



Webinar for members: What is the role of CCU in the path towards a climate-neutral EU?



Housekeeping rules

- Please keep your microphone muted and camera off unless you're speaking.
- Please use the chat function for comments and questions.
- If you wish to speak, please use the "raise hand" feature. The host will invite you to unmute.
- The webinar is being recorded and will be shared after the session.
- Webinar materials will be shared afterward.



Webinar Programme

Welcome & introduction

CCU's role in 2050,
Célia Sapart, Scientific Director,
CO2 Value Europe

Commentary – Outlook for CCU in Finland,
Erika Laajalahti, Sector Manager (carbon removal & CCUS),
The Bioenergy Association of Finland

Q&A, comments & closing remarks



Outlook for CCU in Finland

Erika Laajalahti
Bioenergy Association of Finland
29.10.2024

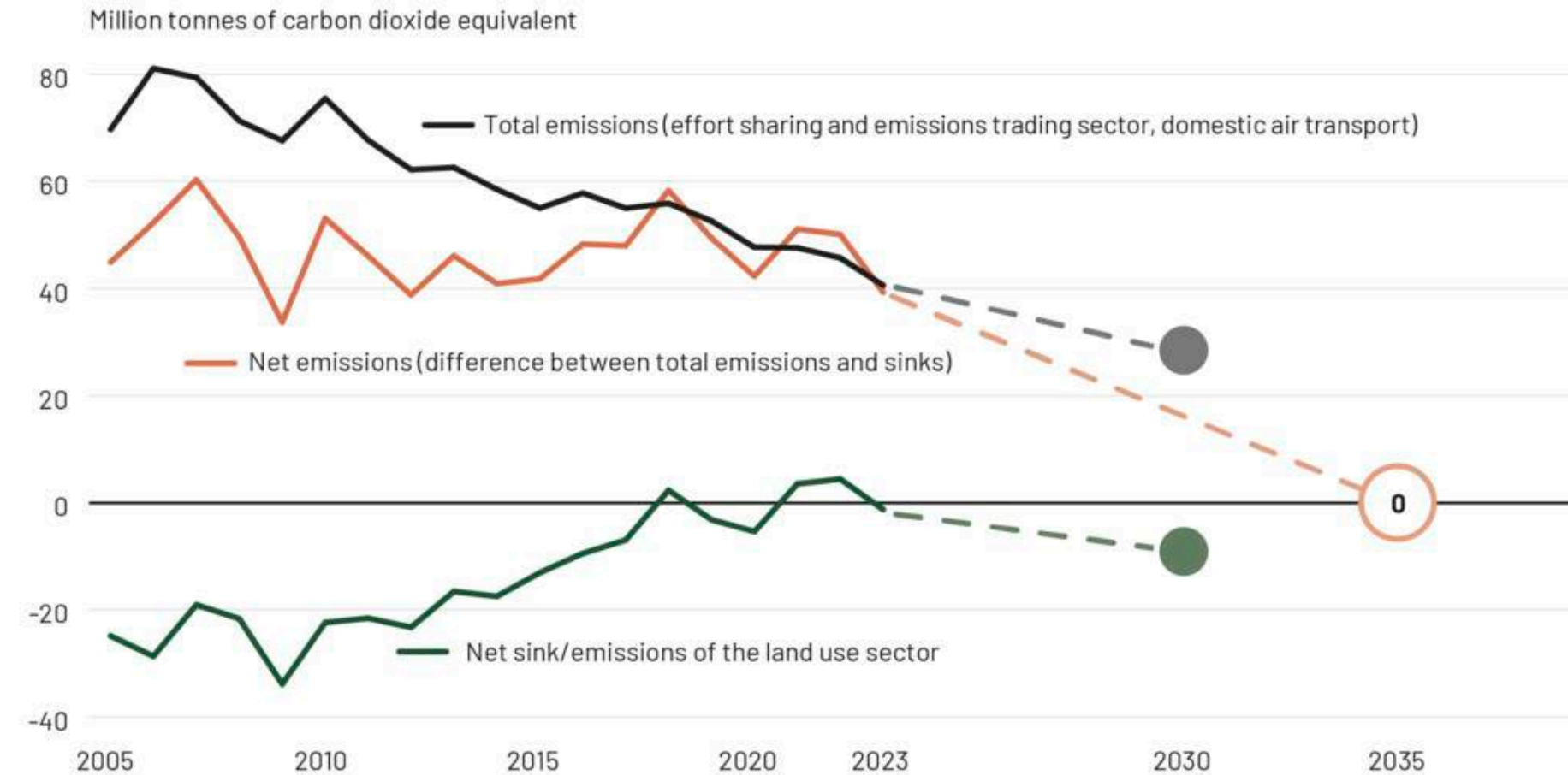
Bioenergy Association of Finland

- Business association with 250 member organisations.
- We represents the entire bioenergy sector from land ownership to energy companies, as well as technology and research in the field.
- Our goal is the make Finland the best place in the world to create sustainable, bio-based, and even carbon-negative solutions.
 - Carbon removal & CCUS -committee & biochar network
- [Learn more!](#)





Finland's path to carbon neutrality in 2035



“Our greatest opportunity in terms of scale is to capture carbon dioxide from industrial smokestacks, and we are developing incentives for this”, Minister of Climate and the Environment **Kai Mykkänen**.

Source: [Finnish Annual Climate Report 2024](#)

National policy development on CCUS



- Finland aims to become the European leader in the hydrogen economy in the entire value chain ([resolution](#) from 2/2023). Aim to produce at least 10 % of the EU's clean hydrogen in 2030.
- [Priority treatment](#) of projects that promote investments in the green transition in permit procedures (Environmental Protection Act/Water Act) 2023-2026, includes CCUS. Urgent status also in the administrative courts.
- [Government's programme \(June 2023\)](#): CCUS solutions as one of the key priorities in the Finnish climate policy. Highlights the role of Bio-CCU & Bio-CCS.
- BioCCU combined with increased hydrogen production will create a platform for producing fuels, chemicals and materials from a sustainable carbon source and will reduce dependence on fossil raw materials.
- **"The Government will explore and introduce policy instruments to ensure that carbon dioxide emissions to atmosphere from large industrial sources are eliminated by the mid-2030s."**
- 140 M€ for Clean Energy Finland key projects. Reservation in the 2025 budget.





Finnish perspectives on CCU

- **Biogenic CO₂:**

- 30 Mt of biogenic CO₂ produced annually. CO₂ available all year round.
- CO₂ emissions are large volumes compared to many domestic material flows. If a major part is refined to high-value products, export of products is a must.

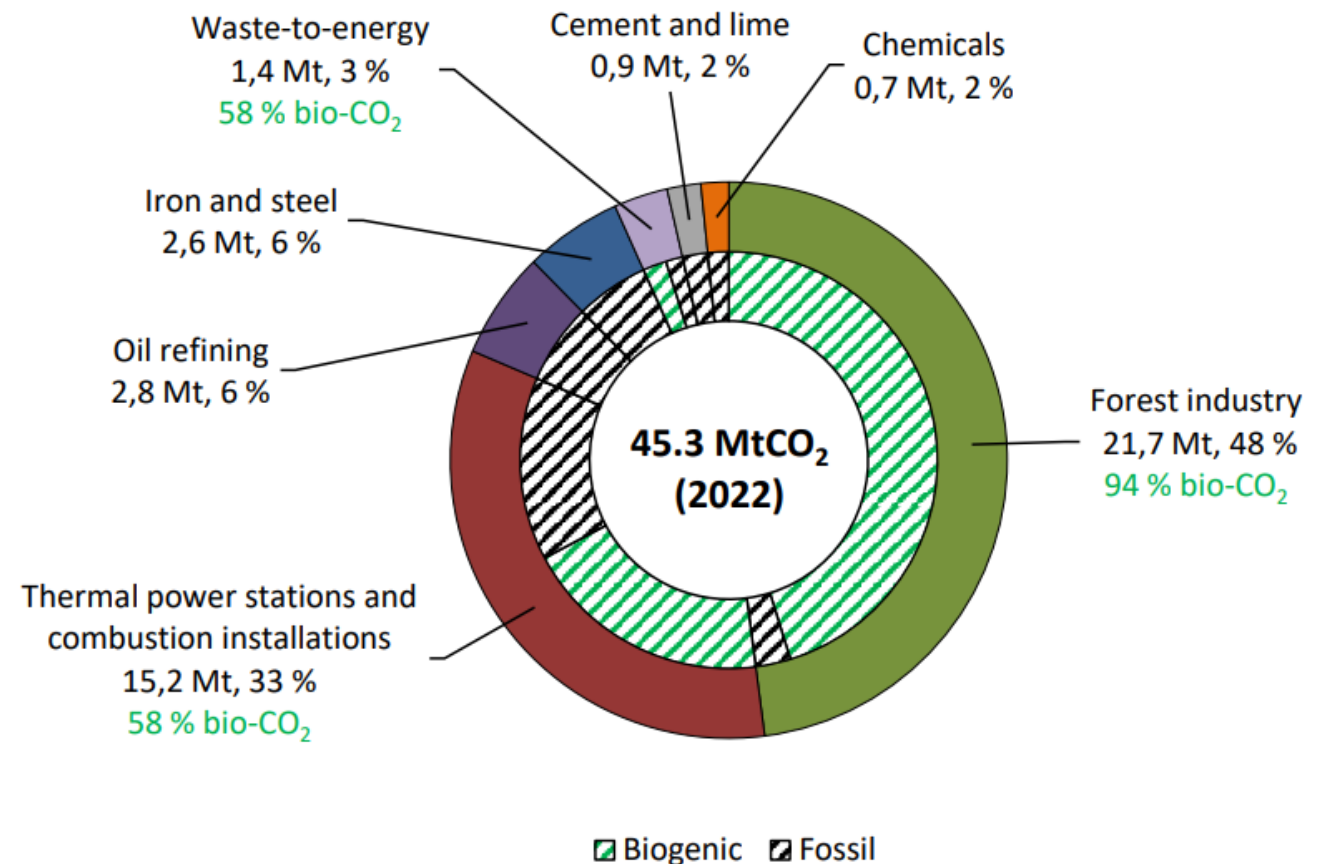
- **Clean electricity:**

- The CO₂ emission intensity of electricity production is low (average ca. 70 gCO₂ /kWh) compared to the respective EU average (ca. 240 gCO₂ /kWh) (averages between 2020-2022, EEA, 2023).

- **CO₂ storage:**

- Finland does not have suitable geological formations for storing CO₂. Limited potential in storing CO₂ in mining wastes (0,5 Mt-2.0Mt/a) or in e.g. construction products.

Industrial CO₂ emissions from facilities with emissions of >100 ktCO₂/a





Bio-CCU projects in Finland

- Ongoing/ recent research for P2X hubs, biogenic CO₂ value chains, CO₂ storage in minerals in the soil or in products, such as concrete, CCU's economic and climate potential & CO₂ logistics.
- There are about 15 announced CCU-projects in Finland where the majority plans to use biogenic CO₂ source as feedstock. Most of these projects target to enter the market by the end of 2020's. Most of the projects aim to produce synthetic fuels (e.g. e-methane, e-methanol, e-SAF) for heavy transportation.
 - Based on current project pipeline, the volume of CO₂ utilisation accounts for only about 1,5 MtCO₂/a, which still remains only a fraction of the potential.

Recent news on CCU-projects



Ren-Gas eNRG Kotka e-methane project Secures €42 Million EU Innovation Fund Grant

Ren-Gas, a prominent European hydrogen developer, has further solidified its leadership in the hydrogen industry by obtaining a significant grant from the EU Innovation Fund. This accomplishment highlights Ren-Gas's dedication to develop the world's most competitive hydrogen value chain in Finland.

Ren-Gas Receives €28 Million Energy Investment Grant for Lahti E-Methane Project

The Ministry of Economic Affairs and Employment has granted a €28 million energy investment subsidy to Ren-Gas for its renewable e-methane production facility in Lahti.

Carbonaide and partners create value chain for permanent carbon storage in concrete – initiative starred by climber Adam Ondra

Press release

World's first biodegradable plastic produced from CO2 emissions in Finland

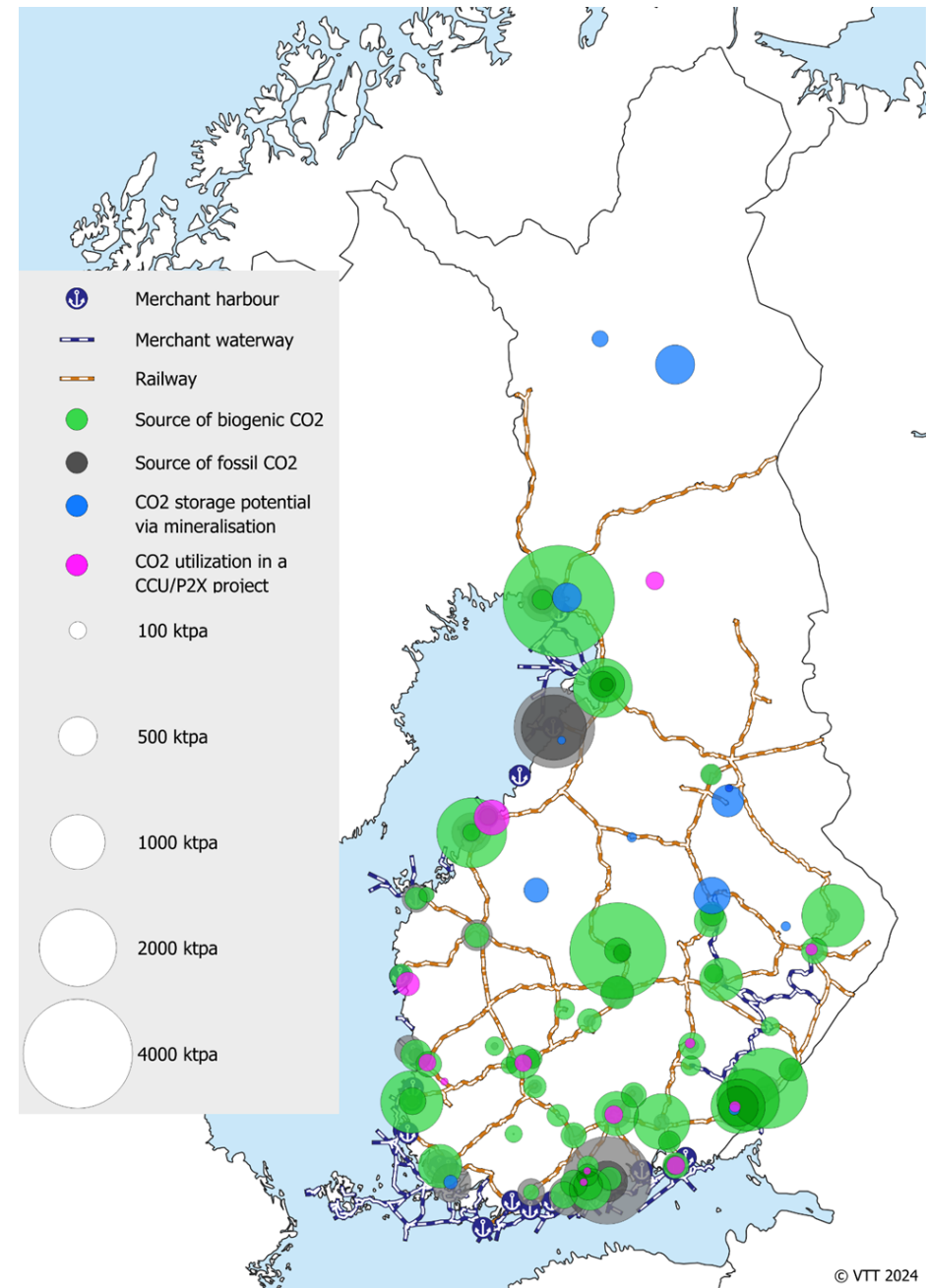
15 October 2024, 8:00 EEST



Nordic Ren-Gas Wins in the First EU Hydrogen Auction with EUR 45 million Bid

CO₂ point sources and existing transport infrastructure

- [Outlook of CO₂ logistics in Finland for CCUS](#)
- Large CO₂ point sources are scattered evenly within Finland, excluding the northernmost Lapland region.
- Existing railway network covers nearly all the examined large CO₂ point sources.
- Plans for 13 utilization projects have been announced in Finland, totalling for capacity of only 1.3 MtCO₂/year. The projects are largely located near existing CO₂ point sources, from where CO₂ could be supplied to these projects if carbon capture is implemented.
- Potential sites for CO₂ storage via mineralization are mainly located at central and northern parts of Finland, some of which are neither near existing CO₂ point sources nor railways.



Preliminary plans for the national hydrogen infrastructure

- Gas transmission system operator Gasgrid [published a preliminary plan](#) for Finland's hydrogen backbone in April 2024.
- Mapping of concrete route alternatives with counties and municipalities has begun in 2024.

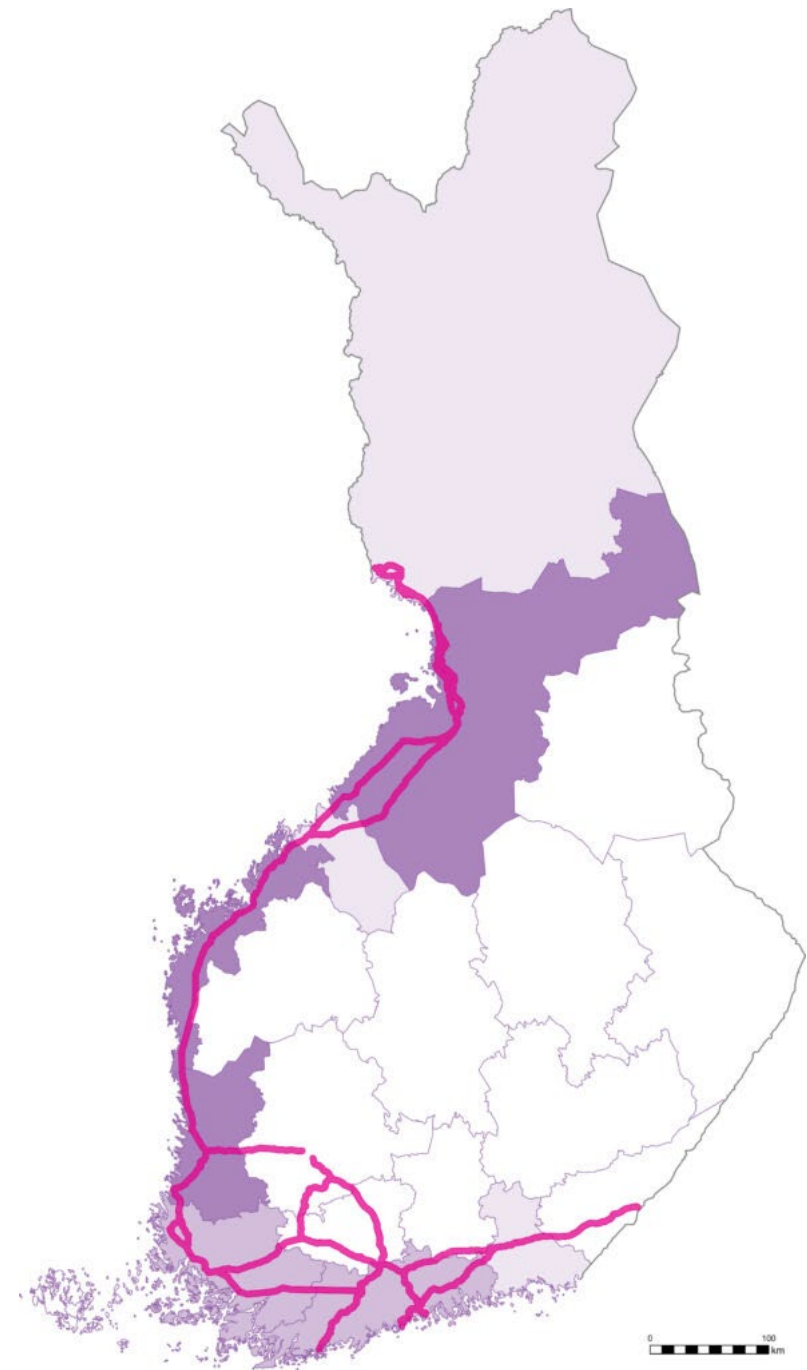


Photo:
[Gasgrid](#)



Conclusions

- **Long-term regulatory framework underway, essential to ensure investment security:**
 - National CCUS strategy needed urgently. First step will be inclusion in the national energy and climate strategy (update in the making, Q2/2025).
 - Harmonised regulatory framework for CCU (fuels, chemicals, materials) in the EU needed. Open questions remain e.g. climate impacts of different CCU-products & associated accounting.
- **Investments and infrastructure:**
 - Renewable electricity and hydrogen are needed for high-value upgrading. Investments in their production and infrastructure needed.
 - CO2 capture, transportation and utilisation also require multi-billion-euro investments + significant operating expenses.
- **Opportunities ahead:**
 - CCU can be a great business and innovation opportunity for Finland that can also help reduce the dependency on fossil fuels and achieve climate goals. Strong potential for exported products to contribute to reducing CO2 emissions in EU and global markets as well.



Thank you!

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Q&A



Questions received beforehand

- When is EU going to come with comprehensive guidelines for companies regarding compensation?
- Cost structures of the different CCU technologies and the potential quantities to be captured through the different technologies?
- Is there any resistance or specific locations where this carbon removal project can be carried out? How could a small company access funds or combine force to achieve same result as big companies?
- How can we integrate in a more efficient way the CO₂-capture and subsequent conversion?
- How is the CCU landscape anticipated to develop outside of the EU?