International Carbon Action Partnership

ETS, RELOADED?

DESIGNING EMISSIONS TRADING FOR NET-ZERO AND NET-NEGATIVE SOCIETIES

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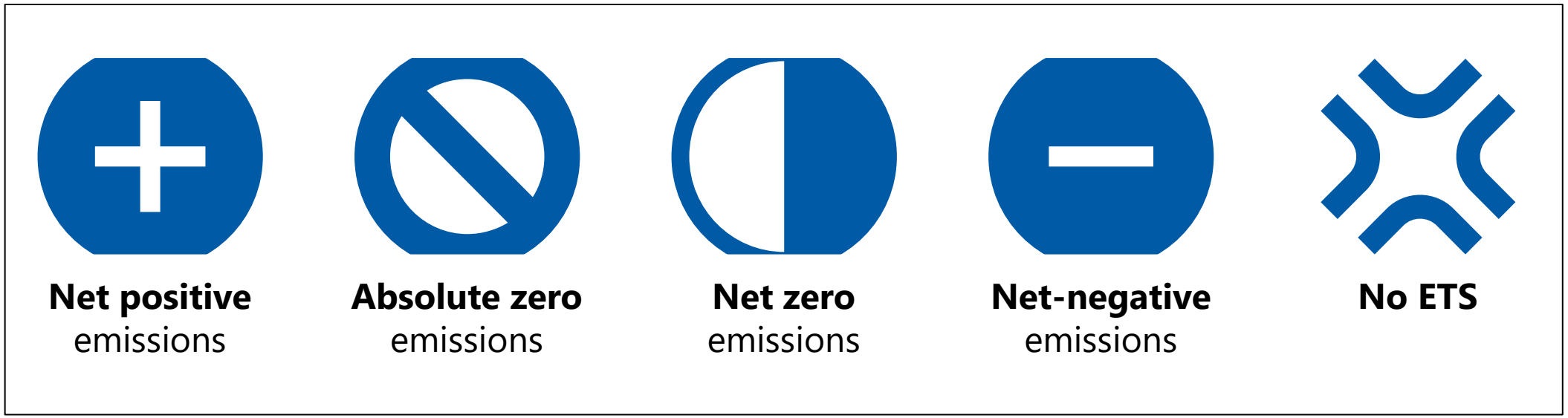
Based on a presentation by Stephanie La Hoz Theuer

THE FUTURE TRAJECTORY OF ETSs IS AN OPEN QUESTION WITH MULTIPLE POSSIBILITIES

ETS emission levels **<u>may or may not</u> mirror broader jurisdictional goals**

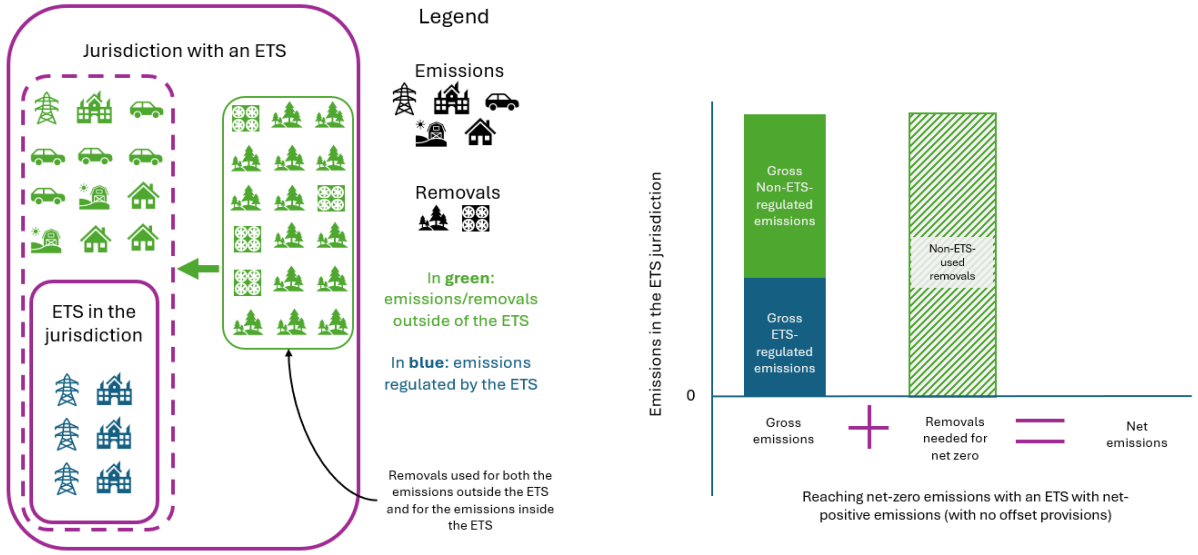


NET POSITIVE ETSs

Default setting for existing ETSs

- Regulator **continues issuing conventional allowances**
- Promotes **abatement** while leaving room for **residual emissions**
- Two critical choices:
  - (1) defining the **cap** (i.e. deciding the amount of residual positive emissions)
  - (2) **CDR policy mix** to compensate for gross residual emissions **outside the ETS**

*Reaching net-zero emissions with an ETS that results in **positive** emissions*

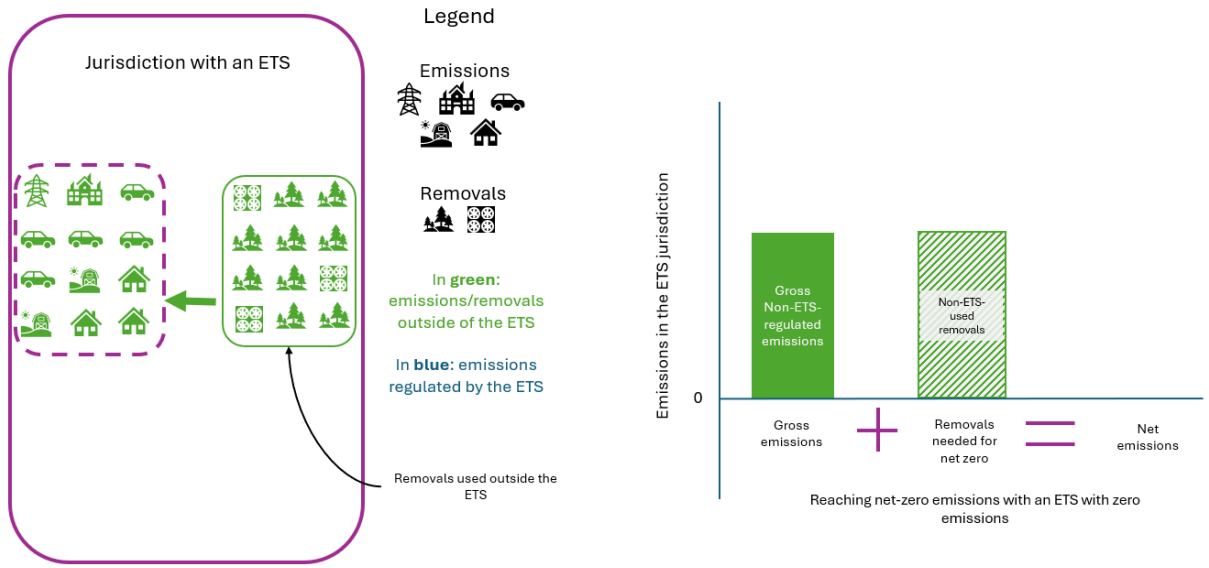


Source: La Hoz Theuer, Ortiz Rivera, Biedenkopf (in progress)

ABSOLUTE ZERO ETSs

Functions like a ban on emissions

*Reaching net-zero emissions with an ETS that results in **zero** gross emissions*



Source: La Hoz Theuer, Ortiz Rivera, Biedenkopf (in progress)

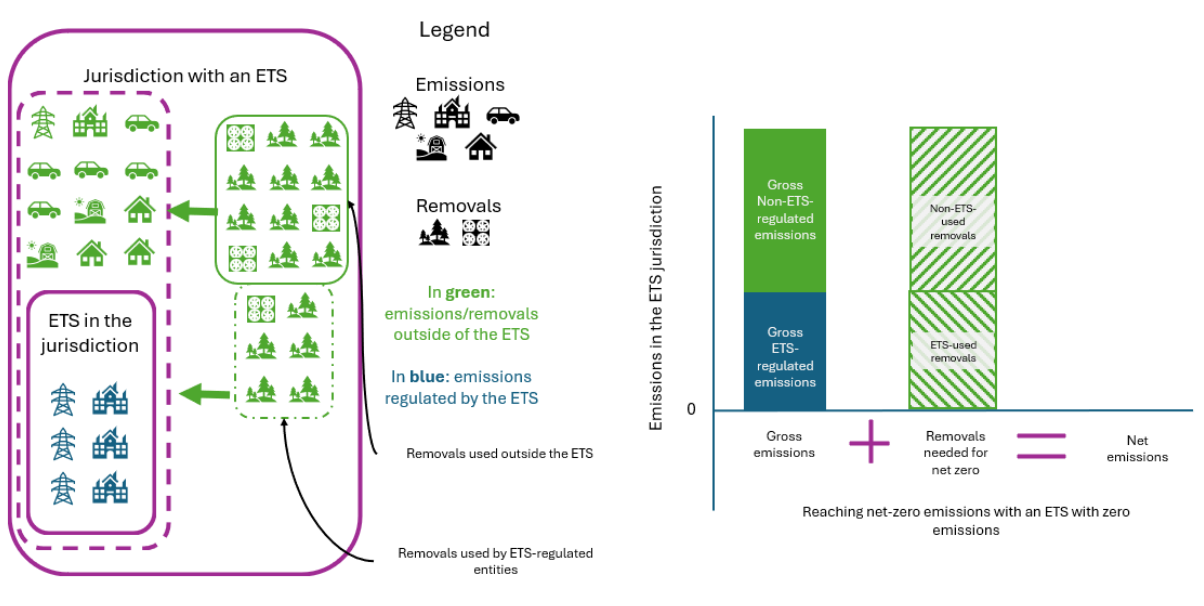
- Regulator **ceases to issue conventional allowances**
- Once all banked allowances have been used up, functions like a **ban on emissions**
- Pushes **gross emissions** under the scope of the ETS to **zero**
- Would require significant **innovation** and broader **behavioral changes**
- **Could be seen as a draconian**, especially if affordable CDR is available

NET ZERO ETSs

Fungible or not, that's the question

- Delivers **net-zero**, allowing **residual gross emissions** to be balanced with CDR
- Allows **in theory for a cost-effective mix** of abatement and removal
  (if abatement and removal are considered fungible, and if all externalities are priced in)
- **Exclusive use of removal units**
  (no conventional allowances!)
- ETS could be seen as a '**removals trading system**'

*Reaching net-zero emissions with an ETS that results in **net zero** emissions*

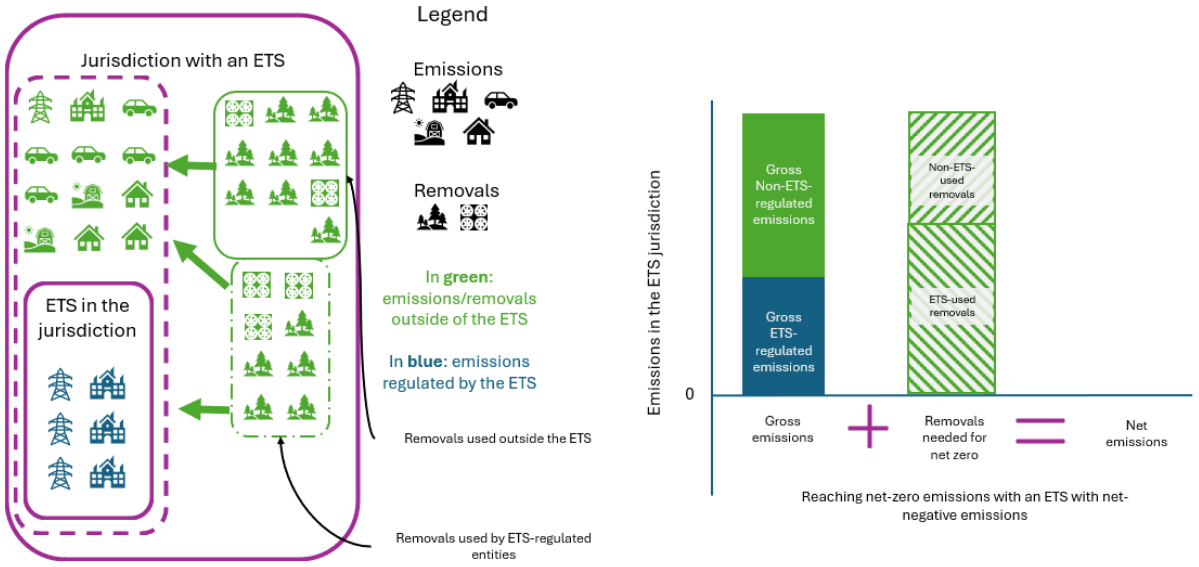


Source: La Hoz Theuer, Ortiz Rivera, Biedenkopf (in progress)

NET NEGATIVE ETSs

Residual emitters deliver net negative

*Reaching net-zero emissions with an ETS that results in **net negative** emissions*



Source: La Hoz Theuer, Ortiz Rivera, Biedenkopf (in progress)

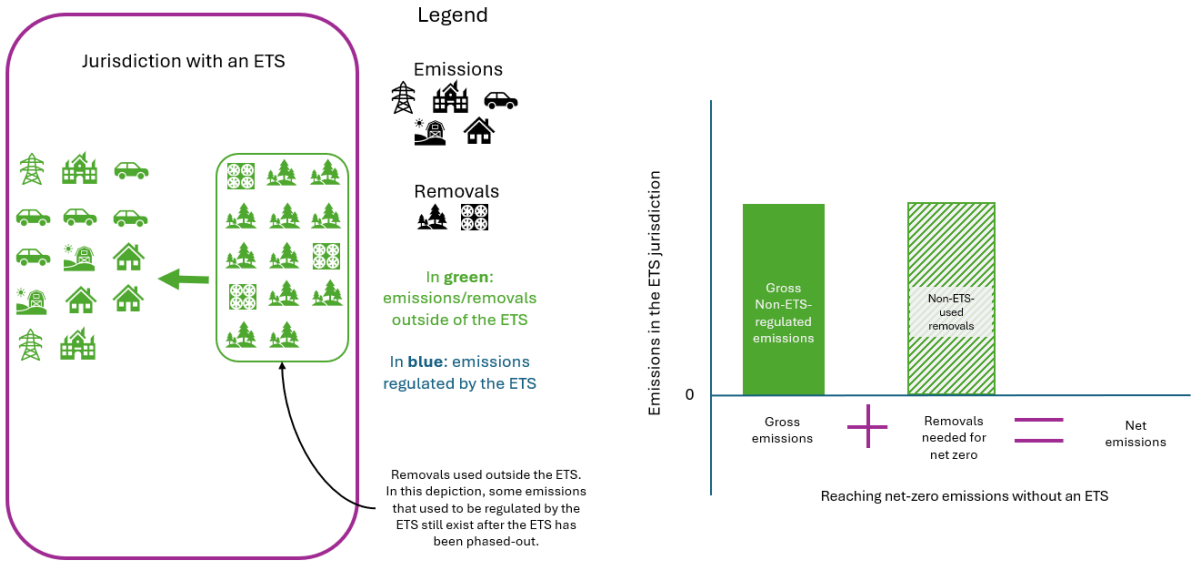
- We looked at options where the **actions of regulated entities** deliver net-negative
- **E.g. two removals for one emission**
- Places **burden of removal onto residual emitters**
- Volume of **net-negative** emissions **is a function of** the volume of **gross emissions**

NO ETS

Another policy may work better!

- The ETS **ceases to exist**
- E.g. ETS is **too small** to provide for effective price discovery, or other policies are considered more effective in achieving mitigation goals.
- ETS could **e.g. morph into a carbon tax** by eliminating make-good provisions and instituting a fixed fine per tCO2e
- **Other instruments would be necessary** to drive abatement and removal

*Reaching net-zero emissions **without an ETS***



Source: La Hoz Theuer, Ortiz Rivera, Biedenkopf (in progress)

DESIGN CONSIDERATIONS

(1) Defining 'residual' and 'hard to abate'

Residual emissions

General context: any emissions that reach the atmosphere after the net-zero point.

ETS context: gross emissions that are allowed for ETS regulated entities

Hard-to-abate emissions

General context: emissions whose abatement feasibility is limited because of technological, economic, social or political considerations.

ETS context: gross emissions that "SHOULD" allowed in ETS

- System level: (a) top-down decision on max. emissions that ETS sector may emit; (b) abatement will only take place until marginal abatement costs equal marginal removals costs
- Regulated entity level: (a) top-down decision on max. emissions per unit of production; (b) dynamic decision with a point of comparison

- A definition of 'hard-to-abate' emission (varies in approaches) would **inform the volume of removals that is allowed into the ETS**

DESIGN CONSIDERATIONS

(2) Addressing abatement deterrence

Abatement deterrence: **carbon removal comes at the expense of emissions reduction**

- **(1) substitution and failure**; (2) rebounds; **(3) mitigation foregone**

Short-term: emissions reduction can be ensured by controlling the volume of ETS compliance units.

Long-term: regulated entities may **delay abatement investments** until there is more information about the costs of available measures. Thus, **locking in a higher-emissions pathway and increasing political pressure to reduce climate ambition.**

- Addressing abatement deterrence: **separating abatement and removal targets and actions**, but risk overall economic welfare losses if CDR is cheaper than abatement.
  - Addressing short-term effects may be simpler than long-term ones due to inherent uncertainty
  - **Long-term effects** may (?) be managed by **slow and careful** inclusion of removals in ETSs, and/or **through policies outside of ETS**

DESIGN CONSIDERATIONS

(3) Managing small markets

- **Market shrinks** as ETS cap becomes smaller and regulated entities minimize their emissions, which **might lead to the following challenges**:
  - more banking, low abatement cost heterogeneity, volatility in allowance prices, market manipulation and increase in detrimental speculation, decrease in political support for ETS
- Governments may try to manage some of the challenges outlined above by:
  - **Increasing the ETS scope** in terms of sectors or GHGs;
  - **Reducing the threshold for mandatory participation** in the system to add more participants;
  - **Linking with other systems** (creates another set of challenges as discussed next page);
  - **Facilitating price discovery through auctions** and/or through requirements for exchange trading.

DESIGN CONSIDERATIONS

(4) Issues related to linking

- **Net flow of compliance units from the ETS with lower abatement costs to that with higher abatement costs.**
- **ETSs of different countries**: rules under Article 6 of the Paris Agreement might apply to meet international targets.
- **ETSs of different sizes**: the smaller system will continue to be the price taker.

- **The flow of compliance units** is determined by **the cost differential** between abatement in the net positive ETS and removal units in the other ETS.
- **Coordination (in ambition levels) across systems** would be key to **ensure continued compatibility** and perverse incentives.

DESIGN CONSIDERATIONS

(4) Issues related to linking

- **In net-zero,** emissions must be **compensated** by removals, while **in net-negative,** emitting entities must **overcompensate** for their emissions.
- **Removal unit = compliance units** under these systems
- Policymakers could limit their role to (1) only decide which removal units are accepted or (2) to procure and sell credits to cover the both systems' demand

- **One system planned a zero emissions steady state:** de-linking of the systems may be required to keep the stringency of the zero emissions
- **Phase out of ETS:** a de-linking process would be required regardless of the planned steady state of the emissions in the other system

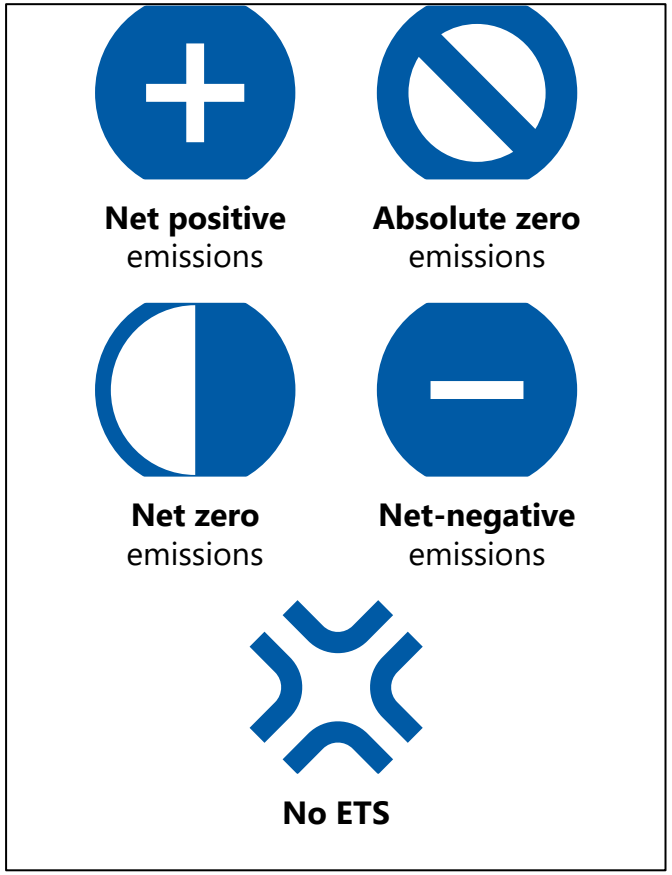
DESIGN CONSIDERATIONS

(5) Generating removal units inside or outside of ETS

	ETS emitters purchase units directly from CDR suppliers	ETS emitters purchase units from the government
CDR suppliers are allocated fully fungible allowances	- Regulator cannot control the balance between abatement and removal - Exchange-traded units with price transparency and consignment auctions can facilitate price discovery - Under a net-positive ETS, this option could lead to a glut of compliance units in the market - Example: New Zealand ETS	- Regulator can limit the volume of RUs that enters the system, as well as who has access to those units – noting that limits on unit issuance could affect the ability of CDR suppliers to be rewarded for the (excess) CDR carried out. - Aggregate transaction costs are likely to be lower than in direct purchases as the government can purchase units in high amounts - Regulator can address heterogeneous cost structures on the CDR supply side
CDR suppliers are allocated units other than fully fungible allowances (e.g. 'credits')	- Regulator can set limits on the use of RUs (e.g. % of entities' compliance obligation) and control the balance between abatement and removal - Exchange-traded units with price transparency and consignment auctions can facilitate price discovery - Example: Korea ETS, California cap-and-trade program	- Regulator has wide control over volume and use of RUs in the system - Aggregate transaction costs could be lower than in direct purchases as the government can purchase units in high amounts - Regulator can address heterogeneous cost structures on the CDR supply side

SOME TAKEAWAYS

1. The future trajectory of ETSs is an open question with **multiple possibilities**
2. ETS emission levels **may or may not mirror broader jurisdictional goals**
3. Definitions of **'residual' and 'hard-to-abate'** emissions are crucial
4. Some ETS designs vulnerable to the **risk that is CDR not viable at scale**
5. ETSs could provide support to CDR, but are **unlikely to suffice**
6. Understanding the **policy mix for net-negative emissions** is crucial for defining the role of ETSs in long-term climate strategies



POSSIBLE QUESTIONS FOR FURTHER RESEARCH

- Addressing abatement deterrence
- Interaction between CDR and market stability instruments
- Market dynamics in various scenarios, e.g. net positive – would there still be a market under a steady, positive cap?
- Liquidity matters – to what extent would CDR help address liquidity concerns in a shrinking ETS?
- Policy packages for net zero and the role of ETSs therein
- Considerations for intensity-based systems
- ….?

THANK YOU!