, no changes in land-use, infrastructures, and no CO<sub>2</sub> fertilisation positive/negative effects

# why?

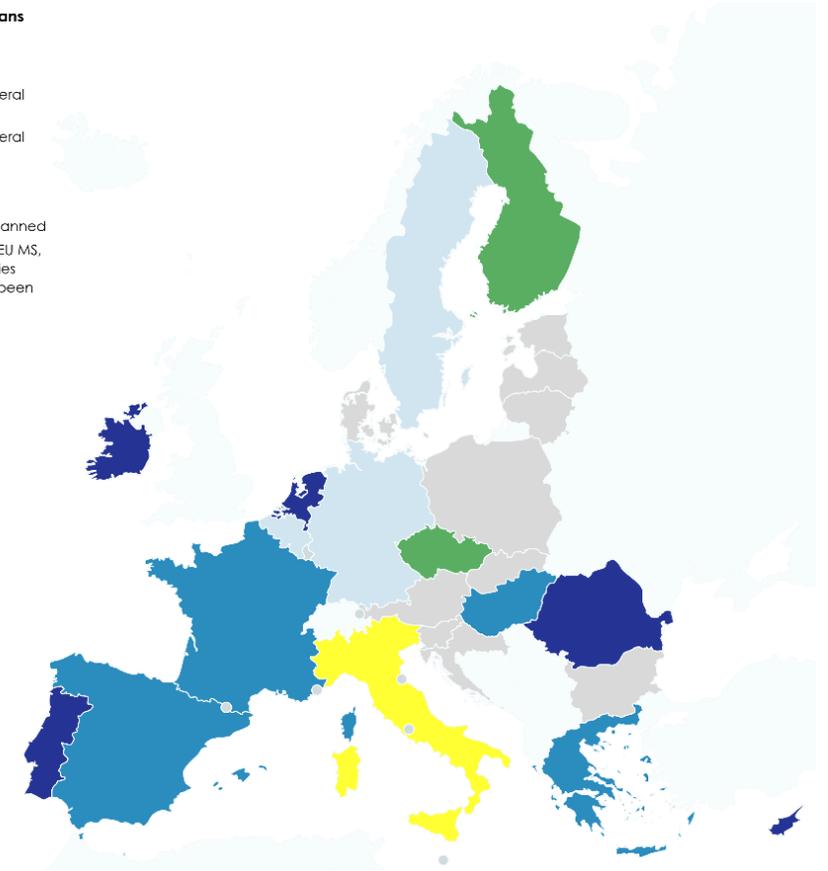
- support Drought Management Plans
- support Adaptation Measures

# and whereto now?

- from hazard-focused to risk-focused drought EWS
  - integration into the European Drought Observatory
  - further develop: include more sectors, improve methods
- networks: Enhance cooperation + data and expertise sharing
  - Network of Drought Observatories in the EU
  - WFD CIS ATG Water Scarcity and Drought

## Drought Management Plans

- In place for whole MS territory
- In place for one or several RBDs
- In place for one or several regions
- In process or planned
- Other approaches
- No DMPs in place or planned
- Note: For some of the EU MS, several of the categories apply; the largest has been indicated in the map



# Thank you



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