

Ariadne @ Brussels 6 December 2023

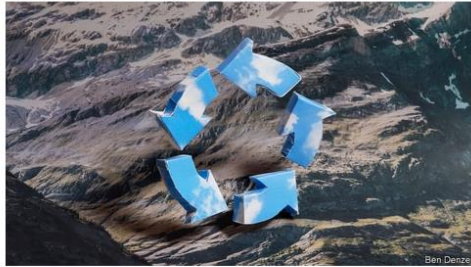
SEQUENCING CDR INTO THE ETS: INTRODUCTION & FRAMING

Michael Pahle (PIK) & Darius Sultani (PIK)



GEFÖRDERT VOM

CDR ISSUES AT A GLANCE: ECONOMIST SPECIAL REPORT



The lost heart of net zero

Carbon-dioxide removal needs more attention

It is vital to climate stabilisation, remarkably challenging and systematically ignored



St Augustine's climate policy

The temptations of deferred removals

Carbon dioxide removals must start at scale sooner than people think



On the other hand...

The many prices of carbon dioxide

Not all tonnes are created equal



Thy axe shall harm it not

Trees alone will not save the world

But better markets and better monitoring will let them do more



All the myriad ways

Carbon-dioxide-removal options are multiplying

Many are intriguing; none is cheap, scalable and easily



The carbon economy

A net-zero world needs new markets and institutions

It is just possible they will be built in time

- Abatement vs. removals
- Technologies, cost, and innovation
- Trust and institutions

Focus of this workshop

Source: [The Economist](#)

GEFÖRDERT VOM

TWO OPTIONS: TREACHEROUS POLITICAL ECONOMY VS. TRUST IN GOVERNMENTS

Integration into ETS



For schemes to be palatable to the industries operating under them, the credits need to be cheap and plentiful, which experience suggests means **dodgy**.

Creating separate system

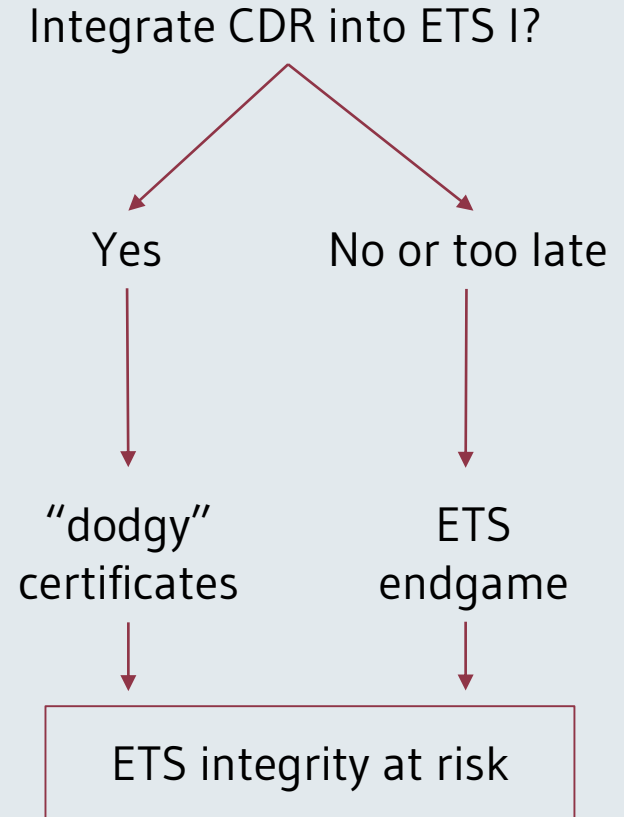
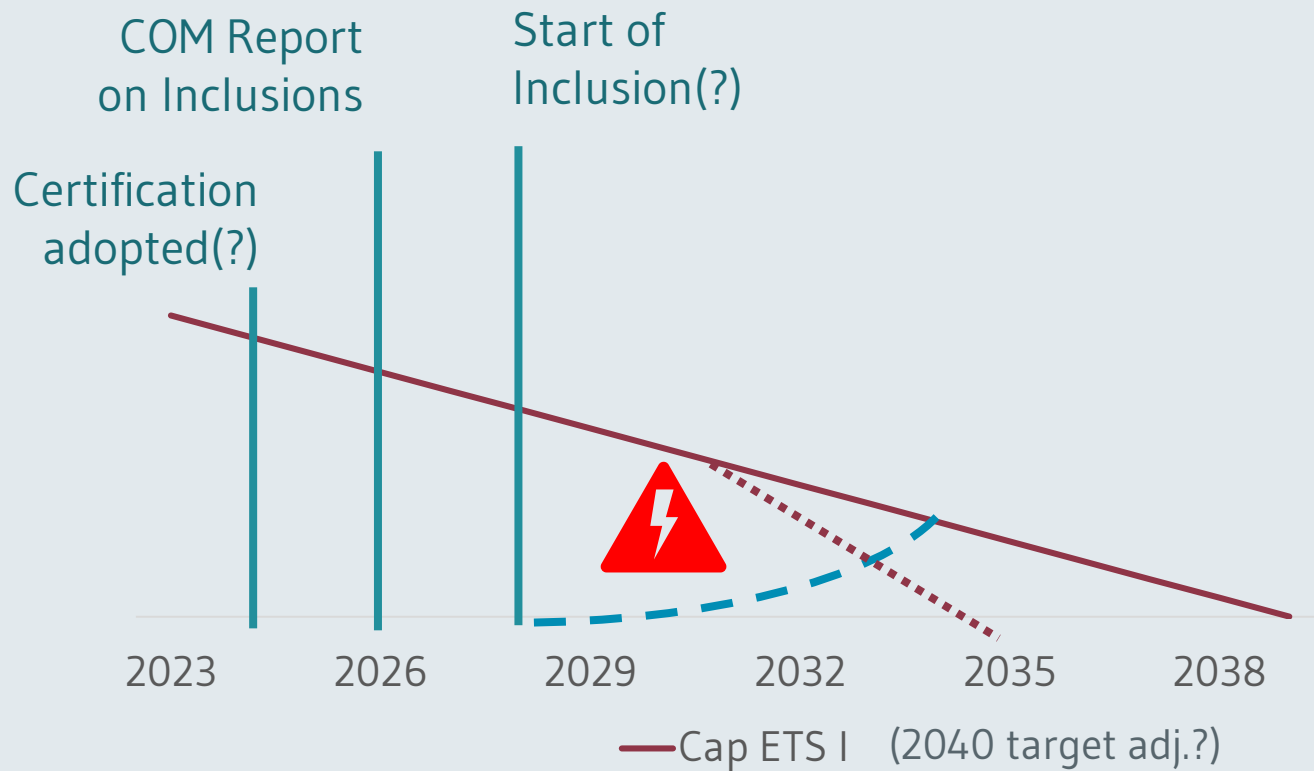


Industry would be required to cover an increasing fraction of its production with removals*. But **could governments be relied** on to ratchet up the obligation to buy removals?

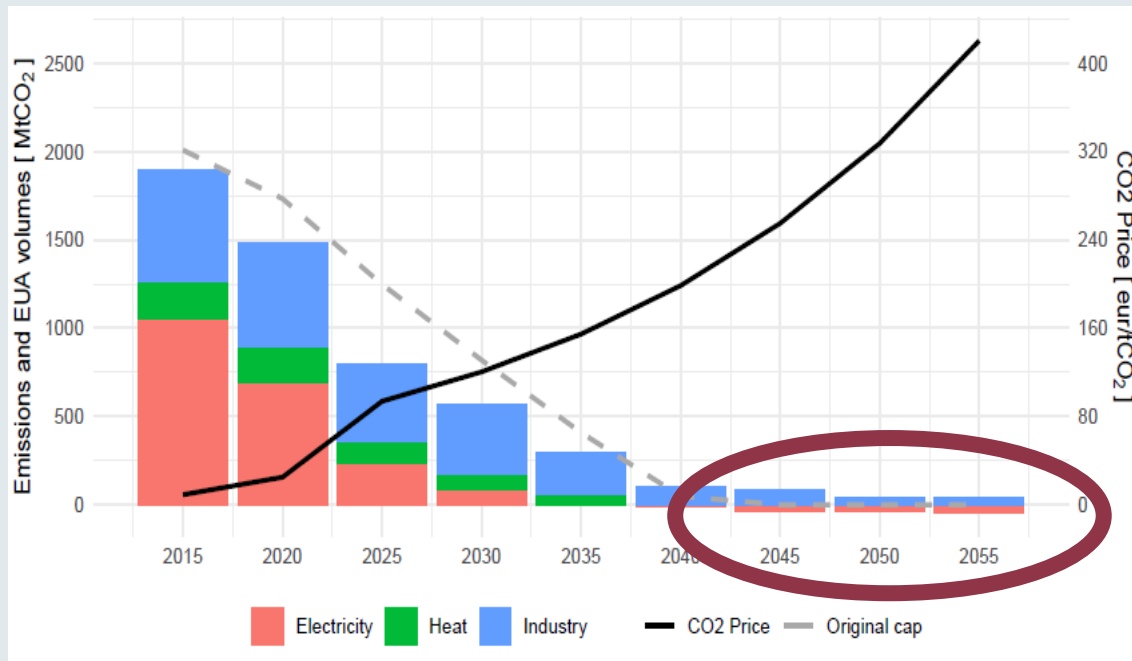
➔ Can **sequencing CDR into the ETS** build on (and preserve) existing trust, while safeguarding against integrity risk?

GEFÖRDERT VOM

INTEGRATION FROM ETS PERSPECTIVE: CDR MIGHT BE NEEDED TO "SOLVE LIQUIDITY PROBLEM"



MODELLING SUGGESTS BECCS WILL MAKE CONSIDERABLE A PRICE DIFFERENCE



- **BECCS is used to compensate** for “hard-to-abate” (residual) emissions, which are in the range of 40-60 Mt
- **Residual emissions** not determined technically, **but economically** ($MAC > \text{costs of BECCS}$, reduction of 0,3t/MWh)
- **Non-availability of BECCS** increases carbon prices by around 10-20%

Source: Pahle et al. (2023), ETS endgame

WHERE DO WE STAND (1): CDR TYPOLOGY AND POTENTIAL

Potential typology of carbon dioxide removals

| | Technology-based | Nature-based |
|----------------|-------------------|---------------------------------------|
| Permanent* | E.g. DACCS, BECCS | E.g. Peatland and wetland restoration |
| Non-permanent* | | E.g. Durable harvested wood products |

Source: Technopolis, PIK and E3Modelling

Likely higher potential of nature-based CDR

Figure 35 Net carbon removals from LULUCF direct and indirect (filtered scenarios, EU)

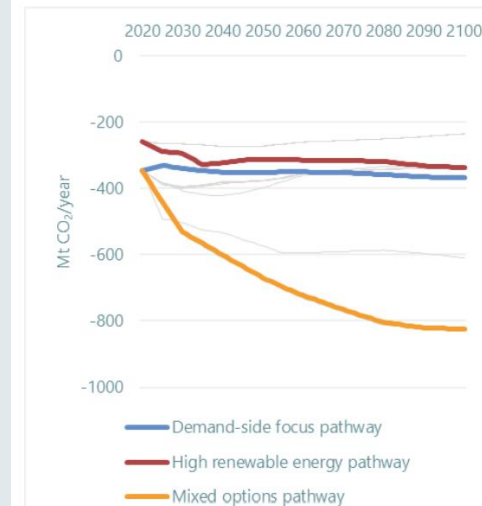
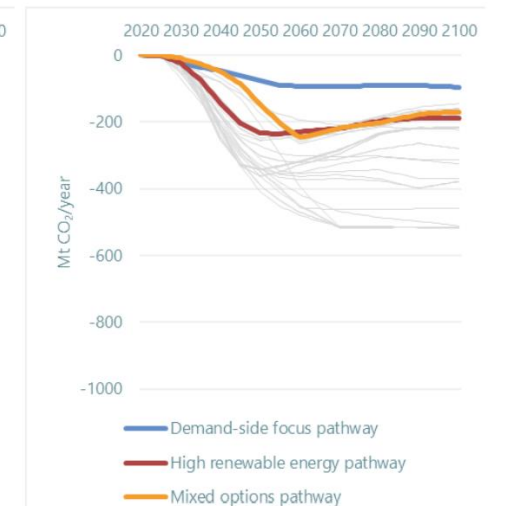


Figure 36 Carbon removals from BECCS and DACCS (filtered scenarios, EU)



Source: [ESABCC \(2023\)](#)

➡ Straightforward to start sequencing with **permanent** removals, nonetheless

WHERE DO WE STAND (2): PERMANENT CDR IN EU CLIMATE POLICY

Carbon pricing (EU ETS)

- CCS installations do not need to surrender allowances
- No provision for generation of additional allowances through carbon removals
- Biomass-only installations excluded from ETS

Governance (RED II, Monitoring)

Biomass can be used to reduce emissions reporting obligations under certain conditions

Standards (CRCF)

- Criteria for certification of removals
- Strong “firewall” to ETS (for now?)

Technology support (IF, NZIA)

- Technology support already running under IF and Member States’ research funds
- NZIA to ramp up support

➔ Some **“docking points”** for BECCS already, provisions for DACCS still lacking

HOW TO PUT SEQUENCING OF PERMANENT CDR INTO ACTION?

- Thoughts and considerations on **BECCS (Artur Runge-Metzger)**
- Thoughts and considerations on **DACCS (Bjarne Steffen)**
- Intervention (**Verena Hofbauer**)

