EUROPEAN CLIMATE RISK ASSESSMENT (EUCRA)

A comprehensive assessment of current and future climate risks in Europe

Senato della Repubblica
Parliamentary Committee on Industry, Commerce, Tourism, Agriculture and Agri-Food Production
16 April 2024

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EUCRA coordinator
European Environment Agency

The European Environment Agency

Supporting sustainability policy through knowledge

- An independent **EU agency**
- Analysing, assessing and providing **information**
- An interface between **science and policy**
- Dependent upon **strong networks** to carry out its work

30 YEARS

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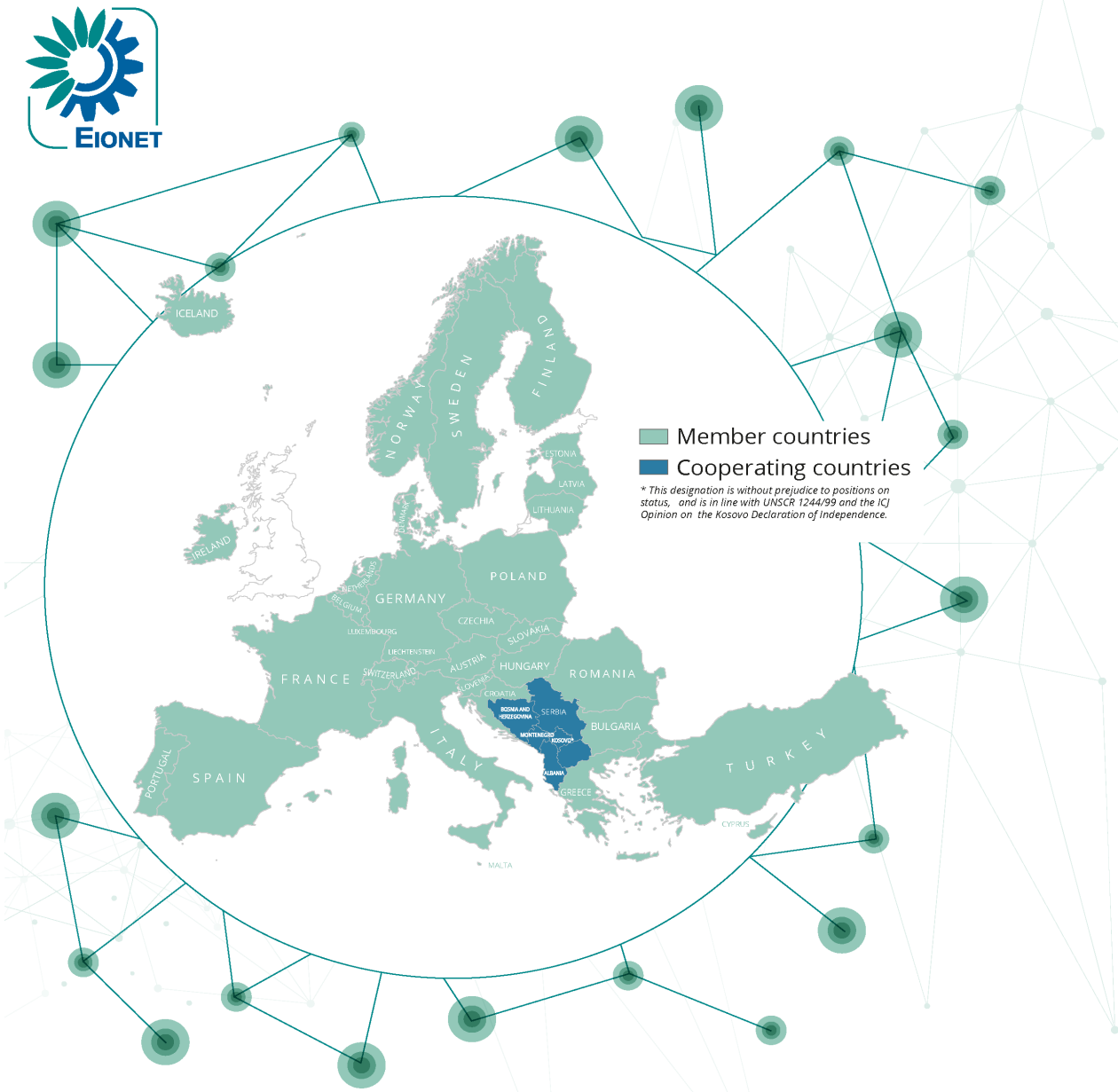
European **Environment Information and Observation Network** - Eionet



Who we are

38 countries

More than **400 institutions**

Around **2,000 experts**

Organised in **13 Eionet groups**

Supported by experts in **8 European Topic Centres**

What we do

Delivering **data, information and knowledge**

The European environment — state and outlook

Support for **EU and National policy**

European Parliament resolution, 15 September 2022

"Calls on the Commission to **urgently draw up a comprehensive EU-wide climate risk assessment** paying special attention to risks of droughts, forest fires, health threats, ecosystem vulnerabilities and the effect on critical infrastructure and network hotspots in order to guide and prioritise short-, medium- and long-term adaptation and resilience efforts"

European Council Conclusions, 30 June 2023

The European Council acknowledges the **challenges posed by cross-sectoral and cross-border crises** and natural and human-made disasters, many of which are **exacerbated by climate change and the evolving security landscape** in Europe and globally. It underlines the importance of **strengthening resilience in strategic areas** through an all-hazards approach to **preparedness and response** using relevant mechanisms, including the Union Civil Protection Mechanism.

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 change **threatens** our ecosystems, water resources, food and energy security, health, infrastructure, and financial stability.
- **Southern Europe** is a hotspot region for multiple climate risks, in particular those caused by extreme heat and droughts.
- **Low-lying coastal regions** are another hotspot for multiple climate risks.

eea.europa.eu/publications/european-climate-risk-assessment

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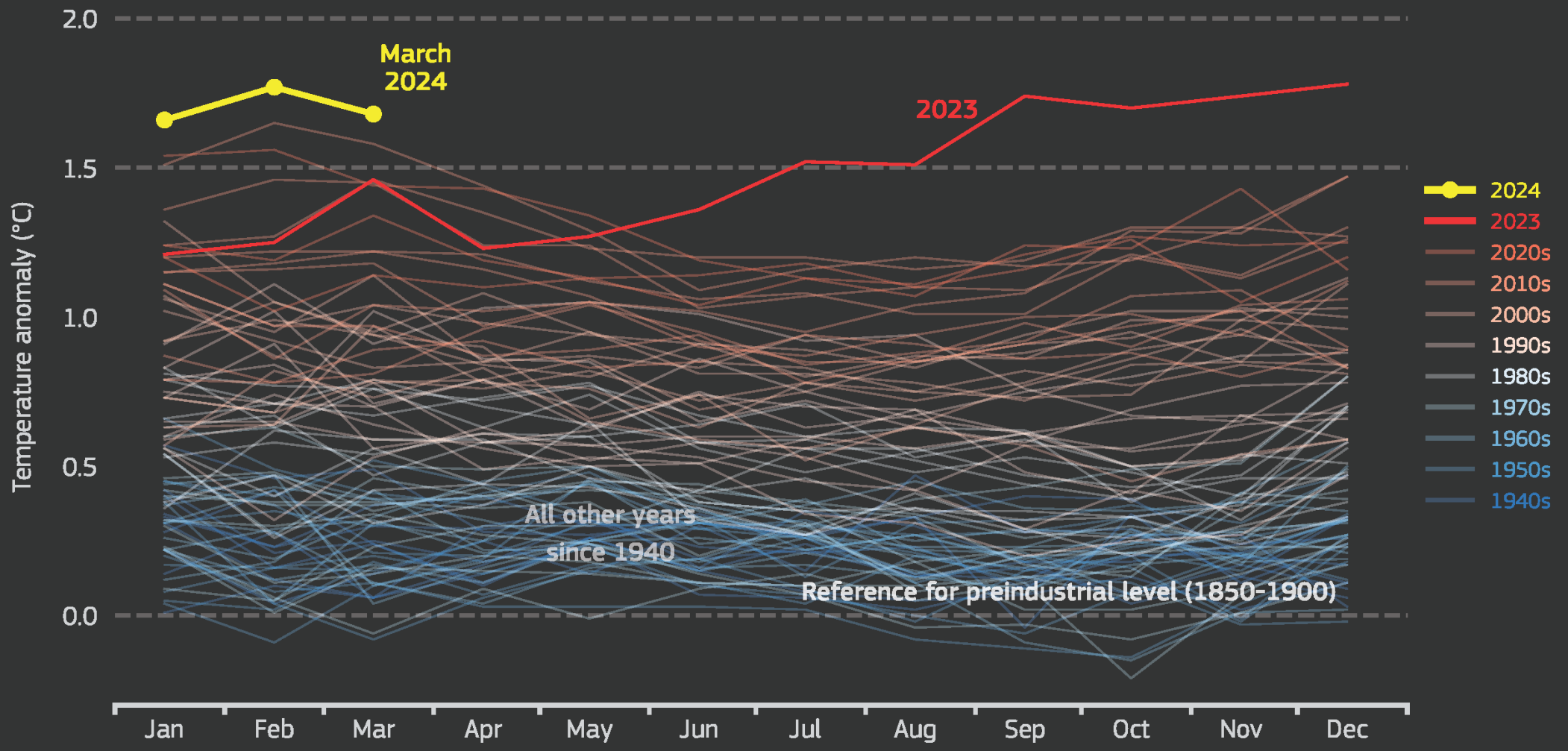
Monthly global surface air temperature anomalies

Data: ERA5 1940–2024 • Reference period: 1850-1900 • Credit: C3S/ECMWF



PROGRAMME OF THE EUROPEAN UNION

Copernicus Europe's eyes on Earth

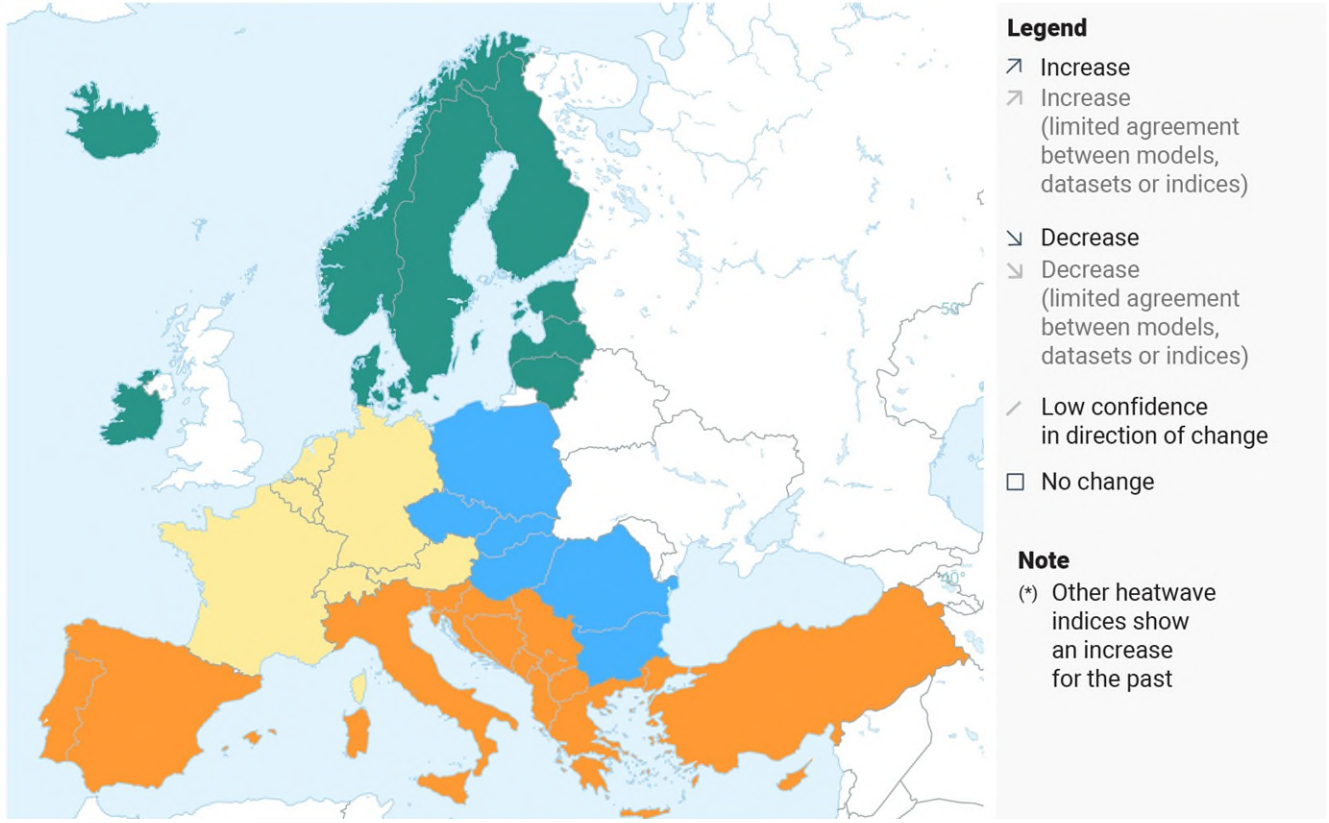
IMPLEMENTED BY ECMWF

Climate Change Service climate.copernicus.eu

Climatic risk drivers are accelerating in all regions

Land regions	Northern Europe			Western Europe			Central-Eastern Europe			Southern Europe		
	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	↗	↘	↘	↗	⟋	↗	↗	⟋	↗	↗	↗	↗

European regional seas	Past	Future
Sea surface temperature	↗	↗
Sea level	↗	↗



- **Heatwaves** are getting worse.
- **Rain patterns** are changing; **southern Europe** is getting drier and northern Europe gets wetter.
- **Downpours** are increasing in magnitude across Europe.
- **Droughts** are increasing most strongly in **southern Europe**.
- **Sea level rise** is accelerating and threatening coastal regions.

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EUCRA thematic factsheets:

Compilation of key impacts and risks and related risks drivers for selected systems and sectors

Terrestrial & freshwater ecosystems	Marine & coastal ecosystems	Water security	Food production & food security
Human health	Energy	Built environment	EU outermost regions

EUCRA risk storylines:

Key compound risks across systems and sectors that could trigger new or exacerbate pre-existing crises and emergencies with relevance for the EU

Extreme heat and prolonged drought	Large-scale flooding	Infectious diseases	Forest disturbances and carbon sinks
Major disruption of critical infrastructure	Disruption of international supply chains	Stability of financial markets and public finances	

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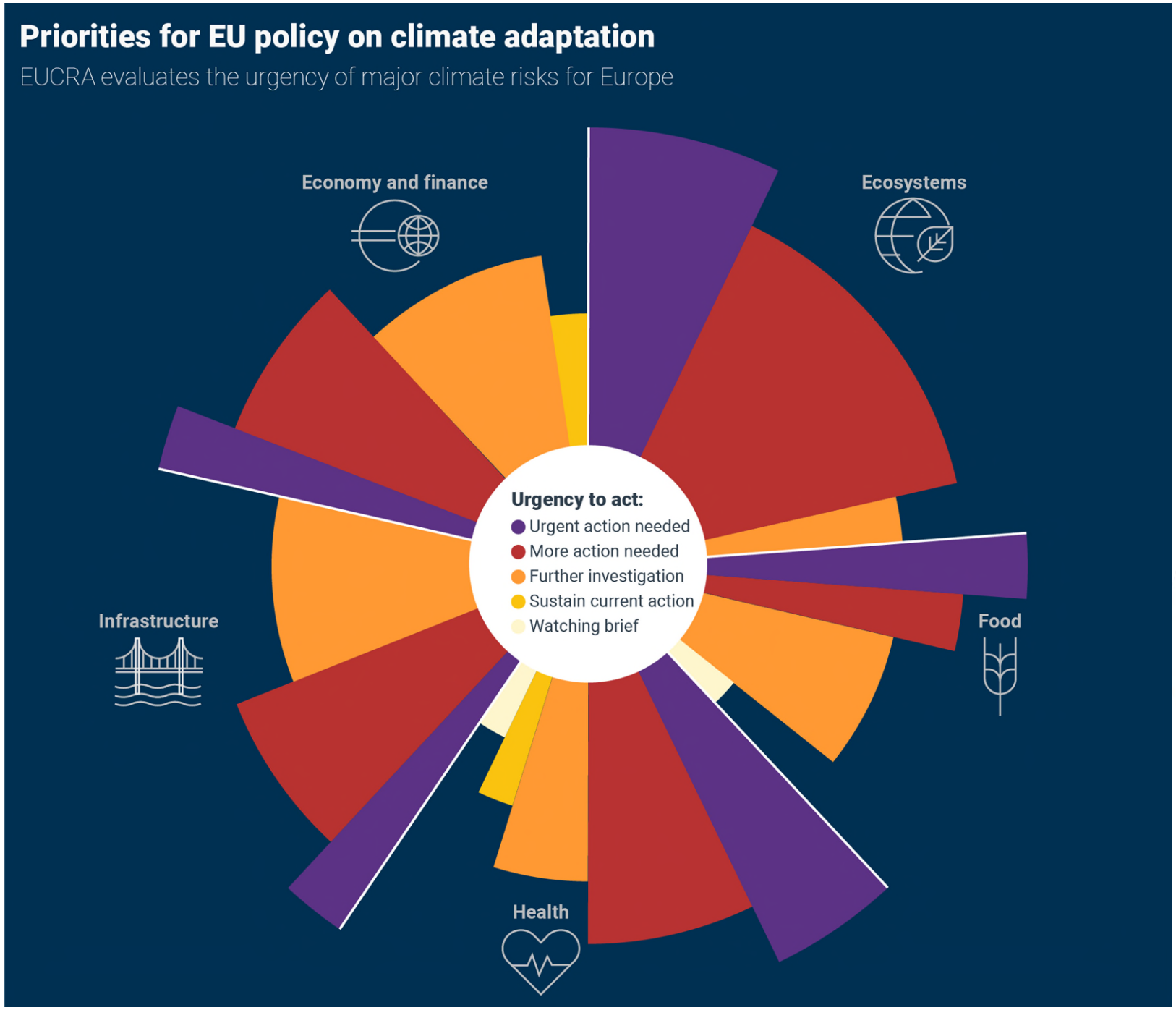

Urgent action at EU level needed in all five risk clusters

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

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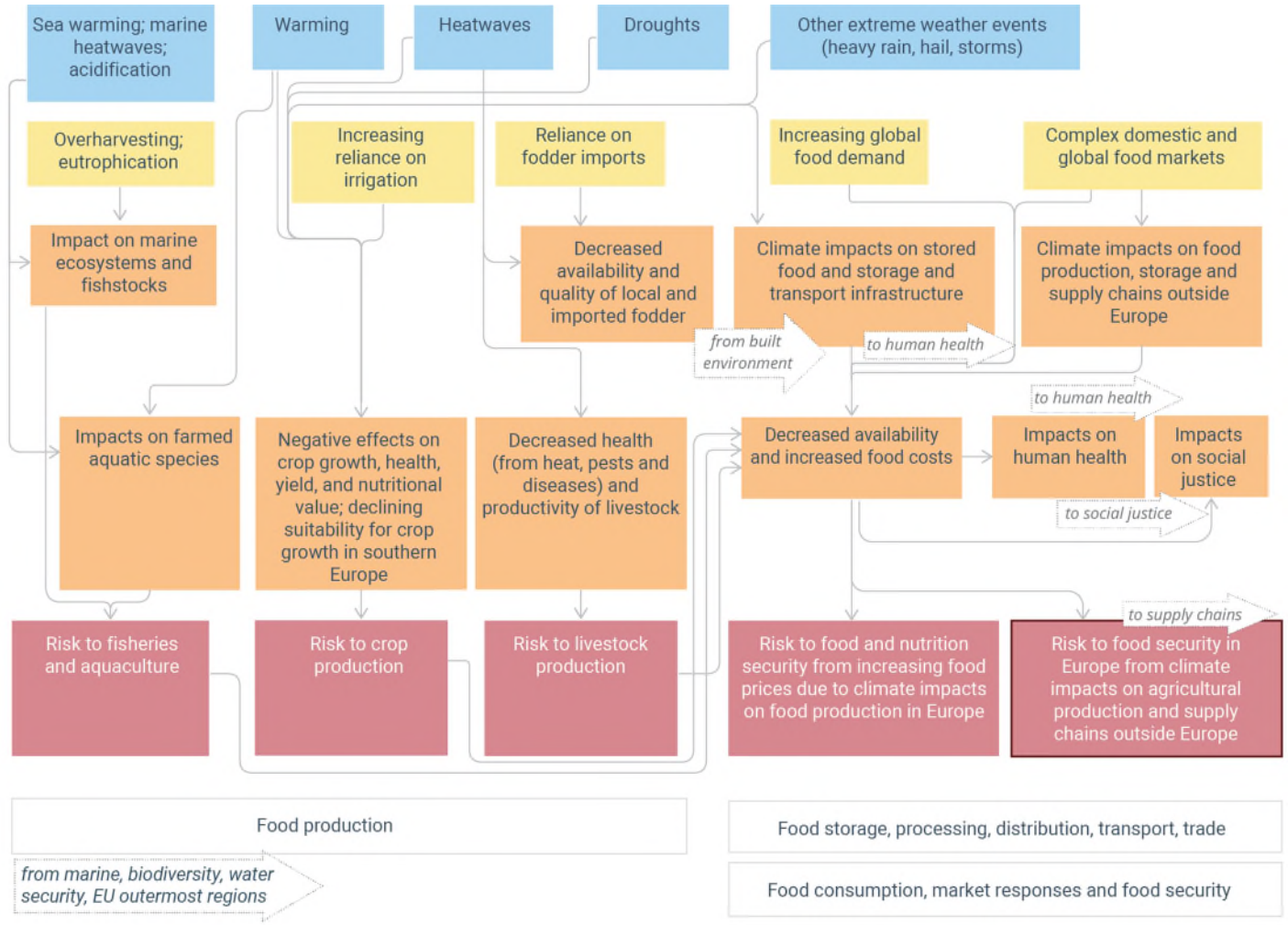
Impact chains for major climate risks related to food security



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Food cluster

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)		+++	++	++	Short	Medium	Co-owned
Crop production		+++	++	++	Short	Medium	Co-owned
Food security due to climate impacts outside Europe (*)		++	++	+	Short	Medium	EU
Food security due to higher food prices		++	+	+	Short	Medium	Co-owned
Fisheries and aquaculture		++	+	+	Short	Medium	Co-owned
Livestock production		++	++	+	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.

Food production and food security: major climate risks

- Climate change presents **multiple risks** to food production and food security in Europe.
- **Key climate hazards** for food production include: reduced water availability; heat stress; specific meteorological events, such as late frosts and heavy rain; current and new pests and diseases; and deterioration of terrestrial, marine and freshwater ecosystems.
- Crop production is already facing **critical risks in southern Europe** in periods of prolonged drought and excessive heat, and substantial risks in Europe as a whole.
- Food production that is **water-intensive or heavily dependent on imported fodder** is particularly at risk from climate change.
- Food and nutrition security in Europe is impacted by climate impacts on food and feed production **within as well as outside Europe**, and by socio-economic factors. Socially disadvantaged groups are facing the highest risk.

Food production and food security: policy priorities

- Addressing climate risks to food production and security requires **many policy levers**. These include: adapting and transforming food **production** systems, influencing **demand**, and improving **access** to nutritious foods for all population groups.
- Increased efforts are urgently needed to manage the **risk of prolonged drought**, including in the **common agricultural policy (CAP) strategic plans** of EU Member States.
- The development and application of **sustainable agricultural practices** that enhance ecosystem resilience should be supported at all policy levels.
- Production changes and dietary shifts towards **less animal-based products,** and targeted **social policies** are further levers to ensure food security in a changing climate.
- The consistency and **coherence of key EU policies** affecting food production and security needs to be improved.

Ecosystems cluster

Climate risks for 'Ecosystems' cluster	Urgency to act	Risk severity			Policy characteristics		
		Current	Mid-century	Late century (low/high warming scenario)	Policy horizon	Policy readiness	Risk ownership
Coastal ecosystems	Urgent action needed	+++	+++	+++	Medium	Medium	Co-owned
Marine ecosystems	Urgent action needed	+++	+++	++	Medium	Medium	EU
Biodiversity/carbon sinks due to wildfires (hotspot region: southern Europe)	Urgent action needed	+++	++	++	Medium	Medium	Co-owned
Biodiversity/carbon sinks due to wildfires	More action needed	+++	++	++	Medium	Medium	Co-owned
Biodiversity/carbon sinks due to droughts and pests	More action needed	+++	++	++	Long	Medium	Co-owned
Species distribution shifts (*)	More action needed	+++	++	++	Medium	Medium	Co-owned
Ecosystems/society due to invasive species	More action needed	+++	++	++	Medium	Medium	Co-owned
Aquatic and wetland ecosystems	More action needed	+++	++	++	Medium	Medium	Co-owned
Soil health (*)	More action needed	+++	++	++	Medium	Medium	Co-owned
Cascading impacts from forest disturbances	Further investigation	+	+	+	Long	Medium	Co-owned

Legends and notes

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Risk severity
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- Critical
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Confidence

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High: +++

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Health cluster

Climate risks for 'Health' cluster	Urgency to act	Risk severity			Policy characteristics		
		Current	Mid-century	Late century (low/high warming scenario)	Policy horizon	Policy readiness	Risk ownership
Heat stress — general population		+++	+++	+++	Long	Medium	National
Population/built environment due to wildfires (hotspot region: southern Europe)		+++	+++	+++	Medium	Medium	Co-owned
Population/built environment due to wildfires		+++	++	++	Medium	Medium	Co-owned
Well-being due to non-adapted buildings (*)		++	++	++	Long	Medium	Co-owned
Heat stress — outdoor workers (hotspot region: southern Europe)		+++	+++	+++	Short	Medium	Co-owned
Heat stress — outdoor workers		+++	+++	+++	Short	Medium	Co-owned
Pathogens in coastal waters		+	+	+	Medium	Medium	Co-owned
Health systems and infrastructure		+++	++	++	Medium	Medium	National
Infectious diseases		+++	++	++	Short	Advanced	Co-owned

Legends and notes

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Risk severity
- Catastrophic
- Critical
- Substantial
- Limited

Confidence
Low: +
Medium: ++
High: +++

(*) Urgency based on high warming scenario (late century).

Infrastructure cluster

Climate risks for 'Infrastructure' cluster	Urgency to act	Risk severity			Policy characteristics		
		Current	Mid-century	Late century (low/high warming scenario)	Policy horizon	Policy readiness	Risk ownership
Pluvial and fluvial flooding	Urgent action needed	+++	+++	++ / +++	Long	Medium	Co-owned
Coastal flooding	More action needed	+++	+++	+++	Long	Advanced	Co-owned
Damage to infrastructure and buildings (*)	More action needed	++	++	++ / More action needed	Long	Medium	Co-owned
Energy disruption due to heat and drought (hotspot region: southern Europe)	More action needed	++	++	++	Medium	Medium	Co-owned
Energy disruption due to heat and drought	Further investigation	++	++	+ / Further investigation	Medium	Medium	Co-owned
Energy disruption due to flooding	Further investigation	++	++	++	Long	Advanced	Co-owned
Marine transport	Further investigation	++	++	++ / More action needed	Medium	Medium	Co-owned
Land-based transport	Further investigation	++	++	++	Medium	Medium	Co-owned

Legends and notes

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Risk severity
- Catastrophic
- Critical
- Substantial
- Limited

Confidence

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

(*) Urgency based on high warming scenario (late century).

Economy and finance cluster

Climate risks for 'Economy and finance' cluster	Urgency to act	Risk severity			Policy characteristics		
		Current	Mid-century	Late century (low/high warming scenario)	Policy horizon	Policy readiness	Risk ownership
European solidarity mechanisms		+++	++	++	Short	Medium	Co-owned
Public finances		++	++	++	Medium	Medium	Co-owned
Property and insurance markets		++	++	++	Medium	Medium	Co-owned
Population/economy due to water scarcity (hotspot region: southern Europe)		++	++	++	Medium	Medium	Co-owned
Population/economy due to water scarcity		++	++	++	Medium	Medium	Co-owned
Pharmaceutical supply chains (*)		++	+	+	Short	Medium	EU
Supply chains for raw materials and components (*)		++	++	++	Short	Medium	EU
Financial markets		+	+	+	Short	Medium	Co-owned
Winter tourism		+++	+++	++	Medium	Advanced	National

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Key takeaways – policy and actions

We must act now to prevent locking ourselves into pathways that are not fit for the future.

Many adaptation actions have long planning or decision horizons, such as land-use planning, infrastructure, and forestry. Action is needed now to avoid catastrophic risks in the future.

Climate adaptation policies need to consider multiple objectives to avoid maladaptation.

Adaptation policies can both support and conflict with other environmental, social and economic policy objectives. Social justice is an important element of climate adaptation.

Most of the major climate risks are co-owned by the EU and its Member States.

Therefore, coordinated additional action is required at all governance levels, with a focus on those population groups most affected by climate risks.

Stronger EU policy action is urgently needed to manage several major climate risks.

The EU can also play an important role in improving the *analysis* of major climate risks through legislation, monitoring, co-funding and technical support.

EUCRA: Uptake by EU policymakers

European Commission

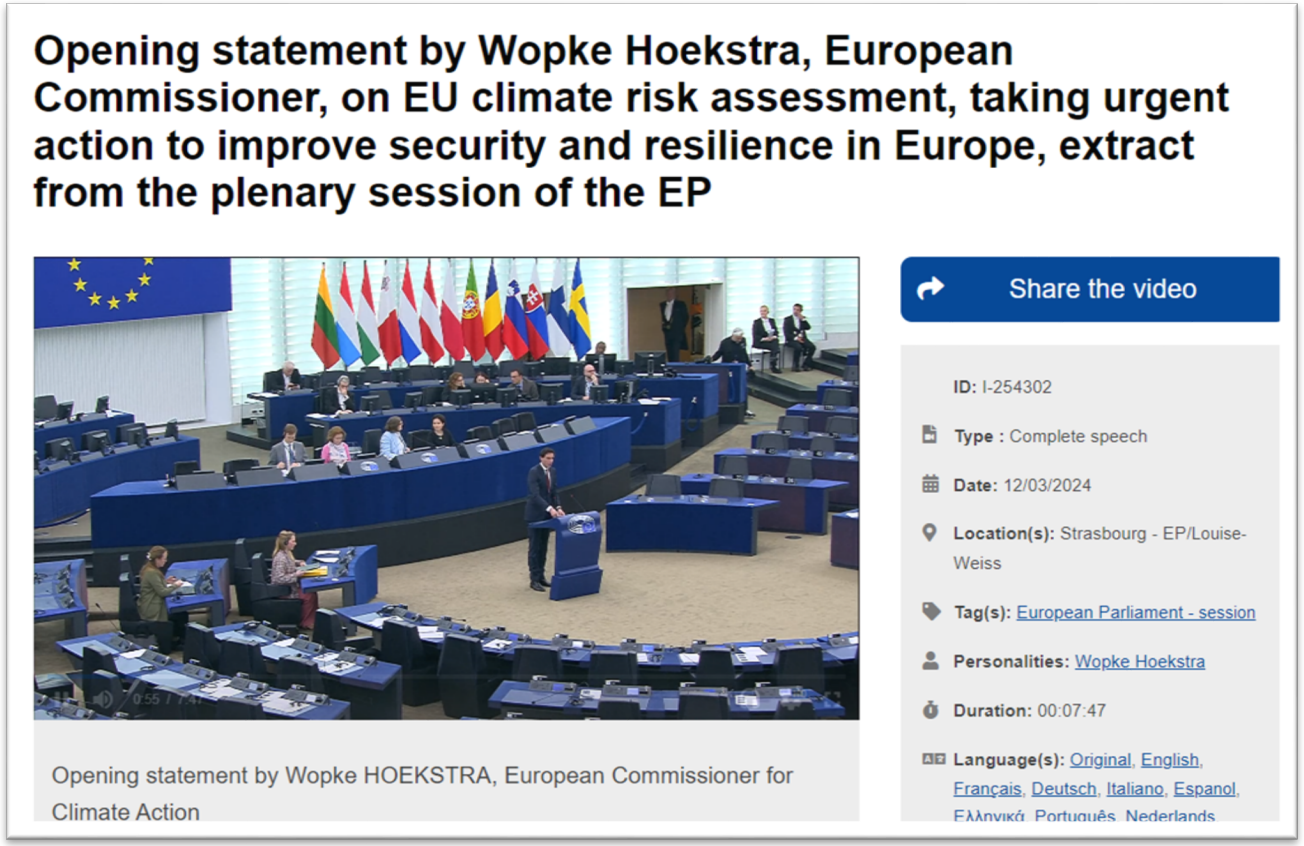
- 12 March: EC Communication

European Parliament

- 12 March: Plenary debate
- 19 March: ENVI Committee

Council of the EU

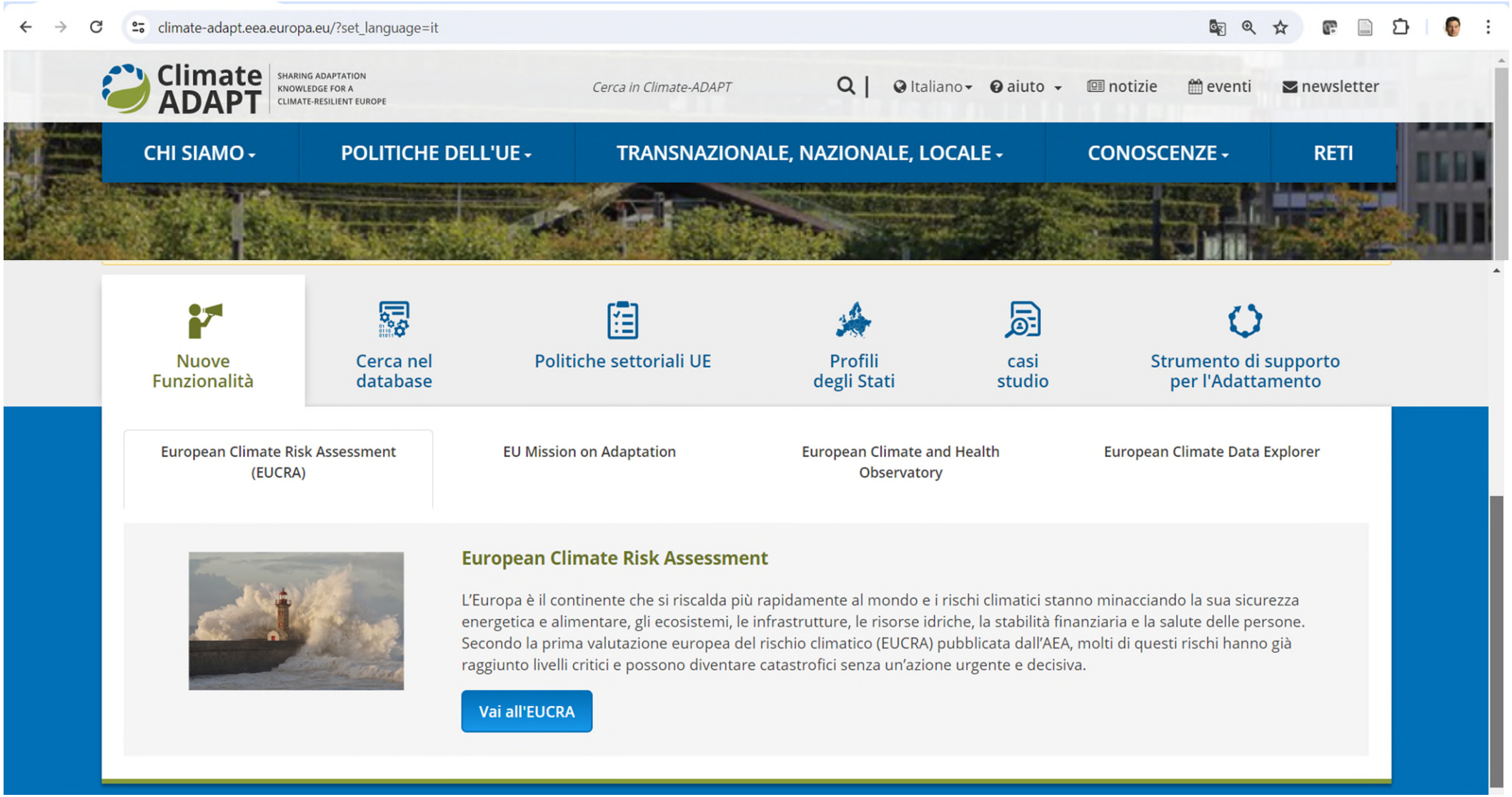
- 25 March: Environment Council
- 11 April: WP Energy
- 12 April: WP Environment
- 23 April: WP Tourism



Belgian Council Presidency

- 26 March: European Water Summit
- 22 April: Unlocking Resilience in Europe and Belgium
- 23 April: Adaptation and resilience conference

Climate-ADAPT: the European Climate Adaptation Platform



climate-adapt.eea.europa.eu/?set_language=it

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Esploratore del caso Climate-ADAPT

Gli studi di casiClimate-ADAPT illustrano le opzioni e le iniziative di adattamento attuate per creare e migliorare le condizioni favorevoli per l'adattamento a tutte le scale di governance, dal livello locale a quello dell'UE.

Sono stati definiti nove criterijper la selezione e la presentazione dei casi di studio Climate-ADAPT.

I casi di studio servono da ispirazione su come leopzioni di adattamentonote possono essere implementate nella pratica in una serie di condizioni diverse.

Questa raccolta viene regolarmente aggiornata con nuovi casi di studio, con l'obiettivo di raggiungere una distribuzione equilibrata dei settori rappresentati, degli impatti legati al clima, degli approcci applicati e delle posizioni geografiche. Gli studi di casi inclusi sono inoltre periodicamente rivalutati e aggiornati, al fine di monitorare sia il processo che l'efficacia delle azioni di adattamento in tutta Europa.

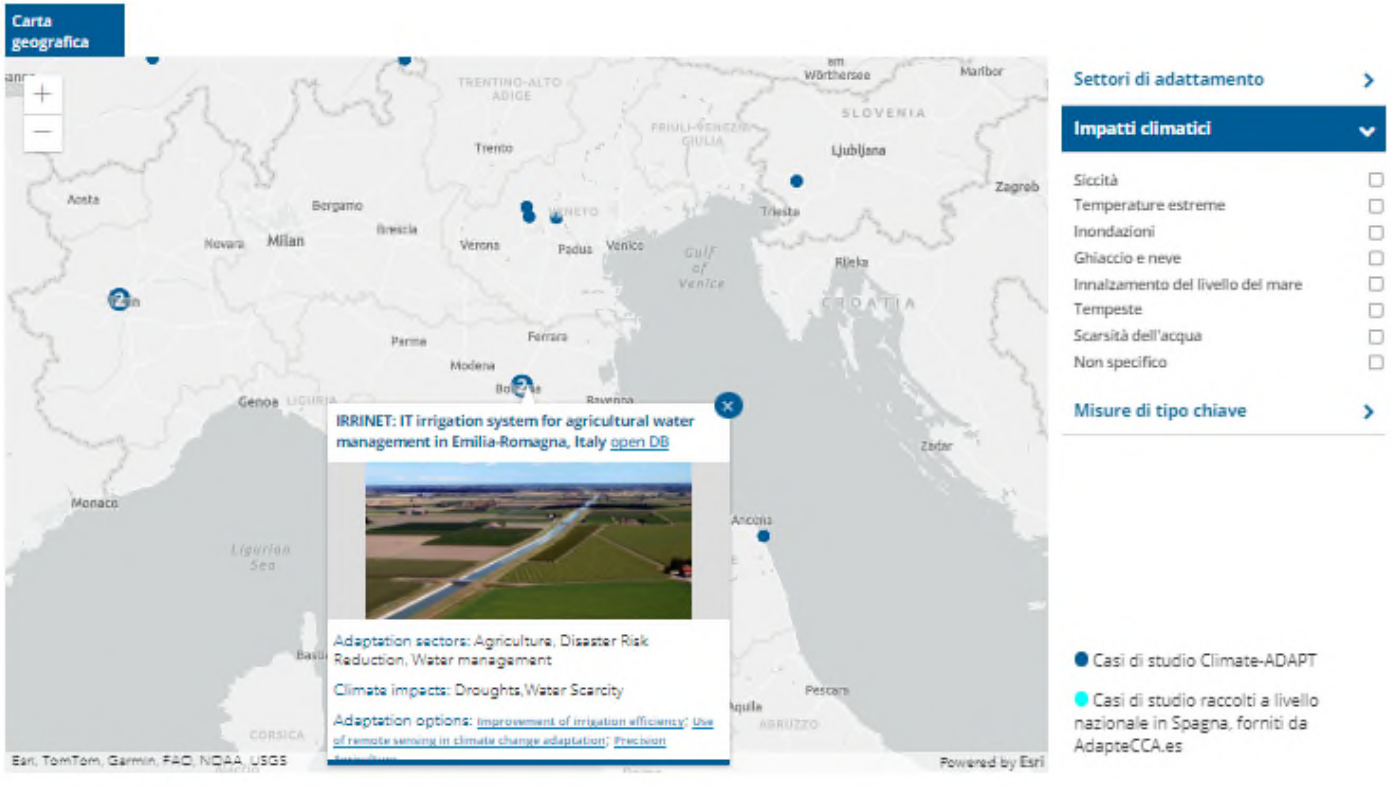
Accesso ai casi di studio Climate-ADAPT

Per imparare da diverse esperienze, esplora i casi distudio di Climate-ADAPT attraverso l'esploratore di casi basato sulla mappaqui sotto. I casi di studio possono essere esplorati attraverso i seguenti tre filtri:

Settori di adattamento — Gli utenti possono navigare in 19 settori di adattamento affrontati dai casi di studio in termini di adattamento ai cambiamenti climatici.

Impatti climatici — Questo filtro consente agli utenti di filtrare i casi di studio attraverso gli impatti dei cambiamenti climatici che affrontano.

Misure di tipo chiave — Questo filtro consente agli utenti di selezionare casi di studio attraverso le categorie di opzioni di adattamento implementate. Le opzioni di adattamento sono contrassegnate da Key Type Measures (KTM). Il KTM è un quadro comune e un approccio di rendicontazione per l'adattamento ai cambiamenti climatici che consente di raggruppare la più ampia varietà di opzioni e misure di adattamento nei paesi membri del SEE.



Climate-ADAPT: local case studies on climate adaptation

climate-adapt.eea.europa.eu/it/knowledge/tools/case-study-explorer

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Thank you

Contact us:

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