

Ariadne @ Brussels 9 December 2024

DESIGN CHOICES AND IMPLEMENTATION OPTIONS FOR DEDICATED POLICIES TO SCALE-UP CDR IN THE EU

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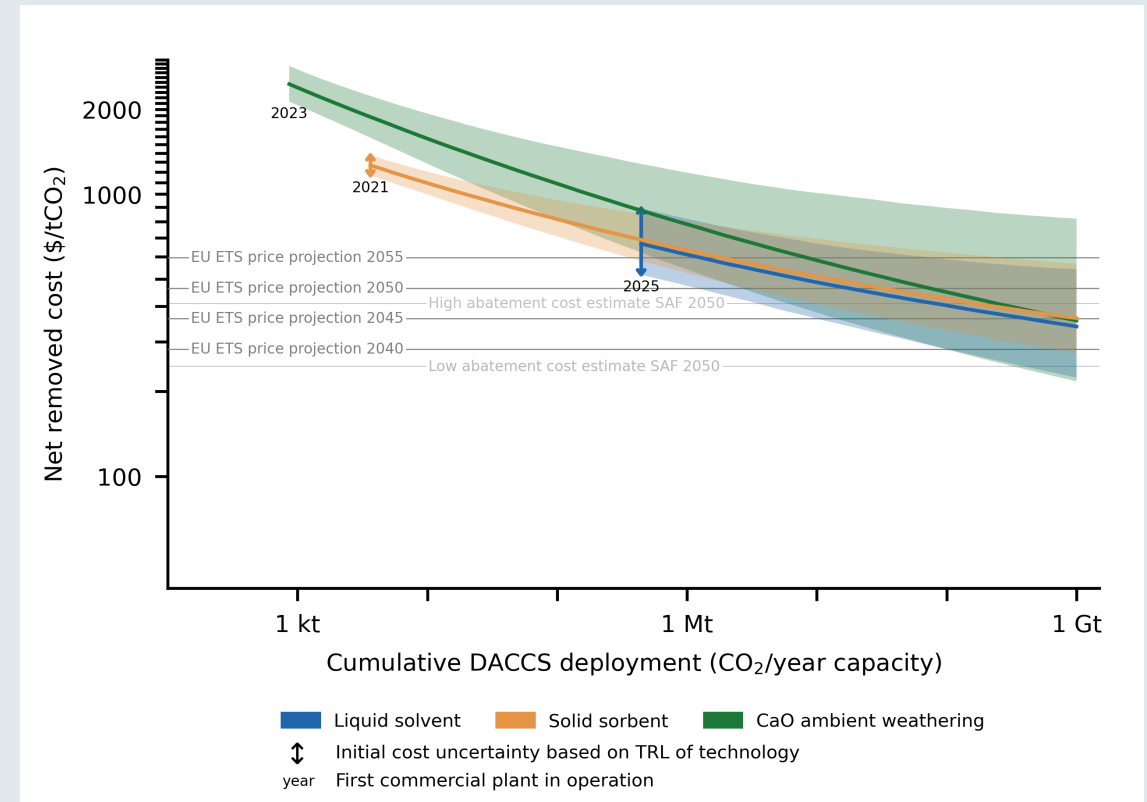
AGENDA

- 9:00-9:15: Welcome (M. Pahle) and initial input (D. Sultani)
- 9:15-9:20: Intervention by N. Deich (US DoE, online)
- 9:20-9:25: Intervention by F. Ramos (DG CLIMA)
- 9:25-9:30: Intervention by V. Selen & C. Beuttler (Carbon Gap)
- 9:30-10:25: Discussion under Chatham House rules
- 10:25-10:30: Wrap-up (M. Pahle & B. Steffen)



SEQUENCING: SHORT TERM SUPPORT POLICY NEEDED AS BRIDGE TO LATER LARGE SCALE POLICIES

- How to integrate **CDR into EU climate policy architecture** still a debated question (ETS integration, creating Removal Trading System etc.)
- In any case, proper **integration takes time and may only be partial =>** dedicated **bridging policy** needed for scaling up in meantime



Source: Sievert K., Schmidt T.S., Steffen B. (2024)

GLOBALLY, THE VARIETY OF EARLY-STAGE SUPPORT INSTRUMENTS FOR CDR IS LARGE.



GX-ETS (“GX-League” forum – companies, academia, government): Accepts use of voluntary but durable CDR credits in baseline-and-crediting system, which is due to develop into compliance market in 2026. Domestic involvement criteria: overseas project run by entity in 51% “league”-ownership, effectively investing at least 20% into overseas project



Public CDR procurement worth at least CA\$ 10 million until 2030 to “advance development and responsible deployment of CDR [...] in Canada” (Treasury Board of Canada Secretariat, [2024](#))



Reverse auctions for domestic BECCS to distribute up to \$3.5 billion between 2026 and 2046; geological storage must be realised within three (plus two) years of support decision (Carbon Herald, [2024](#))



Set of subsidy funds (Danish Energy Agency, [2024](#)): (i) CCUS Fund: max. DKK 815 million of subsidies p.a., aimed at 0.9 mtCO₂ p.a. from 2030 onwards; (ii) NECCS Fund: approx. DKK 2.6 billion awarded to capture 160 kt CO₂ p.a. between 2026 and 2032; (iii) CCS Fund: approx. DKK 28 billion to be paid out over 15 years; supporting 2.3 mt CO₂ p.a. captured from 2030 onwards



IRA 45Q tax credit: \$85/t for CO₂ stored through BECCS, \$180/t for CDR via Direct Air Capture (DAC).



DAC projects can sell certificates for compliance to Low Carbon Fuel Standard (California ARB, [2024](#)); SB308 proposed that ETS entities are mandated to increasingly reduce residual emissions over time by investing in CDR (incl. regulatory oversight, financial responsibility, MRV, interests of affected communities), but died in legislative process this year (RFF, [2024](#))

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IN THE EU, SEVERAL CONCRETE PROPOSALS ON THE TABLE, BUT STRUCTURED ELABORATION OF MAIN DESIGN CHOICES AND RESPECTIVE OPTIONS STILL MISSING

- Several proposal out that **differ** regarding type of instrument, finance, contract, governance...
- Hard to **systematically compare** and discuss pros and cons
- Possible approach: abstract from concrete proposal and **identify general design choices & options** to facilitate comparison

Design choice A

- Option A.1
- Option A.2
- ...
- Considerations & relations to other choices

Design choice B

- Option B.1
- Option B.2
- ...
- Considerations & relations to other choices

OVERVIEW OF IDENTIFIED DESIGN CHOICES: HIGH DIMENSIONALITY/COMPLEXITY CALLS FOR FIRST PRINCIPLES

1. **Type of finance:** public only, blended (buyers' club)
 - **Source of public finance:** consumers, tax payers, “carbon originators”, funds (e.g. Innovation Funds)
 - **If blended, source of private finance:** tech companies, ETS regulated companies, speculators
2. If blended, **leverage on private finance:**
 - **“Stackability”:** Combination of public support and VCM revenues allowed (yes/no)
 - **“Allowability”:** Guaranteed option to sell into / use in EU ETS later on (yes/no)
 - **“Internationality”:** Use of credit in international carbon/compliance markets (yes/no)
3. **Instrument:** performance based procurement, subsidy, loan
4. **Maturity:** immediate procurement, advanced market commitment (AMC)
5. **CDR scope:**
 - Method: (non-)permanent, TRL based, all
 - Domestic vs. international CDR
6. **Governance:**
 - **Institution:** National agencies, public investment banks, EU COM, ECCB

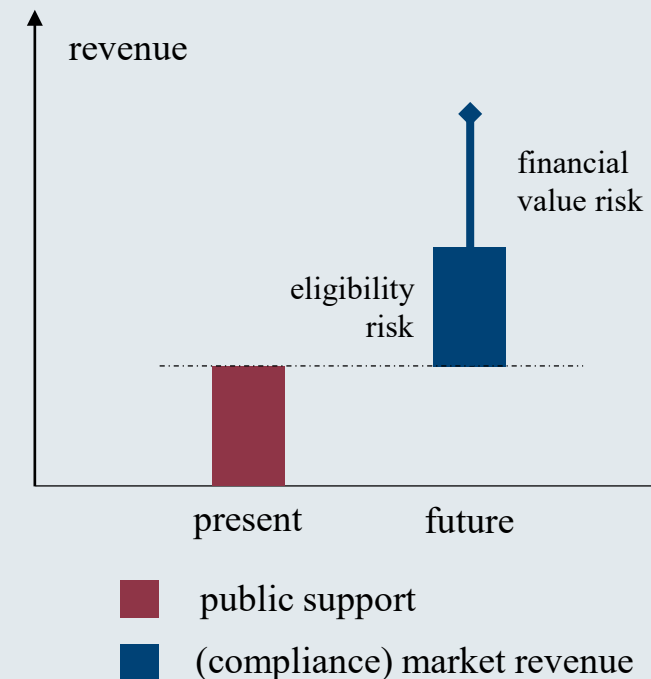
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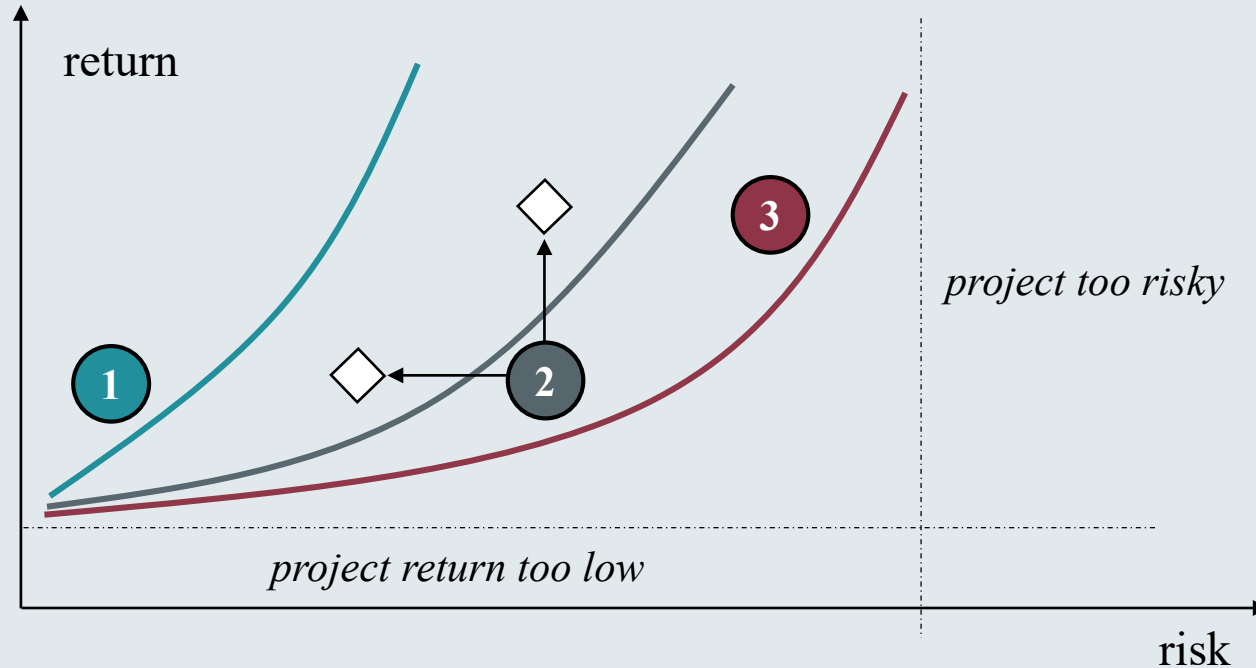
GUIDING PRINCIPLE FOR BRIDGING POLICY (1): MAXIMISE LEVERAGE ON PRIVATE FINANCE & SCALE-UP MARKET

- › Main assumption: For both leverage and scale-up, **carbon compliance market (e.g. EU ETS) eligibility** is crucial.
- › Main reason: **Revenue stacking** (in time and source) is crucial to get most out of public finance, i.e. revenue streams from
 1. Immediate and results-based support (present)
 2. Compliance market value or voluntary market value (future)
- › Two main risks for 2):
 - › (Compliance) market eligibility risk: Will the CDR certificate be eligible for use in carbon (compliance) markets?
 - › Financial value risk: If eligible, for which markets and what will the market price be?



GUIDING PRINCIPLE FOR BRIDGING POLICY (2): CONSIDER POTENTIAL BUYERS/INVESTORS AND THEIR RESPECTIVE RISK-RETURN PROFILE.

Indifference curve and CDR demand profiles



Demand profiles (stylised):

- 1** “Curious adopters”
 - Small willingness to pay for low-risk projects
 - Would already buy today, but not scalable
- 2** “Industrial emitters”
 - Slightly risk averse, but need to hedge against dying fossil business model
 - No feasible investment yet, but **main scalability potential**
- 3** “Prestige buyers” (big tech, re-insurance, consulting, ...)
 - high risk, high return (e.g. from green branding)
 - Already happening, but no long-term scalability

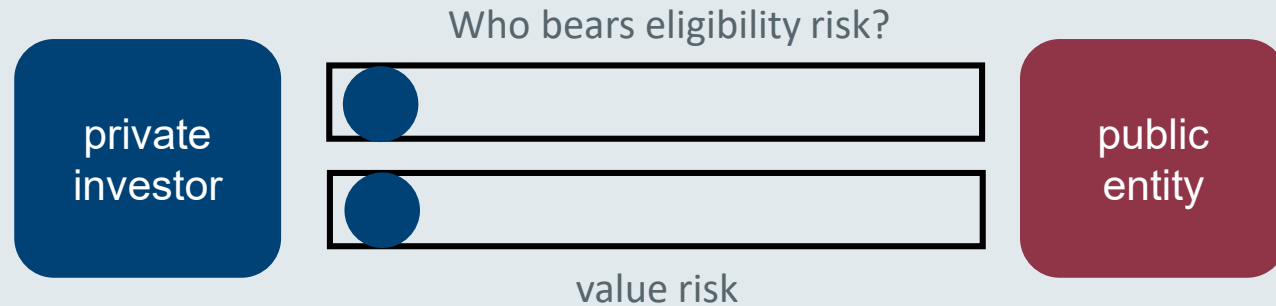
➔ Policies need to address “industrial emitters” demand type by **risk-reducing and/or revenue-increasing** intervention.

TWO POLICY LEVERS ARE AVAILABLE WHICH NEED TO BE “FINE-TUNED”: INCREASE PRIVATE RETURN AND/OR TRANSFER RISKS TO SOCIETY

“Extreme” risk-transfer cases

Considerations

› Option 1: **Flat (e.g. CDR output) subsidy** – boundary solution “full private risk”



Low public budget risk, but more public finance needed to make project viable.

› Option 2: **Public certificate procurement (e.g. CDR Reserve)** – boundary solution “full public risk”



Full risk transfer to public budget, implies lower volumes of CDR can be procured (cp. Innovation Fund).

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VARIOUS OPTIONS EXIST THAT SPLIT RISKS.

Risk-transfer via ETS integration

› Guaranteed market integration (ideally ETS)



› Guaranteed market integration + CCfD for CDR

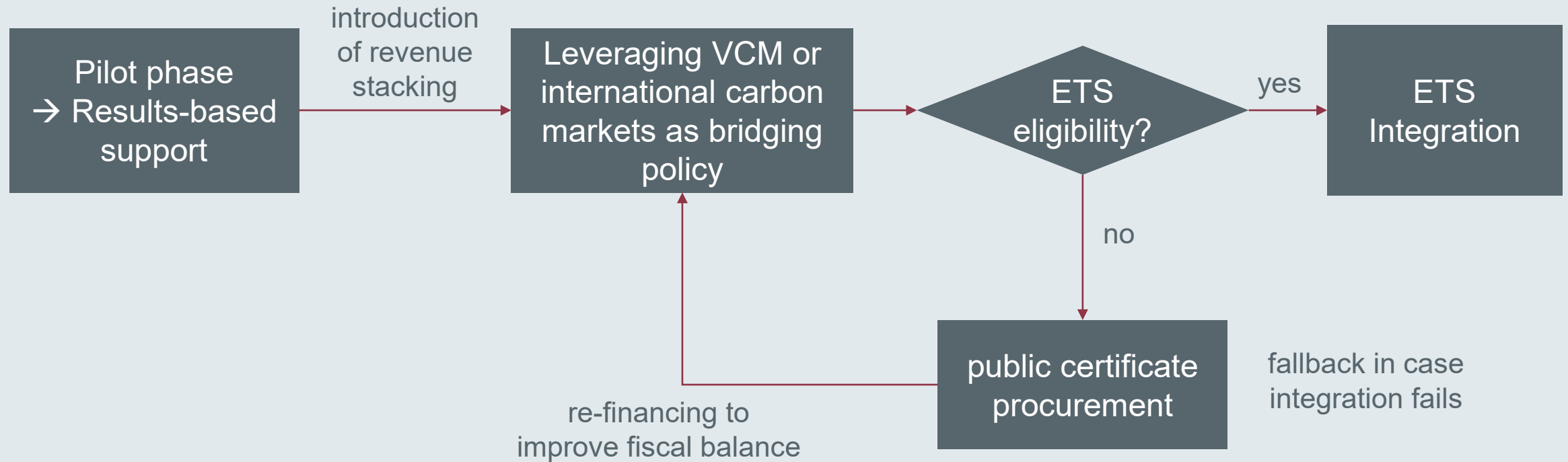


Considerations

Market integration guarantee shifts eligibility risk to actors without programme access. Private investor is effectively confronted with value risk only.

Value risk is transferred away from private investor, but (for a two-sided CCfD) upside risk of high carbon prices goes to regulator with it.

“CDR SEQUENCING” ALSO APPLIES TO DESIGN OF PUBLIC SUPPORT INSTRUMENTS.
CHOSEN APPROACH SHOULD EVOLVE OVER TIME.



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GUIDING QUESTIONS

1. Which other options could leverage private finance? What can we learn from the US approach for the EU? (-> Noah Deich)
2. Is leveraging private finance a suitable first principle? Which first principles is the EU COM considering? (-> Fabien Ramos)
3. Which EU funds, instruments, institutions are best-suited to implement an approach that considers both risk and return? (-> Valter Selen)

THANK YOU!



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