



POTSDAM INSTITUTE FOR
CLIMATE IMPACT RESEARCH

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Sequencing CDR into the EU ETS

- PREVIEW OF SELECTED RESULTS -

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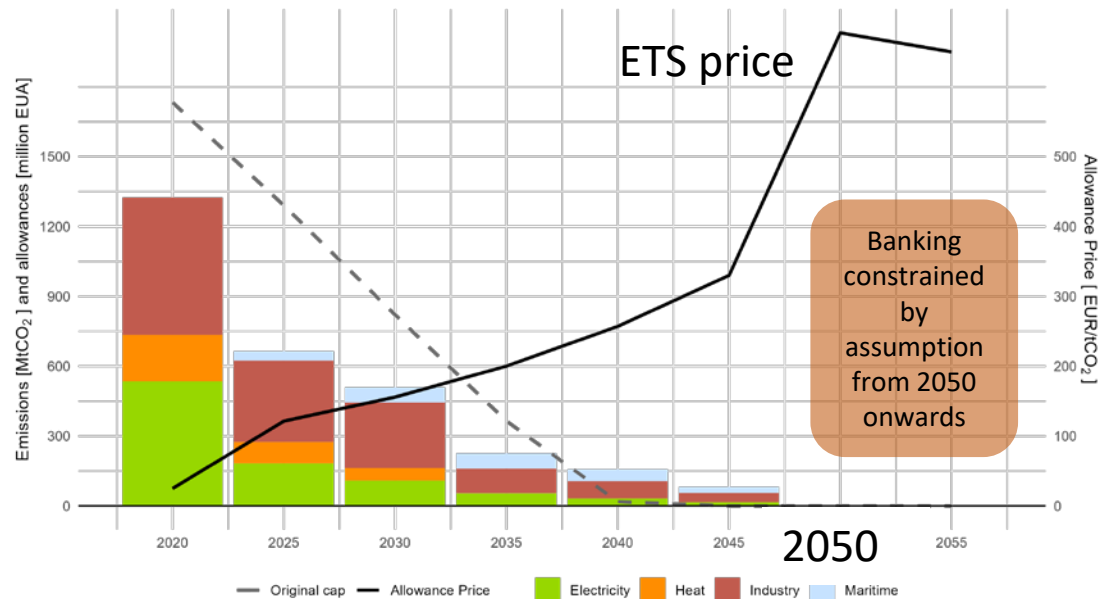
Approach: How to put sequencing CDR into ETS in practice

- 1. First-best vision:** We characterize conditions of an economically desirable regulatory framework for removals to be achieved in the long run.
- 2. First-best integration:** We analyze the implications of a first-best (unconstrained, i.e. no other risks taken into account) integration of permanent removals into the EU ETS as currently in place.
- 3. Sequencing = second-best integration:** Considering risks of mitigation deterrence and excessive biomass use, we derive a policy sequencing path for integrating removals into the EU ETS.

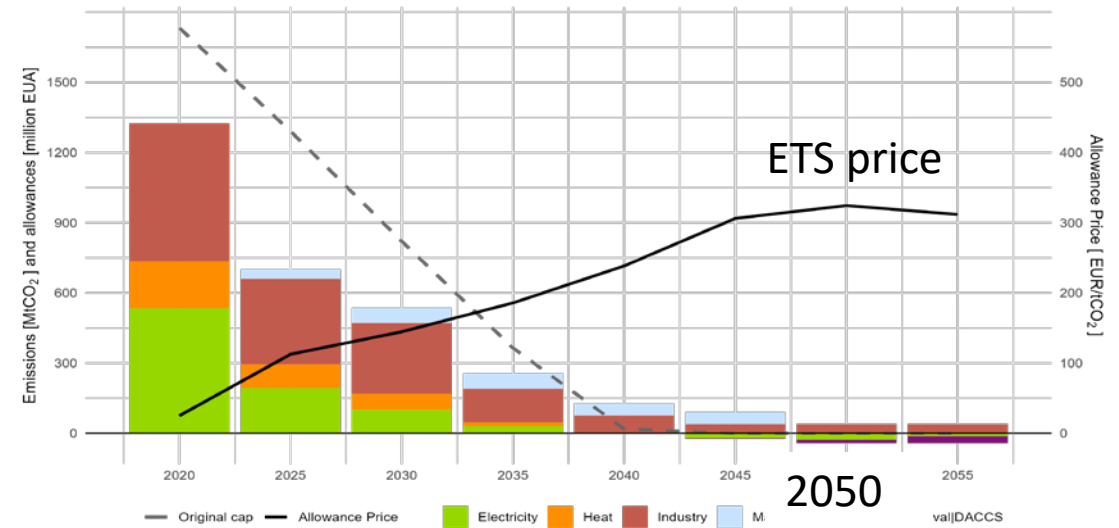
First-best (unconstrained) integration of permanent removals into the EU ETS: A numerical analysis

Integrating CDR halves long-run prices, offsets “residual” emissions

Status Quo: BECCS and DACCS excluded



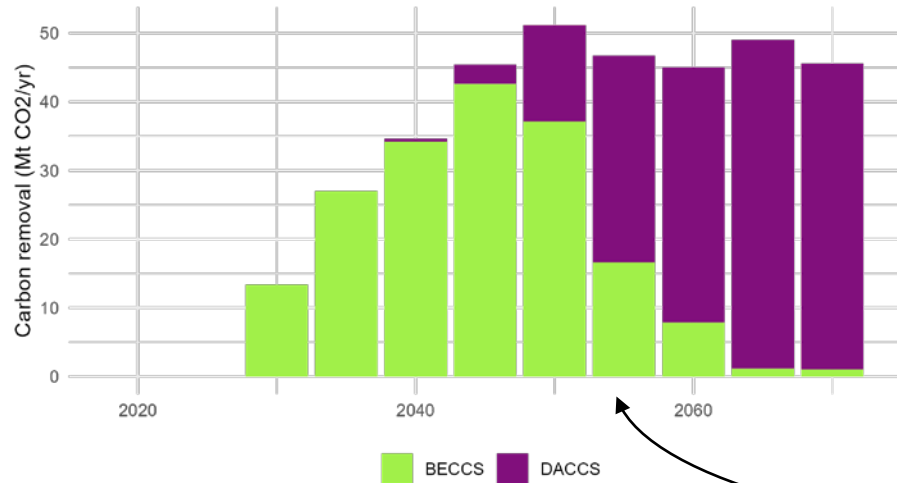
BECCS and DACCS integrated into the EU ETS



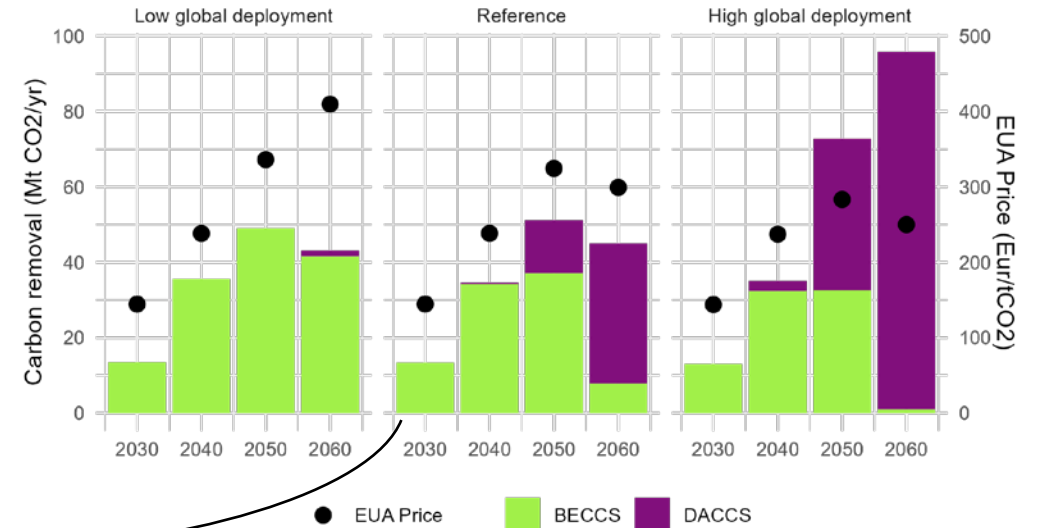
- Integrating CDR cuts **2050 prices** from over 600 EUR/t down to 300 EUR/t
- Price forms where marginal **abatement** costs equal marginal **removal** costs, implicit **definition of residual emissions**

Zooming in on CDR: BECCS starts, DACCS take over

BECCS and DACCS deployment under the ETS I for moderate DACCS cost scenario.



BECCS/DACCS deployment and EUA prices for three global DACCS deployment scenarios.



- ETS **first** incentivizes **BECCS**, later on to **DACCS** as technological learning progresses (volume around 50 Mt)
- High **uncertainty** for cost reductions, depending on global deployment

Sequencing removals into the EU ETS

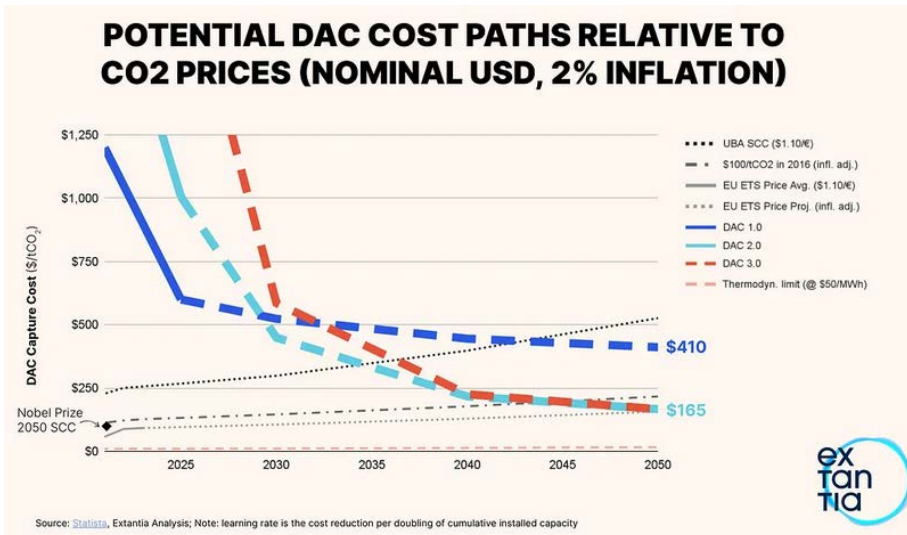
Backward induction to meet the first-best vision

Why not just fully integrate right away? Because of the “dark side”



Risk of mitigation deterrence:

- arises from **CDR cost uncertainty**
- could endanger environmental integrity by a **watering down of the cap** when future prices rise too steeply

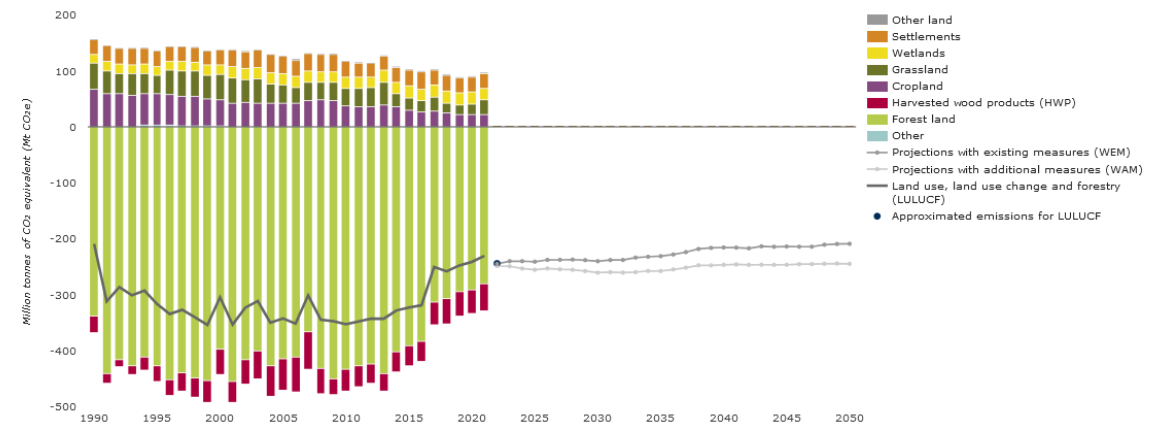


Source: [Boysen and Schreiter \(2024\)](#)

Risk of excessive biomass use:

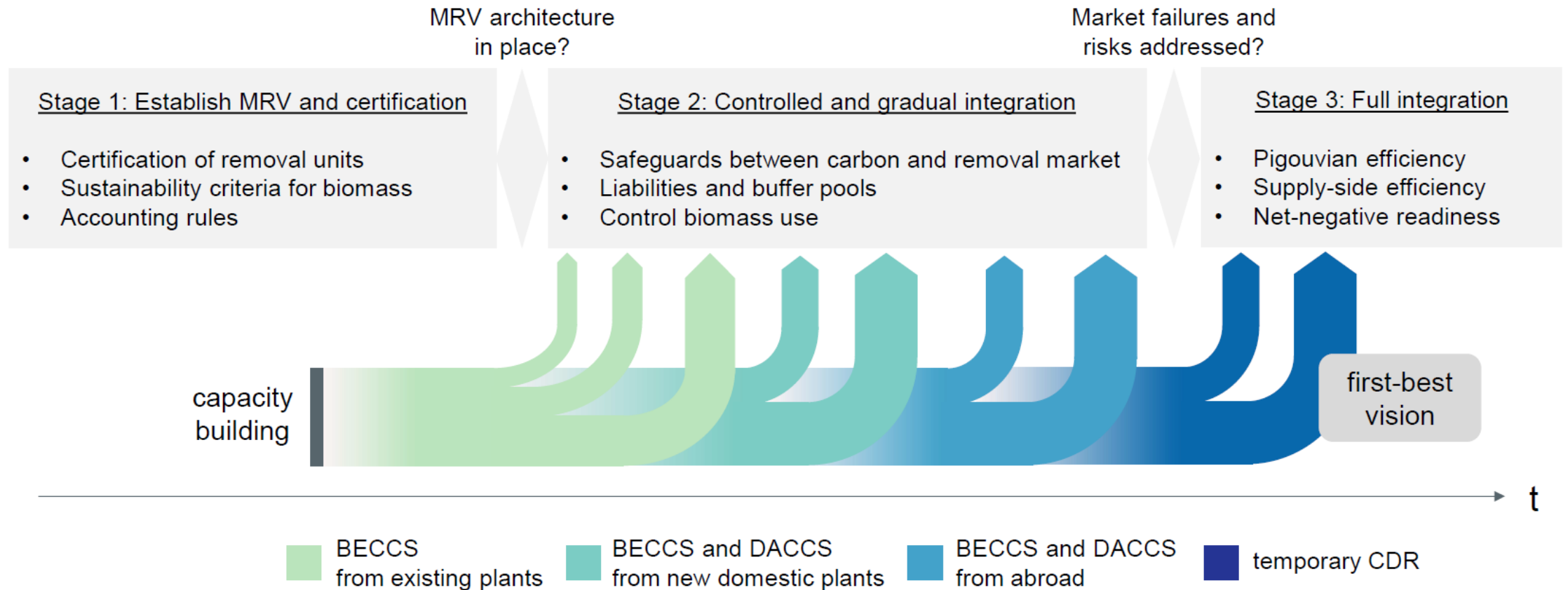
- arises from **incomplete externality pricing** of biomass
- could endanger environmental integrity by **over-depleting natural sinks** (plus other impacts, e.g. on food prices)

Figure 1. EU emissions and removals of the LULUCF sector by main land use category



Source: [EEA](#)

Stage-gate sequencing approach: reduce risks \Leftrightarrow scale-up CDR



- Sequence of **no** → **gradual** → **full linking** could also be role model for linking ETS and ETS2 (distributional risks)