

The first European Climate Risk Assessment (EUCRA)

How to support policy prioritization in a complex risk and political context?

CPSICC Advanced Research Workshop

30 July 2024, Washington, DC

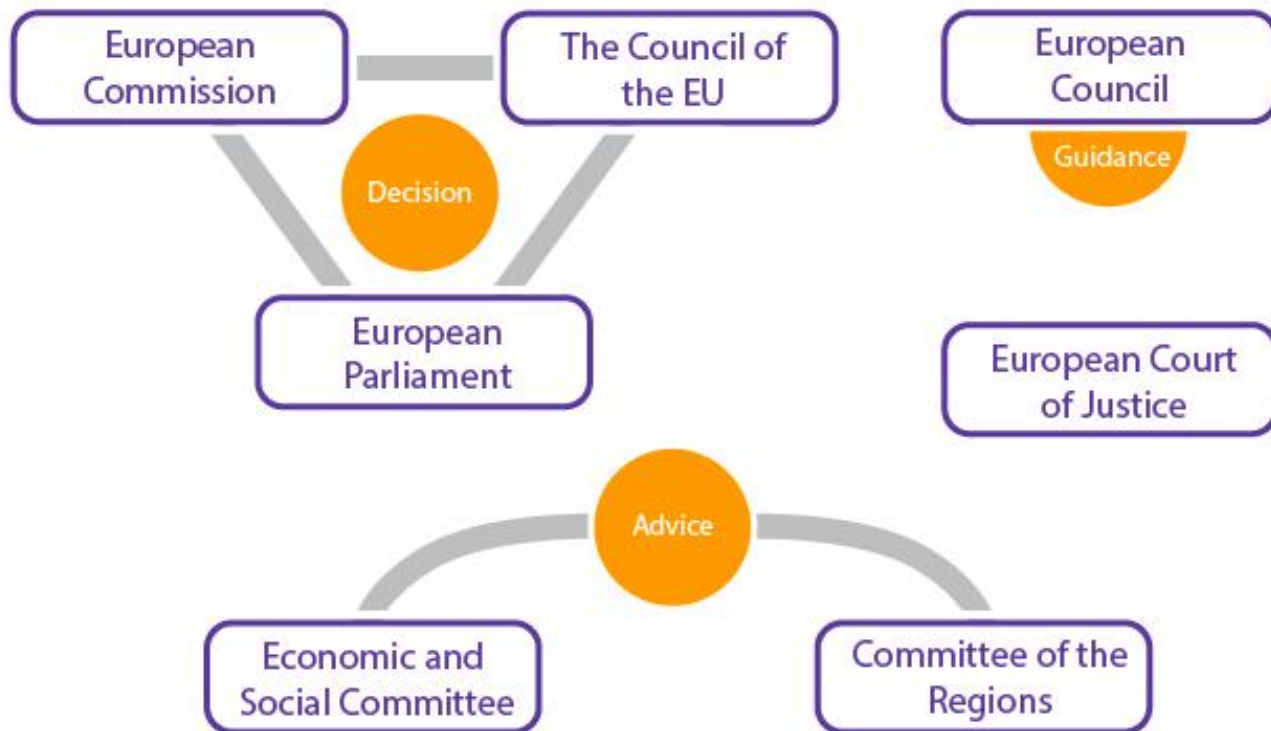
Dr. Hans-Martin Füßel (EUCRA coordinator & Expert – Climate change risks and adaptation, EEA)

European Environment Agency, Copenhagen, Denmark



The EU institutional framework in a nutshell

Key EU institutions and bodies



Centralized EU bodies

- EU bodies (in a narrow sense) (6)
- EU interinstitutional services (4)
- Executive agencies (6)
- EU corporate bodies (2)
- EU joint undertakings (10)

Decentralized EU bodies

- Decentralized agencies (20), incl. **European Environment Agency**
- Euratom agencies (2)
- Common foreign and security policy agencies (3)
- Other agency (1)



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



EU competences

Exclusive

- customs union
- the establishing of the competition rules necessary for the functioning of the internal market
- monetary policy for the member states whose currency is the euro
- conservation of marine biological resources under the common fisheries policy
- common commercial policy
- concluding international agreements
 - when their conclusion is required by a legislative act of the EU
 - when their conclusion is necessary to enable the EU to exercise its internal competence
 - in so far as their conclusion may affect common rules or alter their scope.

Article 3 TFEU

Shared

- internal market
- social policy, limited to the aspects defined in the TFEU
- economic, social and territorial cohesion
- agriculture and fisheries, excluding the conservation of marine biological resources
- environment
- consumer protection
- transport
- trans-European networks
- energy
- area of freedom, security and justice
- common safety concerns in public health matters, limited to the aspects defined in the TFEU
- research, technological development and space
- development cooperation and humanitarian aid

Article 4 TFEU

Support, coordinate or supplement actions of the member states

- protection and improvement of human health
- industry
- culture
- tourism
- education, vocational training, youth and sport
- civil protection
- administrative cooperation

Legally binding EU acts in these areas cannot imply the harmonisation of national laws or regulations.

Article 6 TFEU

Provide arrangements within which EU member states must coordinate policy

- economic policy
- employment
- social policies



Article 5 TFEU

@PabloPerezA

TFEU: Treaty on the Functioning of the European Union

European Environment Agency



European Green Deal Communication, 11 December 2019

The Commission will adopt a **new, more ambitious EU strategy on adaptation to climate change.**

Forging a climate-resilient Europe – the new EU Strategy on Adaptation to Climate Change, 24 February 2021



Launch of a **European climate and health observatory.**

The Commission will draw up an **EU-wide climate risk assessment.**

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”

EUCRA: a comprehensive assessment of major climate risks facing Europe



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



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



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



to provide a reference for conducting **national and regional climate risk assessments** (incl. Mission on Adaptation)



fast-track assessment:
less than 2 years (including scoping, planning, contracting, and implementing)



EUCRA: Scope and focus



- Climate-sensitive policy areas and **risks that may require action at the European or transnational level**
- Risks where climate change is a major driver of the total risk, in comparison to non-climatic risk drivers
- **'Complex' climate risks**, including from 'compound hazards', 'cascading risks', and 'risks outside Europe'
- Risk distribution and social justice implications
- Links between climate risks and specific policy areas
- **Transparent assessment of risk severity and urgency**
- Identifying priorities for policy action
- Possible synergies and trade-offs between increasing climate resilience and other policy objectives



- New quantitative modelling
- Specific adaptation solutions, including their feasibility, costs and benefits
- National adaptation policies and actions
- **EU's Common Foreign and Security Policy**
- Global adaptation context

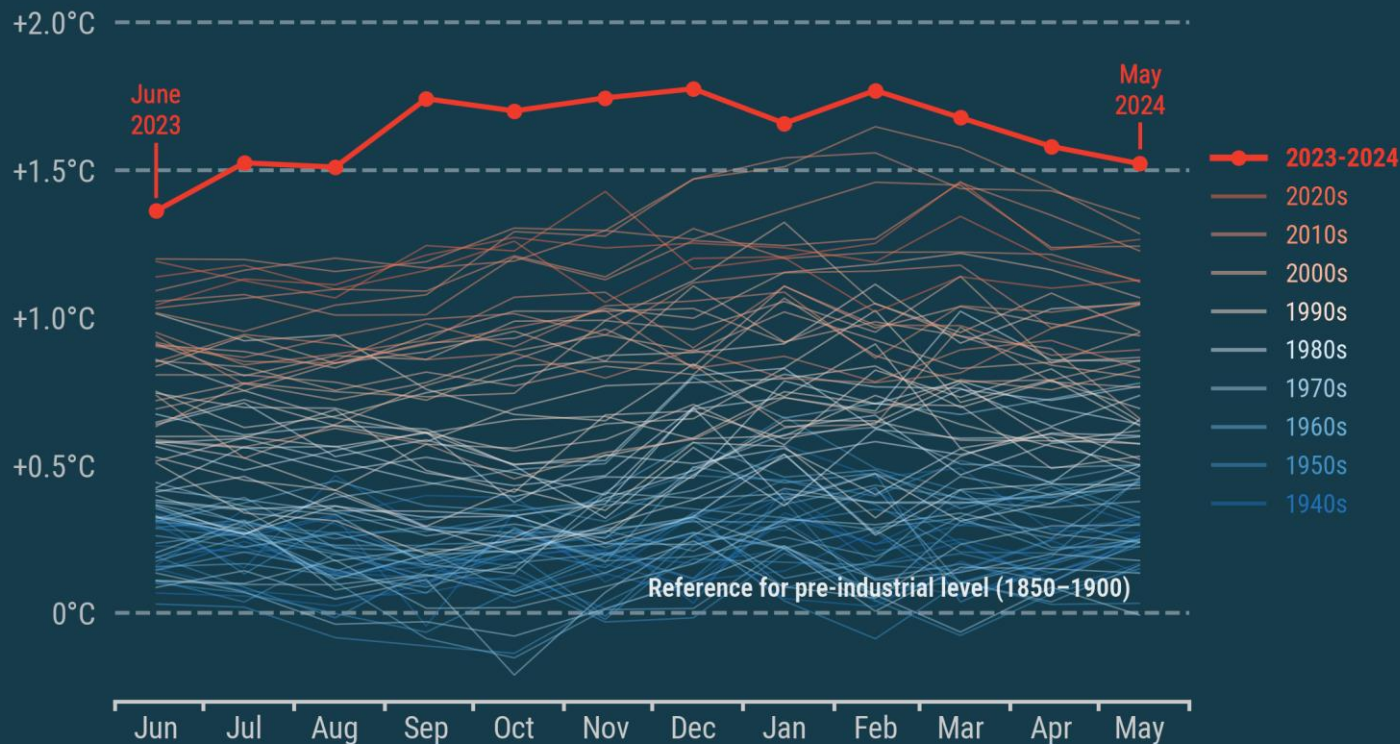
Joint Communication (European Commission, HR for Foreign Affairs and Security Policy): A new outlook on the climate and security nexus, 28 June 2023



Climate change and associated risks: our current reality

Monthly global surface temperature increase above pre-industrial

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



- 2023 was the warmest year on record globally, and likely during the last 100 000 years
- Each of the last 13 months has broken previous records
- Europe is the fastest warming continent
- Europe is increasingly experiencing unprecedented climate-related extremes



PROGRAMME OF THE
EUROPEAN UNION



European Environment Agency



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	



EUCRA synthesizing chapters:

Synthesis of findings from the thematic factsheets and risk storylines

**Major climate risks
for Europe**

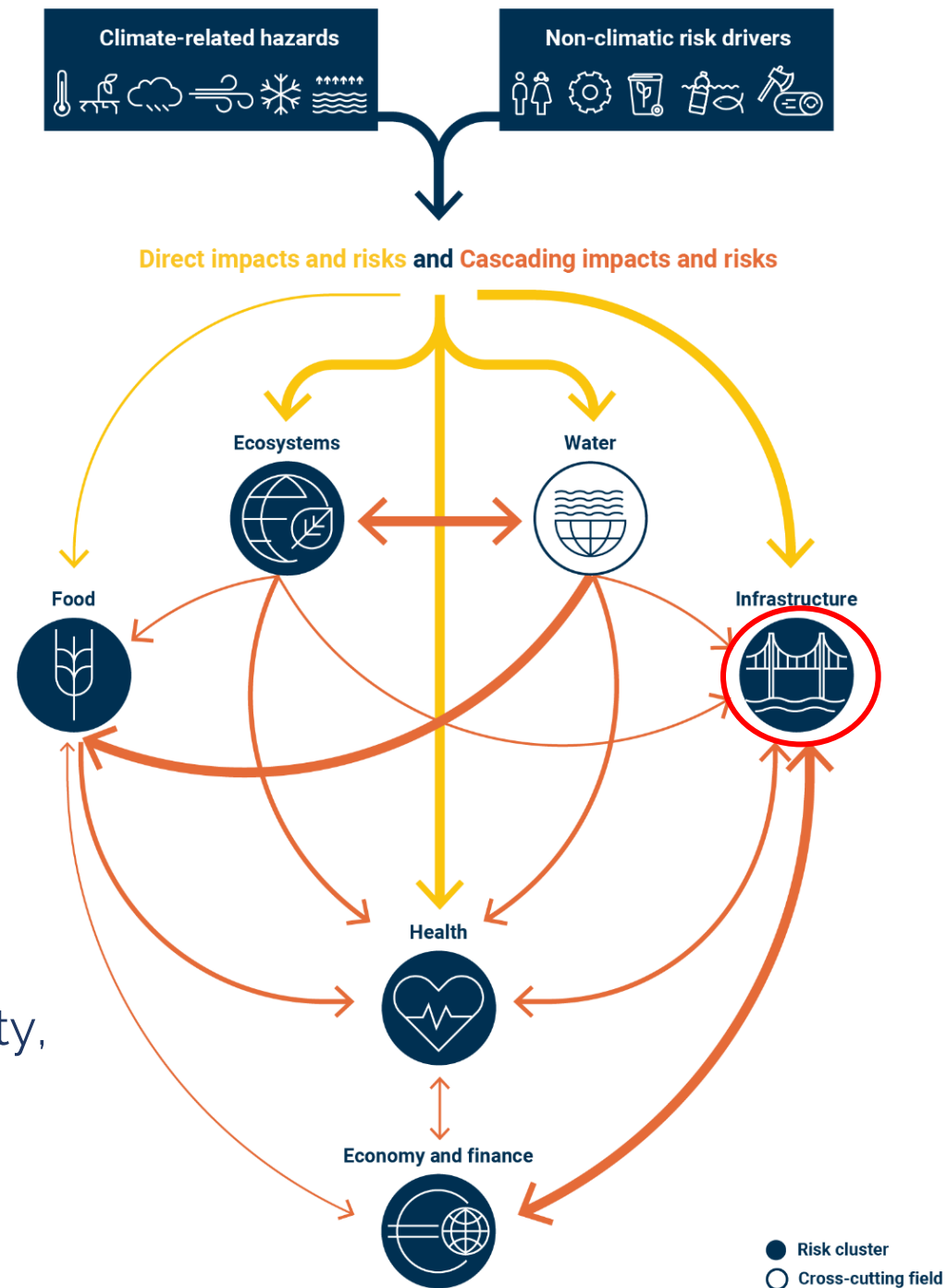
**Social justice
and cohesion**

**EU adaptation policies
and
risk ownership**

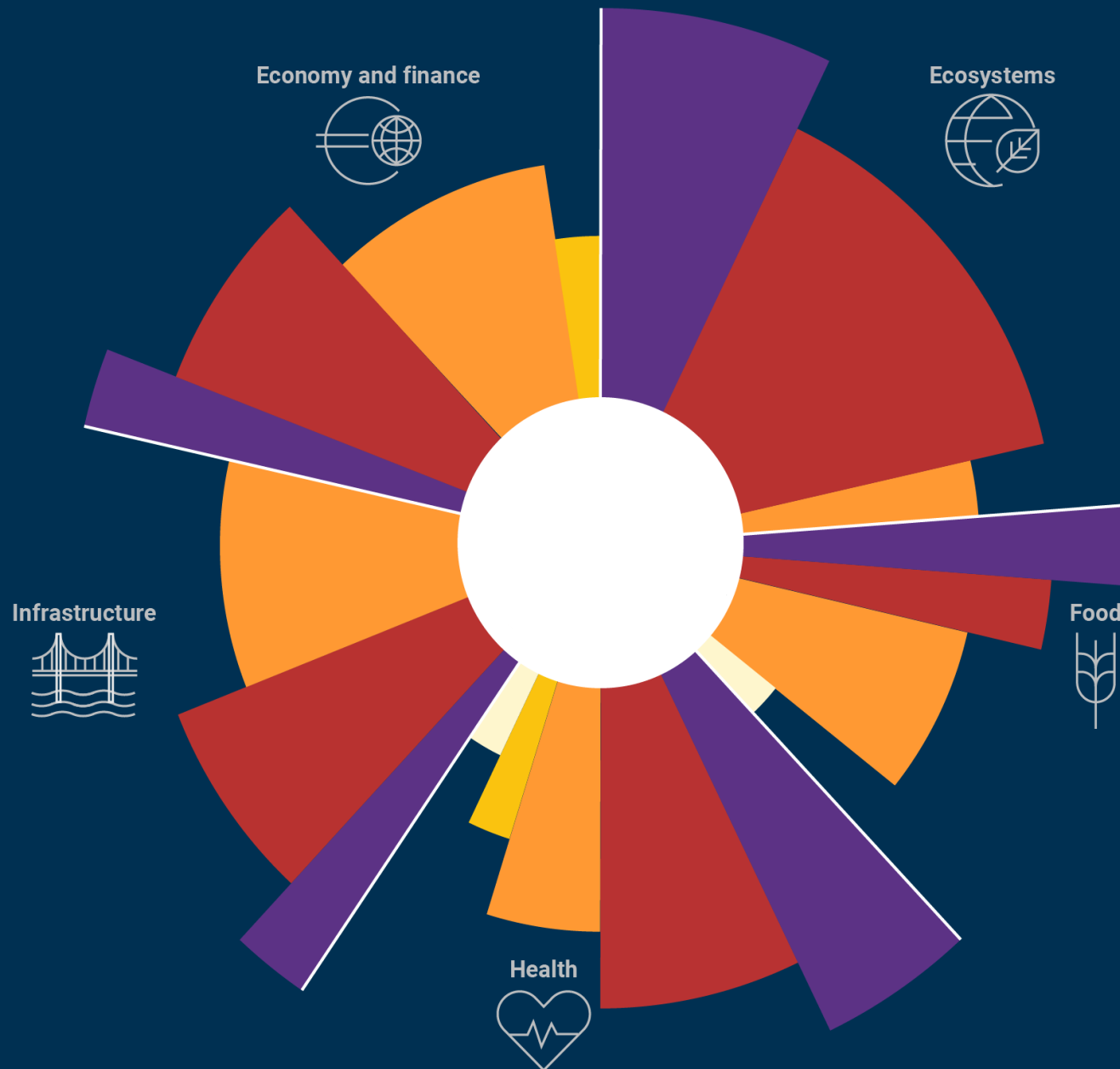
**Priorities
for action**

Climate risks can cascade from one system to another

- Climate risks are determined by **climate-related hazards** (heatwaves, floods, etc.), **non-climatic risk drivers** (land use, etc.) as well as **how prepared we are**.
- Climate change is a **risk multiplier** that can exacerbate existing risks and crises.
- **Cascading climate risks** can lead to system-wide challenges affecting whole societies, with vulnerable social groups most affected.
- For example, a **mega-drought** can lead to water scarcity, widespread crop losses, forest fires, poor air quality, disruptions of energy and transportation infrastructure, and threats to financial markets and stability.



Priorities for EU policy on climate adaptation



Urgent action is needed in all five risk clusters

Urgency to act:

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



Overview of aggregated risk assessment in EUCRA

Table 18.1 Risk assessment for 36 major climate risks for Europe

Climate risks	Urgency to act	Risk severity			Policy characteristics		
		Current	Mid-century	Late century (low/high warming scenario)	Policy horizon	Policy readiness	Risk ownership
Ecosystems							
Coastal ecosystems	High	+++	+++	+++	Medium	Medium	Co-owned
Marine ecosystems	High	+++	+++	++	Medium	Medium	EU
Biodiversity/carbon sinks due to wildfires (hotspot region: southern Europe)	High	+++	++	++	Medium	Medium	Co-owned
Biodiversity/carbon sinks due to wildfires	High	+++	++	++	Medium	Medium	Co-owned
Biodiversity/carbon sinks due to droughts and pests	High	+++	++	++	Long	Medium	Co-owned
Species distribution shifts (*)	High	+++	++	++	Medium	Medium	Co-owned
Ecosystems/society due to invasive species	High	+++	++	++	Medium	Medium	Co-owned
Aquatic and wetland ecosystems	High	+++	++	++	Medium	Medium	Co-owned
Soil health (*)	High	+++	++	++	Medium	Medium	Co-owned
Cascading impacts from forest disturbances	High	+	+	+	Long	Medium	Co-owned
Food							
Crop production (hotspot region: southern Europe)	High	+++	++	++	Short	Medium	Co-owned
Crop production	High	+++	++	++	Short	Medium	Co-owned
Food security due to climate impacts outside Europe (*)	High	++	++	+	Short	Medium	EU
Food security due to higher food prices	High	++	+	+	Short	Medium	Co-owned
Fisheries and aquaculture	High	++	+	+	Short	Medium	Co-owned
Livestock production	High	++	++	+	Short	Medium	Co-owned
Health							
Heat stress – general population	High	+++	+++	+++	Long	Medium	National
Population/built environment due to wildfires (hotspot region: southern Europe)	High	+++	+++	+++	Medium	Medium	Co-owned
Population/built environment due to wildfires	High	+++	++	++	Medium	Medium	Co-owned
Wellbeing due to non-adapted buildings (**)	High	++	++	++	Long	Medium	Co-owned
Heat stress – outdoor workers (hotspot region: southern Europe)	High	+++	+++	+++	Short	Medium	Co-owned
Heat stress – outdoor workers	High	+++	+++	+++	Short	Medium	Co-owned
Pathogens in coastal waters	High	+	+	+	Medium	Medium	Co-owned
Health systems and infrastructure	High	+++	++	++	Medium	Medium	National
Infectious diseases	High	+++	++	++	Short	Advanced	Co-owned

Table 18.1 Risk assessment for 36 major climate risks for Europe (cont.)

Climate risks	Urgency to act	Risk severity			Policy characteristics		
		Current	Mid-century	Late century (low/high warming scenario)	Policy horizon	Policy readiness	Risk ownership
Infrastructure							
Pluvial and fluvial flooding	High	+++	+++	++	Long	Medium	Co-owned
Coastal flooding	High	+++	+++	+++	Long	Advanced	Co-owned
Damage to infrastructure and buildings (**)	High	++	++	++	Long	Medium	Co-owned
Energy disruption due to heat and drought (hotspot region: southern Europe)	High	++	++	++	Medium	Medium	Co-owned
Energy disruption due to heat and drought	High	++	++	+	Medium	Medium	Co-owned
Energy disruption due to flooding	High	++	++	++	Long	Advanced	Co-owned
Marine transport	High	++	++	++	Medium	Medium	Co-owned
Land-based transport	High	++	++	++	Medium	Medium	Co-owned
Economy and finance							
European solidarity mechanisms	High	+++	++	++	Short	Medium	Co-owned
Public finances	High	++	++	++	Medium	Medium	Co-owned
Property and insurance markets	High	++	++	++	Medium	Medium	Co-owned
Population/economy due to water scarcity (hotspot region: southern Europe)	High	++	++	++	Medium	Medium	Co-owned
Population/economy due to water scarcity	High	++	++	++	Medium	Medium	Co-owned
Pharmaceutical supply chains (*)	High	++	+	+	Short	Medium	EU
Supply chains for raw materials and components (*)	High	++	++	++	Short	Medium	EU
Financial markets	High	+	+	+	Short	Medium	Co-owned
Winter tourism	High	+++	+++	++	Medium	Advanced	National

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

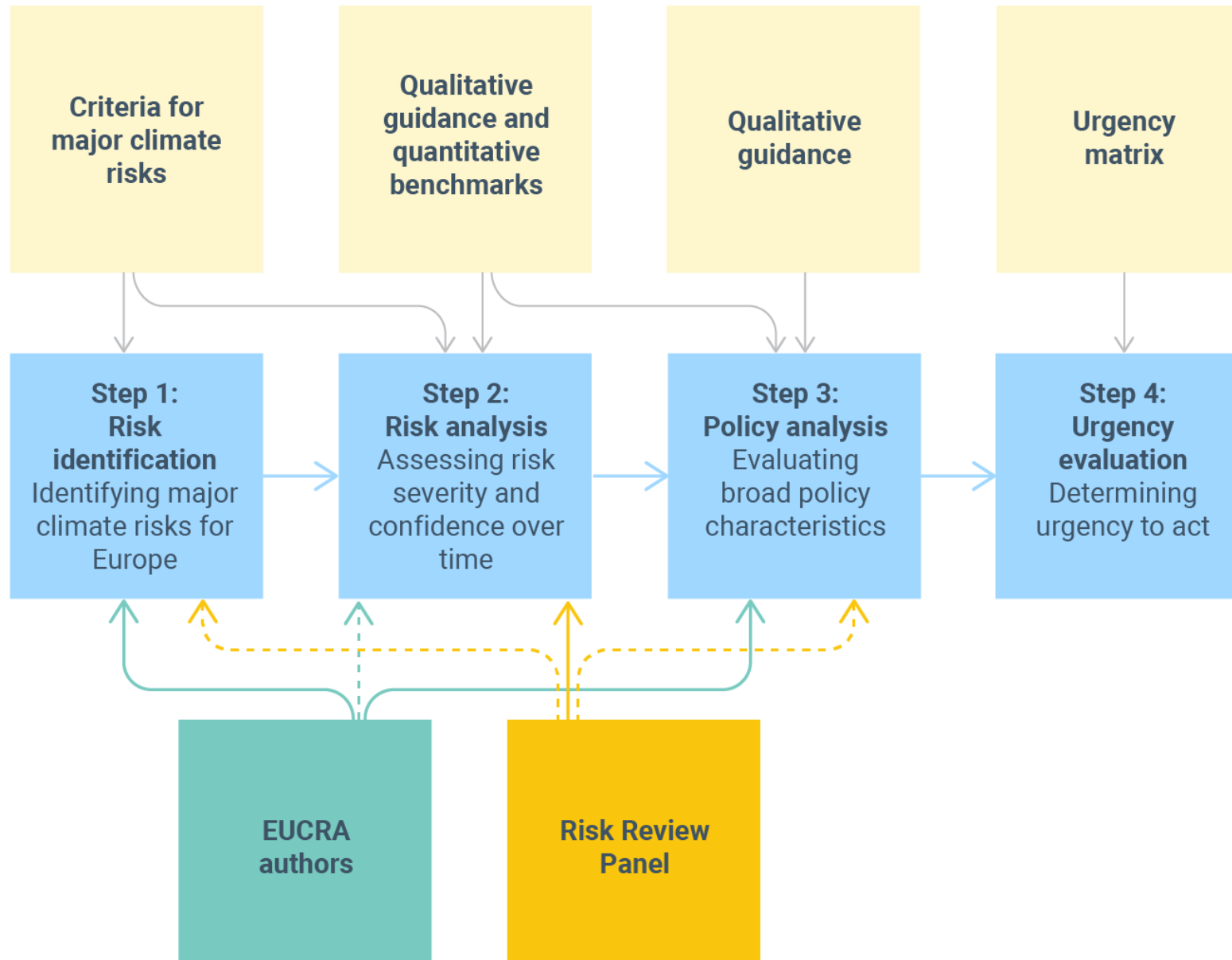
Confidence

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

(*) Wide range of evaluations by authors and risk reviewers.
 (**) Urgency based on high warming scenario (late century).



EUCRA: Structured risk evaluation



Risk urgency matrix (underlying step 4)

Matrix for determining urgency to act (for single time horizon)
based on risk severity, confidence and policy readiness

Risk severity	Confidence	Policy readiness		
		Very advanced	Advanced	Medium / Low
Catastrophic	High	<i>More action needed</i>	<i>Urgent action needed</i>	<i>Urgent action needed</i>
	Medium	<i>Further investigation</i>	<i>More action needed</i>	<i>Urgent action needed</i>
	Low	<i>Further investigation</i>	<i>Further investigation</i>	<i>More action needed</i>
Critical	High	<i>Sustain current action</i>	<i>More action needed</i>	<i>Urgent action needed</i>
	Medium	<i>Sustain current action</i>	<i>Further investigation</i>	<i>More action needed</i>
	Low	<i>Sustain current action</i>	<i>Further investigation</i>	<i>Further investigation</i>
Moderate	High	<i>Sustain current action</i>	<i>Sustain current action</i>	<i>More action needed</i>
	Medium	<i>Sustain current action</i>	<i>Sustain current action</i>	<i>Further investigation</i>
	Low	<i>Sustain current action</i>	<i>Sustain current action</i>	<i>Further investigation</i>
Limited	High	<i>Sustain current action</i>	<i>Sustain current action</i>	<i>Watching brief</i>
	Medium	<i>Sustain current action</i>	<i>Sustain current action</i>	<i>Watching brief</i>
	Low	<i>Sustain current action</i>	<i>Sustain current action</i>	<i>Watching brief</i>

*Further consideration of **policy horizon** (lead time, decision horizon)*



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	High	Critical	Critical	Long	Medium	Co-owned
Coastal flooding	More action needed	High	Critical	High	Long	Advanced	Co-owned
Damage to infrastructure and buildings (*)	More action needed	Medium	Medium	Medium	Long	Medium	Co-owned
Energy disruption due to heat and drought (hotspot region: southern Europe)	More action needed	Medium	Medium	Medium	Medium	Medium	Co-owned
Energy disruption due to heat and drought	Further investigation	Medium	Medium	Medium	Medium	Medium	Co-owned
Energy disruption due to flooding	Further investigation	Medium	Medium	Medium	Long	Advanced	Co-owned
Marine transport	Further investigation	Medium	Medium	Medium	Medium	Medium	Co-owned
Land-based transport	Further investigation	Medium	Medium	Medium	Medium	Medium	Co-owned

Legends and notes

Urgency to act

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

Risk severity

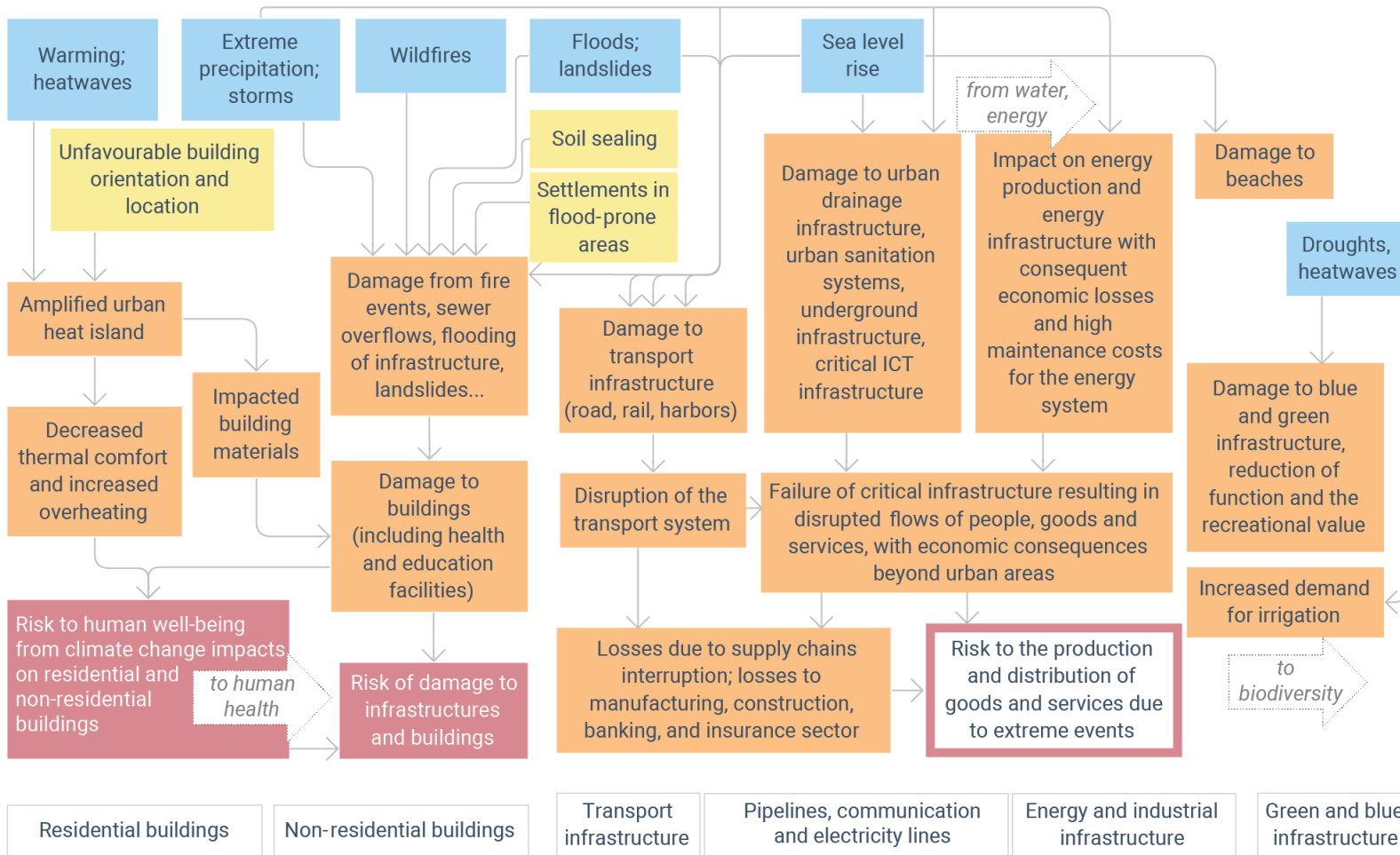
- Catastrophic
- Critical
- Substantial
- Limited

Confidence

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

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

Impact chain for major climate risks related to the built environment



Built environment



- Climate-related hazard
- Non-climatic risk driver
- Direct or indirect impact

- Major climate risk (risk assessment tables presented in this chapter)
- Climate risk not formally assessed in EUCRA

- Exposed subsystem

Link to other factsheets and storylines



Key messages: Risks in the infrastructure cluster

Extreme weather events are posing increasing risks to the built environment and infrastructure in Europe, as well as the services they provide.

This risk is further exacerbated by the ageing condition of much of Europe's buildings and infrastructure, as well as growing demand for the services they provide.

Risks from pluvial, fluvial and coastal flooding are the most urgent to evaluate and address.

Recent inland floods have led to very large economic losses in both absolute terms (e.g. 2021 flood in BE, DE, NL: EUR 44 billion) and relative terms (e.g. 2023 flood in SI: 16% of GDP).

The accelerating pace of sea level rise and the exponential increase in the resulting coastal flooding risks require more action now to prepare settlements and critical infrastructure.

Infrastructure assets are often part of a network of systems, where a disruption to one asset can quickly cascade and affect other sectors and assets.

Climate-related power outages or disruptions of digital infrastructure can disrupt transportation systems, health systems, and nearly all economic activities.

Poorly adapted dwellings and other buildings can increase the risk of heat stress during heatwaves.

Key messages: Policy priorities in the infrastructure cluster

Key priorities include conducting assessments and implementing actions to enhance the resilience of critical infrastructure on a systems level, and incorporating climate projections into the Eurocodes.

The potential of the Critical Entities Resilience Directive (adopted in 2022) should be utilised to the fullest.

The EU should carry out or facilitate systems-level assessments of current and future climate risks to critical infrastructure in Europe, including the trans-European networks for transport and energy.

More clarity on the location, exposure and vulnerability of private and public critical infrastructure is essential for assessing risk ownership and the financial implications from risk management measures.

European standards (Eurocodes), which are largely based on historical climate data, need to incorporate climate projections, including worst-case scenarios for particularly critical assets.

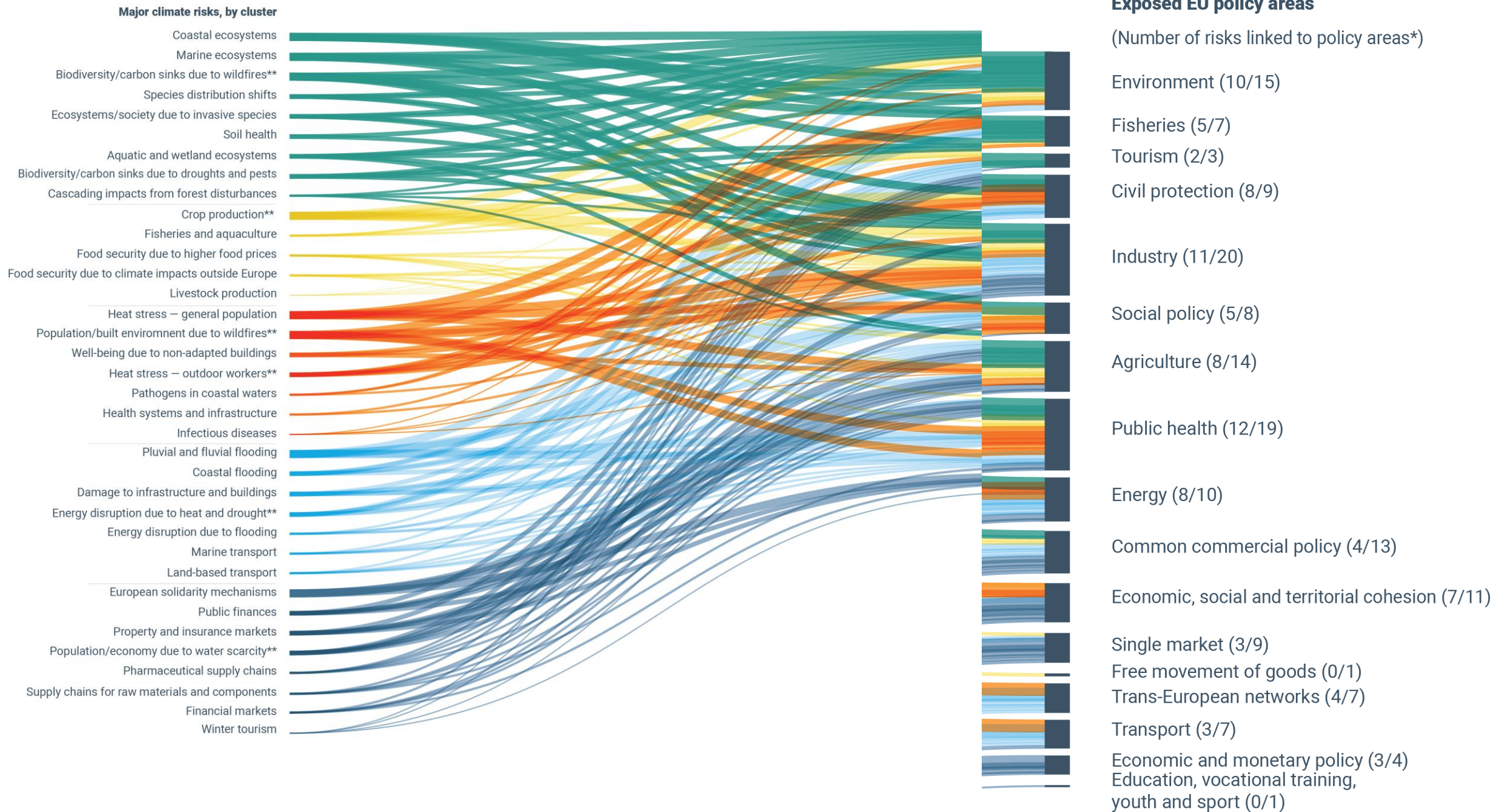
Increasing resilience to climate change needs to be an essential part of EU climate and energy policies, including integrated national energy and climate plans (NECPs).

Ensuring security of supply in southern Europe during prolonged droughts and heatwaves is key.

In this context, developing low-carbon approaches for cooling buildings, both passively and actively, and facilitating their wide implementation, is a high priority.

The operation of existing energy infrastructure and the planning of new infrastructure should incorporate hydrological forecasting and monitoring systems.

Nearly all EU policy areas are exposed to climate risks



EUCRA uptake by EU institutions and other stakeholders

European Commission

- 12 March: [EC Communication](#)
- 12 March: [Press conference](#)

European Parliament

- 12 March: [Plenary debate](#)
- 19 March: [ENVI Committee](#)

Council of the EU

- 25 March: [Environment Council](#)
- 17 June: [Environment Council](#)
- Council Working Partys on Environment, Energy, Health, Tourism, Industry, and Agenda 2030

Belgian Council Presidency

- High-level conferences on climate adaptation

Commission sets out key steps for managing climate risks to protect people and prosperity



The European Commission has today published a [Communication on managing climate risks in Europe](#). It sets out how the EU and its Member States can better anticipate, understand, and address growing climate risks, and how they can prepare and implement policies that save lives, cut costs, and protect prosperity across the EU.

- [Press release](#)
- [Questions and answers](#)
- [A factsheet](#)

Opening statement by Wopke Hoekstra, European Commissioner, on EU climate risk assessment, taking urgent action to improve security and resilience in Europe, extract from the plenary session of the EP



Opening statement by Wopke HOEKSTRA, European Commissioner for Climate Action

[Share the video](#)

ID: I-254302

Type : Complete speech

Date: 12/03/2024

Location(s): Strasbourg - EP/Louise-Weiss

Tag(s): [European Parliament - session](#)

Personalities: [Wopke Hoekstra](#)

Duration: 00:07:47

Language(s): [Original](#), [English](#), [Français](#), [Deutsch](#), [Italiano](#), [Español](#), [Ελληνικά](#), [Português](#), [Nederlands](#)

EUCRA media headlines: "Europe is unprepared"

POLITICO

EU election | War in Ukraine | Israel-Hamas war | Farmers' protests | Newsletters

NEWS ENERGY AND CLIMATE

5 things we learned from the EU's big (and first) climate risk report

Farming must change. Diets must evolve. Southern Europe is at risk. And disaster looms if EU leaders don't act after June's election.

FINANCIAL TIMES

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Climate change + Add to myFT

EU warned of rising risk of systemic financial shocks from continent warming

Environmental agency says region should prepare for long-term average temperature rise of at least 3C by 2050

"Dringende actie noodzakelijk" om Europa te wapenen tegen klimaatverandering

InsuranceERM
The online resource for enterprise risk management

Europe uninsured and underprepared for rapidly growing climate risks, says environment agency

11 March 2024

AP WORLD U.S. ELECTION 2024 POLITICS SPORTS ENTERTAINMENT BUSINESS SCIENCE FACT CHECK ODDITIES NEWSLETTERS

Israel-Hamas war 'Gorilla hail' Family Dollar closures Iditarod dog deaths Iron lung user dies

CLIMATE

Europe is not prepared for the growing climate extremes it faces, its first risk assessment finds



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GLOBAL WARMING

Europe unprepared for 'catastrophic' climate risks: EU agency

A European Climate Risk Assessment report published Tuesday reveals that Europe is desperately unprepared for the dangers of climate change, specifically vulnerable to wildfires, water shortages, flooding and erosion.

Issued on: 13/03/2024 - 09:37 ⌚ 3 min

NOS Nieuws • Gisteren, 00:03

Milieuagentschap: Europa onvoldoende voorbereid op klimaatrisico's



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Thank you

For more information:
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