



POTSDAM INSTITUTE FOR
CLIMATE IMPACT RESEARCH



Mercator Research Institute on
Global Commons and Climate Change





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Securing Lasting Commitment to a Future Climate Policy

Carbon Pricing, Removals, and the Challenge of Net-Negative Emissions

Ariadne EU Workshops 2024

9 December 2024

Prof. Dr. Ottmar Edenhofer

Director, Potsdam Institute for Climate Impact Research (PIK)

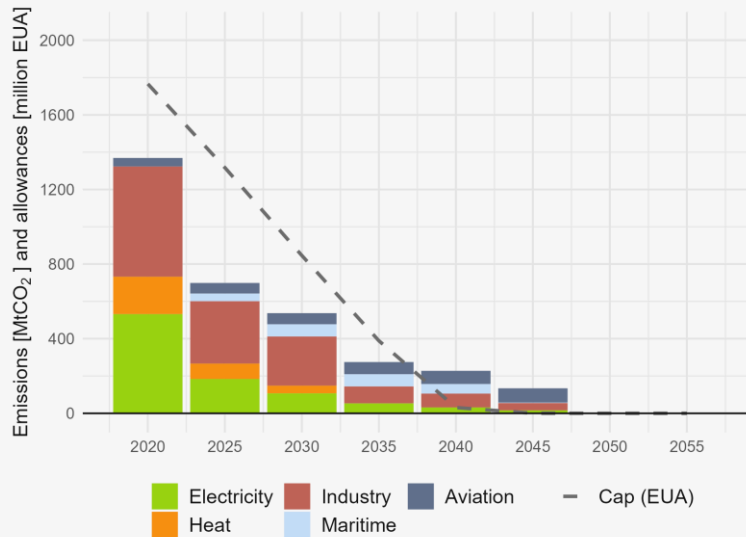
Director, Mercator Research Institute on Global Commons and Climate Change (MCC)

TU Berlin, Chair of The Economics of Climate Change

ETS market stability under threat by 'endgame' scenario in the 2030s. 'First-best' CDR integration can halve long-run allowance prices

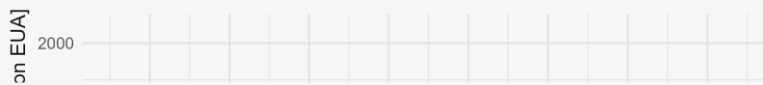
Sector emissions under status quo

BECCS and DACCS excluded from EU ETS



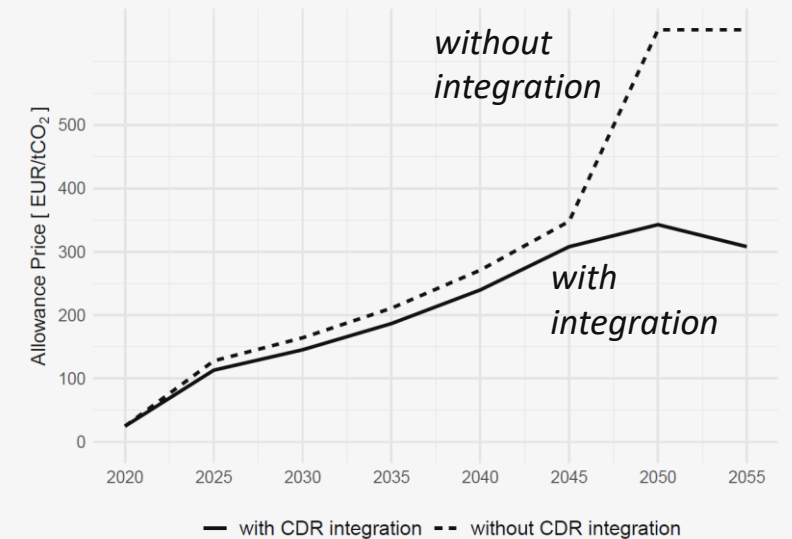
Sector emissions under CDR integration

BECCS and DACCS integrated into EU ETS



Allowance prices

Without/with BECCS and DACCS integration



Source: Sultani et al. (2024)

Assumption: Banking constrained from 2045 onwards

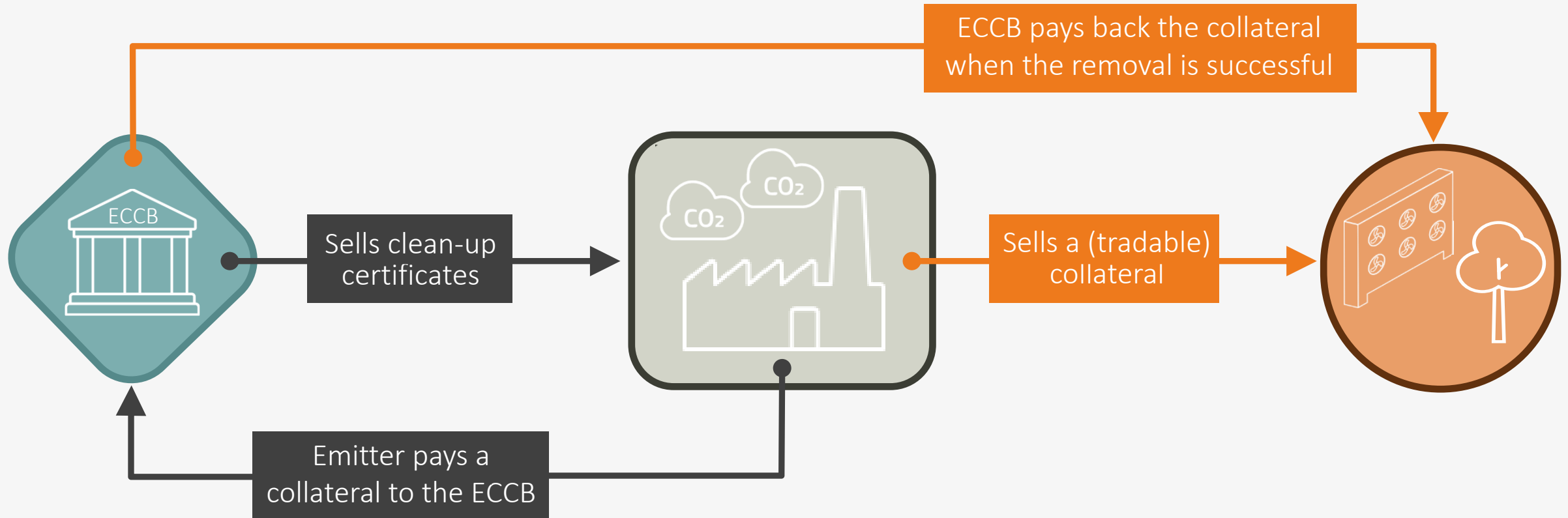
The European Climate Law mandates to strive for net-negative emissions beyond 2050

European Climate Law, Article 2:

*“Union-wide **greenhouse gas emissions and removals** regulated in Union law **shall be balanced** within the Union at the latest **by 2050**, thus reducing emissions to net zero by that date, and the Union shall aim to **achieve negative emissions thereafter.**”*



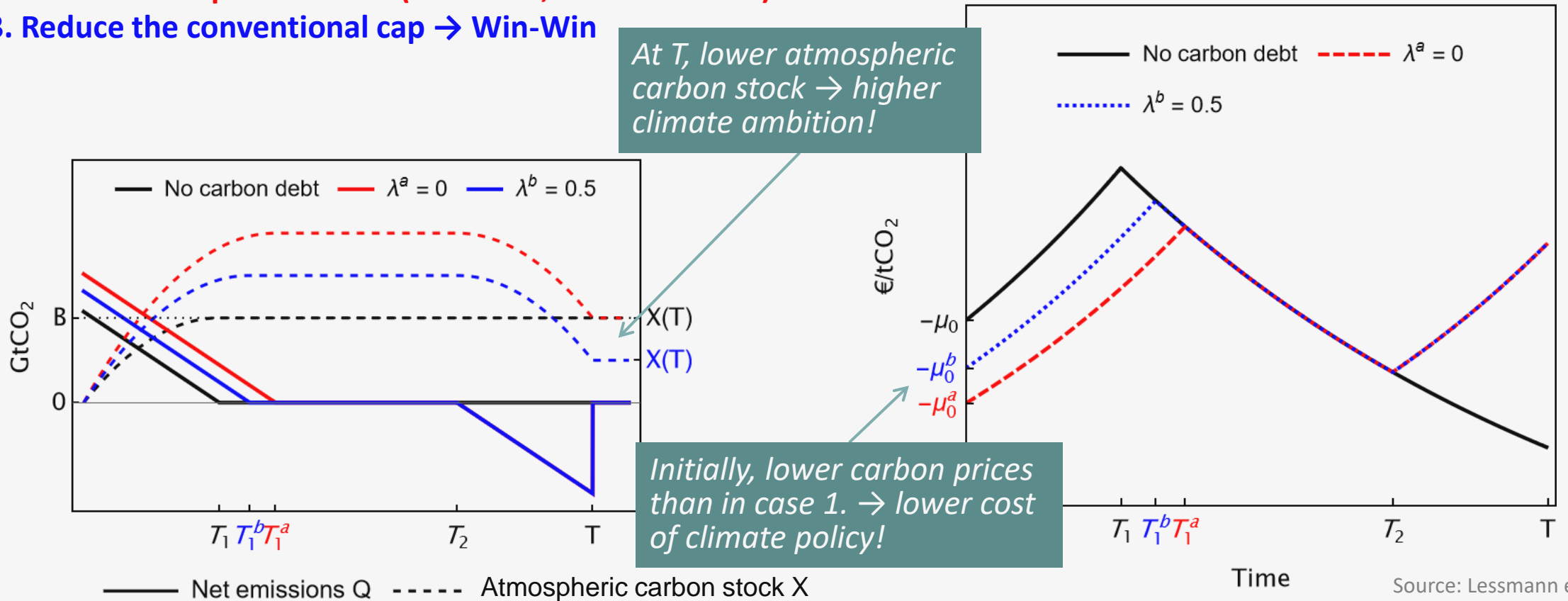
Achieving net-negative: Emission trading with 'Clean-Up Certificates' and the case for a European Carbon Central Bank



Based on Lessmann et al. (2024)

Exploiting intertemporal efficiency gains: Lower carbon prices with higher ambition levels are feasible

1. Integrating CDR in conventional EU ETS
2. Issue Clean-Up certificates (emit now, remove until T)
3. Reduce the conventional cap → Win-Win



Source: Lessmann et al. (2024)

A new institutional set-up: Forging a flexible pathway to achieve lasting commitments



Functions

- › Overshoot can be controlled directly
- › Addresses the commitment problem of the regulator
- › Creates a CDR market with strong enforcement capacity ('lender of last resort')
- › Creates a market for scaling up CDR

Challenges

- › Unintended distributional consequences
- › Weak mandate might lead to soft intertemporal budget constraint
- › Unpriced land-use emissions might induce adverse effects on biodiversity
- › Lack of democratic legitimacy

Conclusion

- › While the EU is on track to meet its 2030 climate target (ESABCC 2024), it (still) lacks a comprehensive regulatory framework to achieve its 2050 net-zero goal and transition to net-negative emissions thereafter
- › Integrating carbon removal into the EU's climate strategy is essential for securing lasting commitment to long-term objectives, providing the flexibility needed to navigate the path towards ambitious objectives
- › 'Clean-up certificates' allow to achieve net-negative emissions while improving intertemporal efficiency of emission trading and maintaining environmental integrity. Steering the EU towards net-negative requires robust governance
- › A European Carbon Central Bank could manage net-negative emissions, address the liability problem of the regulator and act as lender of last resort in case of (strategic) bankruptcy of firms



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Thank you

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