An aerial photograph of a dense forest with a winding road. The forest is composed of various types of trees, including evergreens and deciduous trees. The road is a light-colored, unpaved path that curves through the trees. The overall scene is lush and green.

State-of-play of CCS in Europe and the role of carbon removals

18 December 2023 - Brussels

Zero Emissions Platform

Zero Emissions Platform – *who we are*



The **Zero Emissions Platform (ZEP)** is a European Technology and Innovation Platform (ETIP) under the **European Strategic Energy Technology Plan (SET-Plan)**.

The EU advisory body on CCS and CCU deployment and development.

ZEP unites a diverse range of stakeholders from oil and gas companies, hard-to-abate industries, researchers and environmental NGOs.



Zero Emissions Platform - *mission*

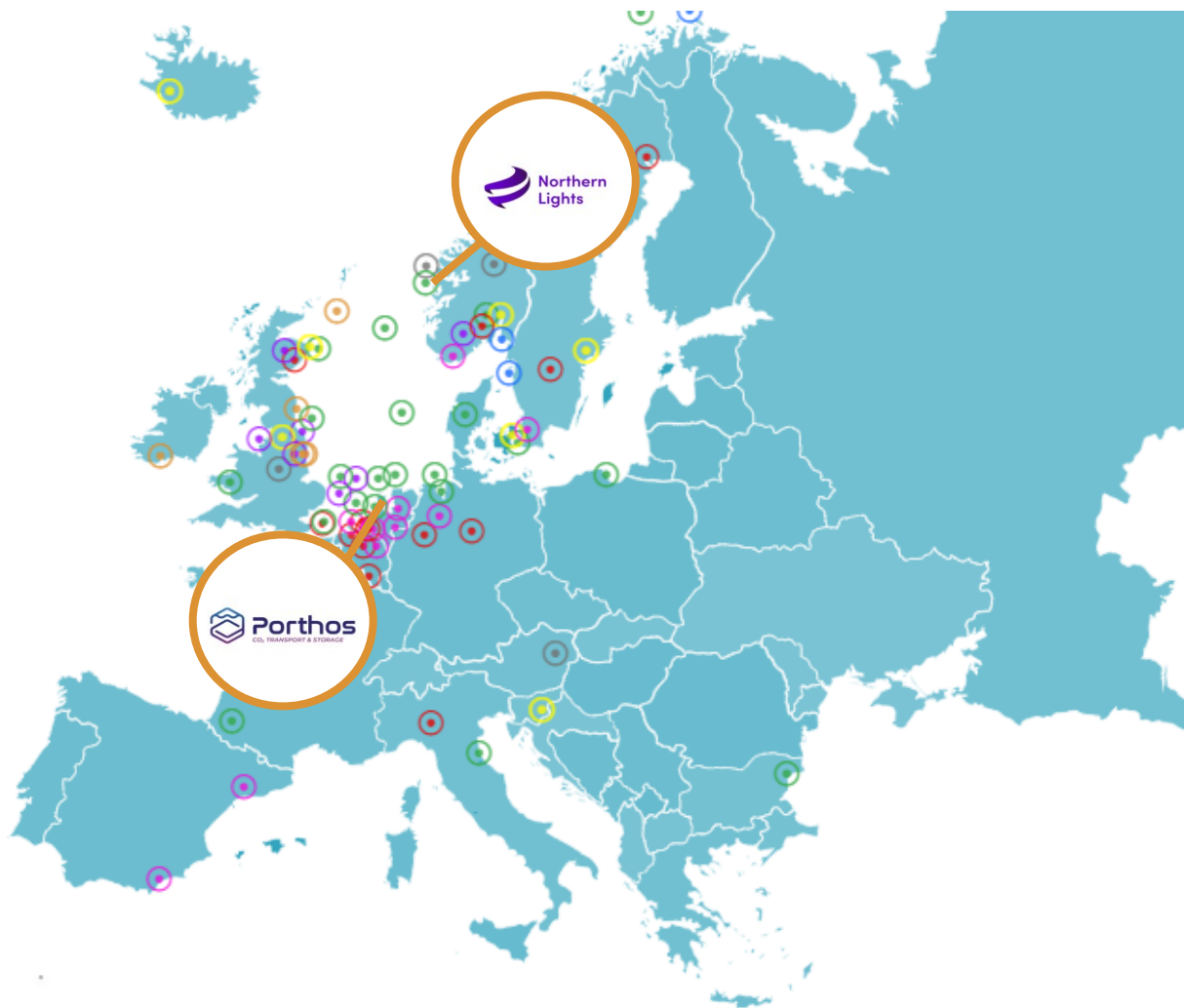


- 1 Create the right conditions to reach net-zero by 2050 focusing on energy and industrial sectors.
- 2 Demonstrate that the implementation of CCS and some applications of CCU technologies are essential to this goal.
- 3 Accelerate the deployment of large-scale CO₂ transport and storage networks.

Current status of CCS projects in the EEA



More than **70** market-ready CCS and CCU projects looking to become operational by 2030.

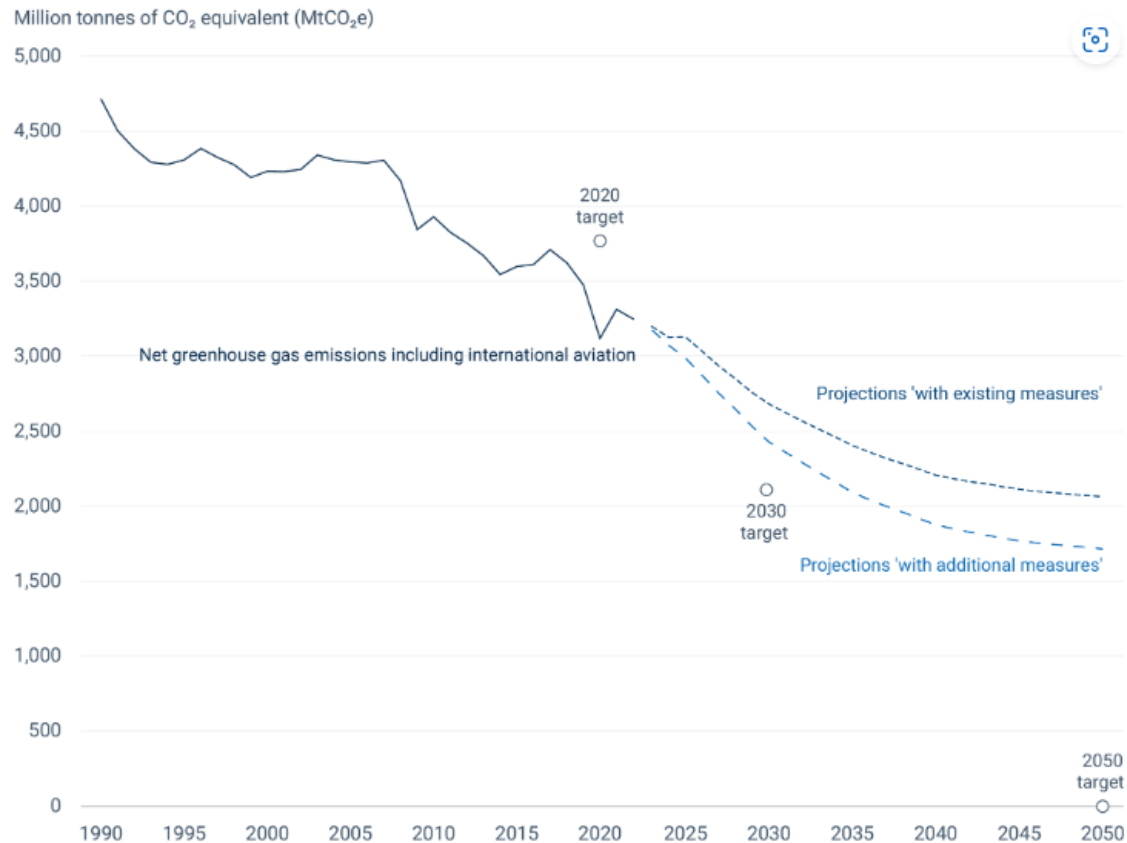


2 CO2 transport and storage projects have taken Final Investment Decisions in the EEA by December 2023.

How much CCS do we need?



Figure 1. Progress towards achieving climate targets in the EU-27



1.5°C scenario: 230-430 MtCO₂/yr in 2030, 930-1200 MtCO₂/yr by 2050.

2°C scenario: 35-100 MtCO₂/yr in 2030, 600-930 MtCo₂/yr by 2050.

EU targets

→ The European Commission's Net Zero Industry Act: 50 MtCO₂/yr objective by 2030. (in range of 2 degree scenario)

Source: EEA, Total net greenhouse gas emission trends and projections in Europe, 24 Oct 2023

How do we make it possible?



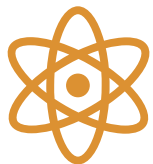
Develop European CO2 transport and storage infrastructure



Policy framework and finance mechanisms

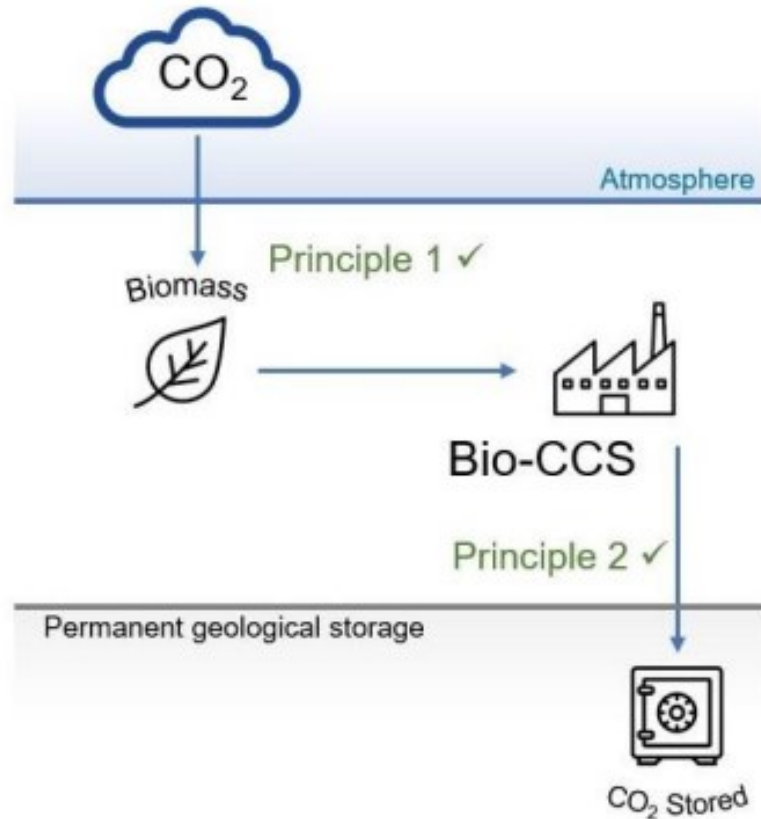


Incentives to support large-scale deployment of CCS value chain.



Strong support for CCS & CCU Research and Innovation

Bioenergy with CCS (aka BECCS)



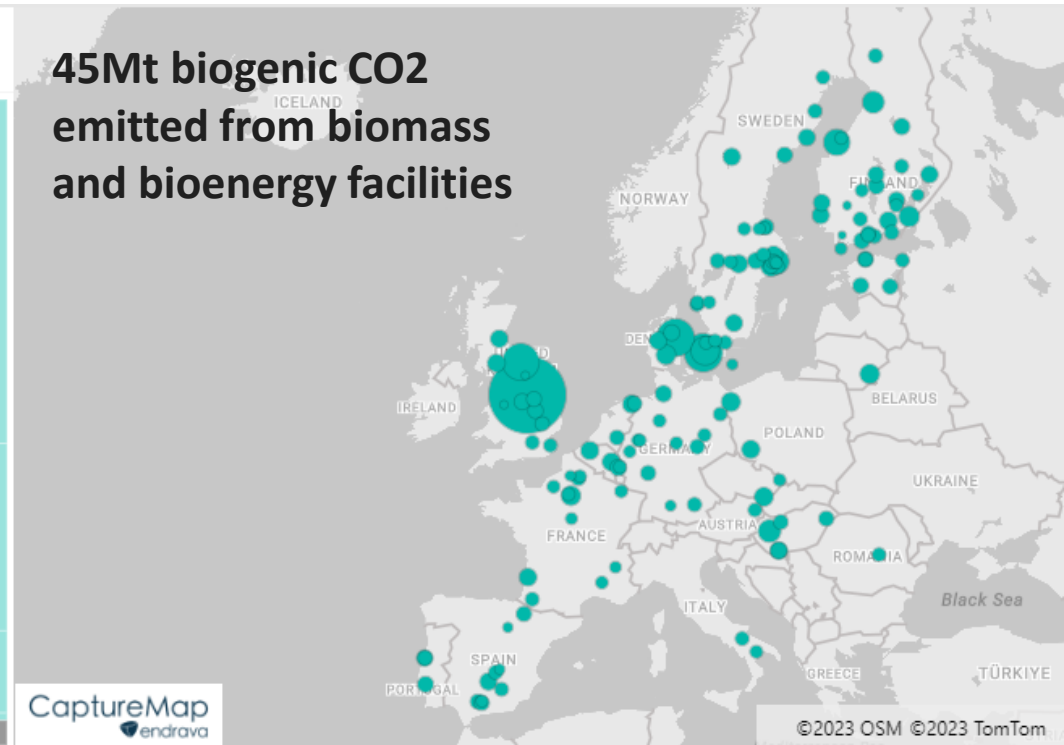
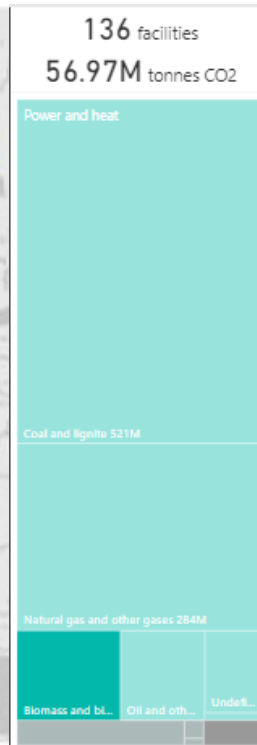
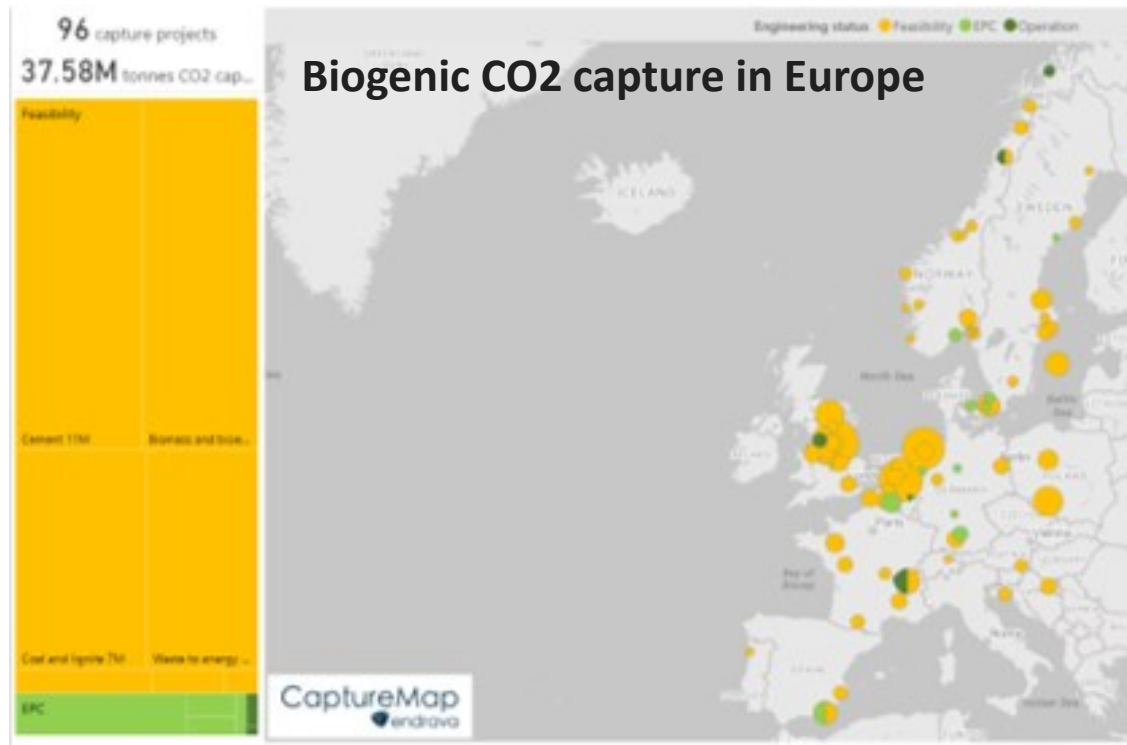
- ↓ CO₂ is removed from the atmosphere by photosynthesis and bound as carbon in biomass.
- ↓ Biomass is combusted for energy or converted to a product or a gas.
- ↓ The biogenic CO₂ is captured and geologically stored.

How much do we need?



- ~ **209 Mt biogenic CO₂/yr** in Europe
- **1.5°C scenarios:** 30 Mt CO₂/yr in 2030, 400 MtCO₂/yr by 2050.
- **2°C scenarios:** 1-5 MtCO₂/yr 2030, 150- 230 MtCO₂/yr by 2050.
- European Commission's goal: **5MtCO₂/yr tonnes by 2030.**

BECCS potential in Europe



A definition for Carbon Dioxide Removals

4 principles must be met for a CCS project to be considered CDR:

- 1** Carbon dioxide is physically removed **from the atmosphere**.
- 2** The removed carbon dioxide is **stored** out of the atmosphere in a manner intended to be **permanent**.
- 3** **Upstream and downstream greenhouse gas emissions**, associated with the removal and storage process, are **comprehensively estimated and included** in the emission balance.
- 4** The **total quantity** of atmospheric carbon dioxide **removed and permanently stored** is greater than the **total quantity** of carbon dioxide **emitted** to the atmosphere.

Find out more

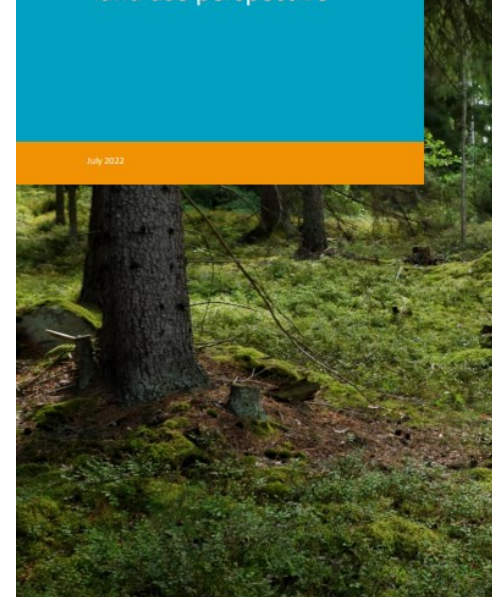


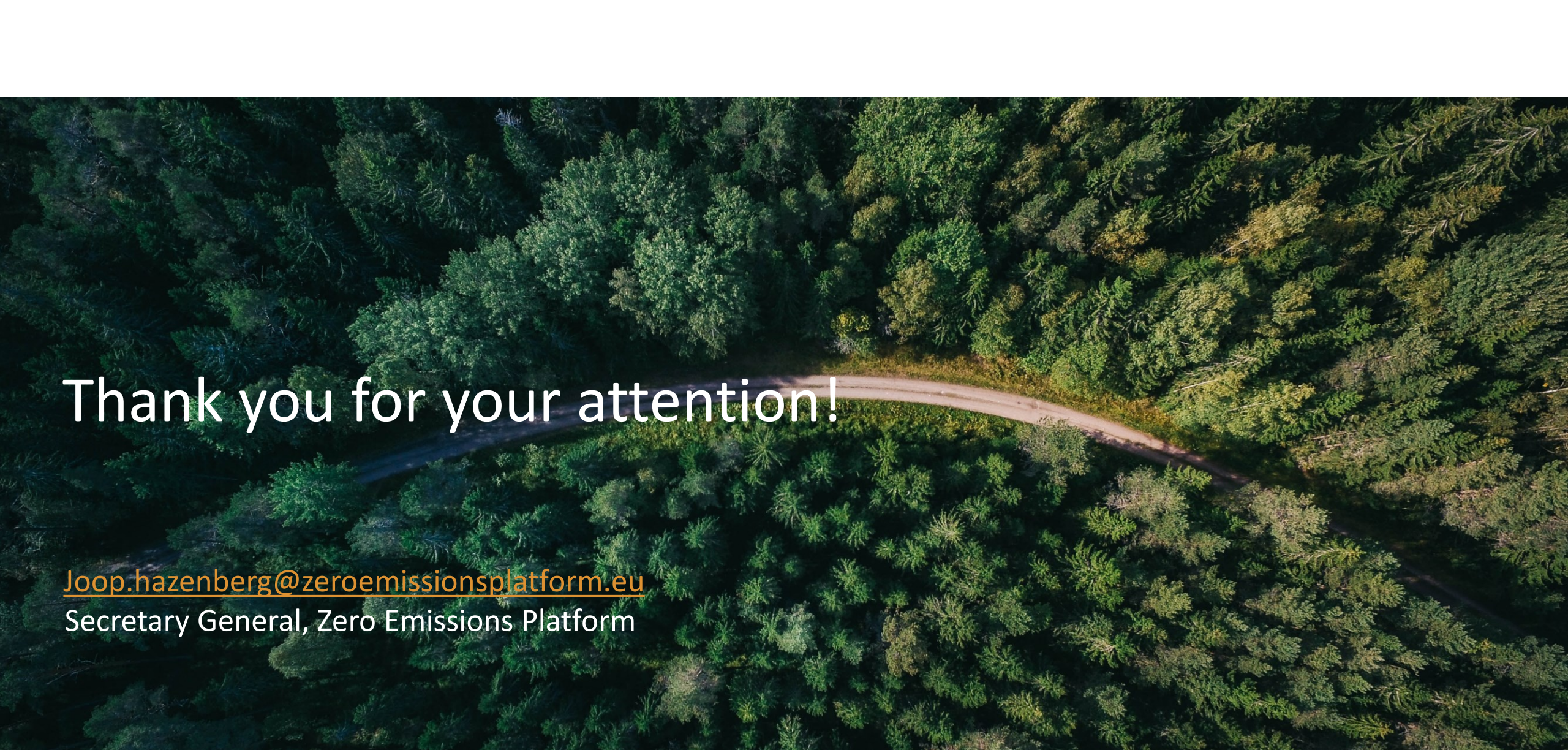
“CCS in biodiversity and land use perspective”

- Key recommendations to ensure the best solutions to achieve carbon neutrality while avoiding harm to biodiversity.
- Conclusions from ZEP WG aiming to expand discussions around CCS, CCU, DACCS, and the biomass usage of BECCS.

“Europe needs a definition of Carbon Dioxide Removal”

- Provides a clear and concise definition for carbon dioxide removal
- Illustrate applications that can/cannot be considered carbon removals





Thank you for your attention!

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