



# Climate Risk and Resilience:

*Setting the scene for climate action in the energy sector*

Ine Vandecasteele  
REGILIENCE Open Training Session 5  
online, 10<sup>th</sup> December 2024

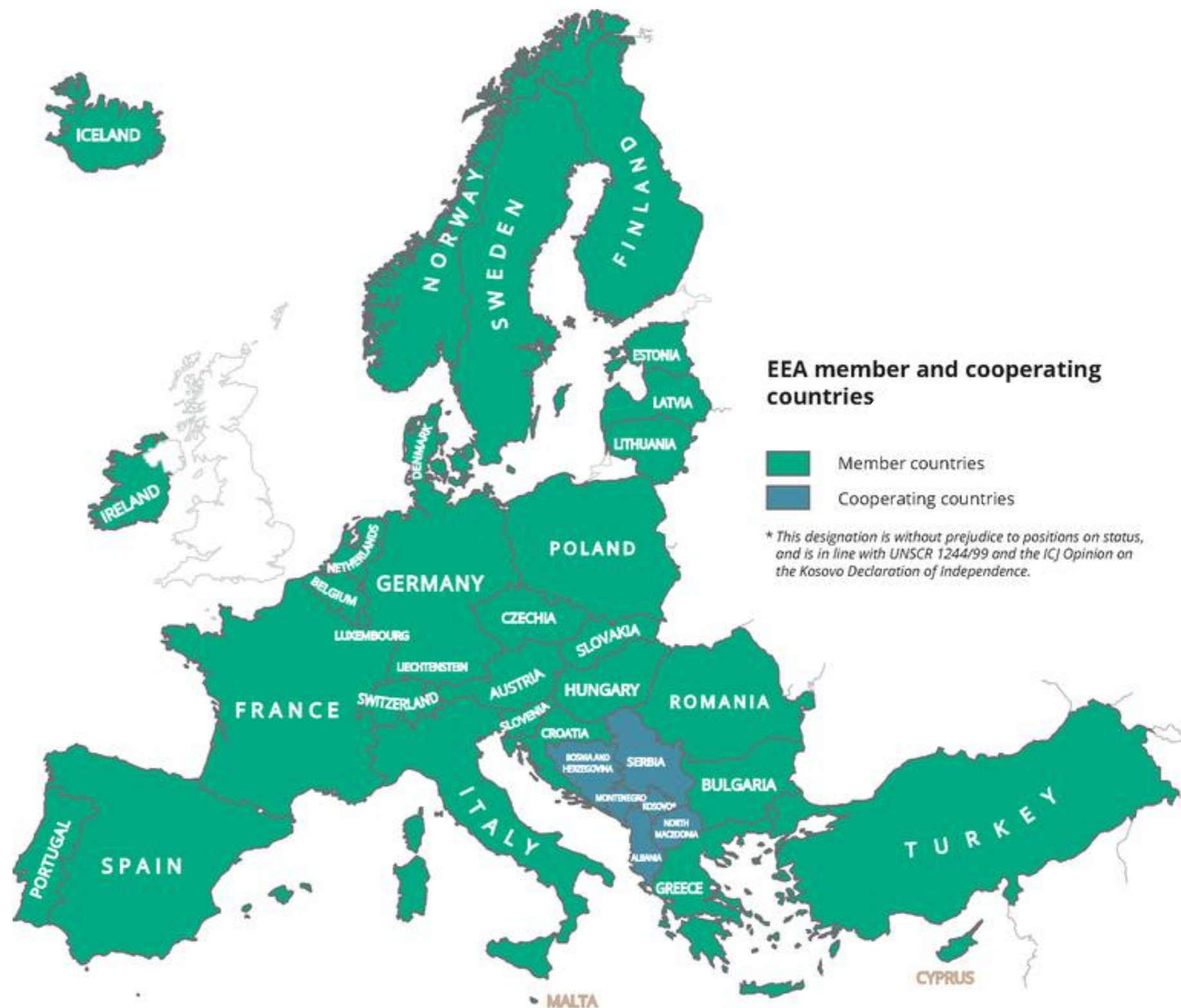
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European Environment Agency



# European Environment Agency


- Agency of the European Union
- EEA **gathers** data and information from across Europe and **translates** them into assessments and knowledge to **inform** policy and decision-making
- **Eionet**: network of more than 1000 experts and 350 institutions in 39 European countries



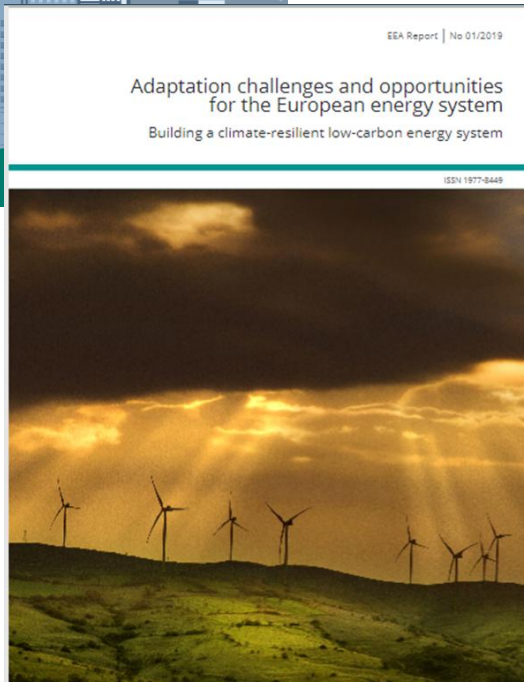
# Recent products - highlighting the need for accelerated climate action



## European Climate Risk Assessment



## Urban adaptation in Europe: What works?



## Adaptation in the energy sector

## Trends and projections in Europe 2024



### Briefings:

- ❖ Climate-ADAPT case studies
- ❖ Decarbonising heating and cooling



# Further EEA resources on climate adaptation and energy

Map

Adapting overhead lines to increasing temperatures (United Kingdom)

Replacing overhead lines with underground cables (Finland)

Flood risk management for hydropower plants (France)

Adaptation Sectors

- Agriculture
- Biodiversity
- Buildings
- Business and industry
- Coastal areas
- Cultural heritage
- Disaster Risk Reduction
- Energy
- Financial
- Forestry
- Health
- ICT
- Land use planning
- Marine and Fisheries
- Mountain areas
- Tourism
- Transport
- Urban
- Water management
- Non specific

Climate Impacts >

Key Type Measures >

Reset



[Climate-ADAPT Case Study Explorer](#)

[Climate-ADAPT Energy Page](#)

[Climate and Energy Portal](#)

*Feedback welcome*

## CLIMATE AND ENERGY IN THE EU

Find information on the EU and its Member States' progress towards their 2030 targets on climate and energy

The European Union is committed to becoming climate neutral by 2050, in pursuit of the temperature goal set out by the Paris Agreement. Reductions in greenhouse gas emissions will have to accelerate to reach the 2030 milestone and the long-term goals. This website provides direct access to data and analysis on key areas for achieving climate neutrality, based mainly on official information submitted by European countries to the European Environment Agency.

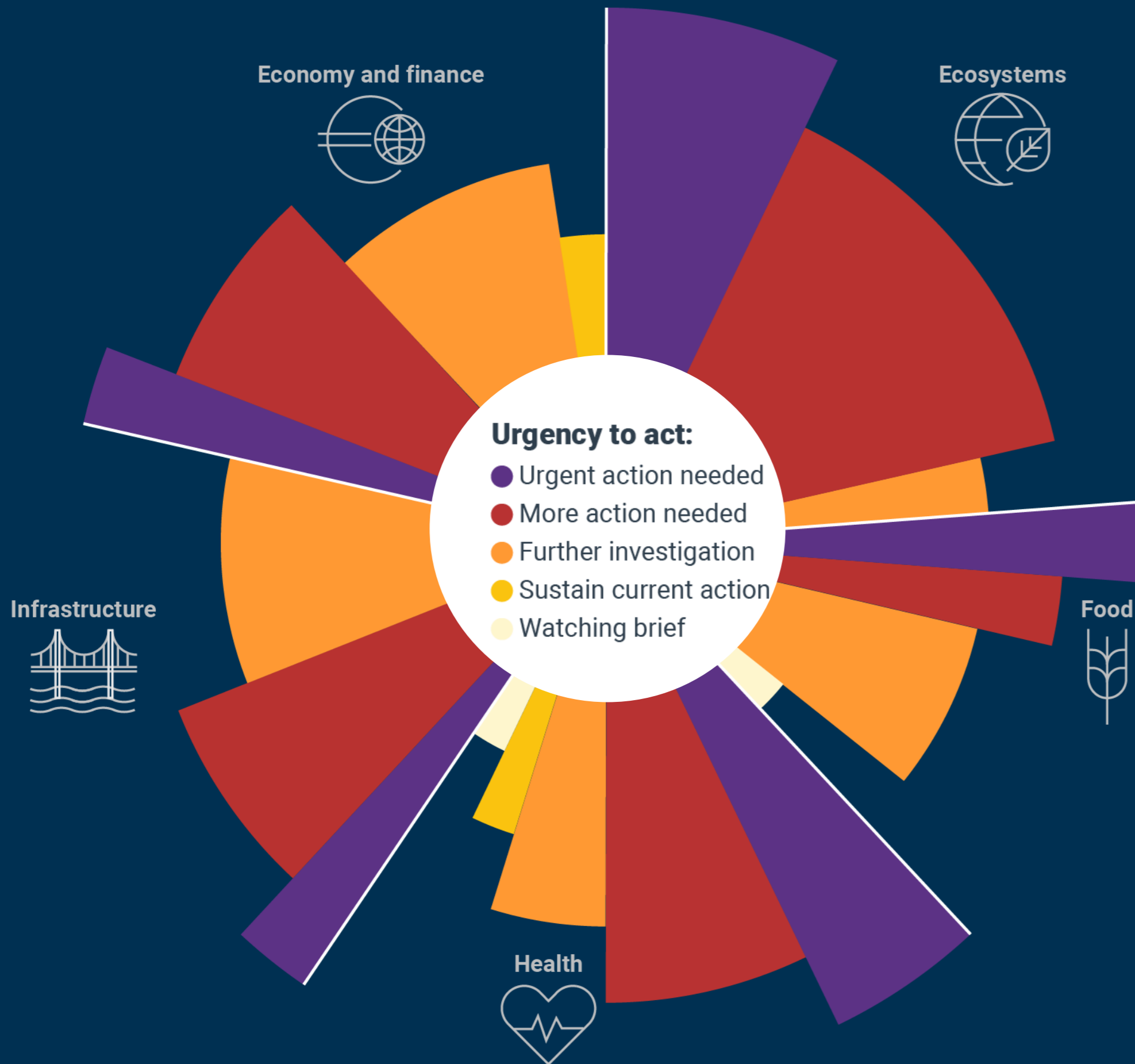
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*\*34 of 36 major climate risks could reach **critical levels** during this century under high warming scenarios*

*\***Urgent EU policy action is needed in all five risk clusters***

# Why do we need to adapt our built environment?

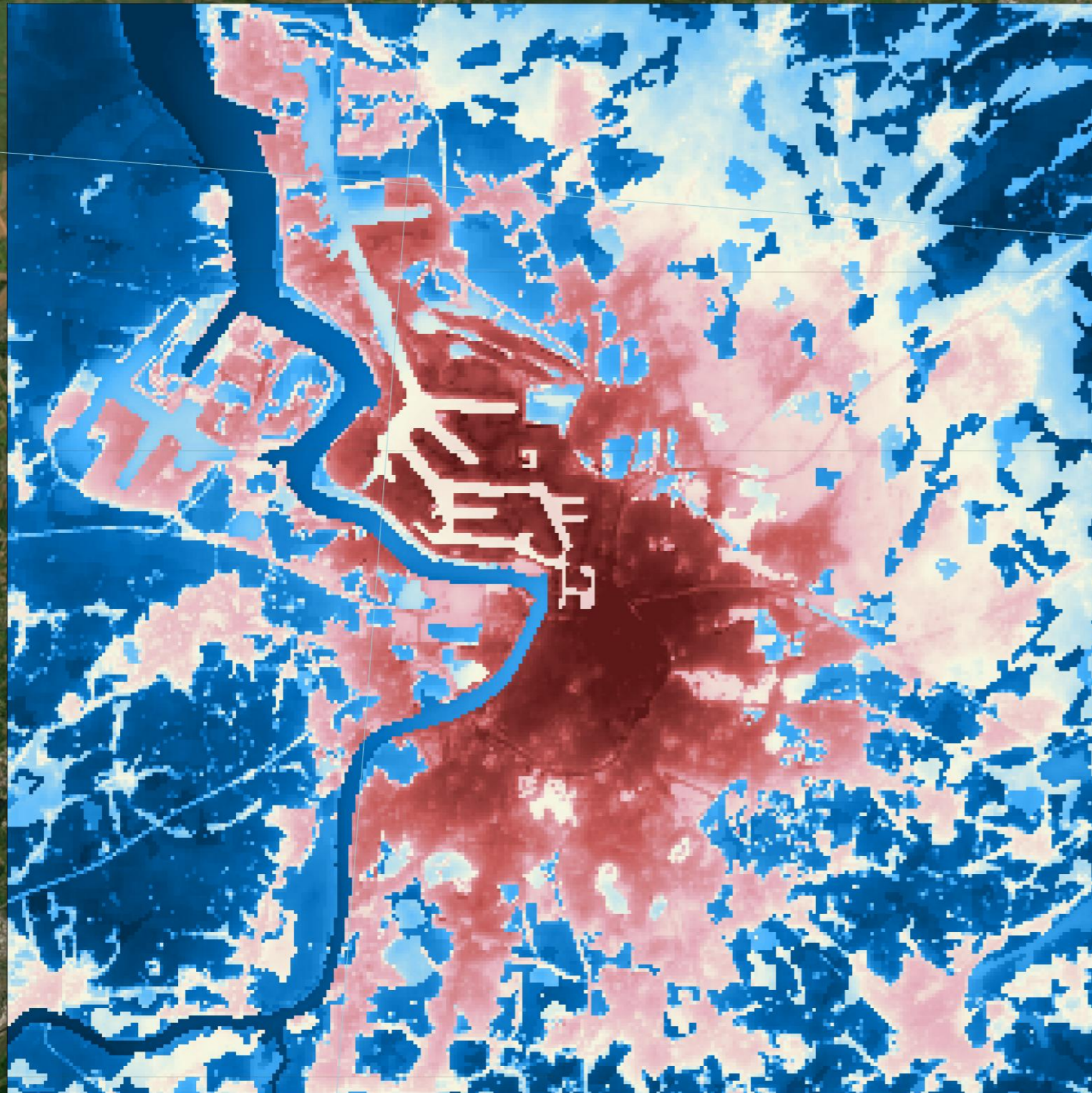
- \* Urban surface temperatures up to **10-15°C warmer**

- \* **27%** urban areas with significant (>10%) increase in population in floodplains 2011 - 2021

- ❖ 75% of buildings in Europe are energy inefficient

- ❖ 34 Million people in Europe experience energy poverty

**Urban heat island effect, Antwerp, Belgium.**  
*Copernicus Health Services/VITO*





## 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	Medium	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	Low	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: +++

#### Examples of vulnerabilities and risks cited include:

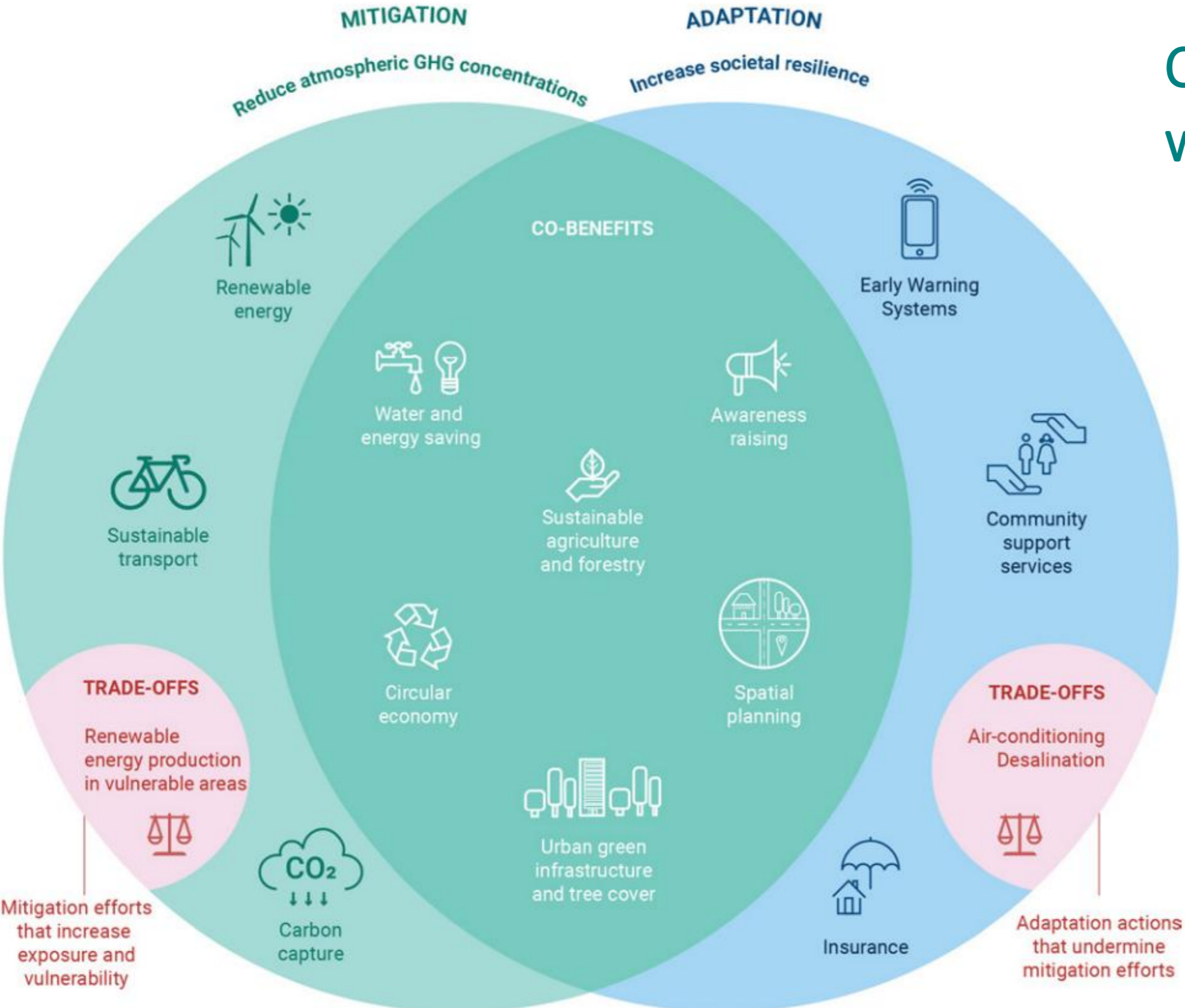
- Spain identifying the vulnerability of the energy system to water scarcity under the Research, innovation and competitiveness dimension.
- Finland identifying a reduction in the availability and quality of biomass as a risk across Decarbonisation (GHG emissions and removals and renewable energy).
- Portugal identifying concerns around water availability, droughts, and fire risks, impacting renewable energy production (especially hydropower) as part of the Decarbonisation: renewable energy dimension.

# Climate risks in energy systems

- ❖ increased cooling demand,
- ❖ regional reductions in hydropower potential, reduced efficiency of thermal power plants and electricity transmission
- ❖ impacts of extreme weather events on energy infrastructure
  - **Southern Europe faces the largest risks to its energy security -**  
Prolonged droughts affecting electricity supply in combination with heatwaves affecting peak electricity demand can lead to power cuts.
  - **A stable and affordable energy supply is central for a modern society -**  
Risks to energy supply can cascade to all societal sectors and activities, threatening security, economic well-being, and human health.



# Climate action – what can be done?



\*Need to prioritize actions that meet **both** mitigation & adaptation goals

**\*Especially important in the energy sector**

How are cities adapting?



Share of reported actions by cities  
CDP, 2022





## Key take-aways

- Cities are particularly vulnerable to the impacts of climate change, but can also be **key drivers of transformative change**.
- Climate action in the energy sector needs to prioritise **actions with both mitigation and adaptation benefits**, including diversification of energy supply and prioritization of renewables, improving energy efficiency and demand-side management
- **Social justice** considerations are essential in energy adaptation planning, ensuring equitable access to resources and addressing energy poverty.



# Thank you!

For further questions/feedback:

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*More specific questions on climate mitigation and emissions in the energy sector:*  
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