An aerial photograph of a river delta, likely the Ganges-Brahmaputra delta, showing a complex network of water channels and green wetlands. In the background, a large, rugged mountain range is visible under a cloudy sky.

Working with nature

Turning the tide: How to drive climate resilience in coastal and maritime infrastructure?

SEArca Intergroup event

Dr. Blaz Kurnik

Head of climate change impacts and adaptation

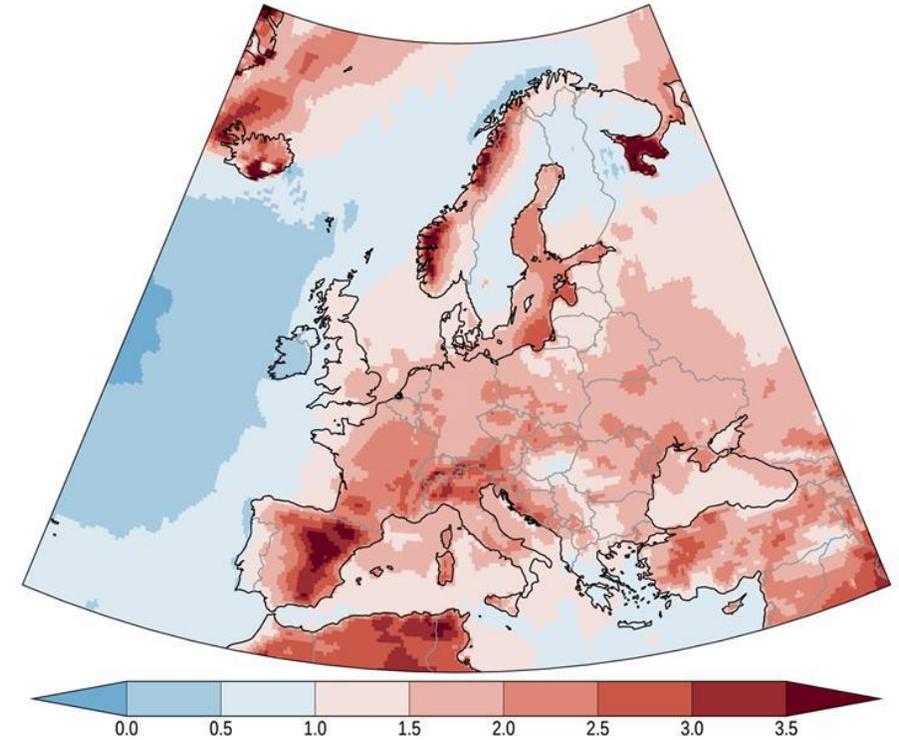
European Environment Agency (EEA)

European Environment Agency



Global and European warming is accelerating

- 2023 was the warmest year on record by a huge margin at about 1.48 °C; it is almost certain to have been the warmest year in the last 100,000 years.
- Each month from June to December in 2023 was warmer than the corresponding month in any previous year
- In each month from April to December 2023, the world's oceans were warmer than ever before recorded

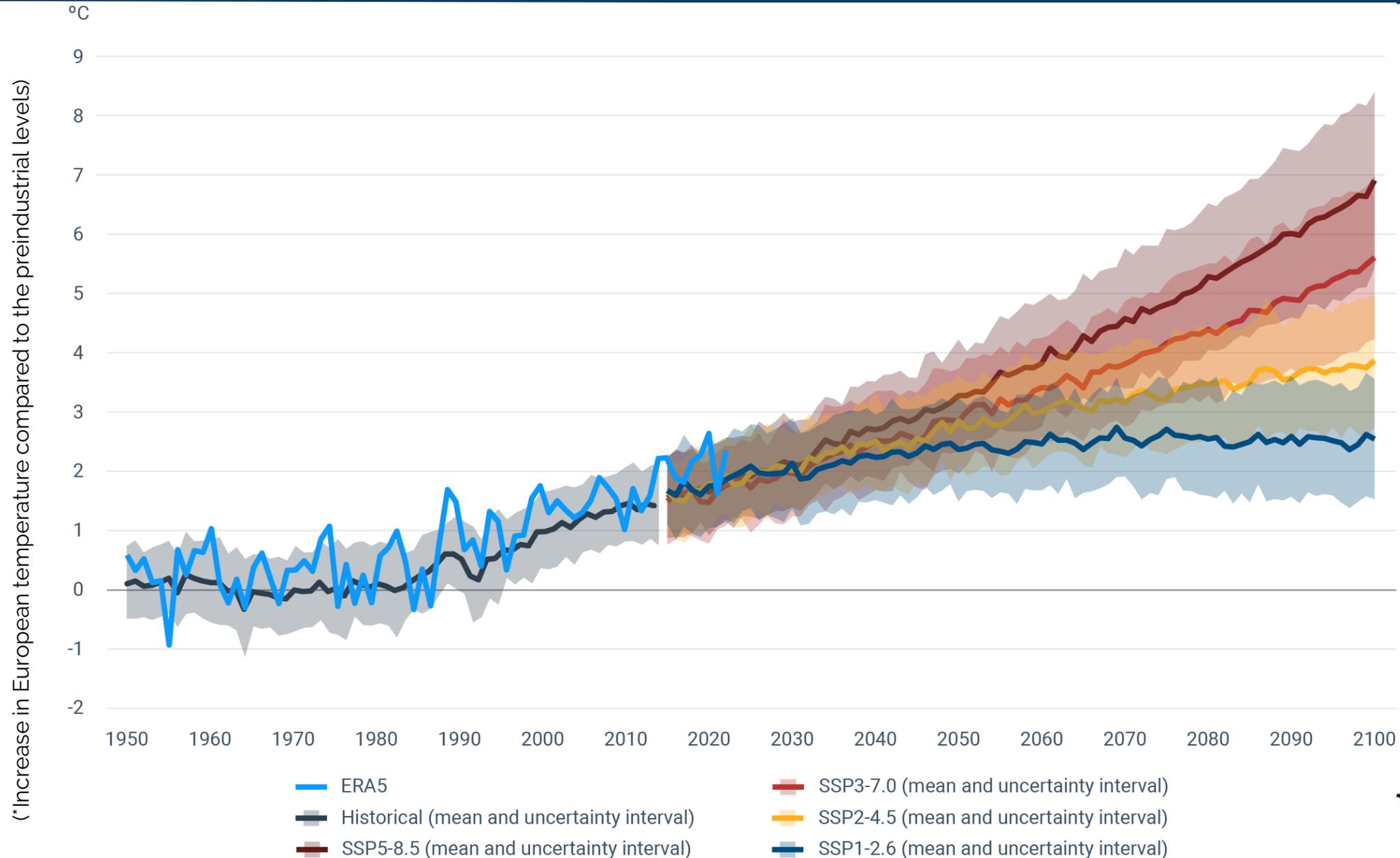


*Rate of change in temperature over 1950-2022
compared to global warming (multiplication)*

Source:
Copernicus Climate Change Service



European warming is projected to increase



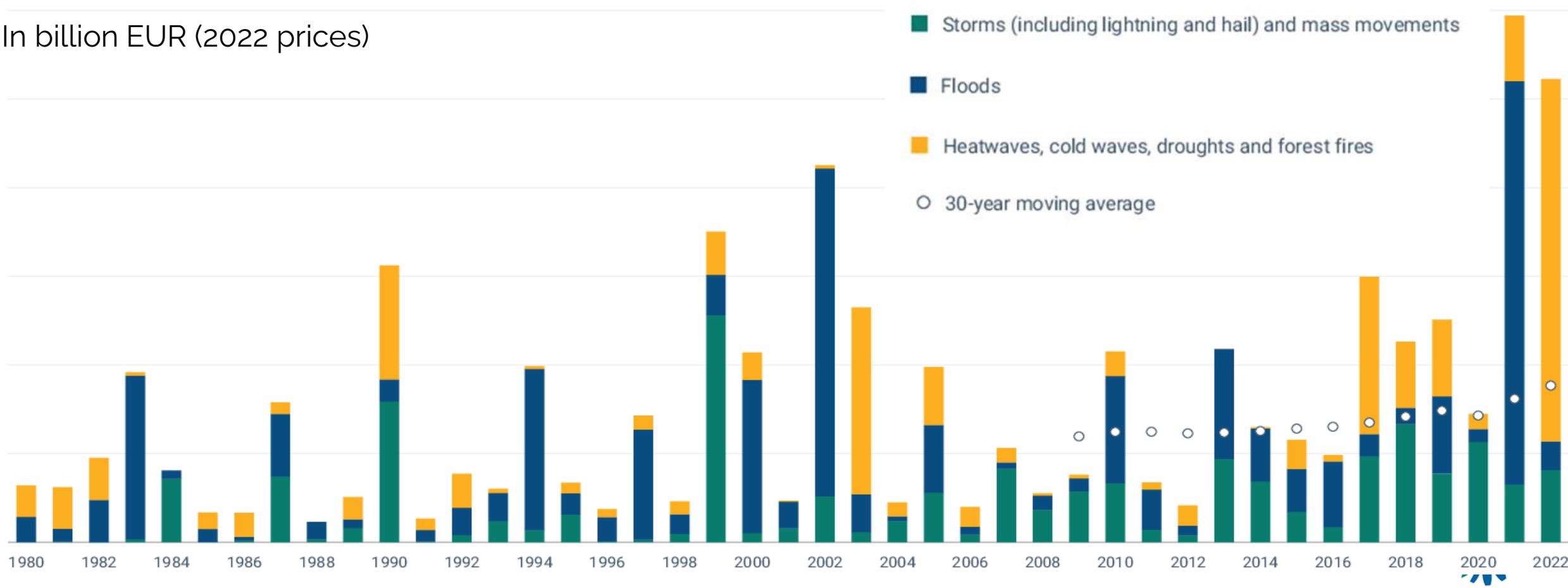
Source: Copernicus climate change service based on CMIP6

Heavy economic and social burden of climate extremes

1980-2022: EUR 650 billion in economic losses

- 2021: EUR 60 billion (EUR 40 billion flooding in BE/DE)
- 2022: EUR 54 billion (forest fires, droughts, heat waves)
- 2023: Estimated losses expected to be similar to 2021 and 2022 losses

Source:
EEA 2023, based on
insurance data



Heatwaves kill but deaths are preventable

90,000 Europeans could die annually from extreme heat **by 2100** in high emission scenario (**12000** fatalities per year **by 2050**)

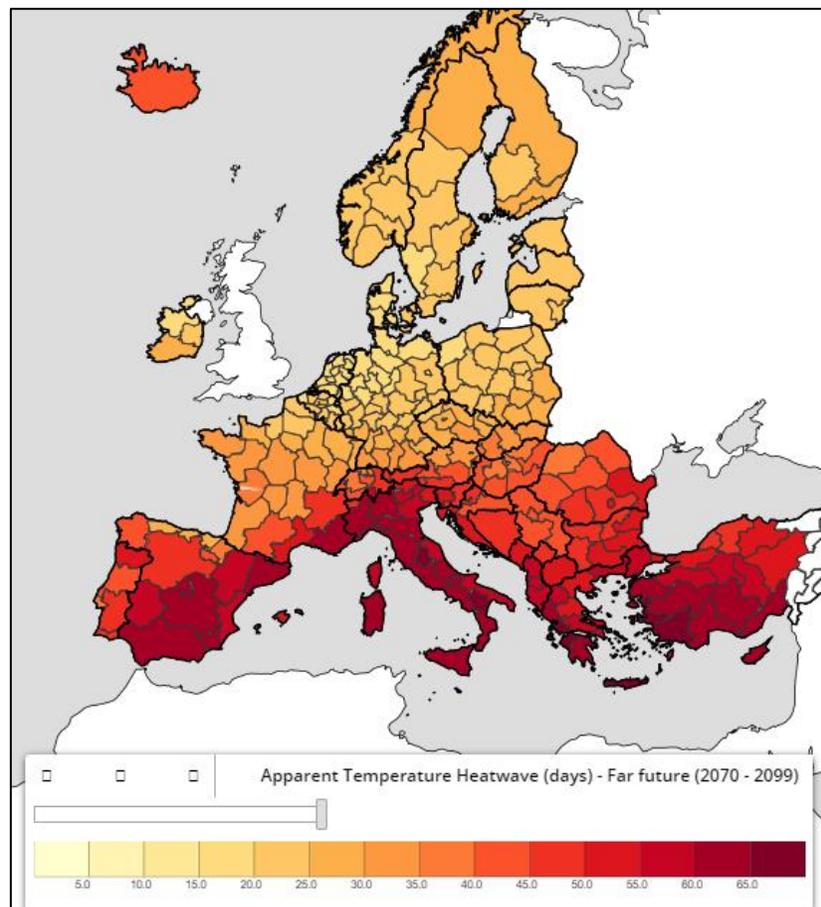
Local level solutions to decrease heat impacts



Keeping kids cool: Oasis schoolyard project, Paris, France



Protecting the vulnerable: Heat hotline project, Kassel, Germany



Sources:
• JRC,
• C3S

 **Climate ADAPT** | SHARING ADAPTATION KNOWLEDGE FOR A CLIMATE-RESILIENT EUROPE

European Environment Agency



Large increase in costs of flooding by end of the century

Inland floods in EU

- Projected increase in estimated annual damage of **2 to 17 times by 2100** (around 2 times by 2050) depending on the scenario

Coastal floods in EU

- Projected increase in estimated annual damage of **4.5 to 800 times by 2100** (around 3 times by 2050) depending on the scenario

Estimated annual damage of flooding **EUR 14 to 961 billion by 2100** (EUR 7- 39 billion by 2050) depending on the scenario

Sources:

EUCRA, preliminary results based on various sources
Climate-ADAPT case studies

Local level solutions to decrease flooding impacts on society



Relocation as adaptation to flooding in the Eferdinger Becken, Austria



Adaptive restoration of the former saltworks in Camargue, southern France

Using nature as an ally for multiple benefits



Flooding protection

Nature based solutions protect coast from flooding and coastal erosion

Coastal Protection

Marine habitats sequester blue carbon act as natural barriers, sequester blue carbon, shielding coastlines from erosion and reducing impact from storms.



Climate Regulators

Blue carbon habitats act as natural buffers against climate change, absorbing and storing vast amounts of carbon dioxide. Seagrasses influence ocean acidification positively

Nursery for Marine Life

These habitats provide critical spawning grounds and nurseries for marine biodiversity.



National actions towards climate resilience

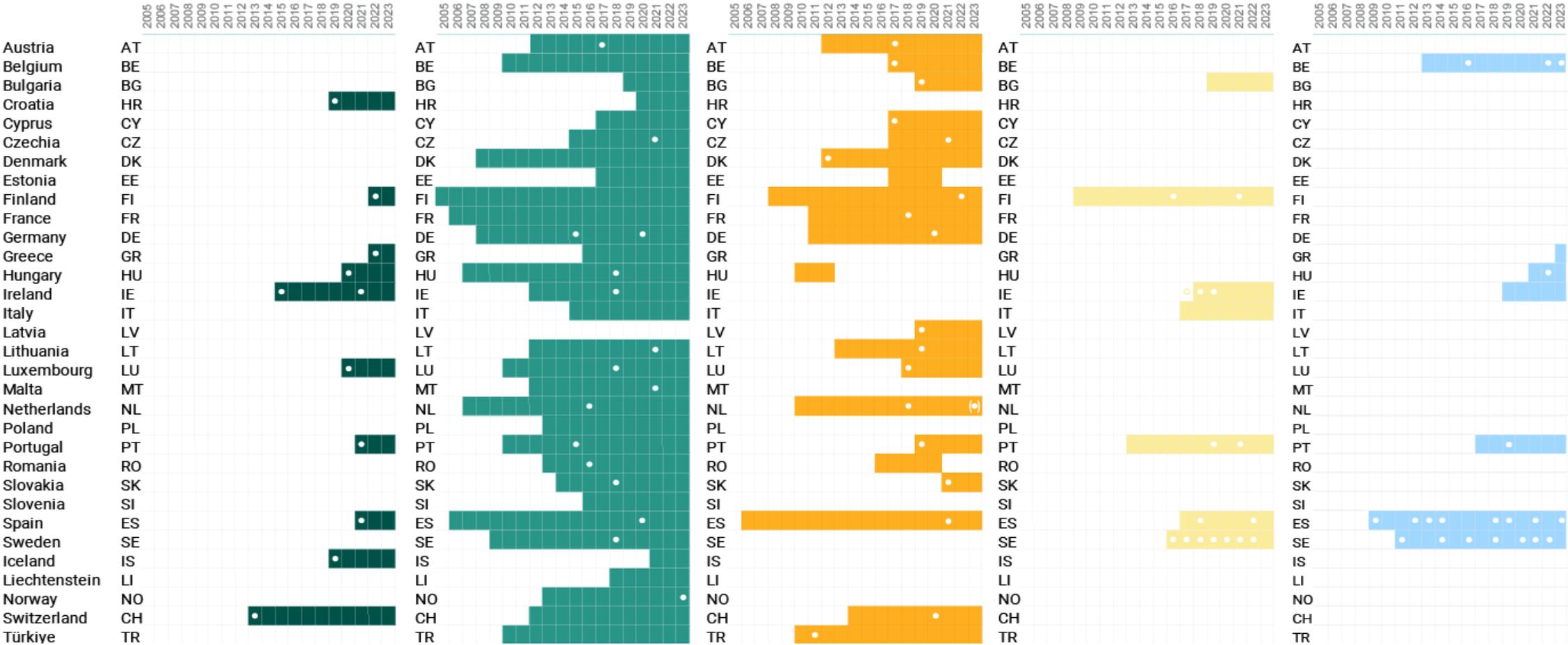
National climate law

National adaptation strategy

National adaptation plan

Sectoral adaptation plan

Regional adaptation plan



(Source: EEA, <https://www.eea.europa.eu/publications/is-europe-on-track-towards-climate-resilience>)



Providing information on climate risks, adaptation and resilience



**Climate
ADAPT**

SHARING ADAPTATION
KNOWLEDGE FOR A
CLIMATE-RESILIENT EUROPE



European
Climate and Health
Observatory



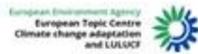
European
Climate Data
Explorer

<https://climate-adapt.eea.europa.eu/>

European Environment Agency



European Climate Risk Assessment: helping build climate resilience



Objectives



to help identify **adaptation-related priorities** for the next policy cycle



to inform the **further development of EU policies** in climate-sensitive sectors



to support the **prioritisation of adaptation-related investments** for the next Multi-annual Financial Framework



to provide a reference for **national and regional climate risk assessments**



to present **climatic and non-climatic** risk drivers in Europe



INCREASED NEED TO FOCUS ON CLIMATE RISKS AND RESILIENCE

- The world is warming rapidly, and long-time climate records are broken year after year. **2023 was the warmest year** on the record. **Europe is the fastest warming continent**, at about twice the global pace over the past 30 years.
- **Climate change** exacerbates existing crises and most of the key climate risks will reach critical or catastrophic severity levels by mid-century. Economic losses might exceed 1 trillion EUR per year by the end of the century (mostly flooding). **Southern Europe, coastal regions, and the EU Outermost Regions**
- **The European Union and its Member States have made considerable progress in understanding the climate impacts, vulnerability and risks**, but implementation of policies is lagging behind the fast increase in risk levels. **Urgent and coordinated additional** action is required at all governance levels **now** to avoid catastrophic risks in the future.
- Many policies to reduce climate risks to society require **a medium to long-time horizon**. Adaptation policies developed now need to consider future risk to prevent further impacts but at same time they **need to be systemic and fair**. Adaptation of coastal and flood prone regions require **long-time horizon**.
- Adaptation policies addressing the key risks **can have tradeoffs with other environmental, social and economic policy objectives**. An integrated policy approach considering multiple policy objectives is essential for avoiding maladaptation.



An aerial photograph of a vast, green river delta with a prominent plateau in the background. The river winds through the landscape, creating numerous oxbow lakes and meanders. The plateau is a large, flat-topped mountain with steep, rocky sides. The sky is filled with soft, white clouds, and the overall scene is bathed in the warm light of late afternoon or early morning.

Thank you

European Environment Agency

