




# Strengthening Drought Impacts and Risk Assessments

Session 3

Challenges of Climate Change Adaptation  
in South-Eastern Europe

4–6 Feb 2025  
Brdo pri Kranju, Slovenia

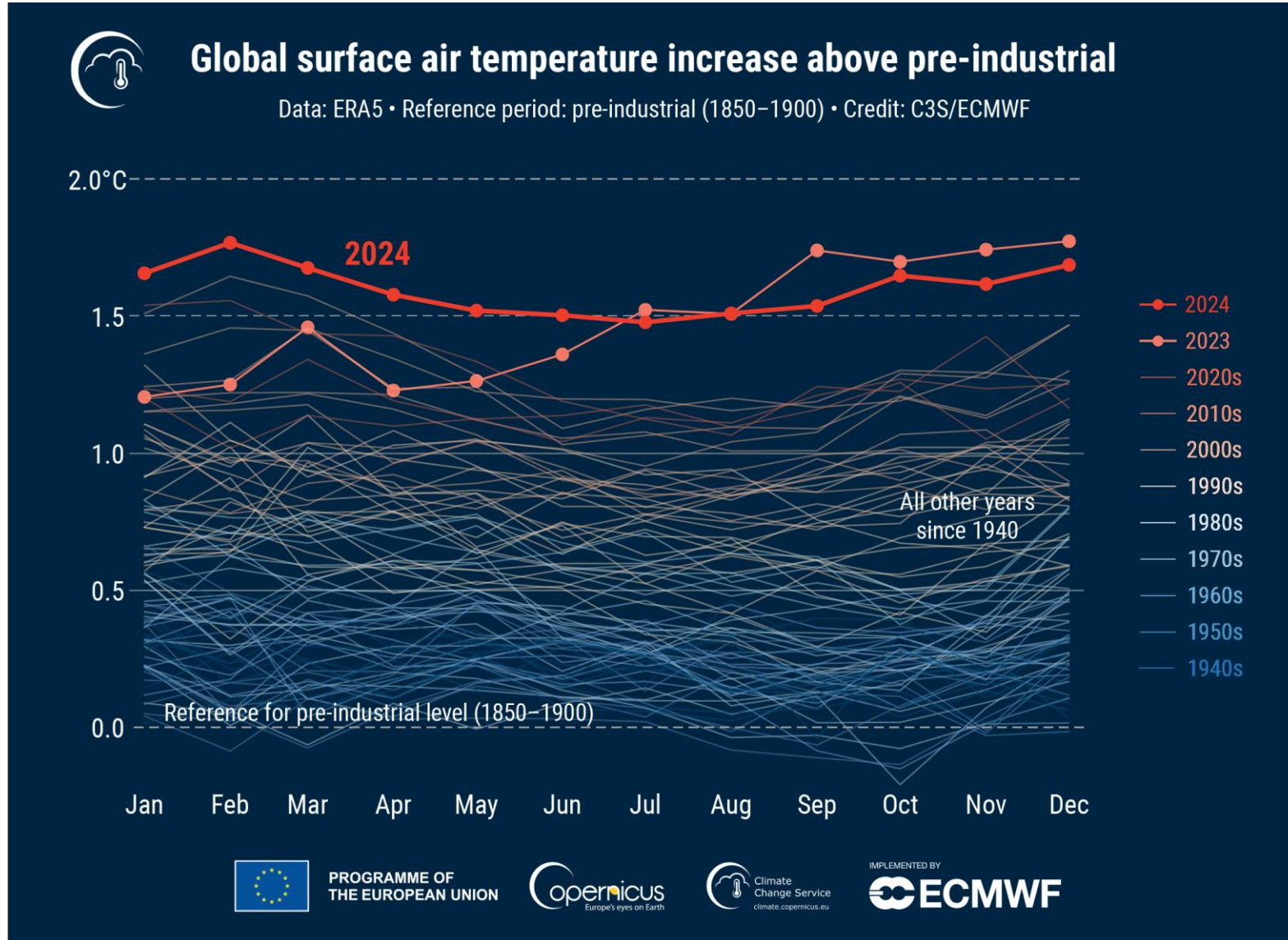


# The EUROPEAN CLIMATE RISK ASSESSMENT

Key findings, implications and case studies

Blaž Kurnik (Head of Climate Risk and  
Resilience)  
European Environment Agency

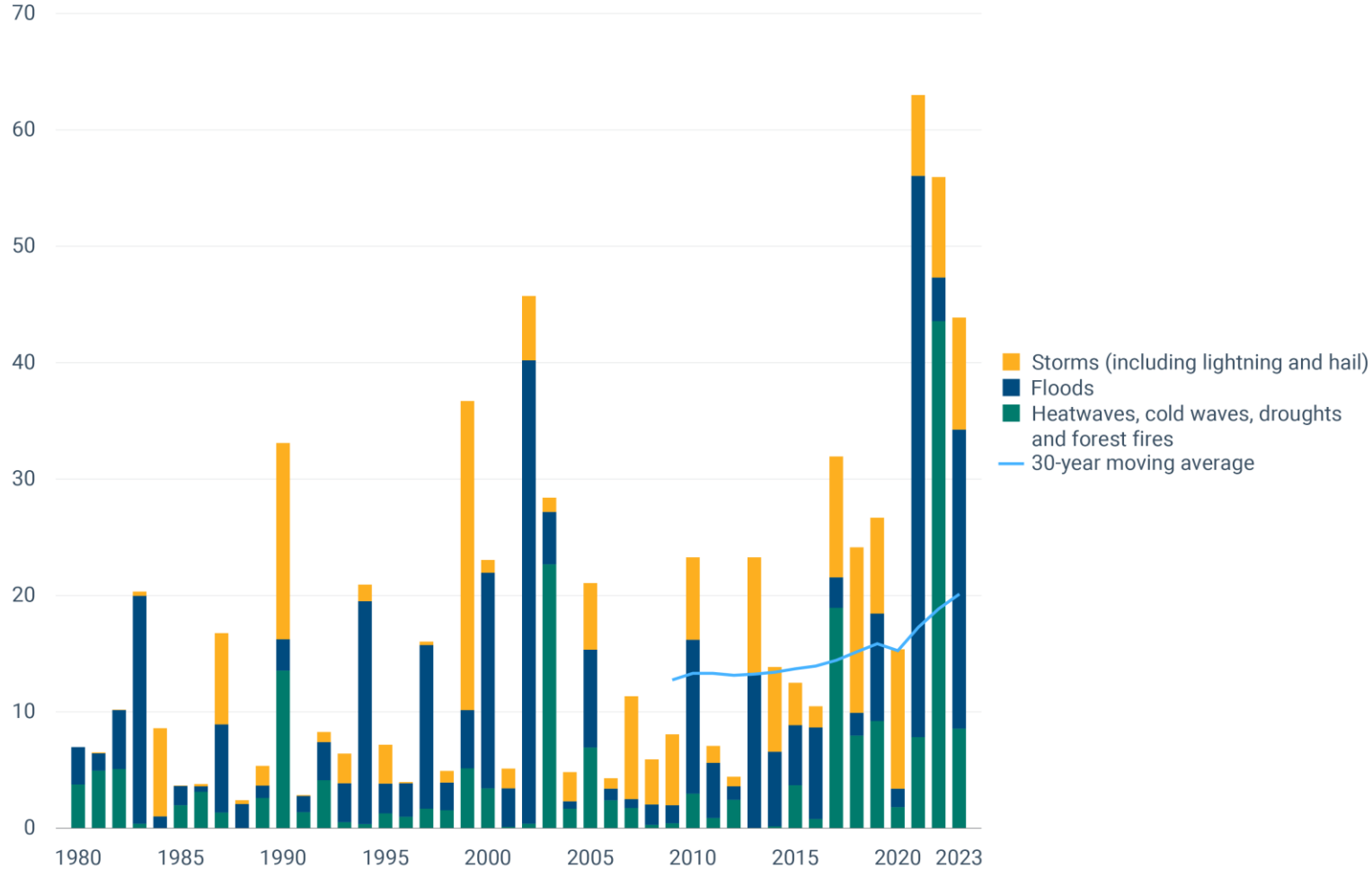
# Global climate change: our current reality



- 2024: the first year to exceed 1.5°C above pre-industrial level, globally
- Each month from July 2023, except July 2024, exceeded 1.5°C above pre-industrial level
- The summer 2024 was the warmest summer in Europe

# Economic losses from weather- and climate-related extremes

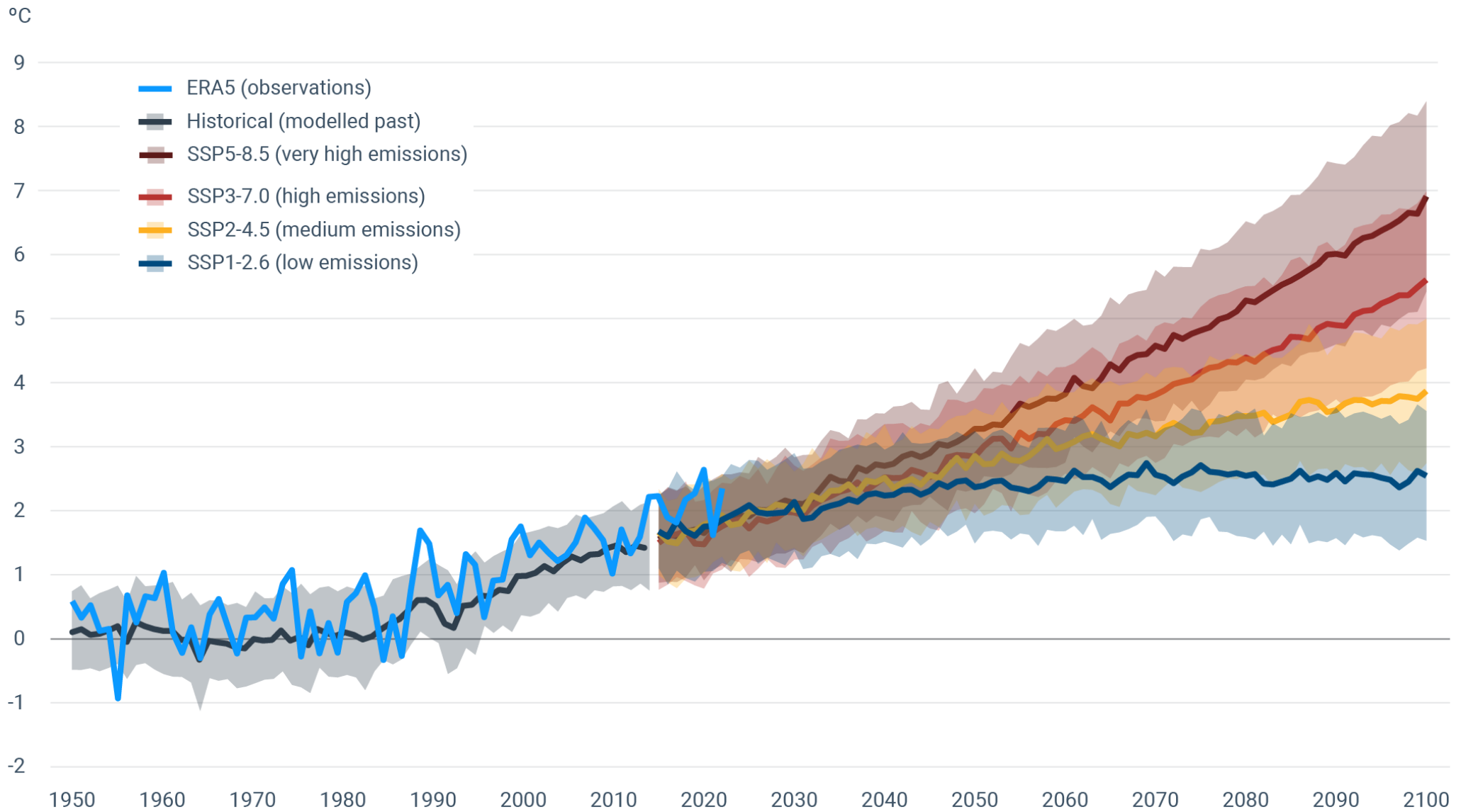
Billion EUR (2023 prices)



- 1980-2023: EUR 738 billion losses in the EU-27 (EUR 162 billion in 2021-2023; each of the 3 last years among the 'top 5' of annual losses)
- Less than 20% of losses insured (large variation across countries)
- In addition, over 240 000 fatalities (95% of them due to heatwaves)

[eea.europa.eu/en/analysis/indicators/economic-losses-from-climate-related](https://eea.europa.eu/en/analysis/indicators/economic-losses-from-climate-related)

# European warming projected to increase, but how much?

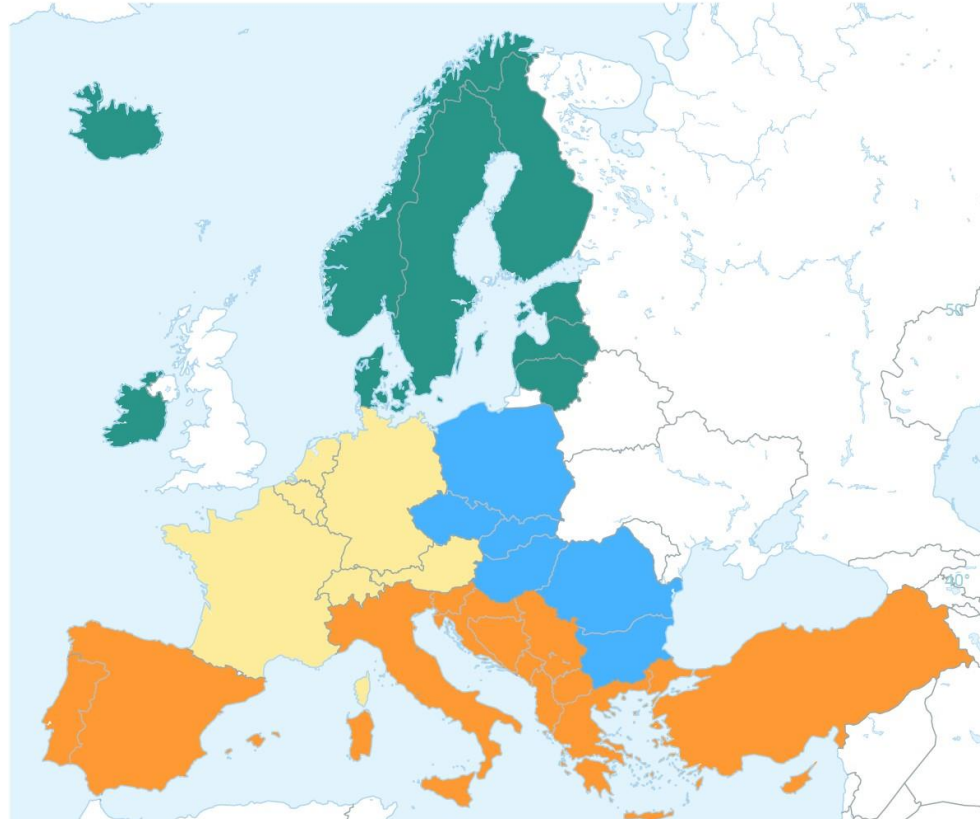


Source: Observed and projected temperature increase over European land area, Copernicus climate change service based on CMIP6



# Climatic risk drivers are accelerating in all European regions

Land regions	Northern Europe			Western Europe			Central-Eastern Europe			Southern Europe			European regional seas	Past	Future
	Past	Future		Past	Future		Past	Future		Past	Future				
		Low	High		Low	High		Low	High		Low	High			
Mean temperature	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗
Heat wave days	□(*)	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗
Total precipitation	↗	↗	↗	↗	↘	↘	↗	↗	↘	↘	↘	↘	↘	↘	↘
Heavy precipitation	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗
Drought	↗	↘	↘	↗	↘	↗	↗	↘	↗	↗	↗	↗	↗	↗	↗



**Legend**

- ↗ Increase
- ↗ Increase (limited agreement between models, datasets or indices)
- ↘ Decrease
- ↘ Decrease (limited agreement between models, datasets or indices)
- ↗ Low confidence in direction of change
- No change

**Note**

(\*) Other heatwave indices show an increase for the past

- Europe is increasingly experiencing **unprecedented climate extremes**.
- **Heatwaves** are getting worse.
- **Rain patterns** are changing, with both downpours and dry spells increasing in magnitude.
- **Sea level rise** is accelerating and threatening coastal regions.
- **South and South-East Europe are the hotspot regions** for multiple climate risks

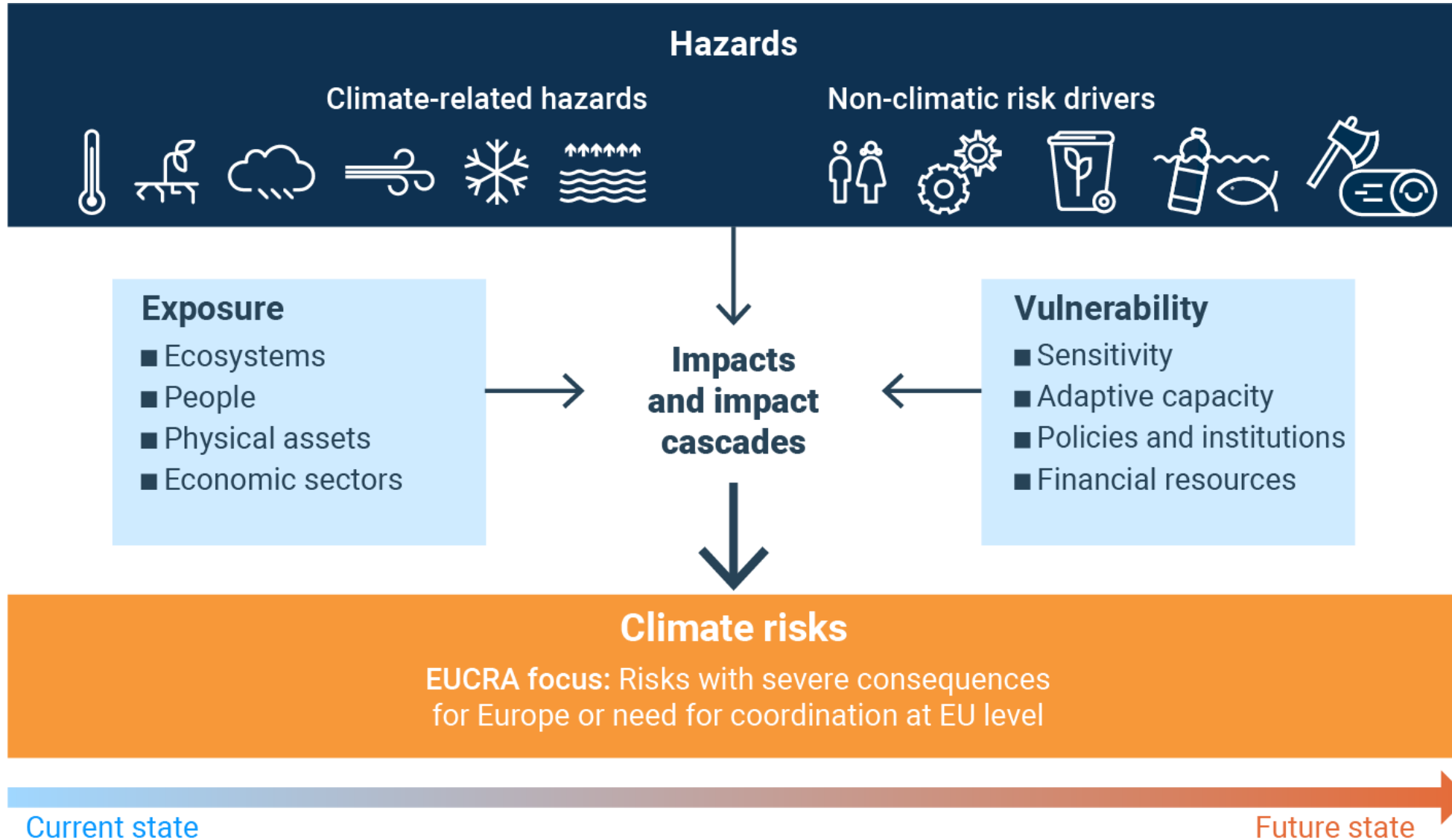
# Europe is not sufficiently prepared for rapidly growing climate risks

- Climate risks are growing rapidly as we approach 1.5 degrees global warming.
- Europe is the fastest warming continent.
- Climate risks are significantly threatening ecosystems, water resources, food and energy security, infrastructure, financial stability, and people's health.

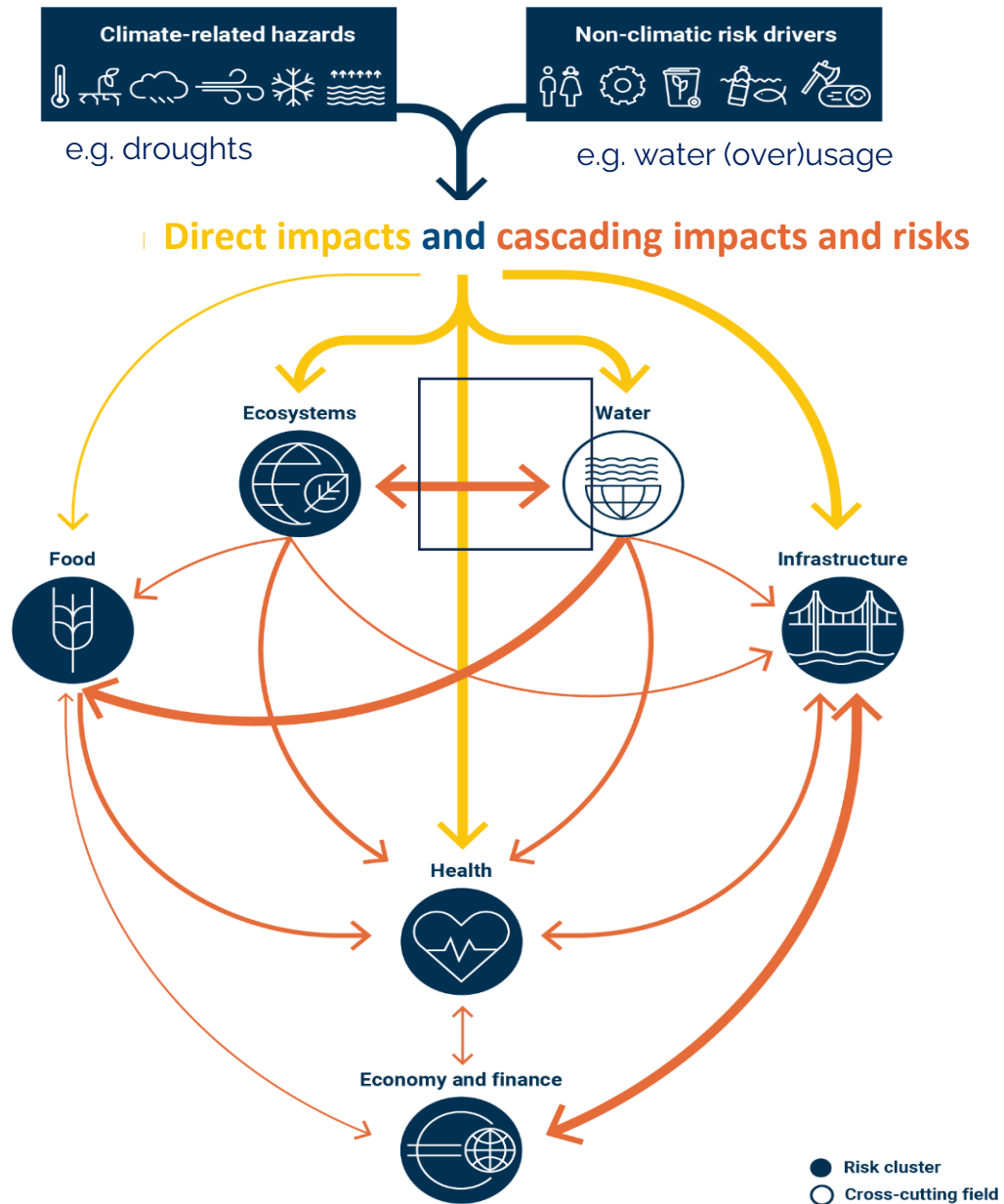
## The first European climate risk assessment



# Interaction between climate and socio-economic factors



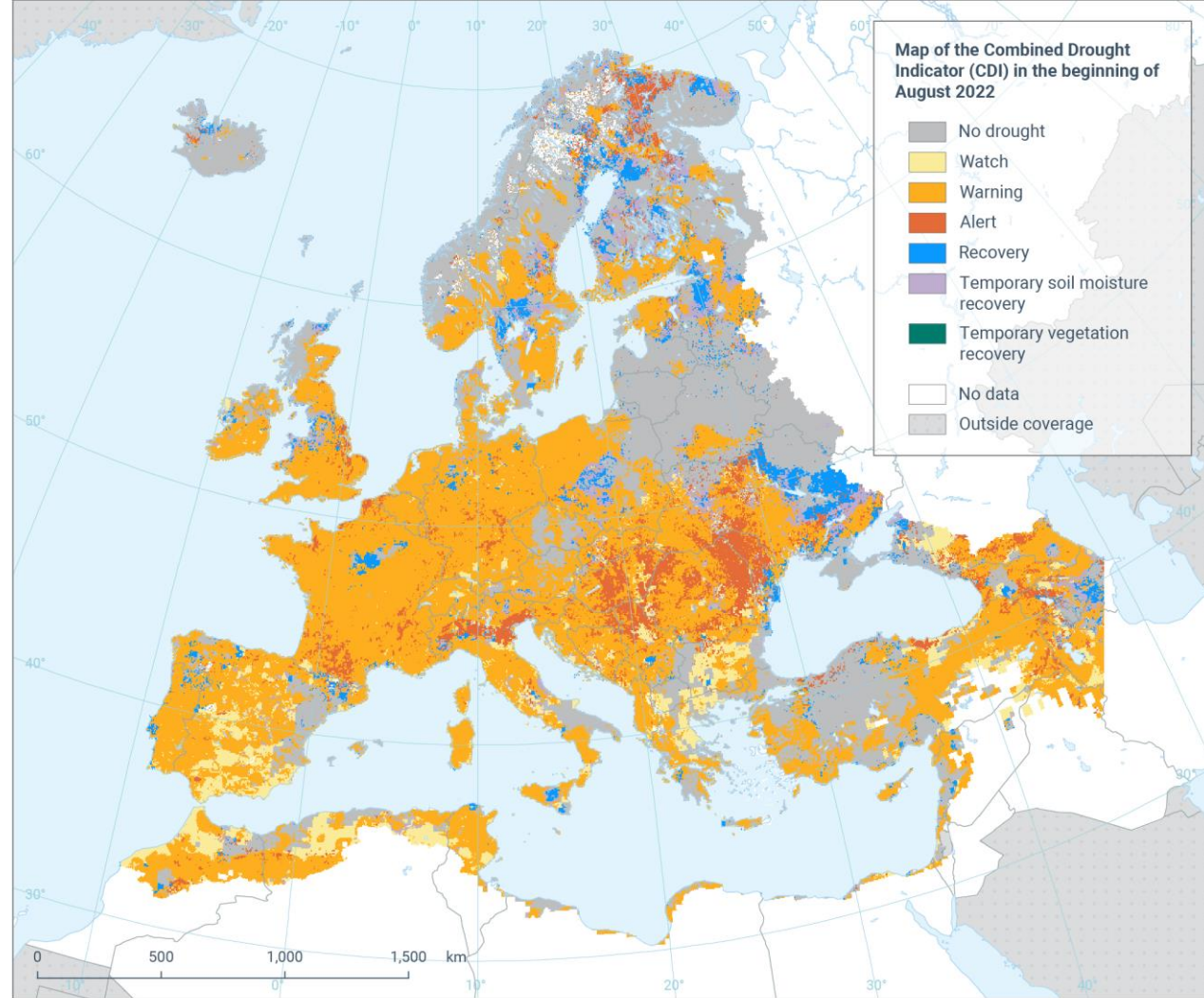




- Climate risks can cascade across systems and water is a cross-cutting field
- High importance to focus on water resilience
- Systemic approach needed to address adaptation and preparedness



# Multiple socio-economic consequences of droughts



- Dry summer of 2022 for most of Europe (figure)
- 2022: a year with several major geopolitical events
- Consequences for economic sectors and society (e.g. increase in energy and food prices)



## Ecosystems

Major fish death along Oder river



## Wildfires

In 2023, 175,000ha burned in Greece, 97,000ha in Italy, 88,000ha in Spain and 36,000ha in Portugal



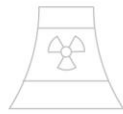
## Water supply

More than 100 municipalities had water supply problems in France



## Hydropower

Low hydropower production in Southern and Central Europe



## Energy sector nuclear

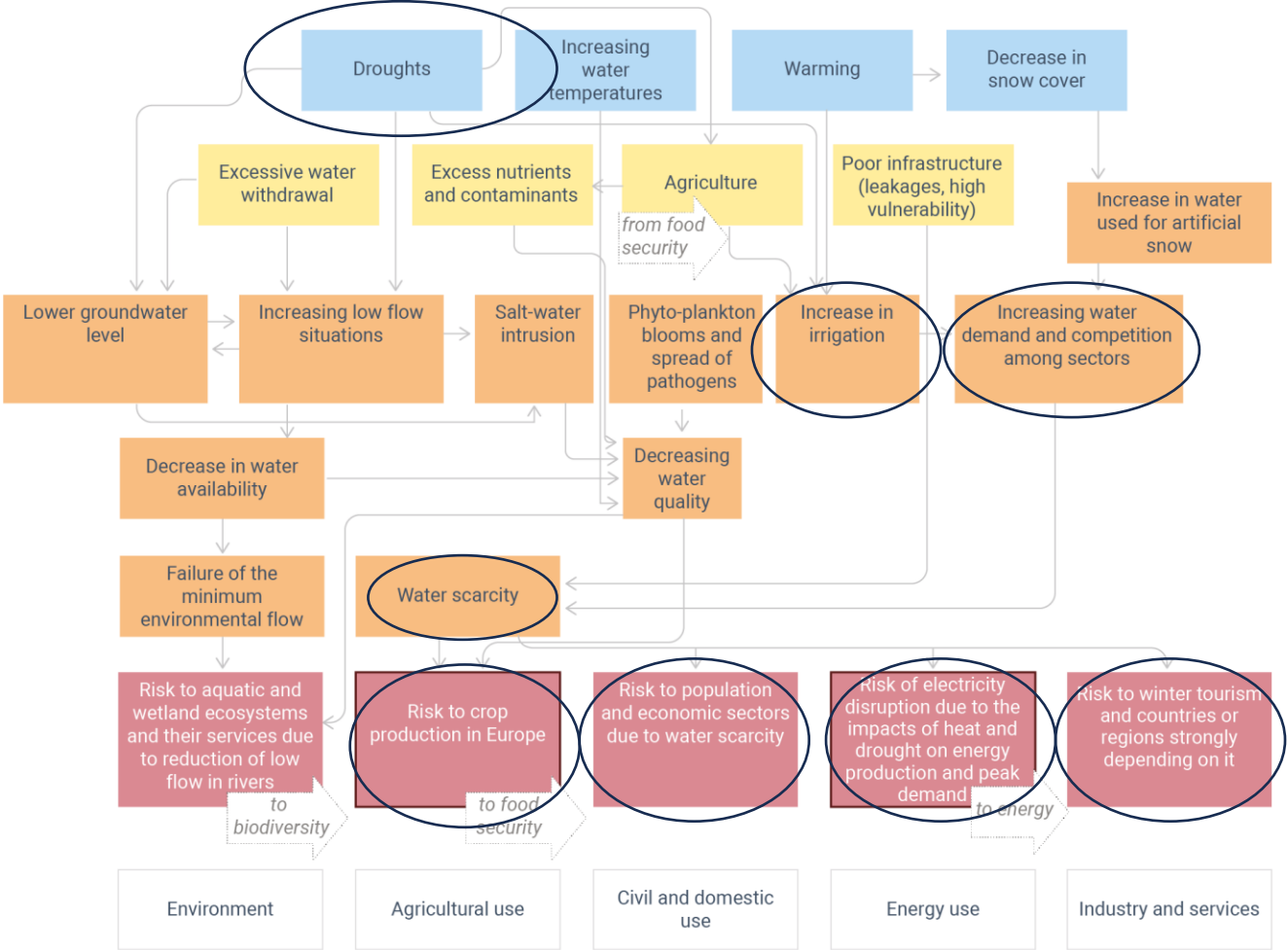
Decrease in nuclear power production in France due to lack of cooling water




## Agriculture

39-60% of the total economic damage across Europe, largest in Italy, Spain and France

# Impact chain for major climate risks related to water security



**Water**



- Climate-related hazard
- Non-climatic risk driver
- Direct or indirect impact
- Major climate risk (risk assessment tables presented in this chapter)
- Major climate risk (risk assessment tables presented in another chapter)
- Exposed subsystem
- Link to other factsheets and storylines

# Drought causes major challenges across systems

## Ecosystems

- Coastal ecosystems
- Marine ecosystems
- Biodiversity/carbon sinks due to wildfires <sup>(1)</sup>
- Biodiversity/carbon sinks due to wildfires
- Species distribution shifts
- Ecosystems/society due to Invasive species
- Soil health
- Aquatic and wetland ecosystems
- Biodiversity/carbon sinks due to droughts and insect outbreaks
- Cascading impacts from forest disturbances

## Infrastructure

- Pluvial and fluvial flooding
- Coastal flooding
- Damage to infrastructure and buildings
- Energy disruption due to heat and drought <sup>(1)</sup>
- Energy disruption due to heat and drought
- Energy disruption due to flooding
- Marine transport
- Land-based transport

## Food

- Crop production <sup>(1)</sup>
- Crop production
- Fisheries and aquaculture
- Food security due to higher food prices
- Food security due to climate impacts outside Europe
- Livestock production

## Economy and finance

- European solidarity mechanism
- Public finances
- Property and insurance markets
- Population/economy due to water scarcity <sup>(1)</sup>
- Population/economy due to water scarcity
- Pharmaceutical supply chains
- Supply chains for raw materials and components
- Financial markets
- Winter tourism

## Health

- Heat stress - general population
- Population/built environment due to wildfires <sup>(1)</sup>
- Population/built environment due to wildfires
- Well-being due to non-adapted buildings
- Heat stress - outdoor workers <sup>(1)</sup>
- Pathogens in coastal waters
- Health systems and infrastructure
- Infectious diseases
- Heat stress - outdoor workers

## Urgency to act:

- Urgent action needed
- More action needed
- Further investigation
- Sustain current action
- Watching brief

**Note:** <sup>(1)</sup> Hotspot region: Southern Europe



## Climate risks for 'Food' cluster

### Urgency to act

### Risk severity

### Policy characteristics

		Current	Mid-century	Late century (low/high warming scenario)	Policy horizon	Policy readiness	Risk ownership
Crop production (hotspot region: southern Europe)	Urgent action needed	+++	++	++	Short	Medium	Co-owned
Crop production	More action needed	+++	++	++	Short	Medium	Co-owned
Food security due to climate impacts outside Europe (*)	Further investigation	++	++	+	Short	Medium	EU
Food security due to higher food prices	Further investigation	++	+	+	Short	Medium	Co-owned
Fisheries and aquaculture	Further investigation	++	+	+	Short	Medium	Co-owned
Livestock production	Sustain current action	++	++	+	Short	Medium	Co-owned

### Legends and notes

#### Urgency to act

- Urgent action needed
- More action needed
- Further investigation
- Sustain current action
- Watching brief

#### Risk severity

- Catastrophic
- Critical
- Substantial
- Limited

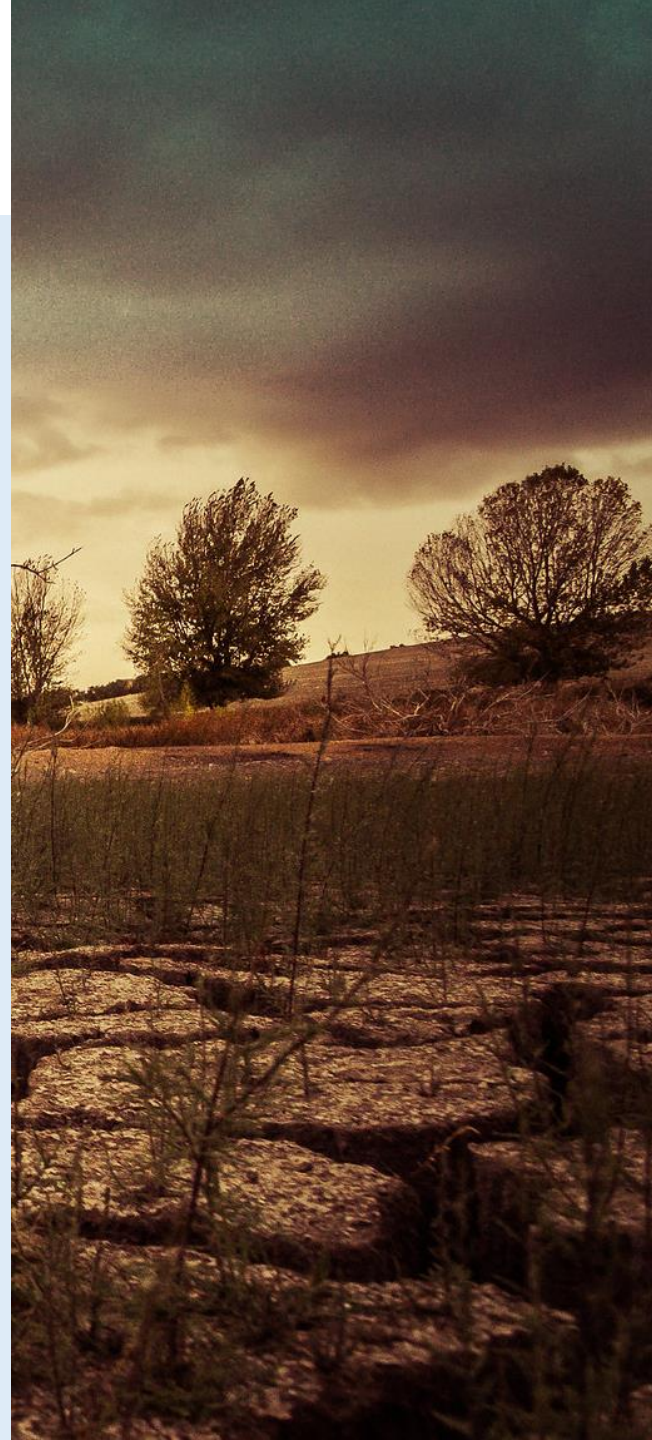
#### Confidence

- Low: +
- Medium: ++
- High: +++

(\*) Wide range of evaluations by authors and risk reviewers.

# Key conclusions

- **2024 was the warmest year recorded and above 1.5 °C. Several major climate risks for Europe have already reached critical levels.**
- **Almost all (34 out of 36) major climate risks could reach critical or even catastrophic levels** during this century under high warming scenarios
- **Water resilience is central for managing major climate risks**
- **Climate adaptation policies** need to consider multiple policy objectives together.
- **Most major climate risks are co-owned by the EU and its Member States** – working together at all governance levels is essential to progress.
- **The new European Climate Adaptation Plan** to focus on systemic risks and complement national adaptation actions.






**Thank you**

**For more information:**  
[climate-adapt.eea.europa.eu](https://climate-adapt.eea.europa.eu)

**Contact us:**  
[EUCRA@eea.europa.eu](mailto:EUCRA@eea.europa.eu)

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# Panellists



**Blaž Kurnik**

*European Environment  
Agency*



**Danila Volpi**

*Joint Research Centre*



**Mirjana Ivanov**

*Institute of Hydrometeorology and  
Seismology, Montenegro*



**Zita Bihari**

*Meteorological service, Hungary*



**Darko Borojević**

*Republic Hydrometeorological Service of  
Republic of Srpska, Bosnia and Herzegovina*