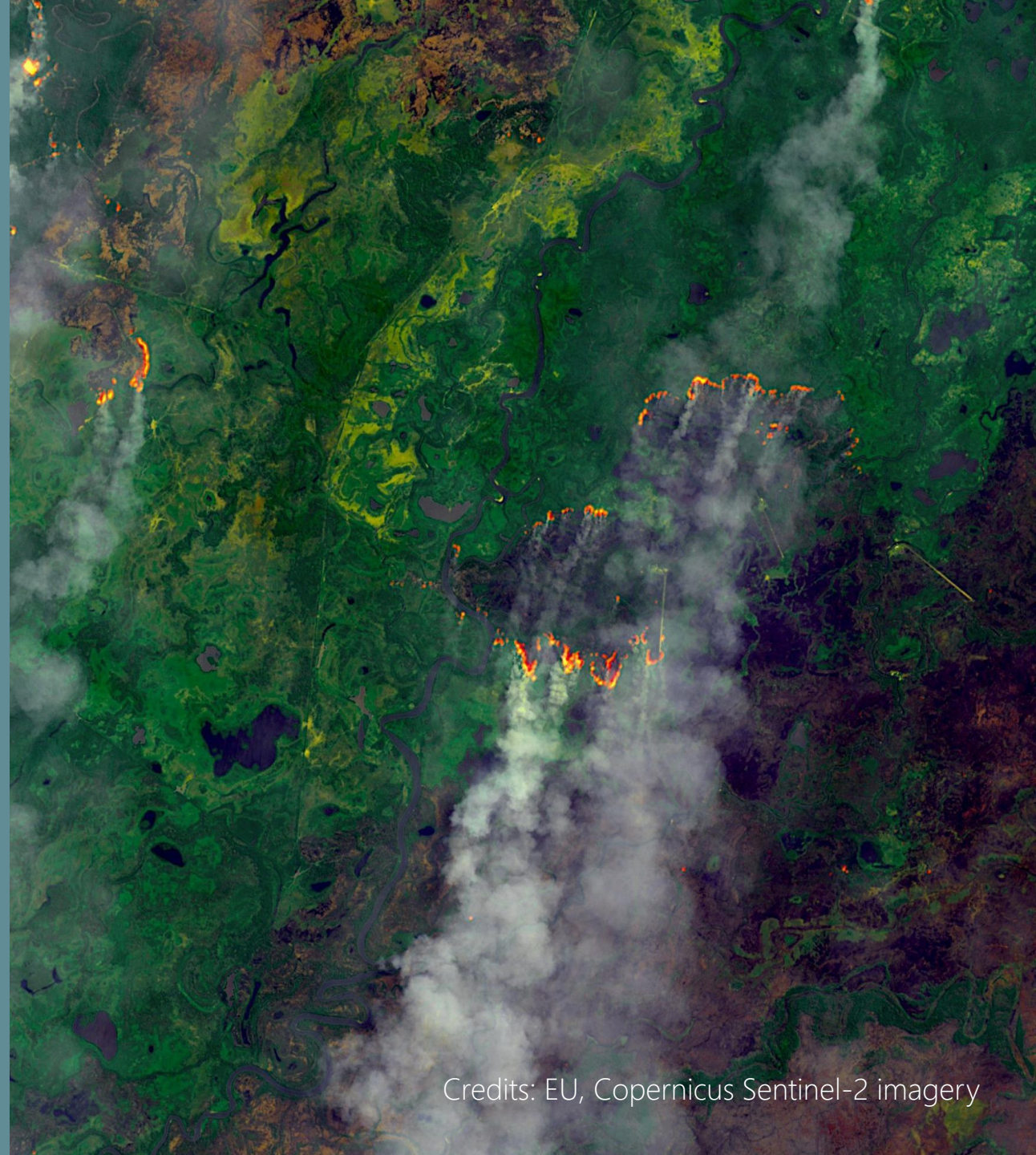


# Scientific advice for an EU policy framework on carbon removals

Elsa Malika Malki, 7 October 2025

EEA-ESA Conference on Earth Observation for  
Monitoring, Reporting and Verification of Carbon Removals



Credits: EU, Copernicus Sentinel-2 imagery

## The Advisory Board

“  
*shall serve as a point of reference for the  
Union on scientific knowledge relating to  
climate change by virtue of its independence  
and scientific and technical expertise.*”

European Climate Law, Article 3



# We have provided advice on energy, targets and policy gaps



**Towards a climate-neutral and climate-resilient EU energy infrastructure**  
Advice on scenario guidelines for trans-European networks for energy

16 November 2022



**Aligning policy responses to rising energy prices with the long-term climate neutrality objective**

7 February 2023



**Scientific advice for the determination of an EU-wide 2040 climate target and a greenhouse gas budget for 2030–2050**

15 June 2023

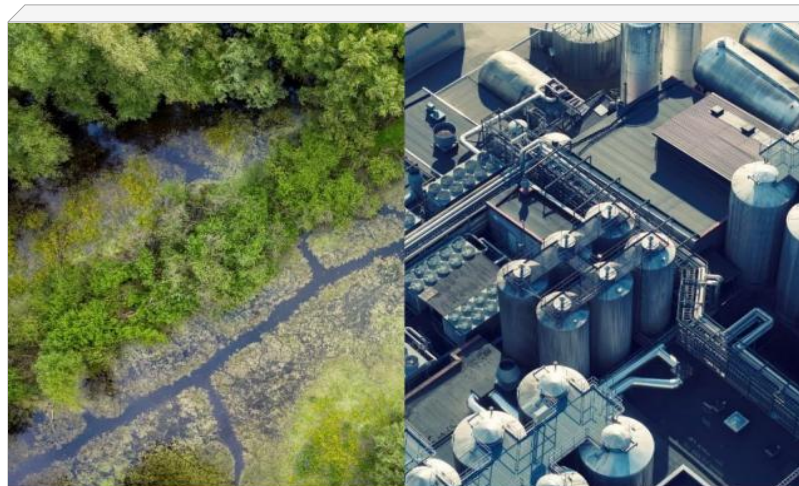


**Towards EU climate neutrality**  
Progress, policy gaps and opportunities

Assessment Report 2024

18 January 2024

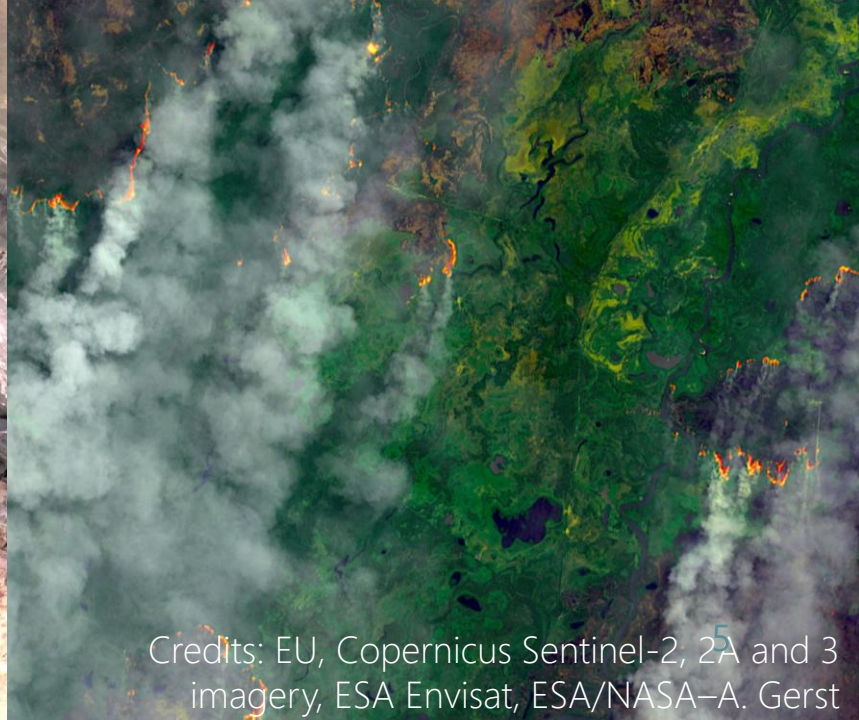
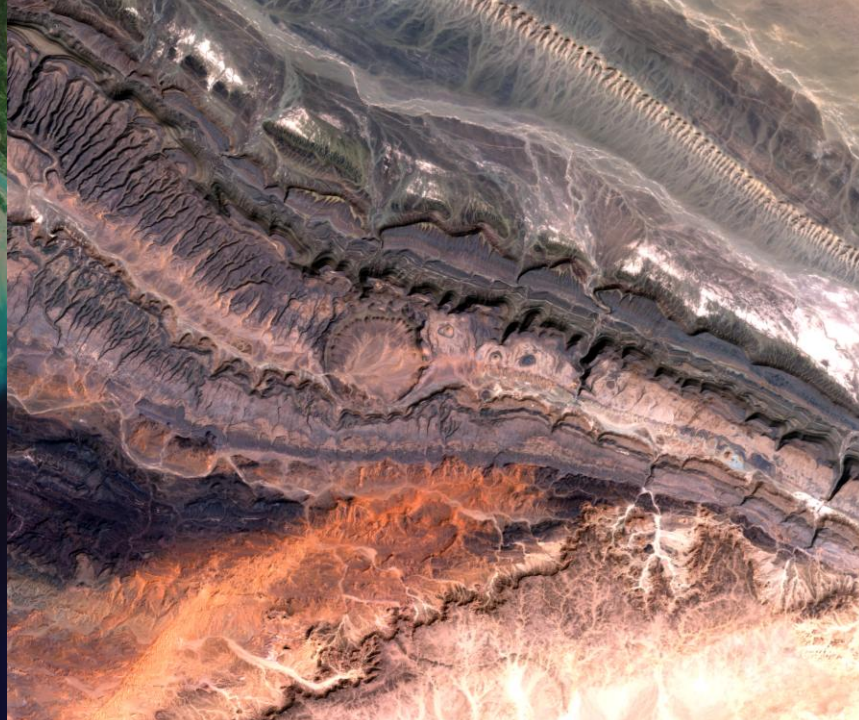
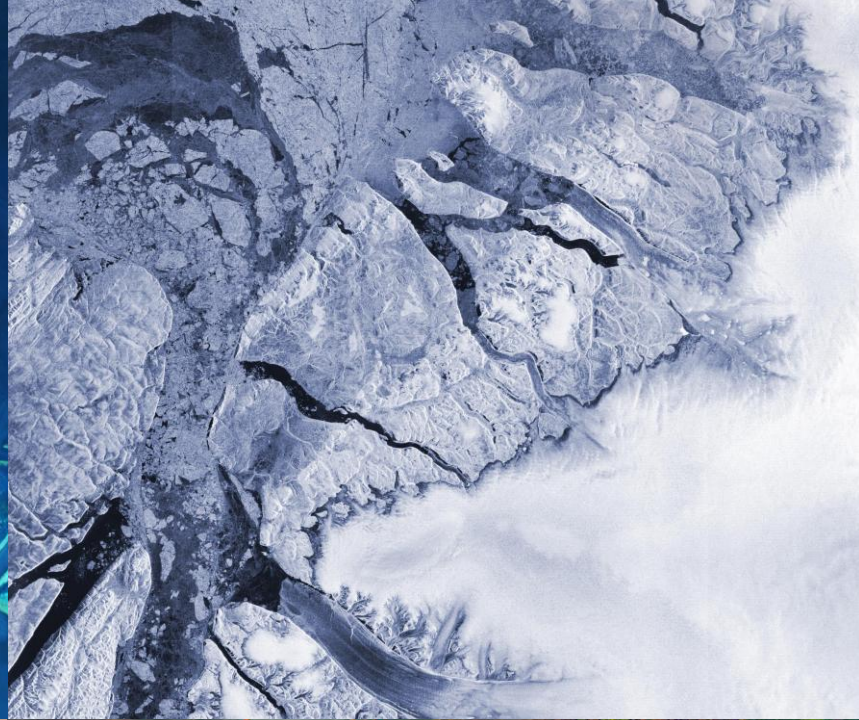




## Scaling up carbon dioxide removals

Recommendations for navigating  
opportunities and risks in the EU

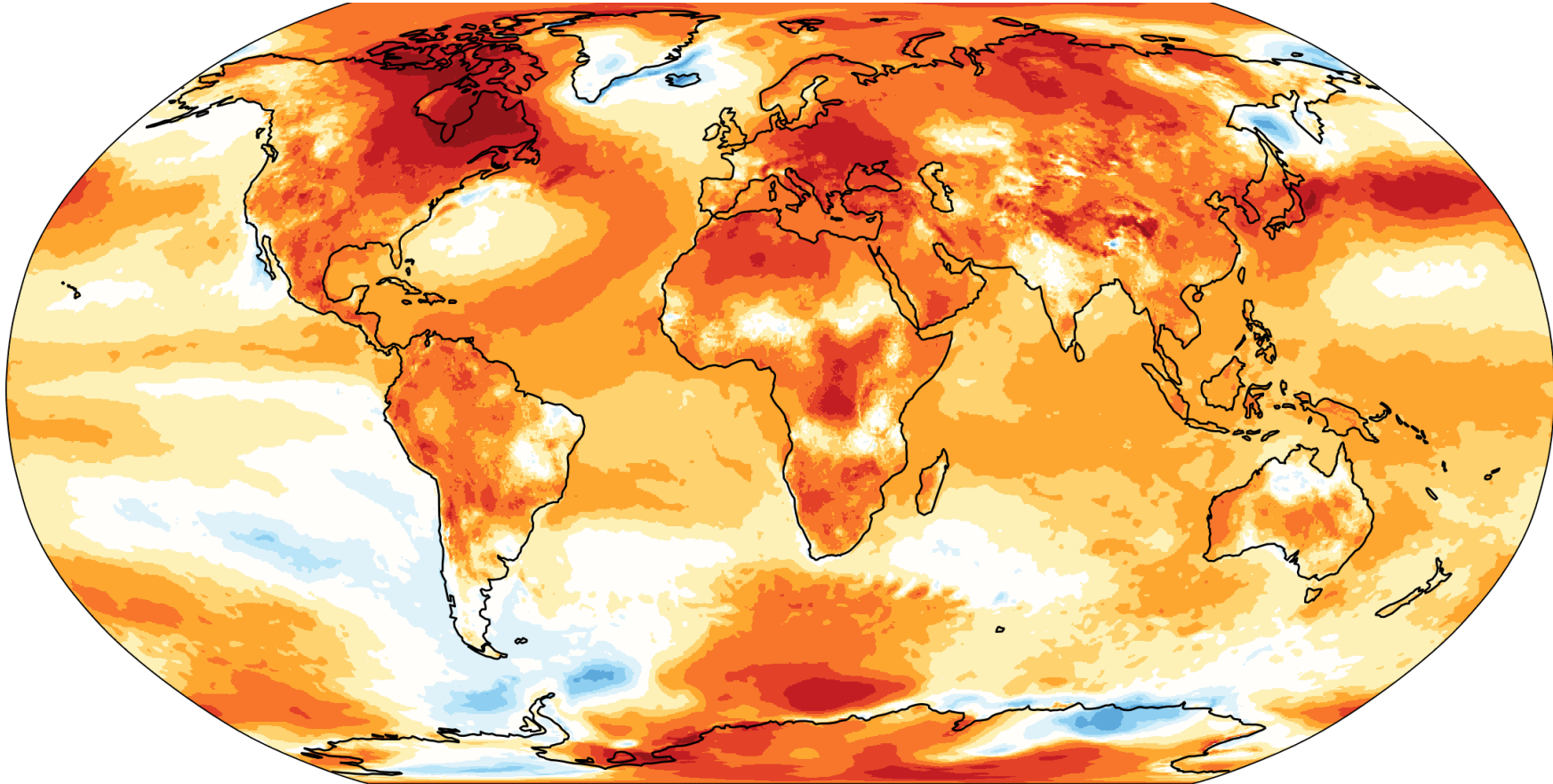
Climatic risk drivers are on the rise



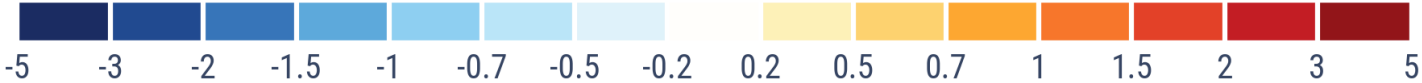
Credits: EU, Copernicus Sentinel-2, 2A and 3 imagery, ESA Envisat, ESA/NASA-A. Gerst

# 2024 was the warmest year on record

Surface air temperature anomalies in 2024 vs 1991–2020

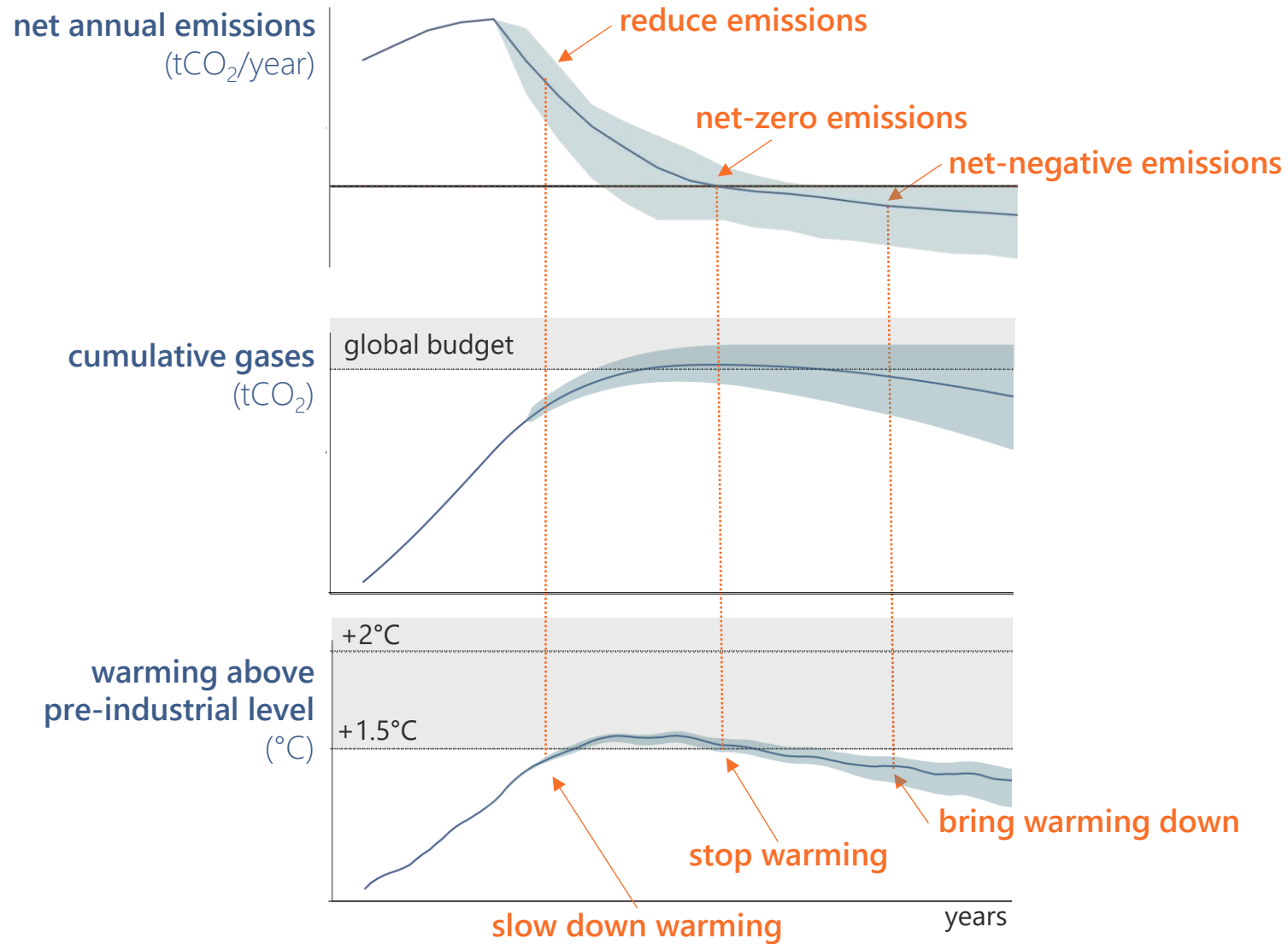


Anomaly (°C)

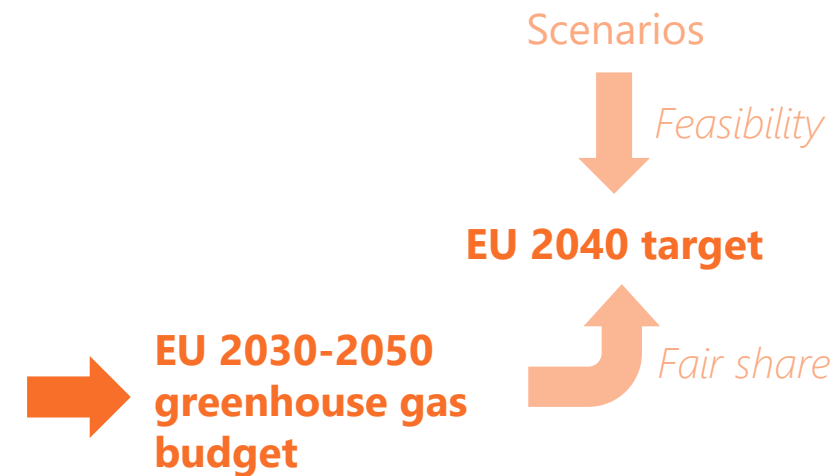
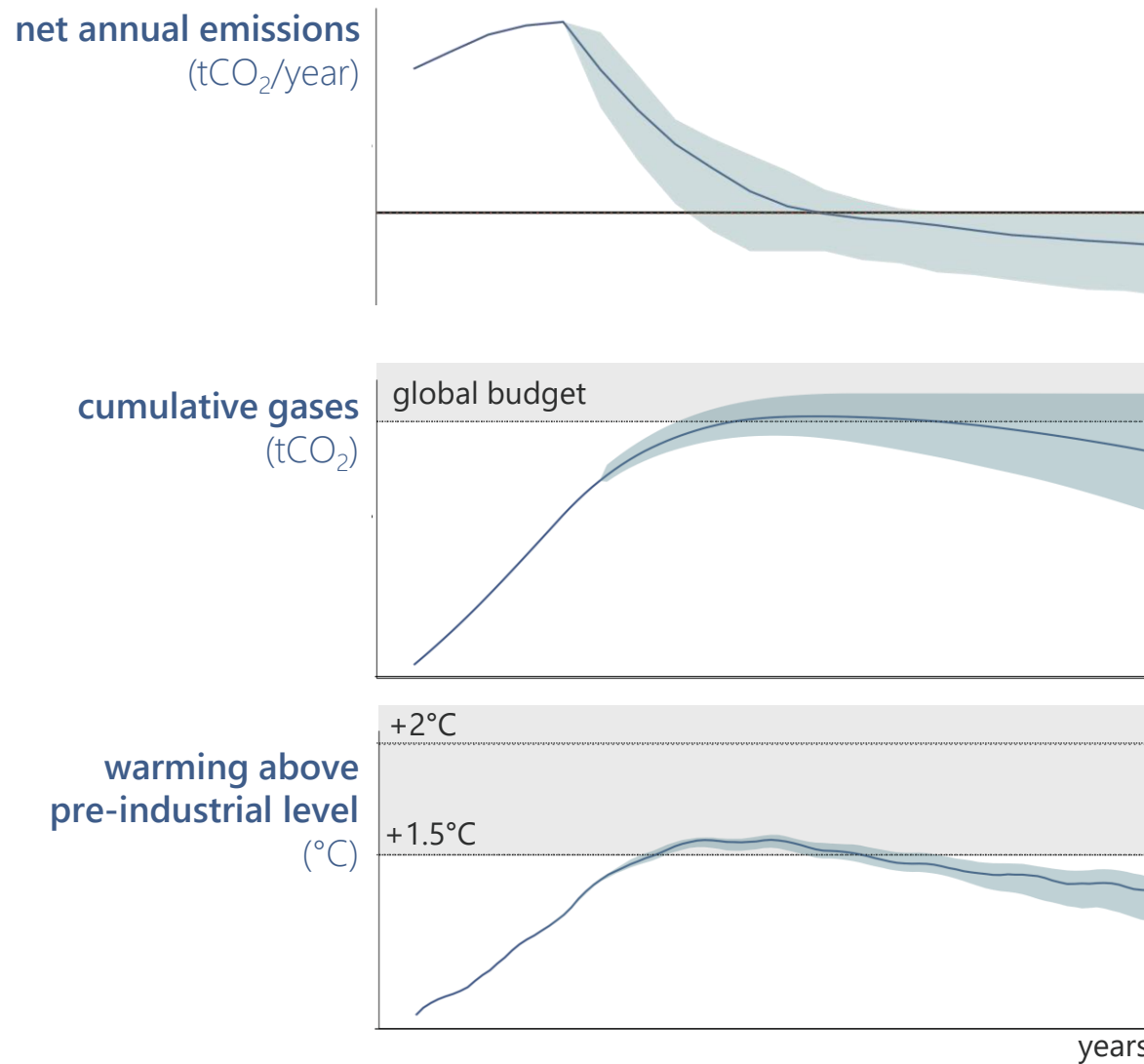


Data source: ERA5. Credit: C3S/ECMWF.

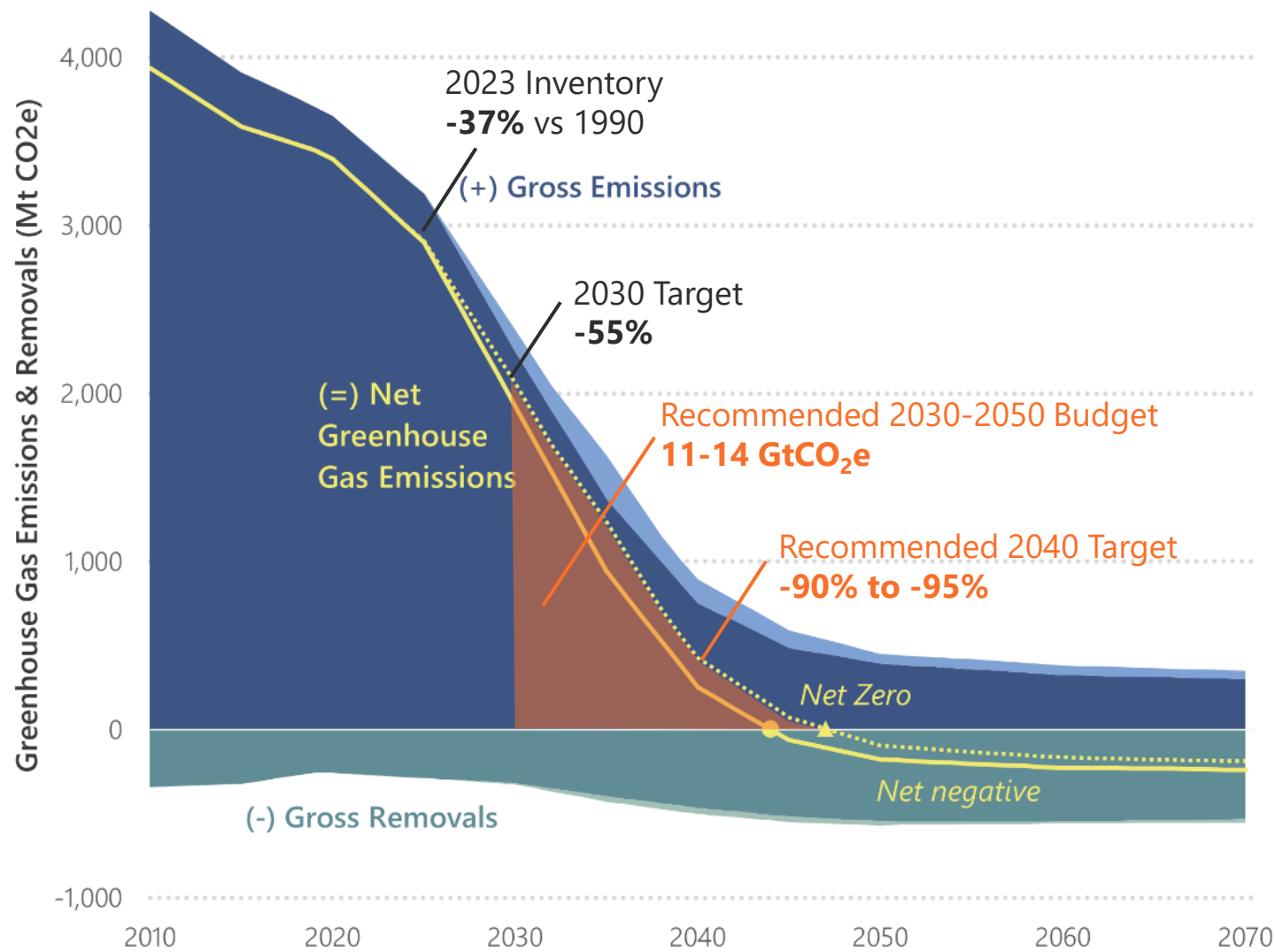
# From net zero to net negative



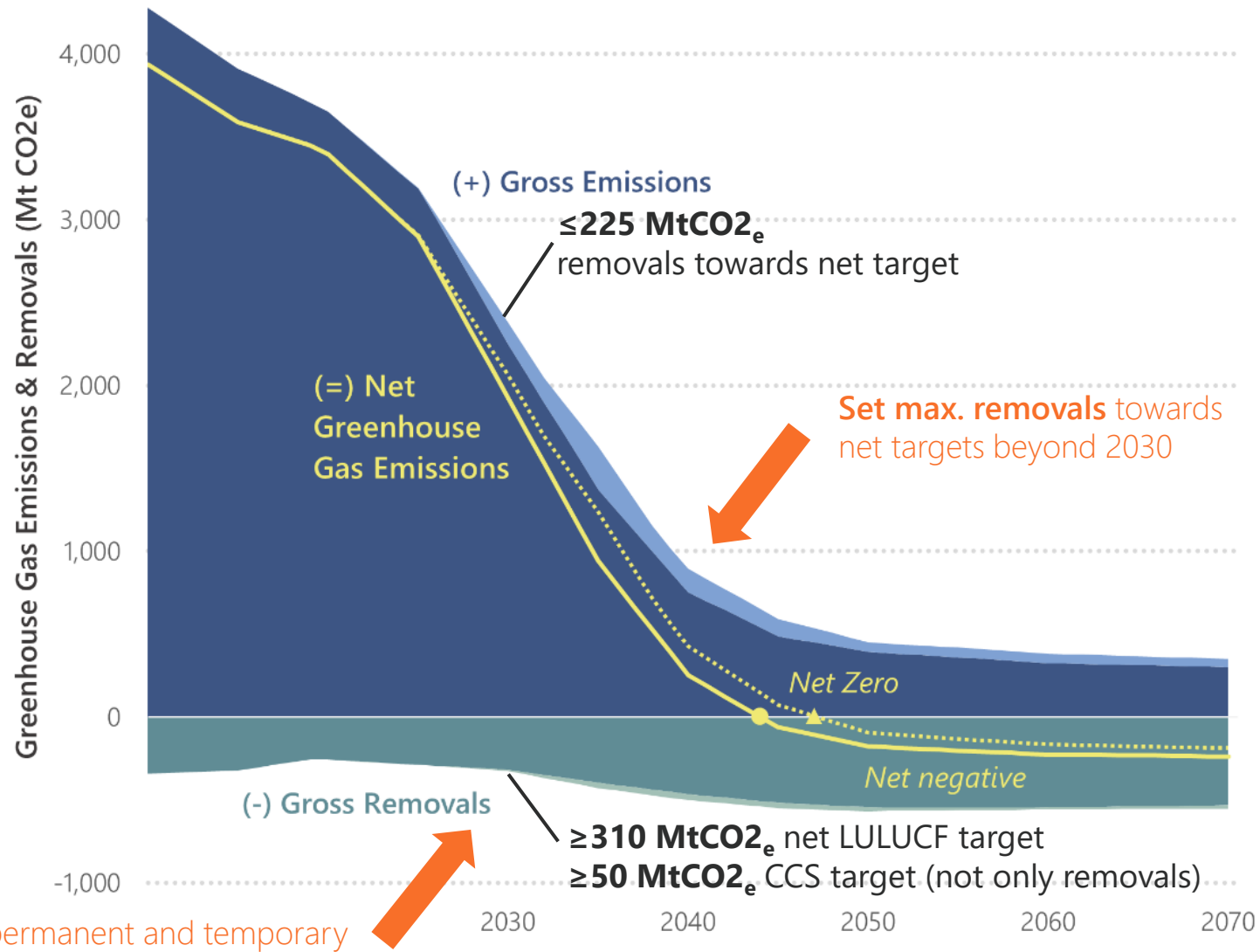
# From net zero to net negative



# The EU needs to rapidly scale up removals



# Setting separate targets

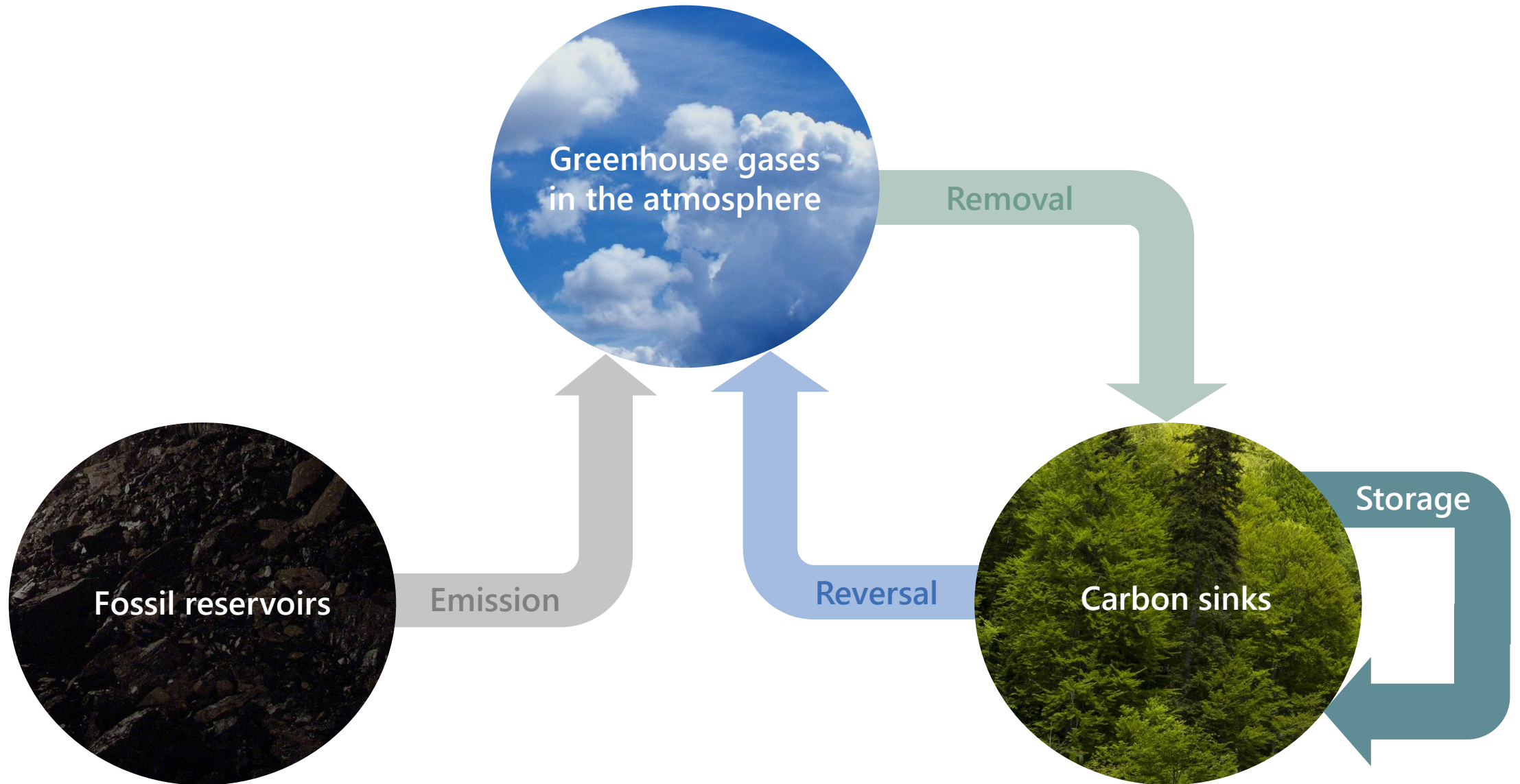


Set min. targets for permanent and temporary removals in the near, medium and long term

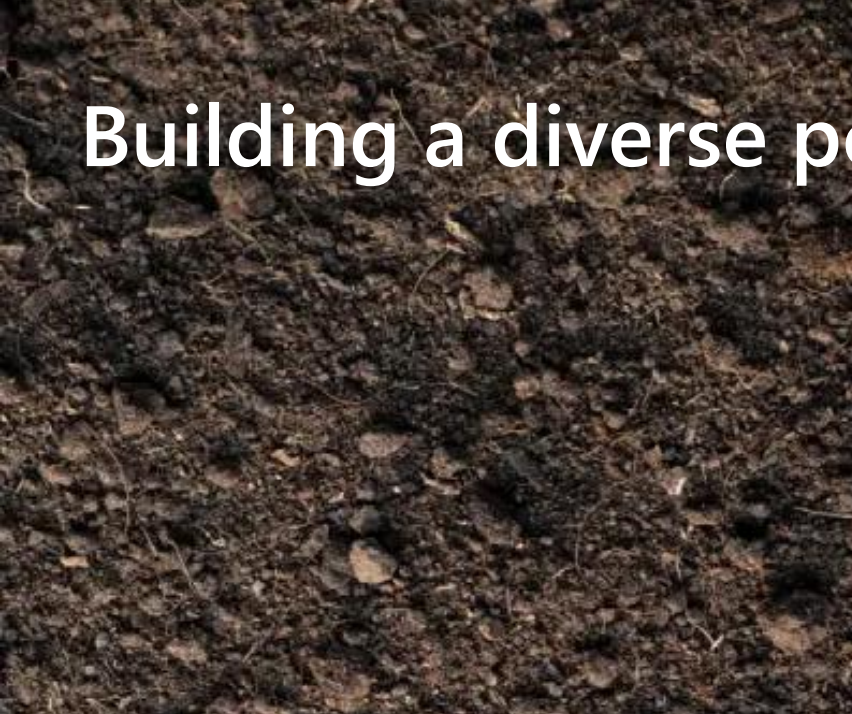
Set max. removals towards net targets beyond 2030

From net zero to net negative,  
from stopping pollution to cleaning up the atmosphere

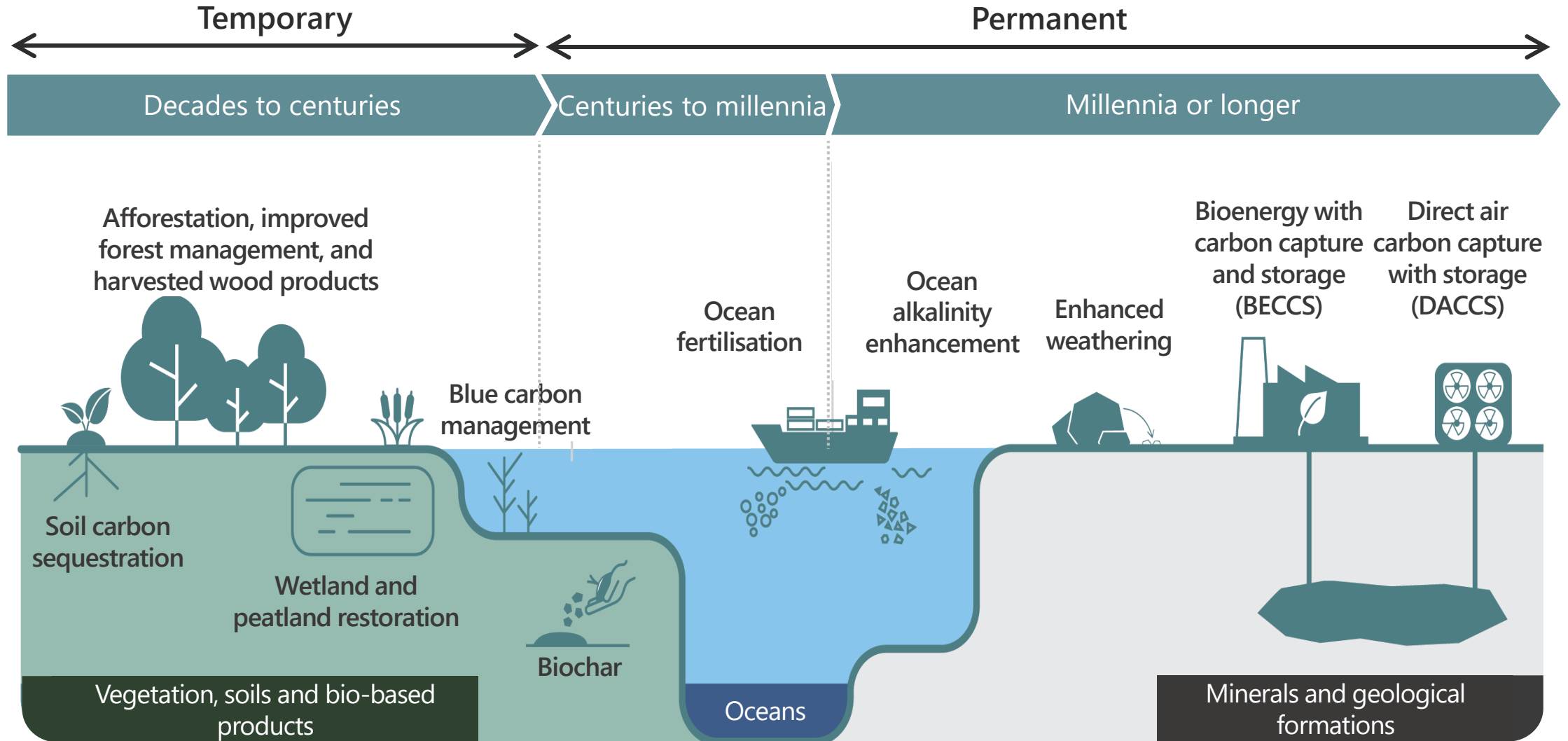
# Managing the greenhouse gas budget



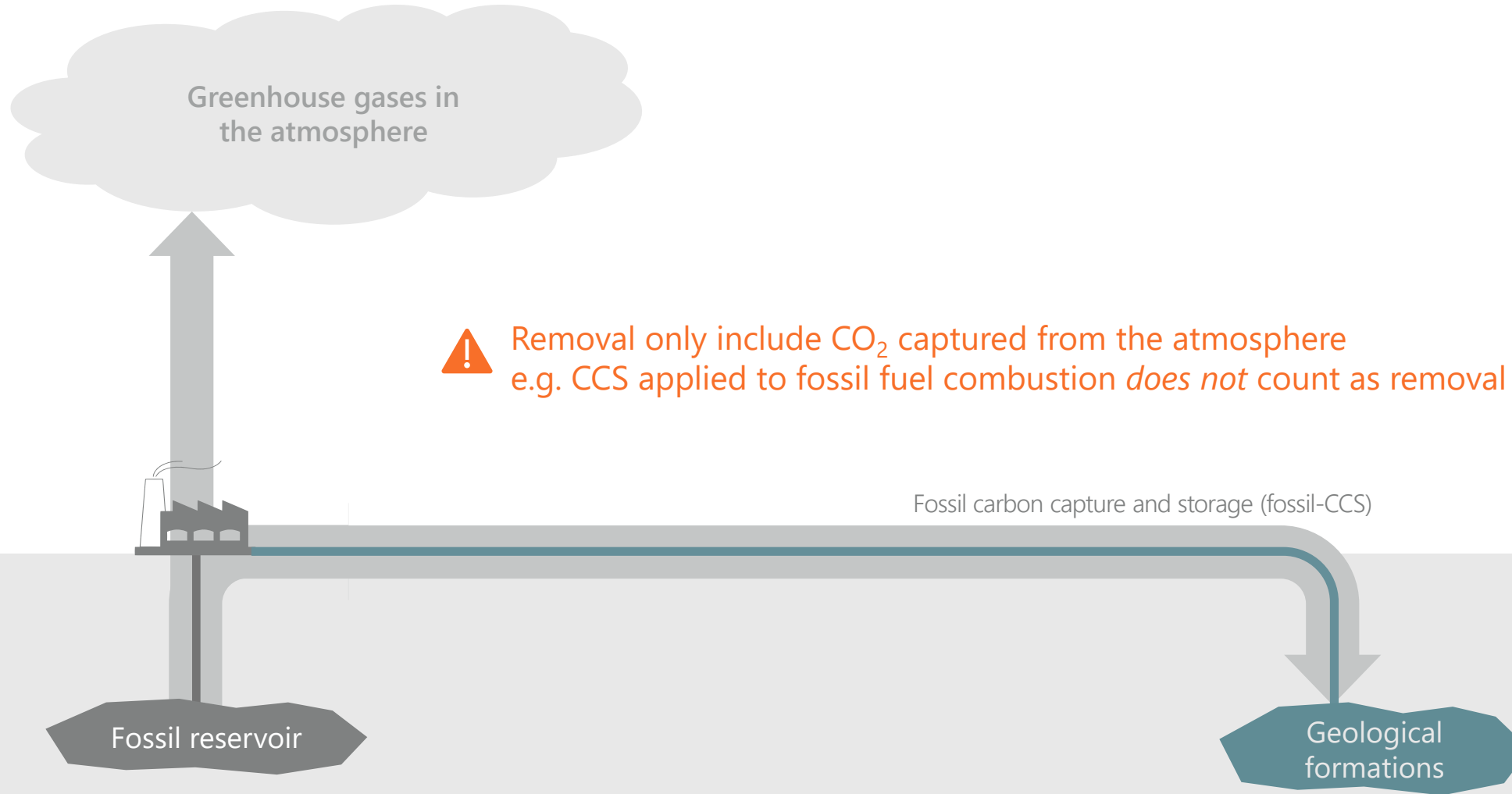
# Building a diverse portfolio of removal methods



# Building a diverse portfolio of removals methods



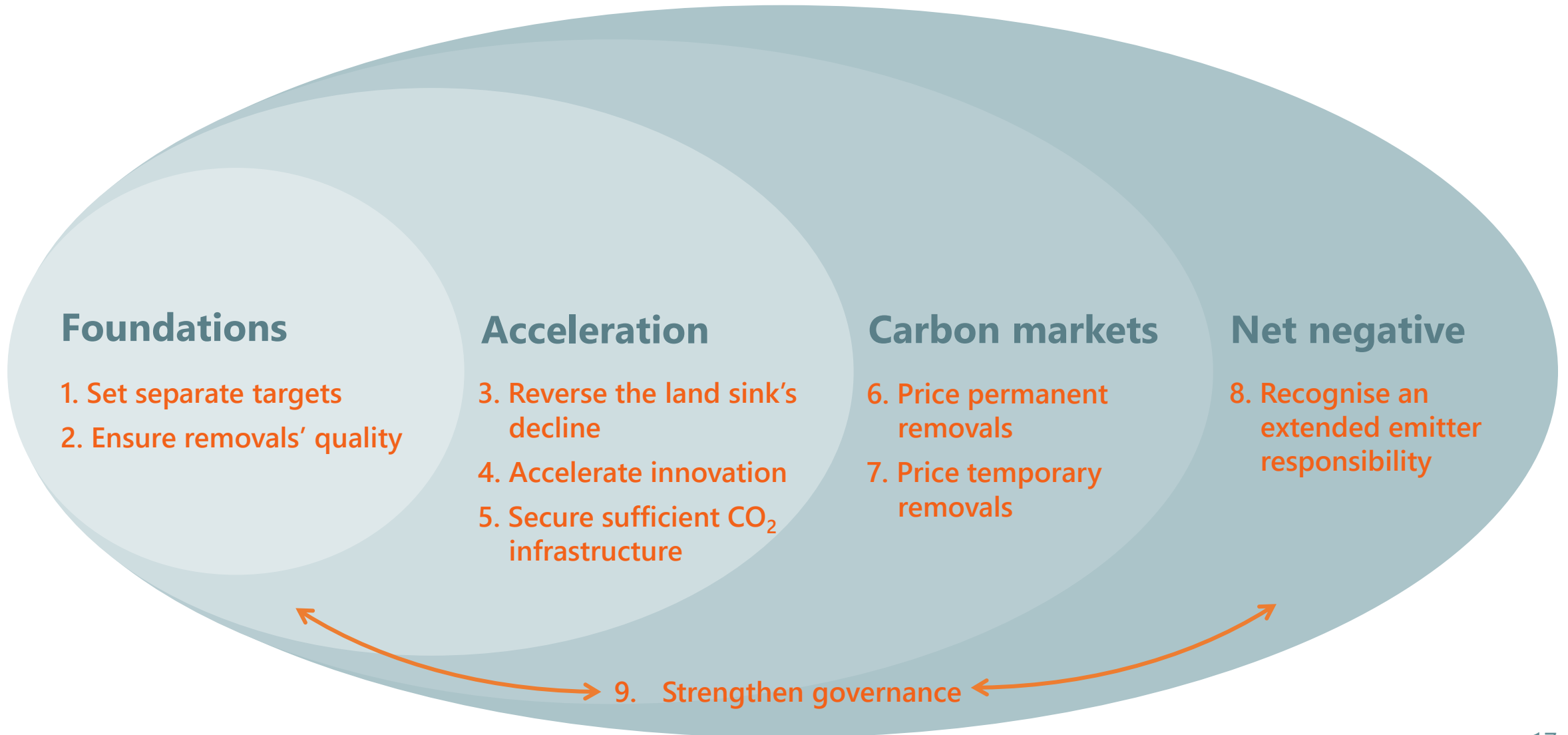
# Fossil-CCS is not a removal, but an emission reduction



# Removals are associated with opportunities and risks



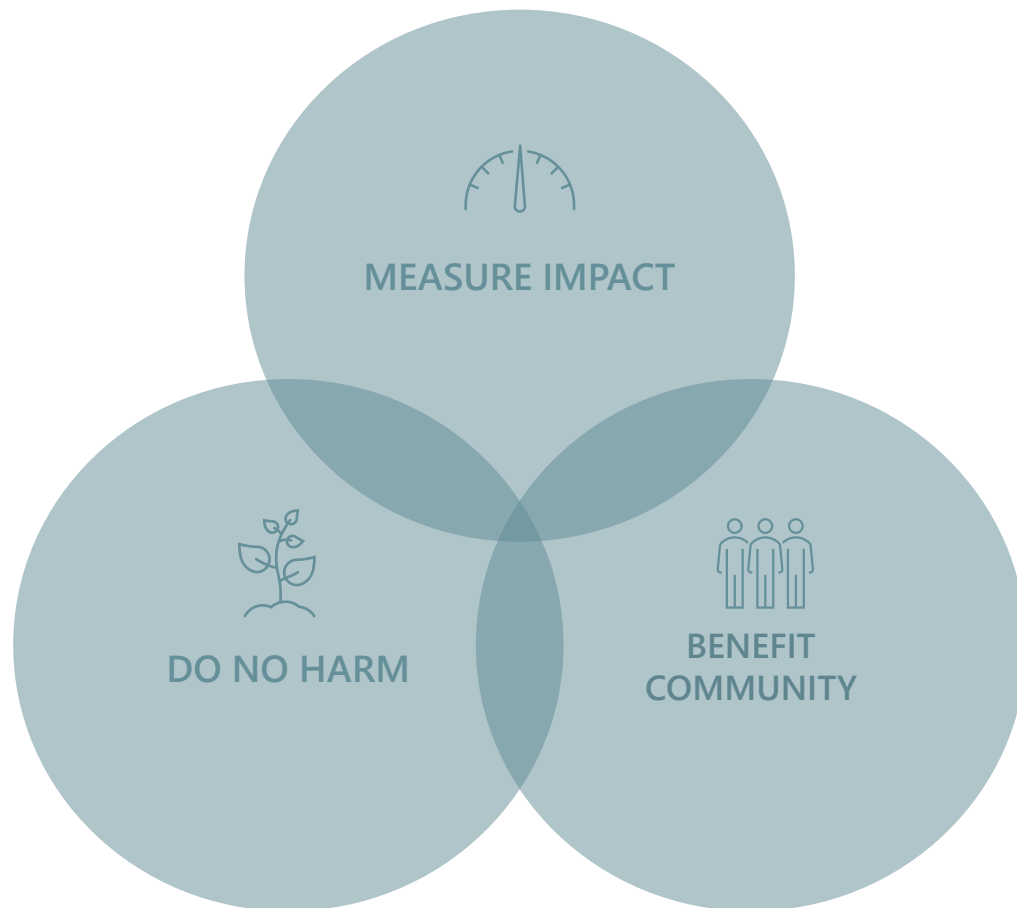
# Recommendations for the EU removal policy architecture



# Managing the land sink



# Ensuring the quality of removals



## Recommendation

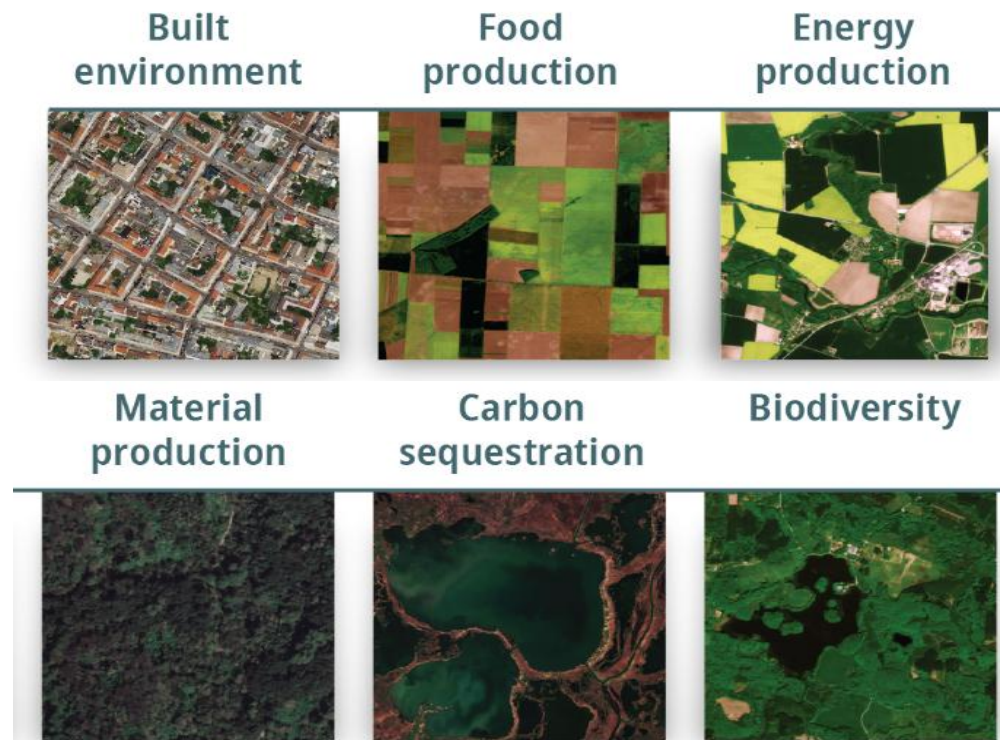
Develop robust monitoring, reporting and verification and ensure a transparent contribution of removals towards policy objectives

## Action points

Embed measurable binding sustainability safeguards and enhance data accuracy with:

- Certification regulation
- Governance regulation
- Forest monitoring law
- Soil monitoring and resilience law

# Reversing the decline of the land sink



## LAND USE OBJECTIVES

### Recommendation

Integrate land-related policies into a coherent framework where sectoral measures enhance EU sinks and foster climate adaptation

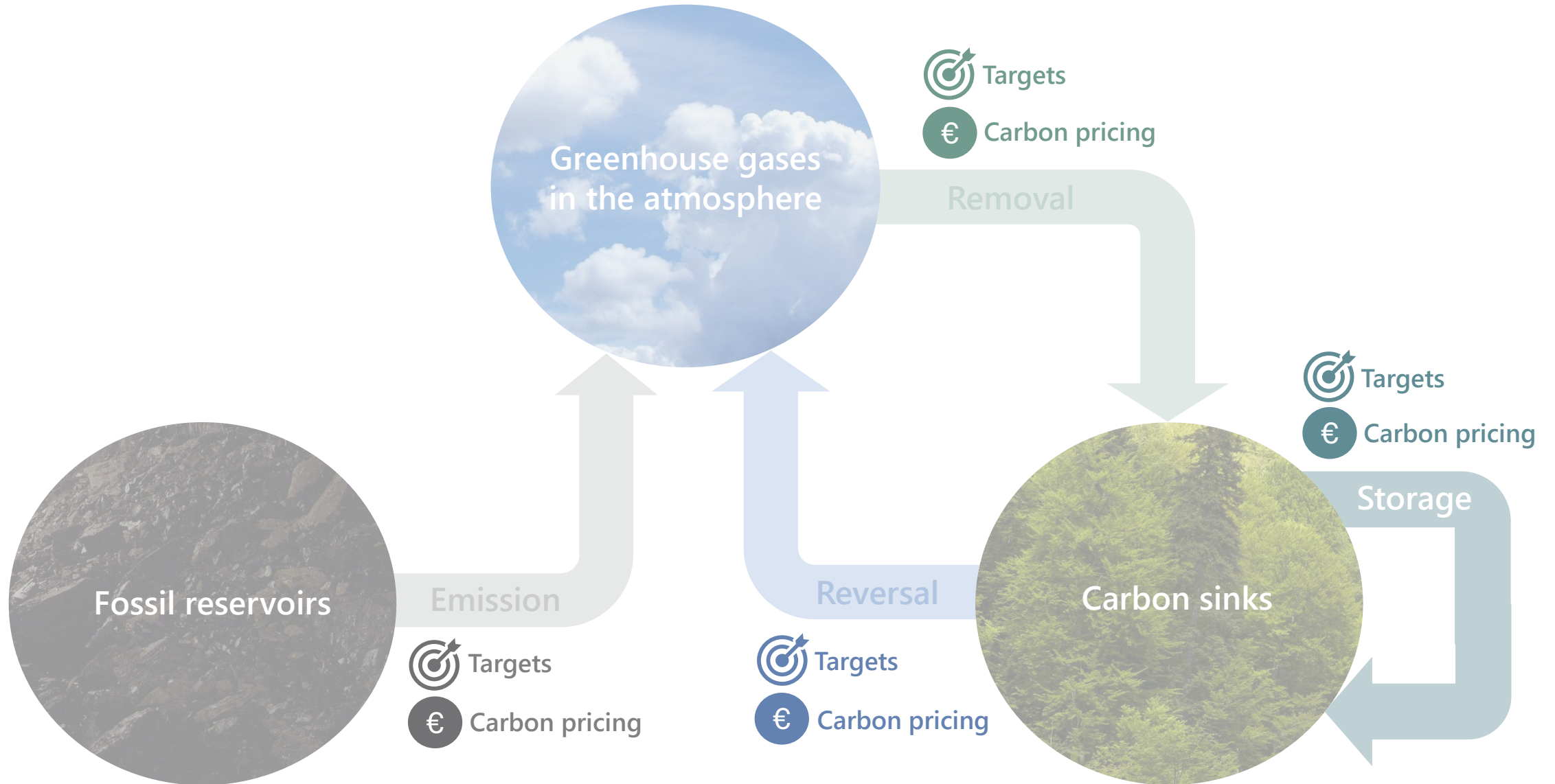
### Action points

- Reinforce the coherence of **land-related policies** and mainstream **climate adaptation**
- Align with the **common agricultural policy** with net zero
- Ensure sustainable bioenergy feedstocks via the enforcement of the **Renewable Energy Directive, FuelEU, REFuelEU**
- Create synergies with ecosystem restoration through the implementation of the **Nature Restoration Law**

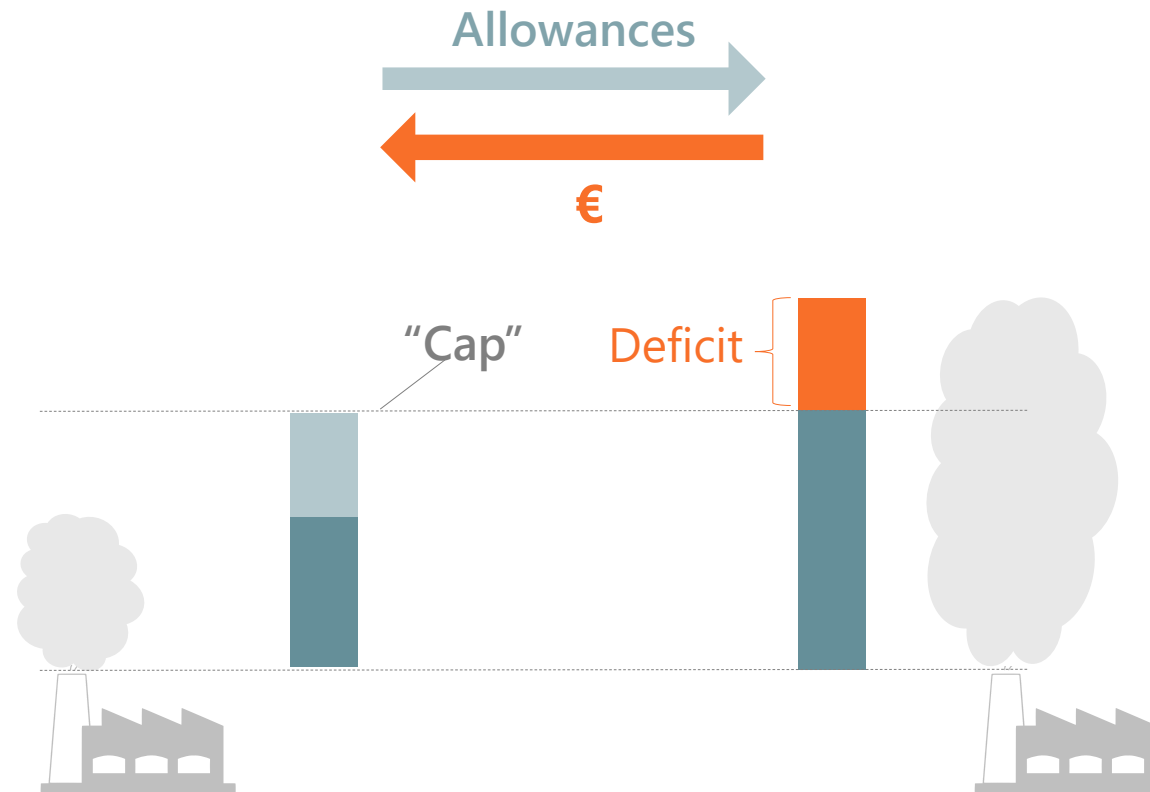
# Carbon pricing for the cost-effective scale-up of removals



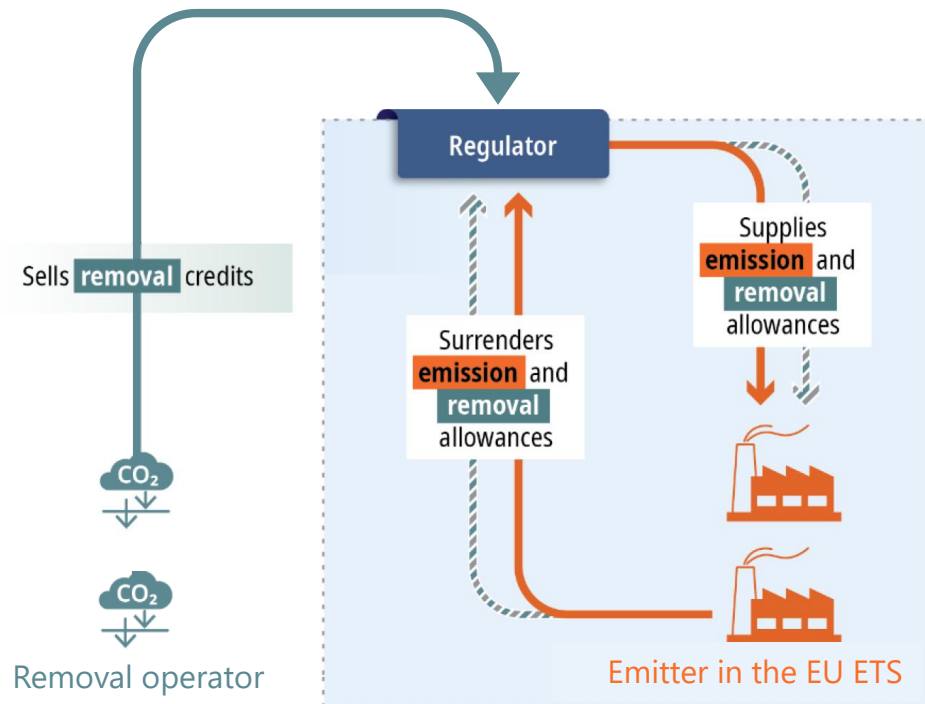
# Mixing price-based and quantity-based instruments



# 20 years of the EU's carbon market



# Pricing permanent removals



## Recommendation

Consider a progressive integration of permanent removals into the EU ETS, under strict conditions to address mitigation deterrence, environmental risks, distributional fairness and dynamic cost-effectiveness

## Action points

- Ensure robust **certification** before market integration
- Progressively integrate permanent removals in the **EU ETS**, subject to sustainability safeguards on biomass feedstocks
- Establish an **institutional framework** to manage the cap, purchase removals and manage supply and demand

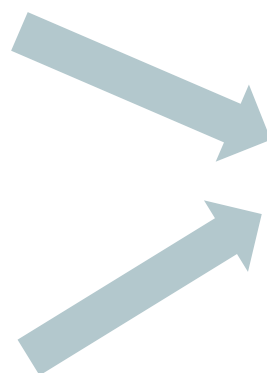
# Approach to bioenergy in the report

## Pillar 1: Sustainability safeguards

Reinforce certification of feedstocks via

- Renewable Energy Directive
- FuelEU Maritime / ReFuelEU Aviation
- Certification regulation (CRCF)

+ more targeted bioenergy policies



**Bioenergy**

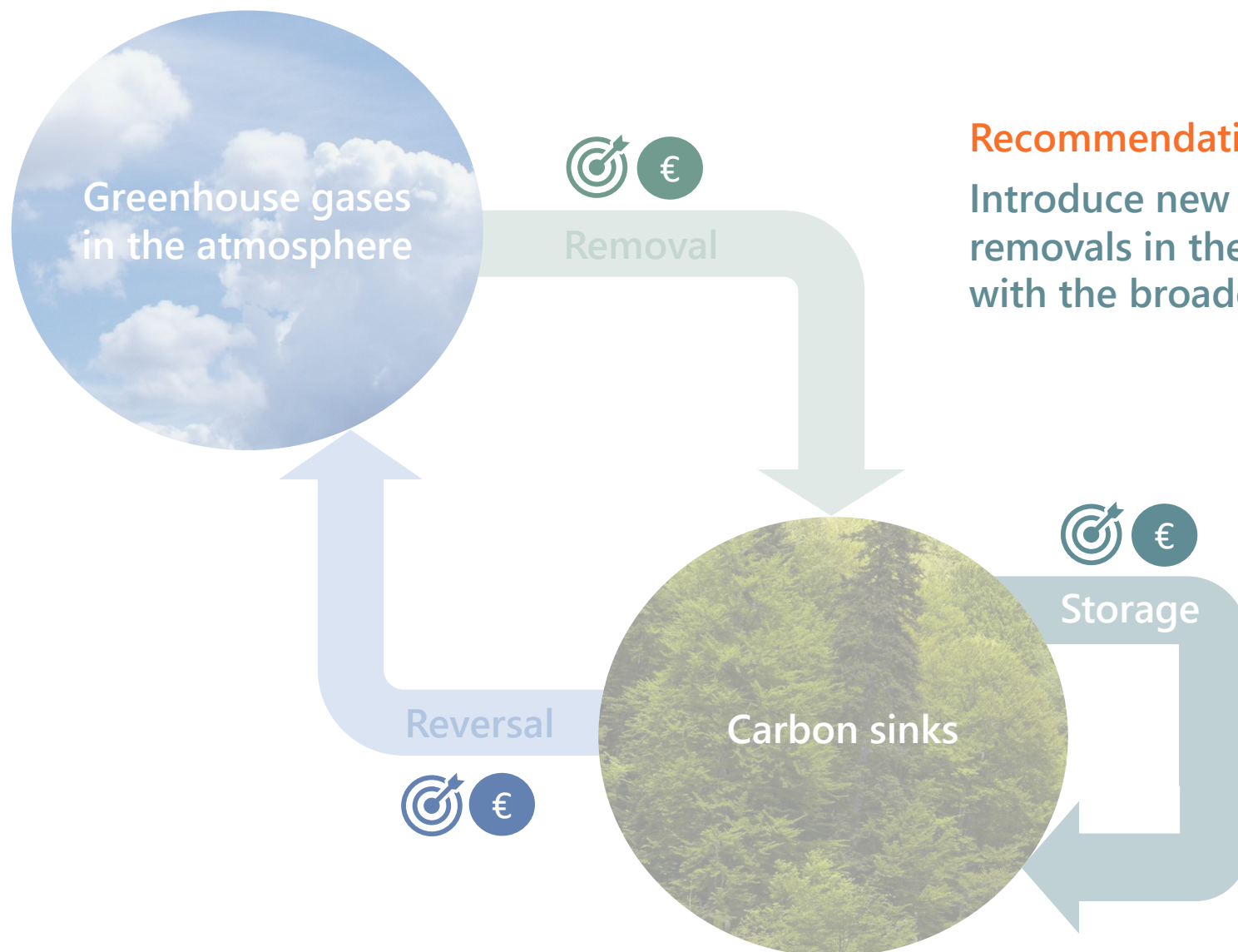


**Gradual and conditional\***  
integration of BECCS in the EU ETS

\*consider qualitative / quantitative  
restrictions on BECCS

## Pillar 2: LULUCF pricing

# Pricing temporary removals



## Recommendation

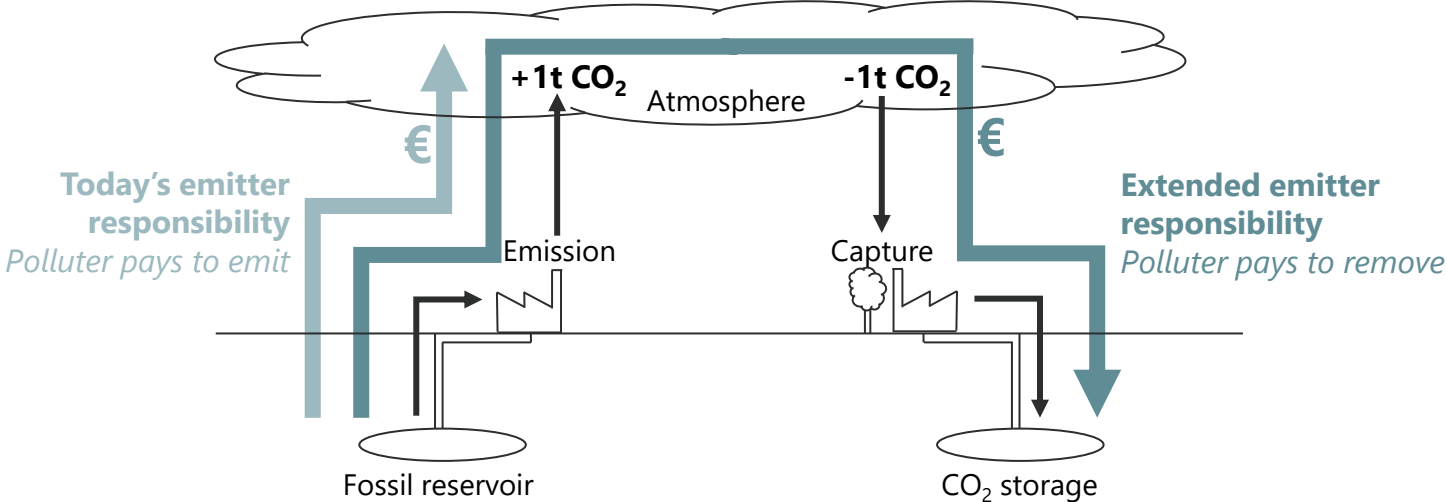
Introduce new instruments to price emissions and removals in the LULUCF sector, and ensure coherence with the broader policy framework

## Action points

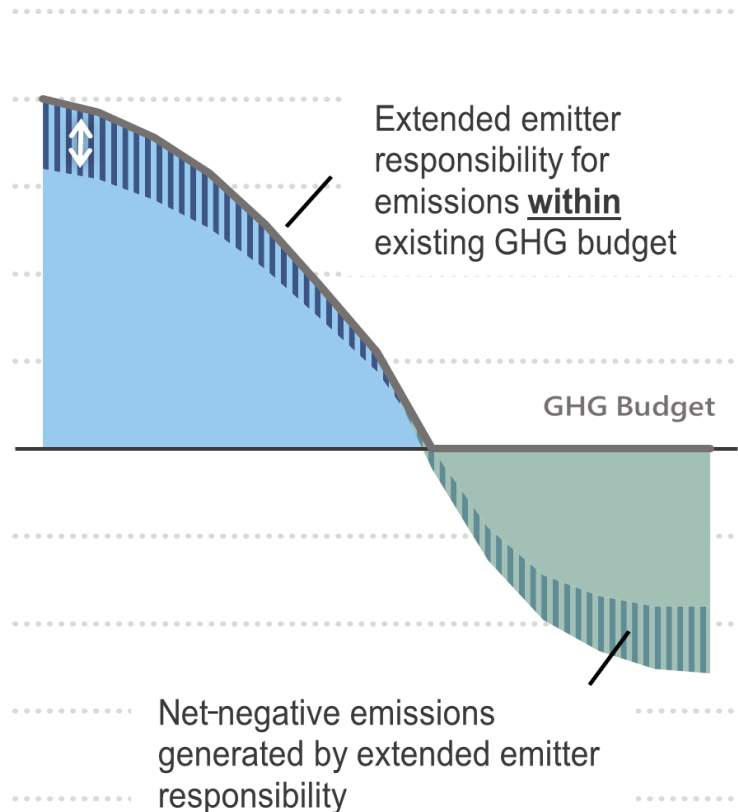
- Ensure the funding of land sink's climate adaptation, maintenance and enhancement with **sectoral policies**
- Develop a **separate pricing system** to price emissions and removals in the land sector

Potentially integrate with other pricing in the future under specific conditions

# Recognising an extended emitter responsibility



# Recognise an extended emitter responsibility



## Recommendation

Require today's emitters to contribute to the removal of the greenhouse gases they emit

## Action points

- Assess options to operationalise the **extended emitter responsibility**, considering different approaches (e.g. timing of payments and removals)
- Assess options to operationalise the extended emitter responsibility, considering different approaches (e.g. timing of payments and removals)



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