BECCS reverse auctions

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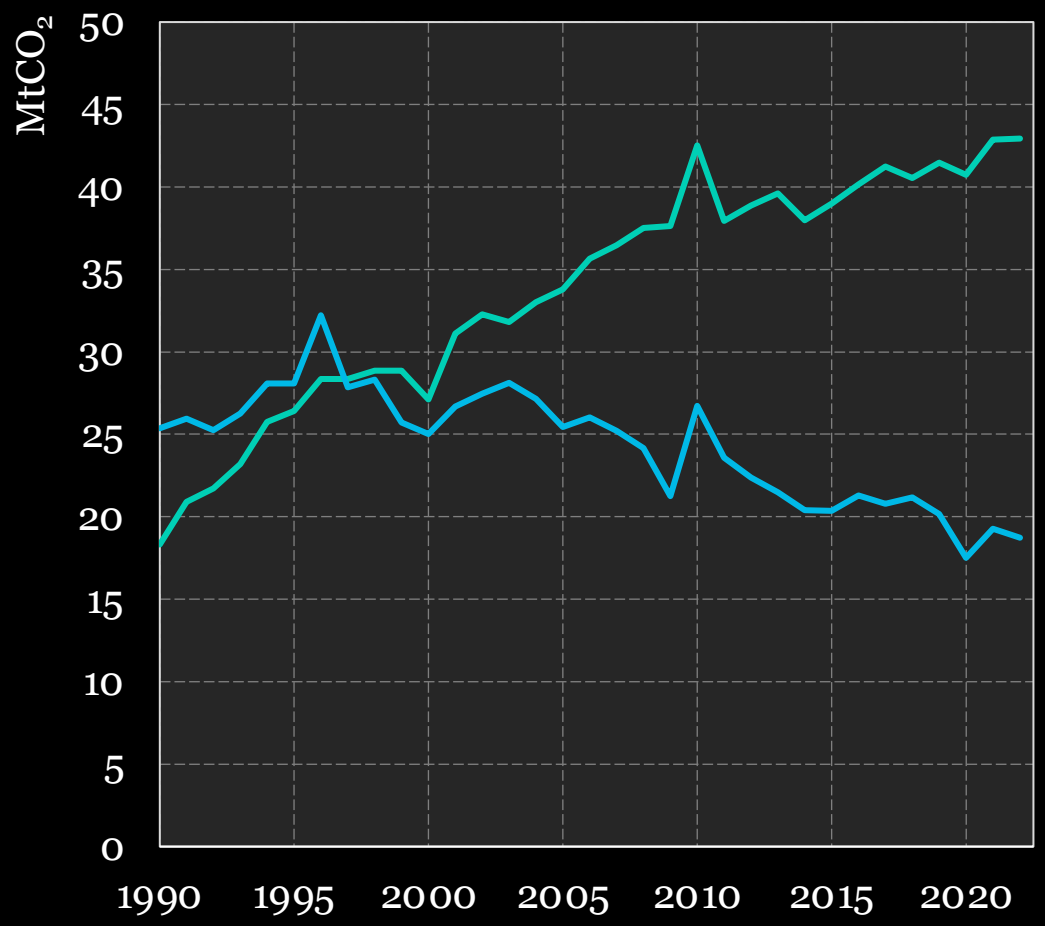
Swedish BECCS reverse auctions

- Demand given by the net-zero target construction:
  - Emissions reductions of at least 85% by 2045, compared to 1990
  - Supplementary measures to counterbalance the residual = removals or verified international offsets
  - But (!) allowed removals excludes the existing net LULUCF sink
  - Hence, a focus on BECCS and other types of removals

- BECCS reverse auctions: EUR 3.6 billion in 2025–2046

CO_2 emissions (electricity, heat, industry)



Biogenic (from fuels) 2022: 42.9 $MtCO_2$

(+137 % since 1990)

Fossil, 2022: 18.7 $MtCO_2$

(–26% since 1990)

Bottom-up perspectives

Snapshot of views among potential BECCS providers

Why bottom-up perspectives matter

- Auctions are used often used for price discovery and cost efficiency reasons
- Bottom-up perspectives are key to understand the feasibility of reverse auctions
- Unwillingness to bid = undermines competition
- Less significant if experience and the number of prospective bidders is high

BECCS potential

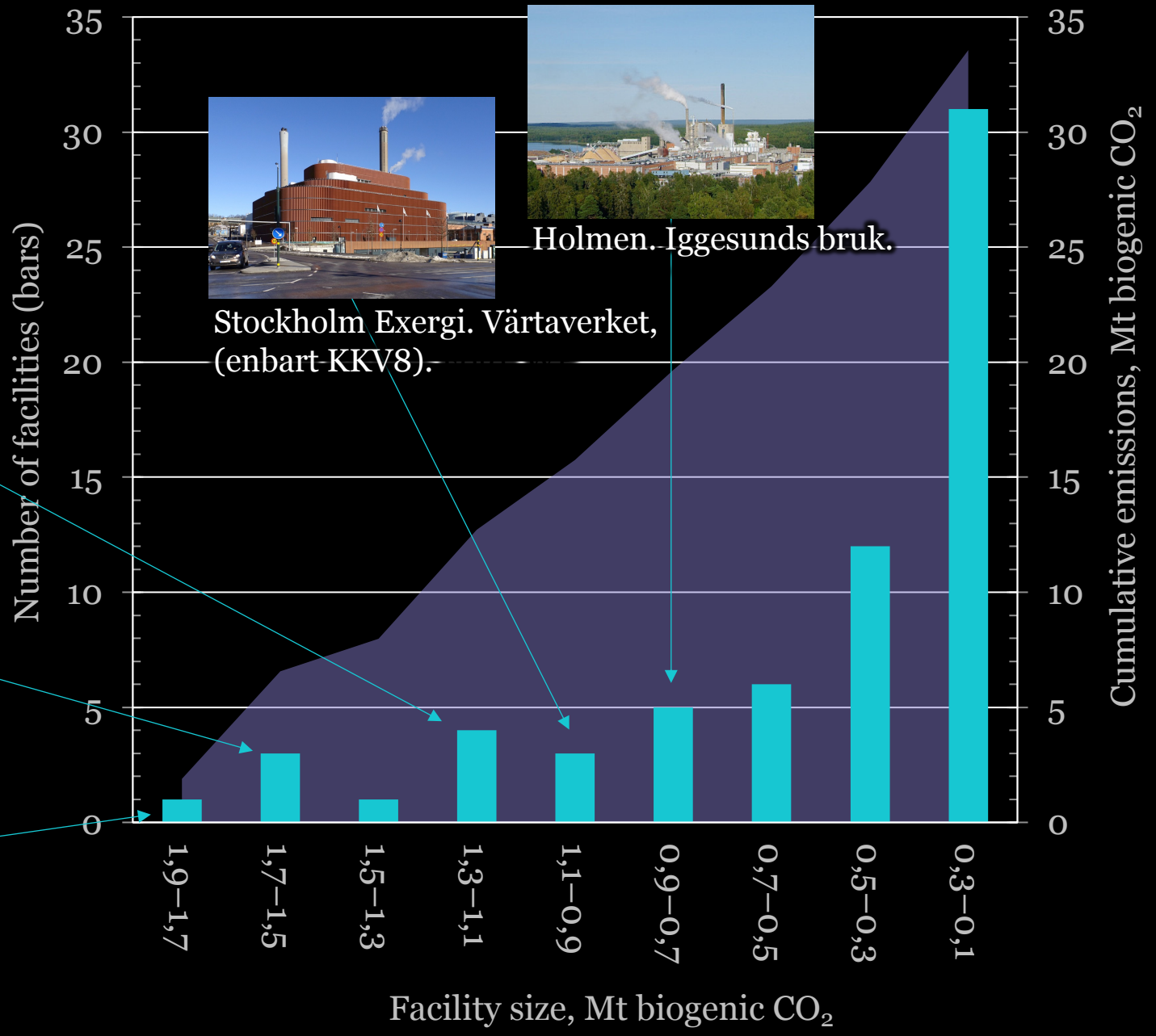
SCA. Östrands massafabrik.

Stora Enso. Skutskärs bruk.

Södra Cell. Mönsterås.

Stockholm Exergi. Värtaverket, (enbart KKV8).

Holmen. Iggesunds bruk.



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Why bottom-up perspectives matter

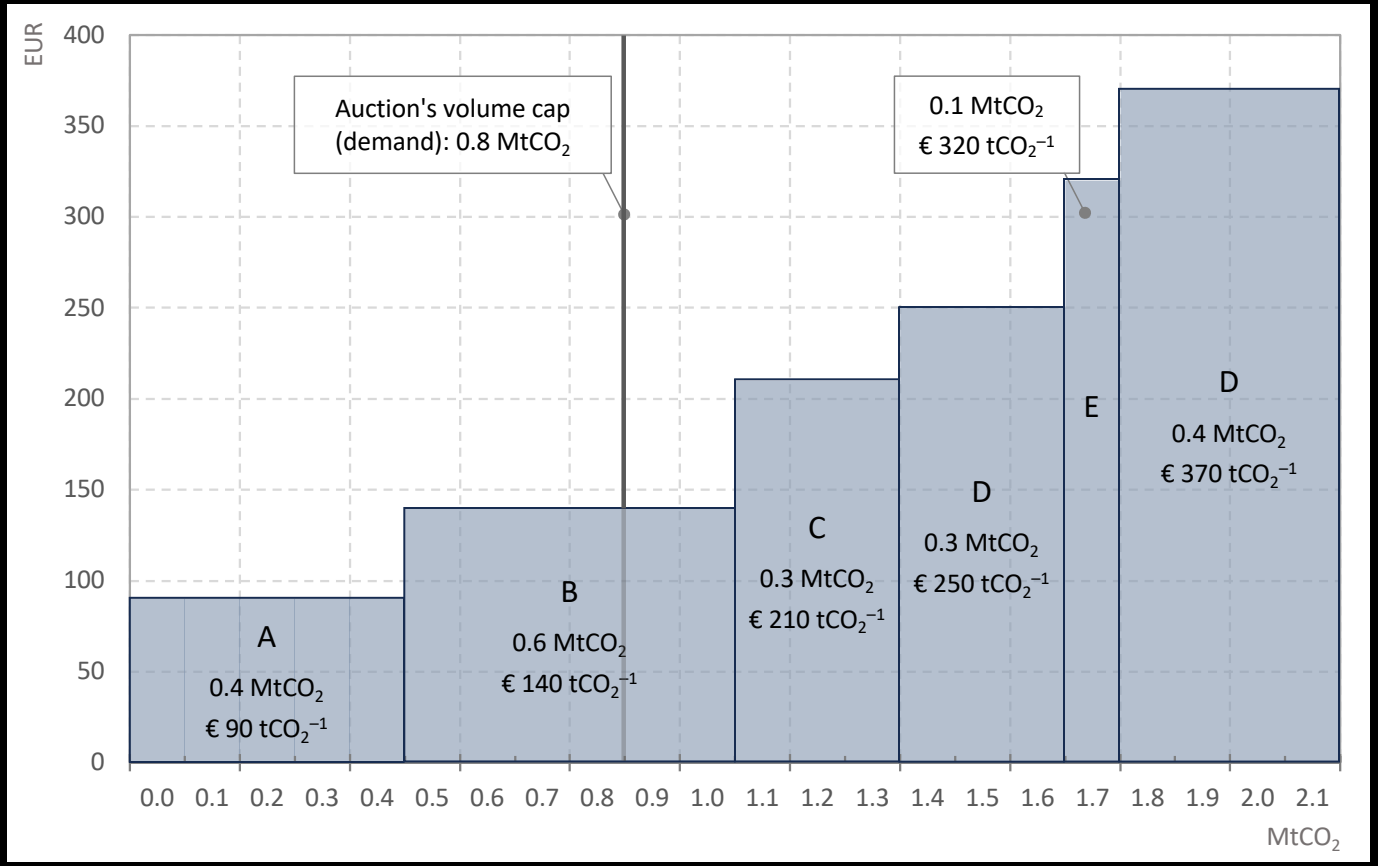
- Interviews with 35 Swedish BECCS practitioners
- Result: brief examples from three out of four identified key themes

Entry criteria and scope

- Dilemma: Find an optimal balance between relaxed prequalification standards for maximum participation and efficiency, and stringent criteria to ensure maximum effectiveness.
- Bidders: Stringent prequalification criteria may deter potential operators from placing bids. This effect is compounded by uncertainties and the potential benefits of a wait-and-see approach.

Bid procedure and winning criteria

- Dilemma: A volume cap aligns well with climate targets, but efficiency might be compromised if it is governed by a fixed volume cap.
- Bidders: Opinions on bid procedures are varied, but concerns are raised about identifying the final winning bid.



Business models and credit ownership

- Dilemma: co-financing could increase deployment. However, if private financing is conditioned on the ability of making offset claims, then the climate benefit of private financing can be questioned, and risks obscuring transparency in reporting.
- Bidders: Agree that the auction's mitigation outcome should be registered in the Swedish greenhouse gas inventory; many (but not all) also argue that the same mitigation outcome could be traded as credits on voluntary carbon markets for offsetting purposes.

First auction results

First auction November 2024, a final decision is imminent

First auction results

- Four serious bids: refinery (1), power and heat (3)
- Few bidders despite relatively generous rules
- Hypotheses:
  - Uncertainties (risks) deemed too high
  - Short commissioning time
  - Ban on “renting out” chimneys
  - Regulation to deduct public support in proportion to private revenues
  - Anticipated competition, including contracts for future private revenues
  - Electricity price trends

Read more at

liu.se/forskning/lunets

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Risk sharing

- Dilemma: Rigorous sanctions aimed at enhancing efficacy and limited flexibility designed to assure timely delivery must be counterbalanced with the necessity to draw sufficient bidders to the auction.
- Bidders: Converge around a 15-year contract term to ensure investment security while hedging against uncertainty of market development in an even longer term; favour lenient sanctions and high flexibility.