A review of drought impacts and risk assessments in the EU27 countries (EDORA project): gaps and lessons learned

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The *European Drought Observatory for Resilience and Adaptation* (EDORA) project aims to **strengthen the European Drought Observatory (EDO)** by improving **drought risk assessment for different systems and at different scales**, aggregating data on impacts on different sectors and fostering linkages and the establishment of drought observatories in Member States.

EDORA project (12/2021 – 06/2023)

Activity 2.1 **Gap analysis and lessons learnt**

→ *What is the **state of the art** in relation to DRA, including the dimensions of H, E & V and impacts?*

→ *How are **sectors & systems in EU27** covered by drought risk and impact assessments?*

"Review of reviews": Main gaps in conceptualization and assessment of drought impacts and risk

Systematic review: trends in EU27 applications (publications)

CORDIS database: trends in EU27 (funded projects, FP1 to H2020)

EDORA project (12/2021 – 06/2023)

What is the coverage of sectors & systems by drought risk and impact assessments in the EU27?

Hits (Scopus): 1414

Screening (abstracts): 255

Retrieved, retained & coded: **168**

Selection criteria:

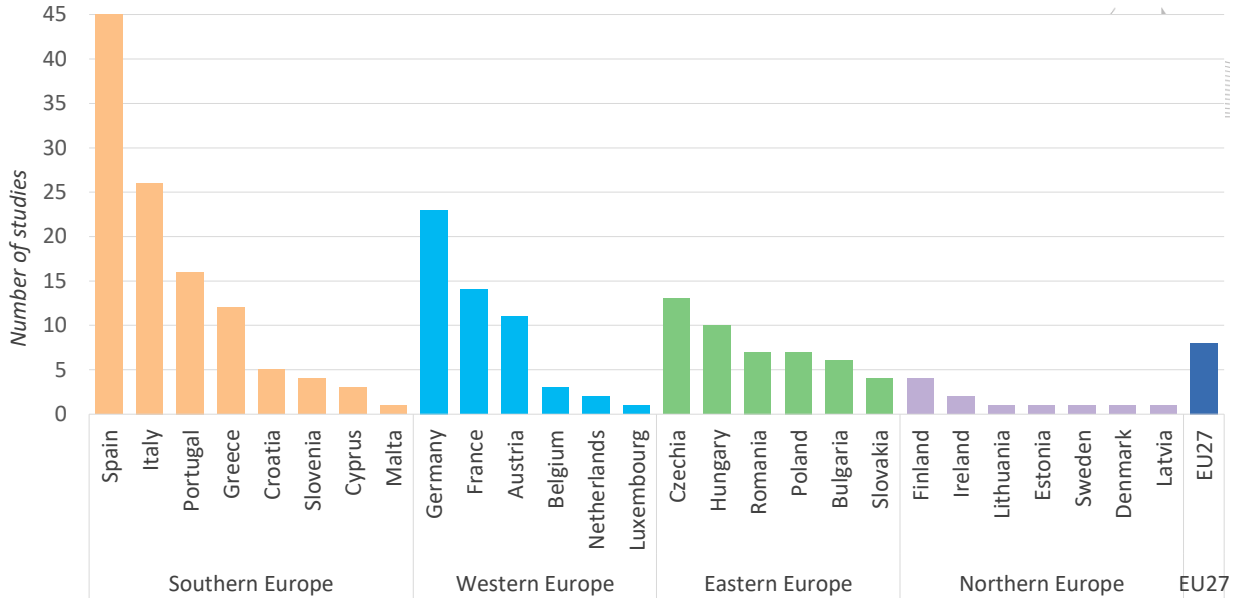
- *case study **location** within the EU27 countries*
- ***impact and/or risk assessment***

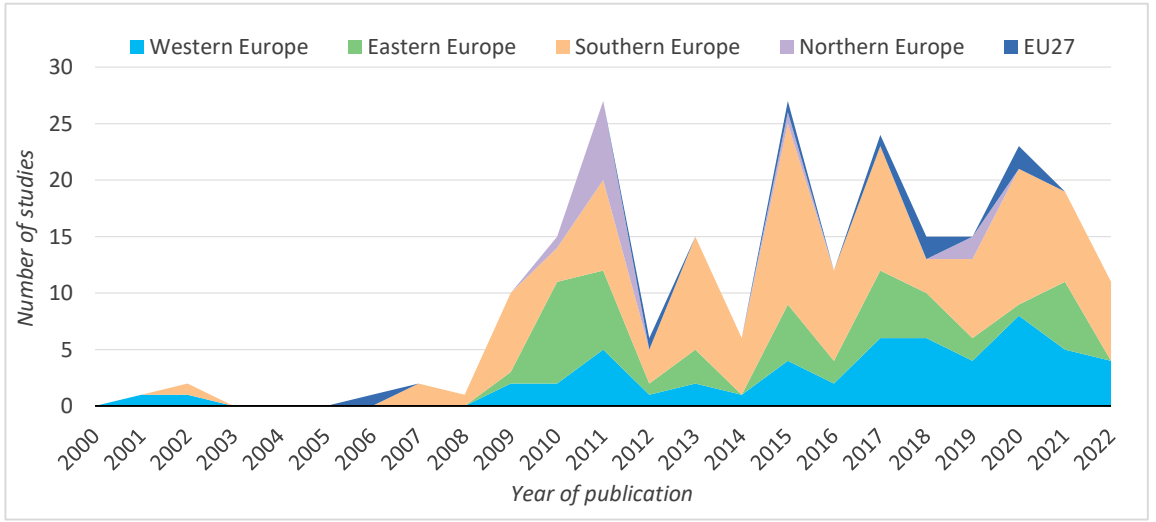
Drought impact and risk assessments in EU27

Countries trends

- ***Southern Europe*** *is the most represented in the literature analzyed*

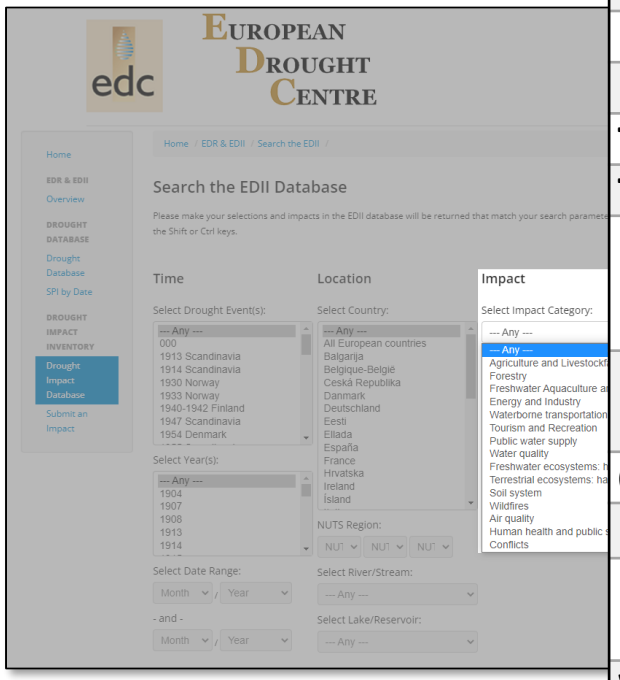
- *Other areas (e.g. Western Europe) are being* ***increasingly featured*** *in more recent years*





Drought impact a
assessments in EU

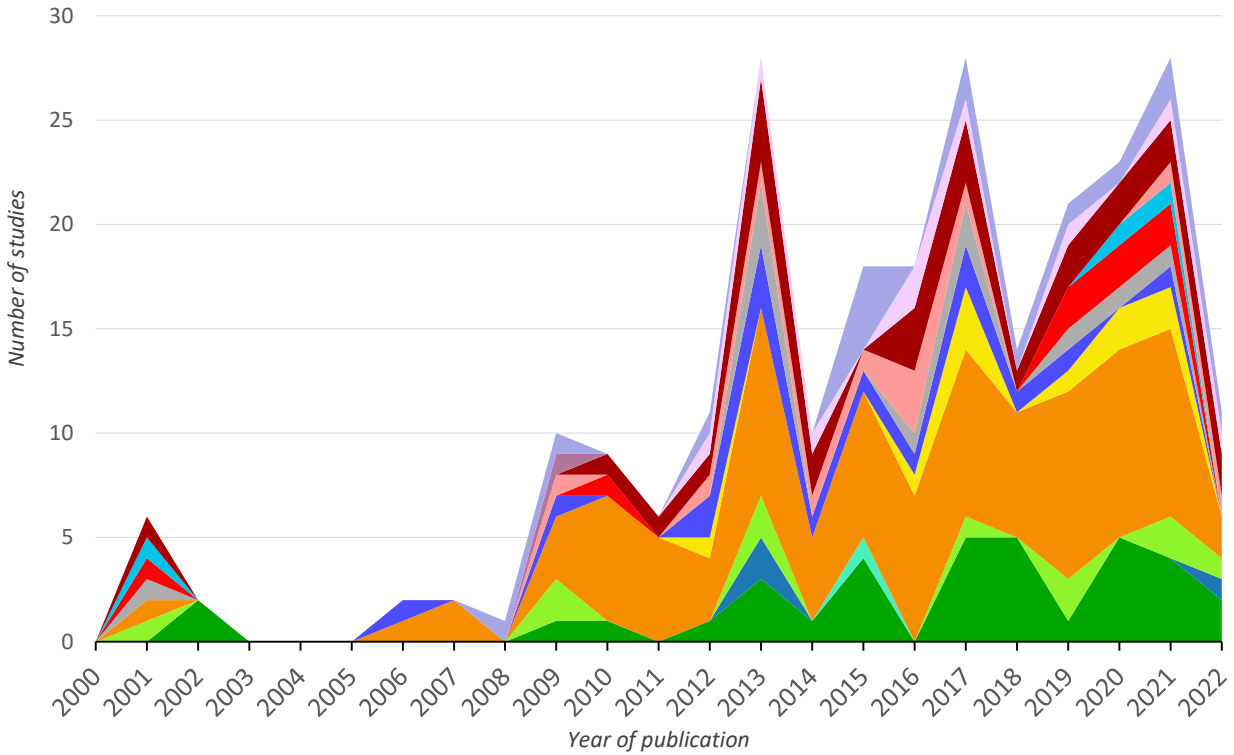
Sectoral trends



System/sector	*Adaptation from EDII*	Number of studies (%)
Agriculture	*Further distinguished in "irrigated" and "rain fed"*	**92 (55%)**
Forestry		**35 (21%)**
Public water supply		**25 (15%)**
Energy		**15 (9%)**
Unspecified	*addition*	**15 (9%)**
Terrestrial ecosystems		**11 (7%)**
Tourism and Recreation		**11 (7%)**
Livestock farming	*Decoupled from "Agriculture"*	**10 (6%)**
Industry	*Decoupled from "Energy"*	**10 (6%)**
Other	*addition*	**9 (5%)**
Human health and public safety		**8 (5%)**
Freshwater Aquaculture and Fisheries		**3 (2%)**
Waterborne transportation		**3 (2%)**
Freshwater ecosystems		**1 (1%)**
Infrastructure		**1 (1%)**
Soil system		**0 (0%)**
Defense	*Modified from "Conflicts"*	**0 (0%)**
Multi-sectoral studies (>1 sector)		**35 (21%)**

Drought impact and risk assessments in EU27

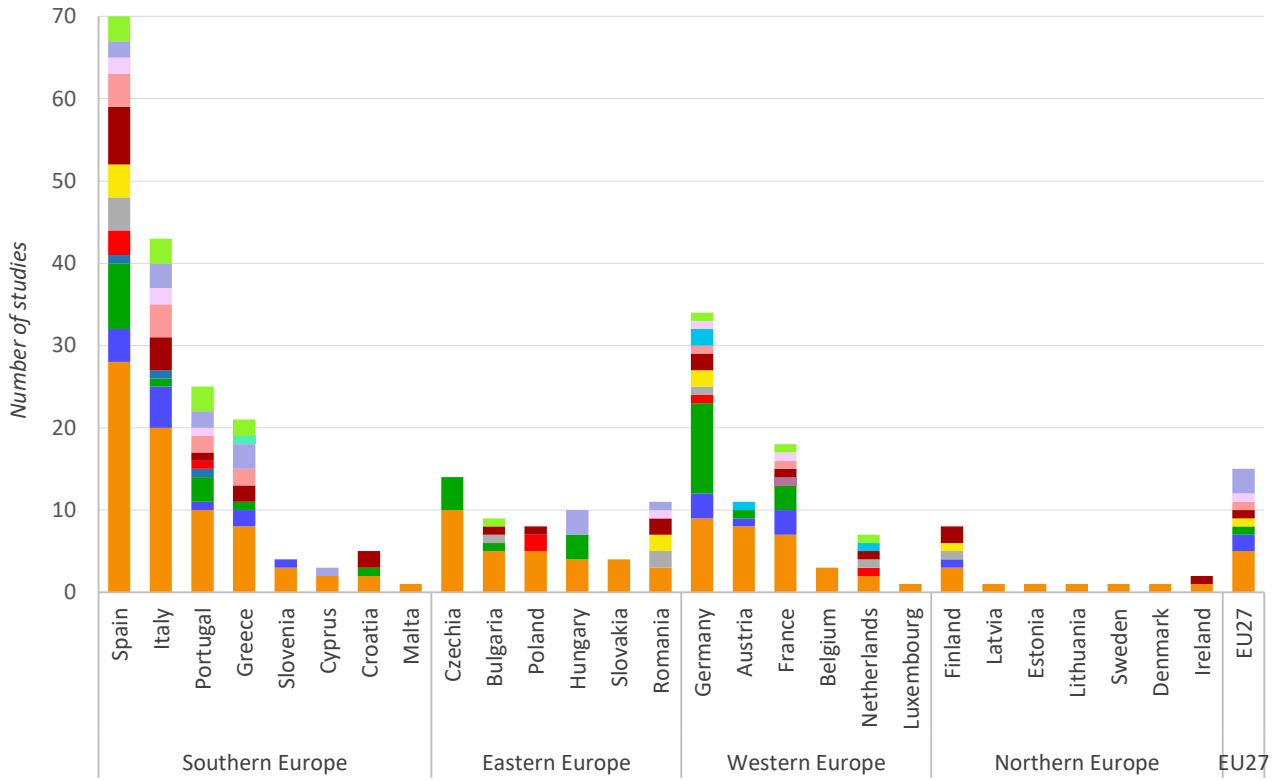
Sectoral trends



→ *Increasing **diversity** in sectoral studies to accompany agriculture's predominance*

Drought impact and risk assessments in EU27

Countries and sectoral trends

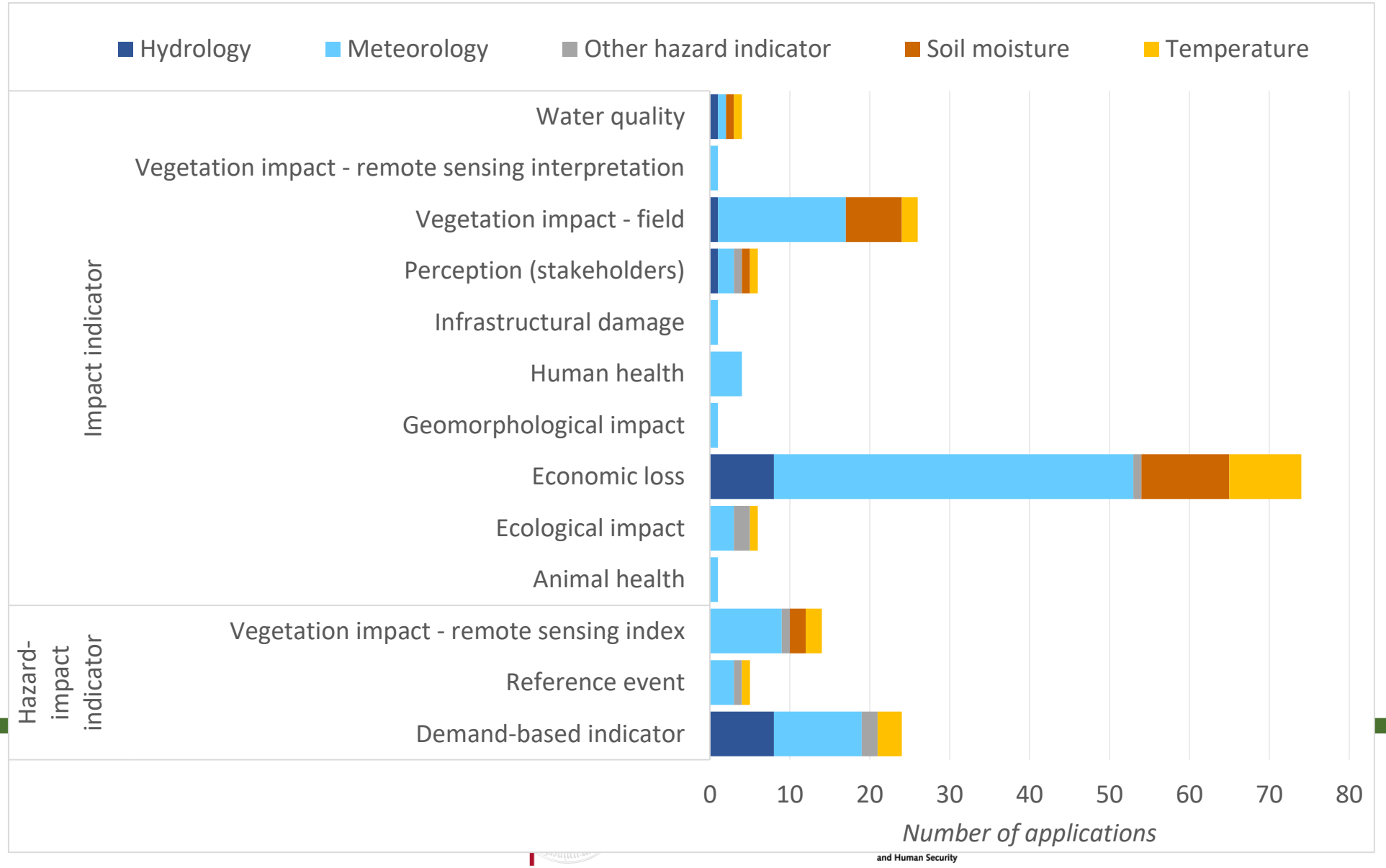


→ *Diversity in sectoral studies is **not evenly distributed** across countries*

Drought impact and risk assessments in EU27

Indicators

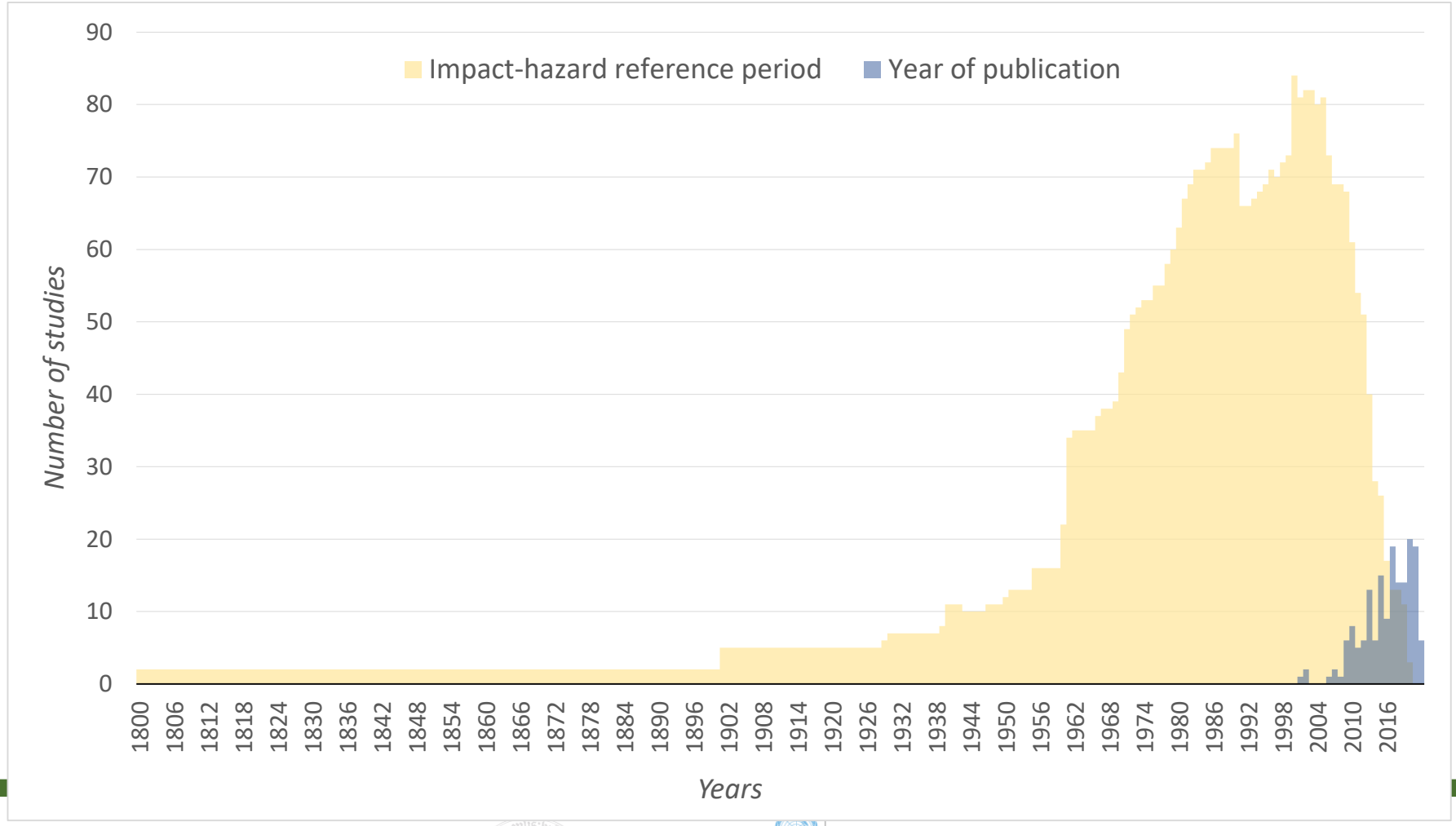
*Hazard and impacts indicators – what is the **relationship**?*



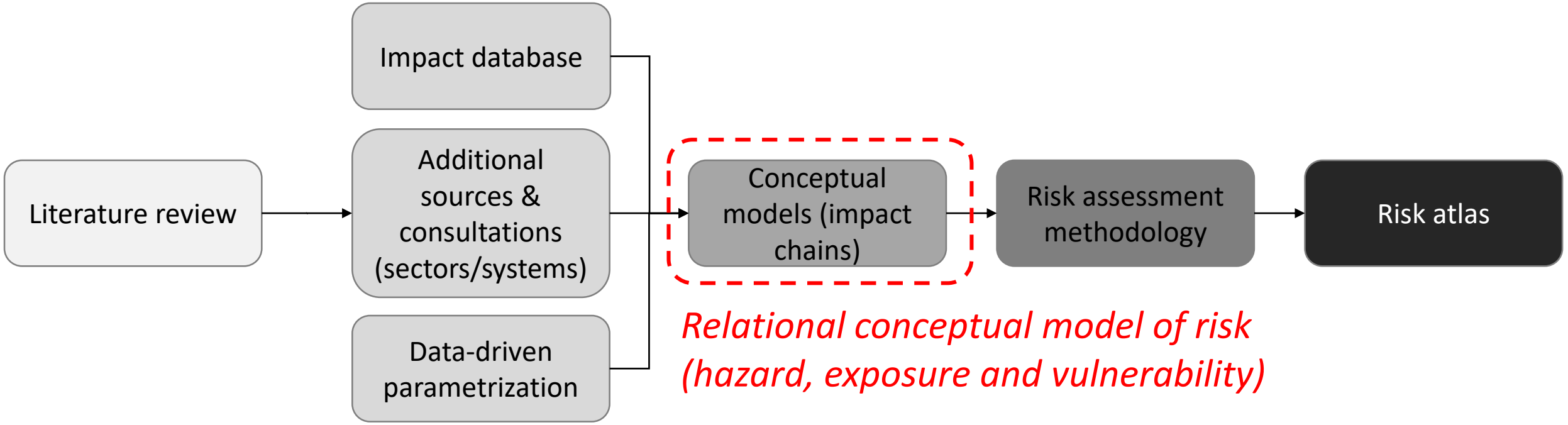
Drought impact and risk assessments in EU27

Timelines

*What is the **overlap between hazard and impacts time series** used to identify drought impacts?*

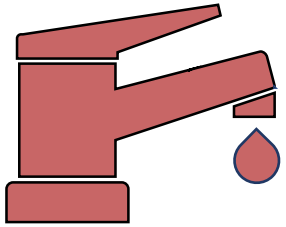


Next steps - Process



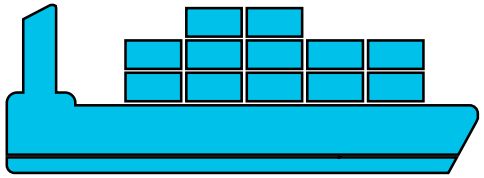
Relational conceptual model of risk (hazard, exposure and vulnerability)

Next steps – Sectors/systems of interest

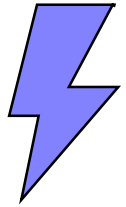


Public water supply

Agriculture



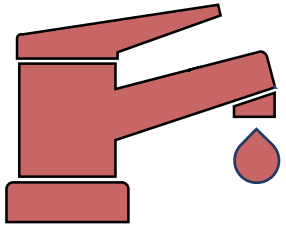
Transportation



Energy

Ecosystems

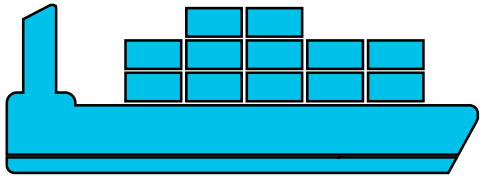
Next steps – Sectors/systems of interest



Public water supply

Agriculture

- Rain fed
- Irrigated
- Livestock



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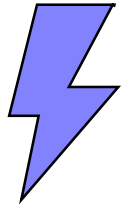


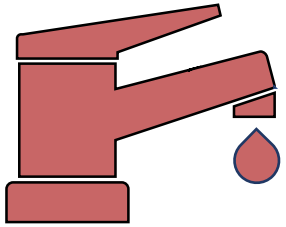
Energy

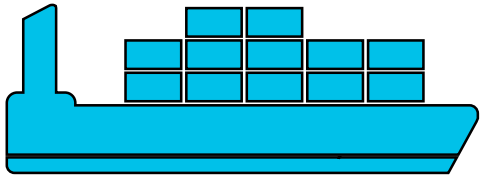
Ecosystems

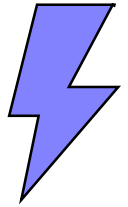
- Terrestrial
  - Forest ecosystems
- Freshwater ecosystems
- Wetlands

Next steps – Sectors/systems of interest

Participatory sessions (Friday 17th, 15:45 – 17:30)







- Public water supply
- Agriculture
  - Rain fed
  - Irrigated
  - Livestock
- Transportation
- Energy
- Ecosystems
  - Terrestrial
    - Forest ecosystems
  - Freshwater ecosystems
  - Wetlands

What are **drivers of risks** for these sectors/systems in connection to **drought** events?

Next steps – Sectors/systems of interest

Participatory sessions (Friday 17th, 15:45 – 17:30)

❑ **4 workshop sessions running in parallel:**

- 2 in-person groups (JRC):
  - Conceptual models (Impact chains) – *UNU-EHS*
  - Data-driven parametrization & risk assessment – *VU-IVM*
- 2 virtual groups (Miro):
  - Conceptual models (Impact chains) – *UNU-EHS*
  - Drought impact database - *UniFreiburg*

❑ **2 shifts of 50 minutes each → switch**

❑ **Brainstorming and collection of feedbacks based on your experience**

EDORA workshop - Participatory sessions (Friday 17th, 15:45 – 17:30)

Kindly fill the short questionnaire to indicate your presence and preference for group discussion

https://unuehs.questionpro.eu/t/AB3uqamZB3vRk0

Network of Drought Observatories in the EU
16th -17th June 2022
JRC (Ispra), Italy)

European Drought Observatory for Resilience and Adaptation

No 09200200.A092005/2021/862347/ENV.C.1
Lot 1 "Development and implementation of a drought impact database, a drought risk assessment methodology and a drought risk atlas"