Negative emissioner med BECCS

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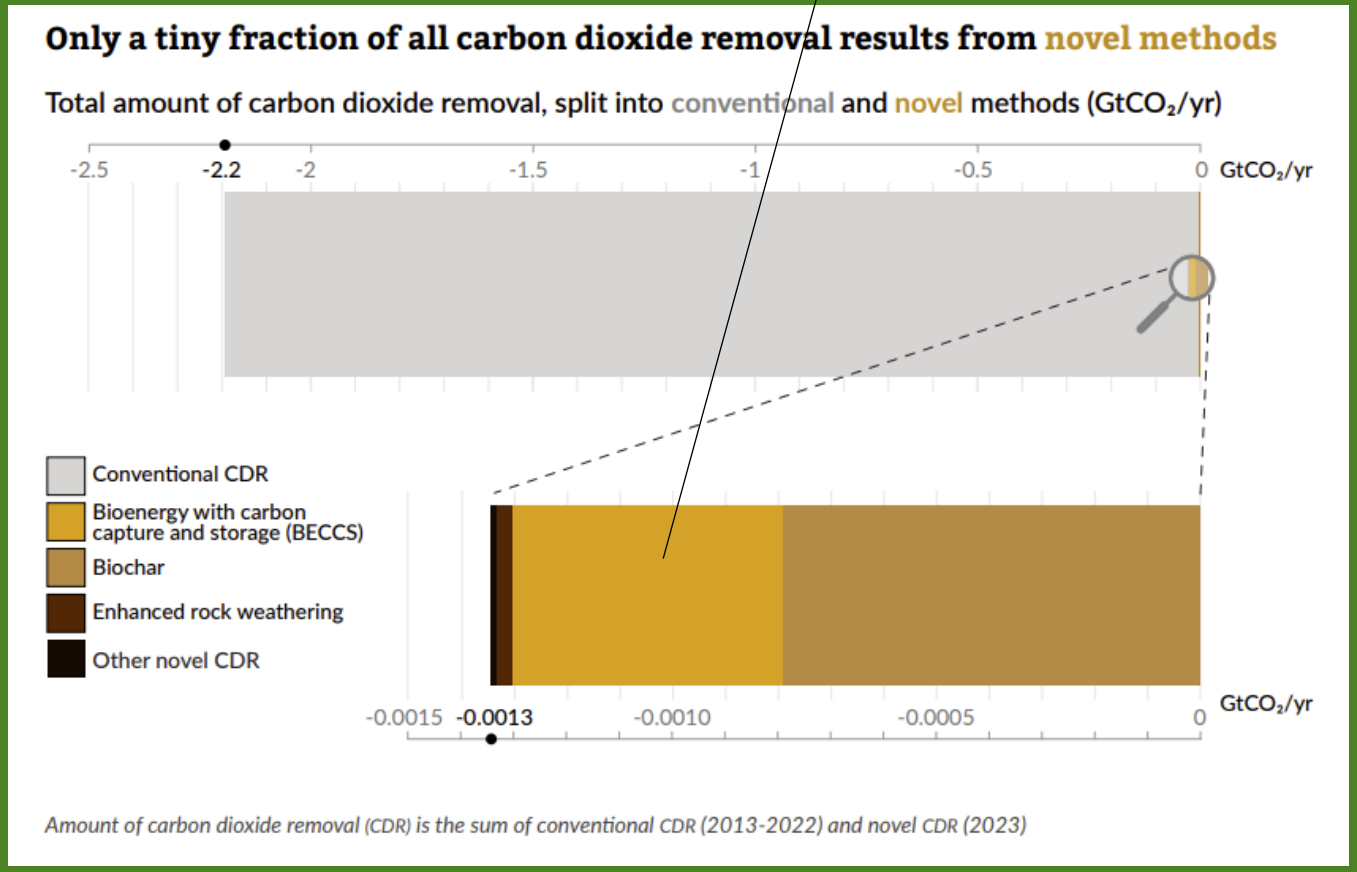
CDR – Carbon Dioxide Removal

CDR is human activity that captures CO_2 from the atmosphere and stores it for decades to millennia.

CDR principles:

1. The CO_2 captured must come from the atmosphere, not from fossil sources.
2. The subsequent storage must be durable, such that CO_2 is not soon reintroduced to the atmosphere.
3. The removal must be a result of human intervention, additional to the Earth's natural processes.



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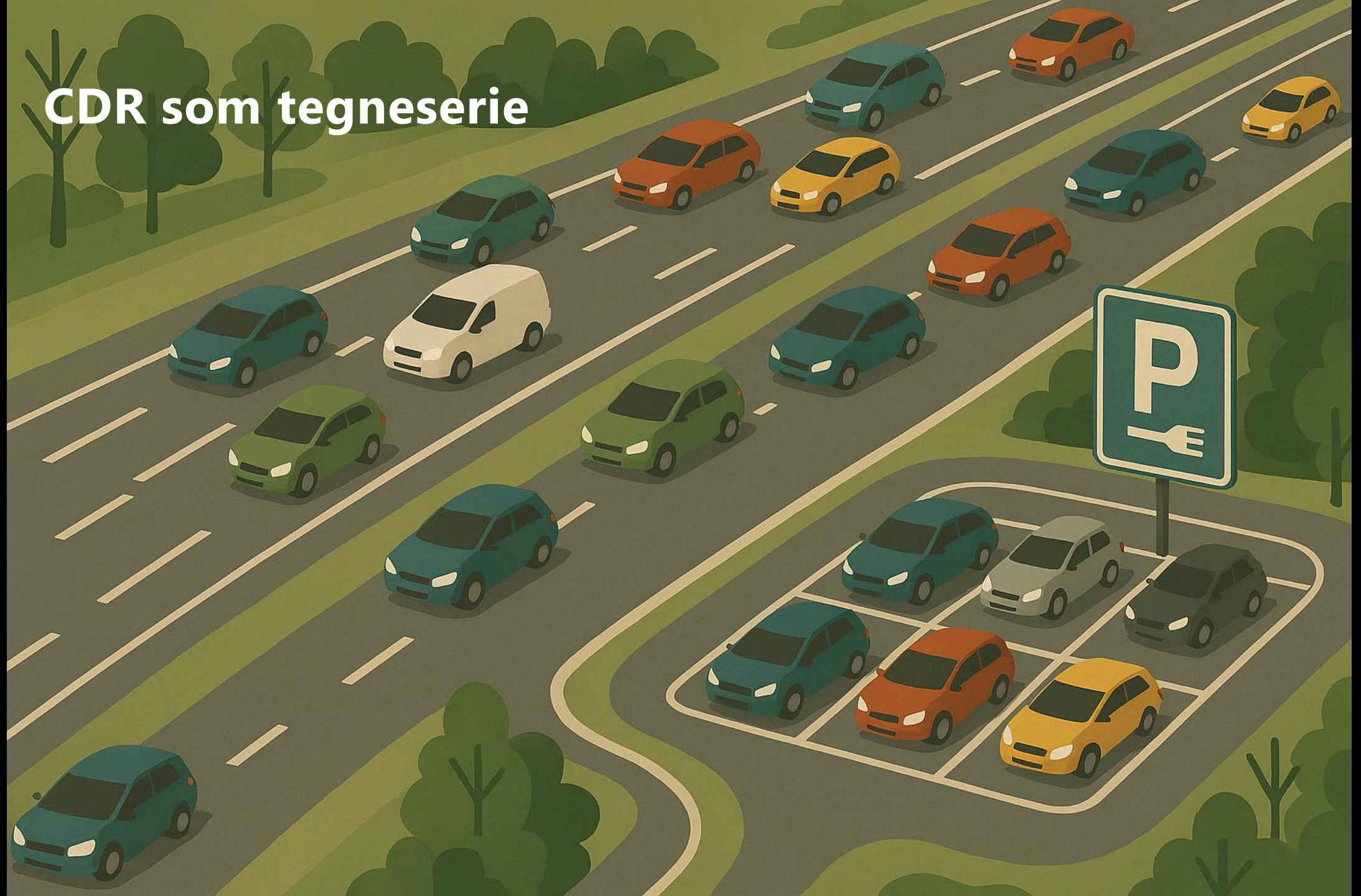
CDR som tegneserie

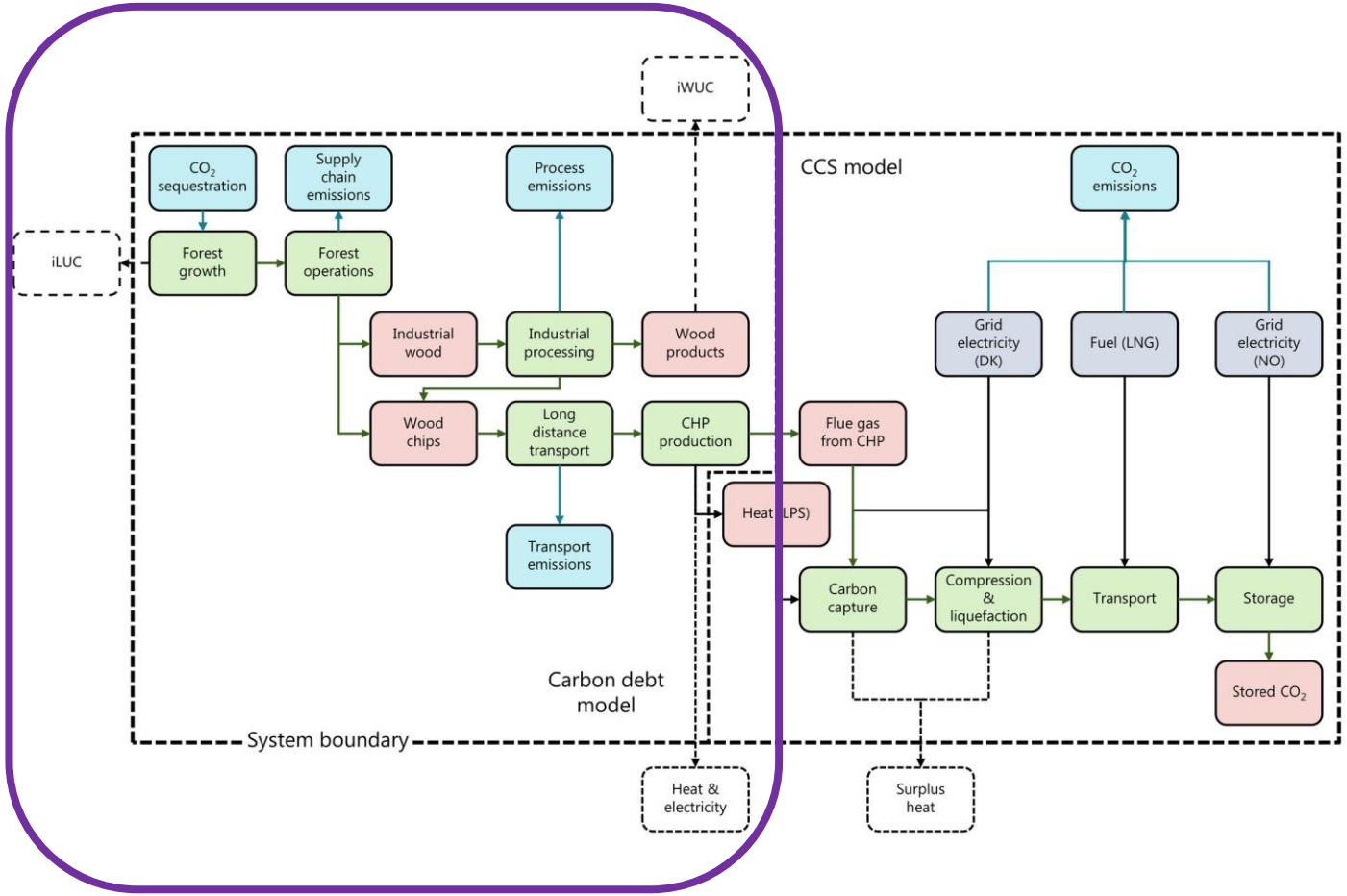


CDR med BECCS (og DOCCS)

CDR med DACCS

Skovmodel

Model for kulstofdynamik inkl. vækst i skoven, hugst, henfald, transport, processering, energiproduktion og indirekte effekter/lækage (iLUC, iWUC, iFUC).



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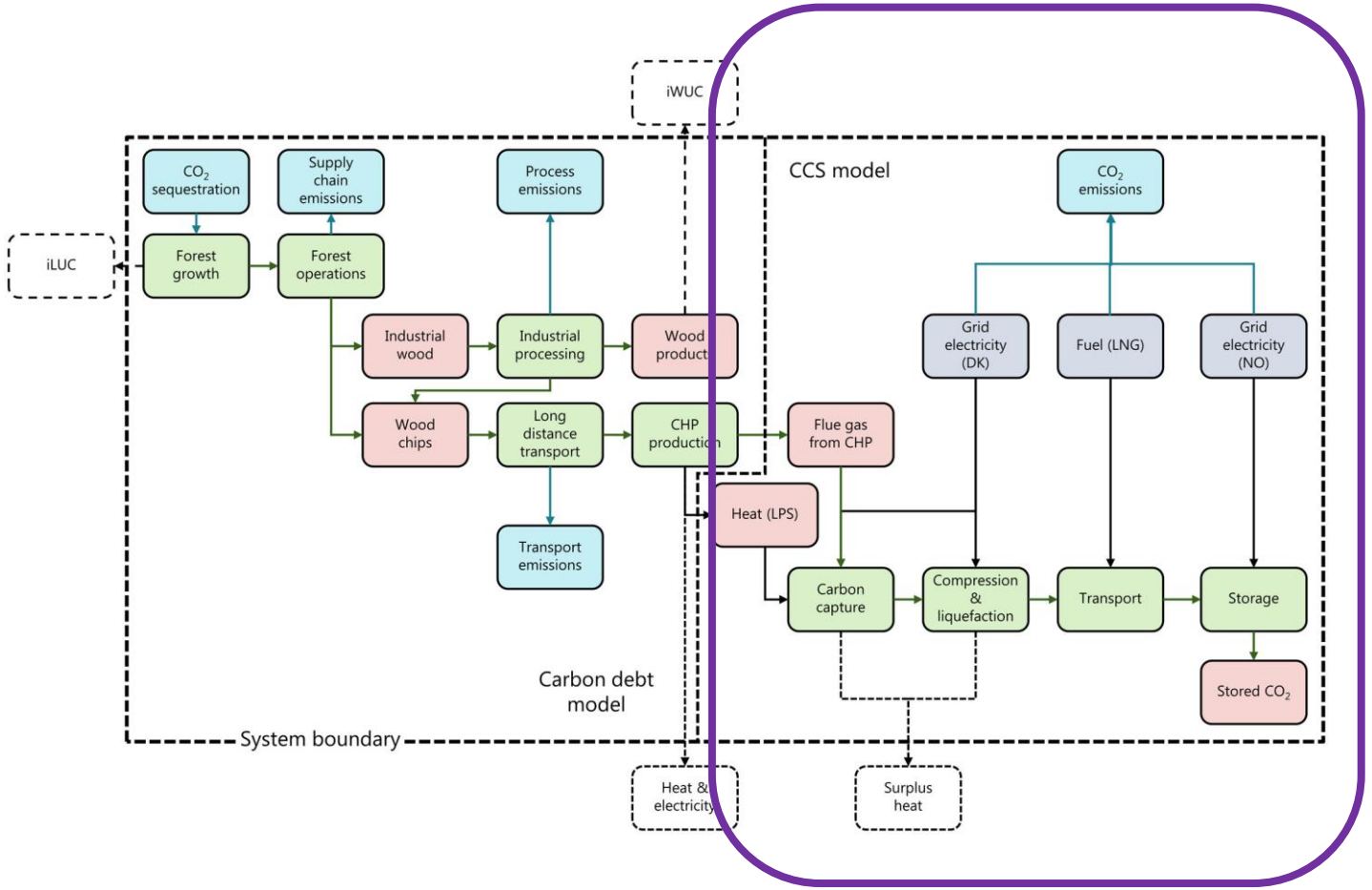
CCS model

Model for kulstofdynamik inkl. fangst, transport, injektion og lagring af CO_2.



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The Danish case

The utility Ørsted has received funds to capture and store 430.000 tons of CO_2 annually from 2026.

The target is met with two facilities

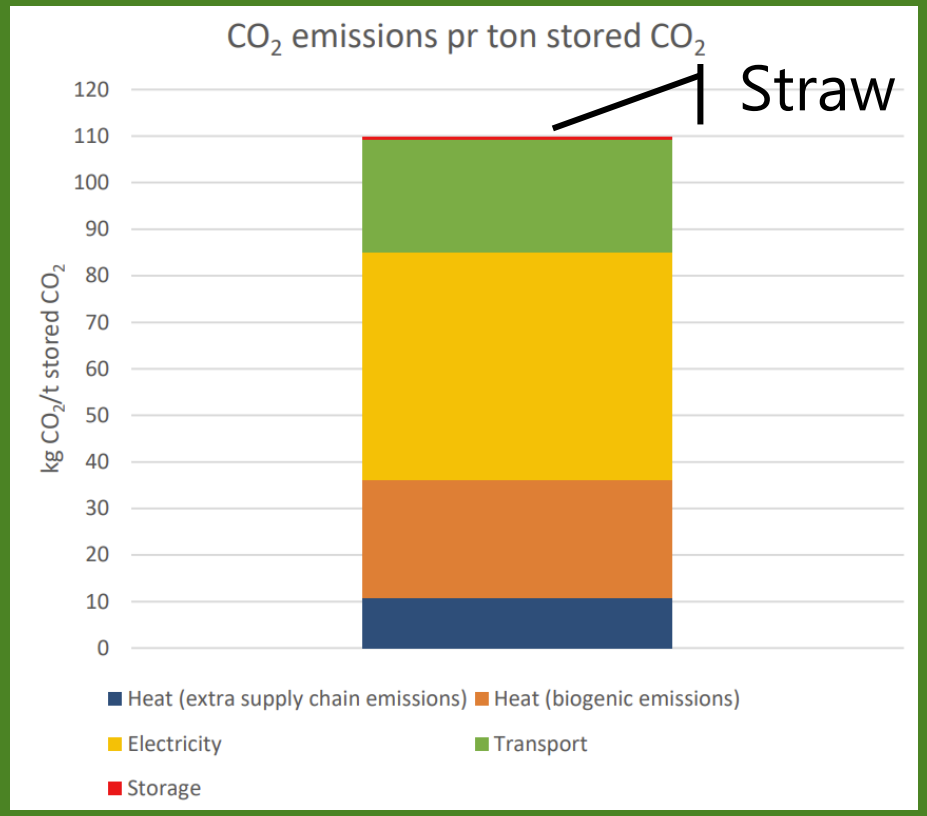
- A wood chips fired CHP will capture 280.000 tons CO_2
- A straw fired CHP will capture 150.000 tons CO_2

The cases were studied independently of each other; wood chips by Gertrud and straw by Andrea using the same methodology and approach.

The wood chips case is published.

Direct CO_2 cost of carbon capture and storage

Capture and storage of 1 tons of CO_2 emits ~0.1 tons of CO_2.



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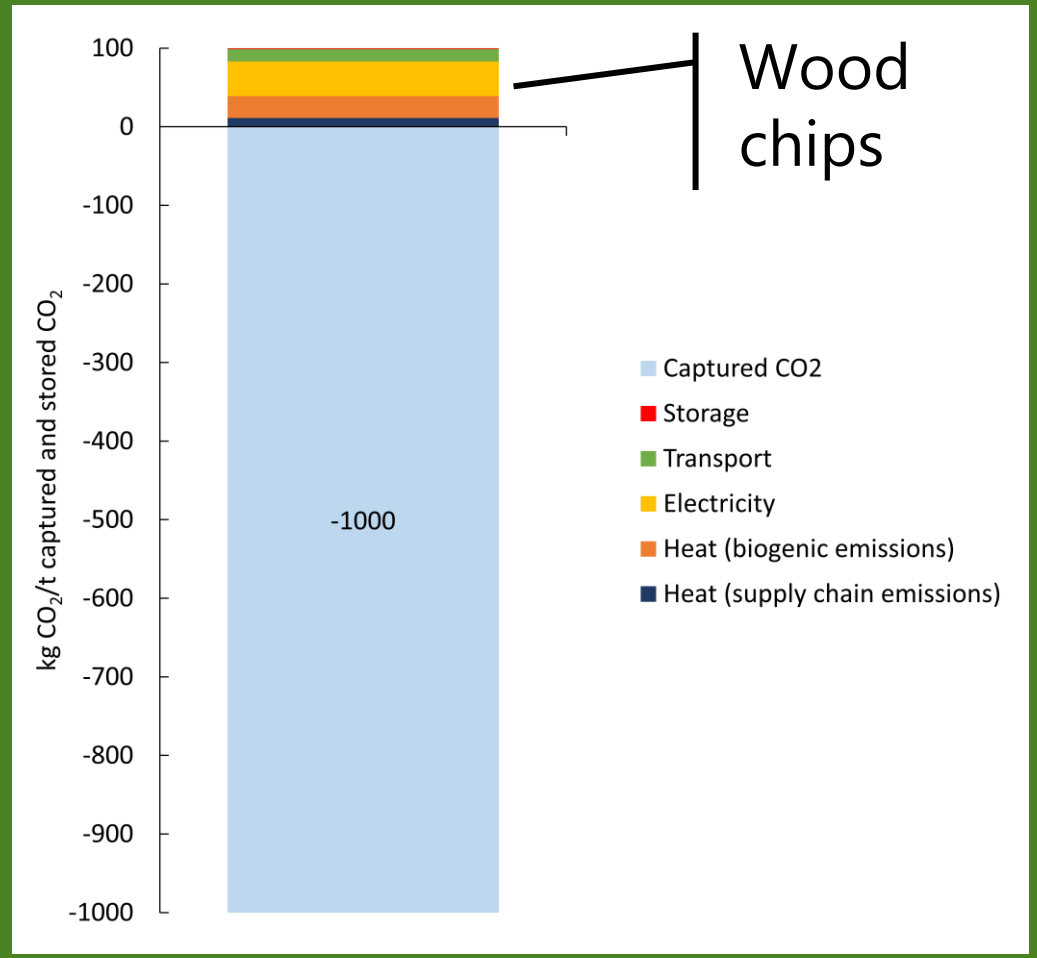

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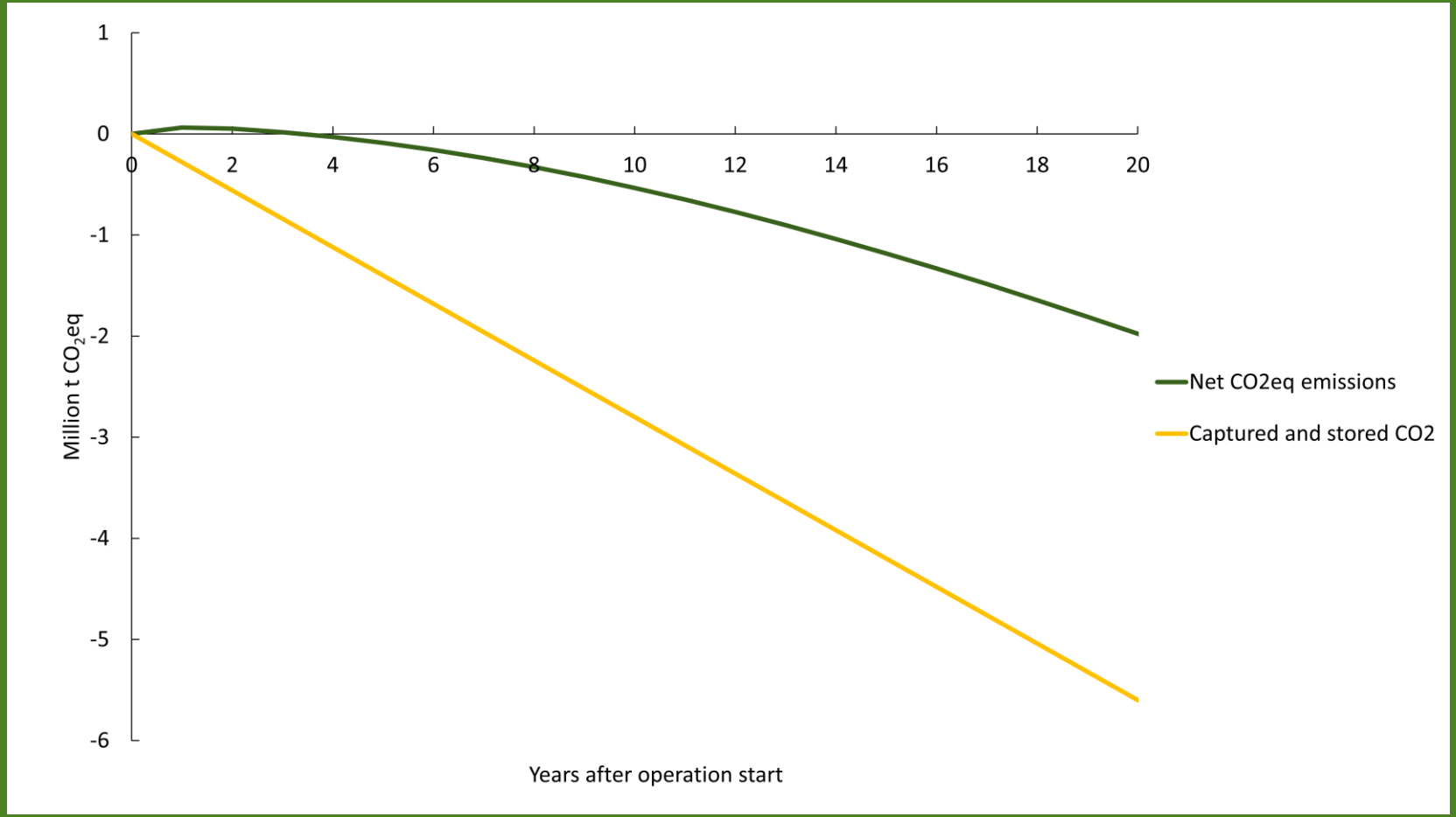
Carbon payback time - Wood chips

Carbon payback time: 3.4 years compared to continued use of wood chips for CHP.

After 20 years the facility will have captured 5.6 Mt of CO_2. (=CCS)

The atmosphere will have experienced removal of 2.0 Mt of CO_2. (=CDR)



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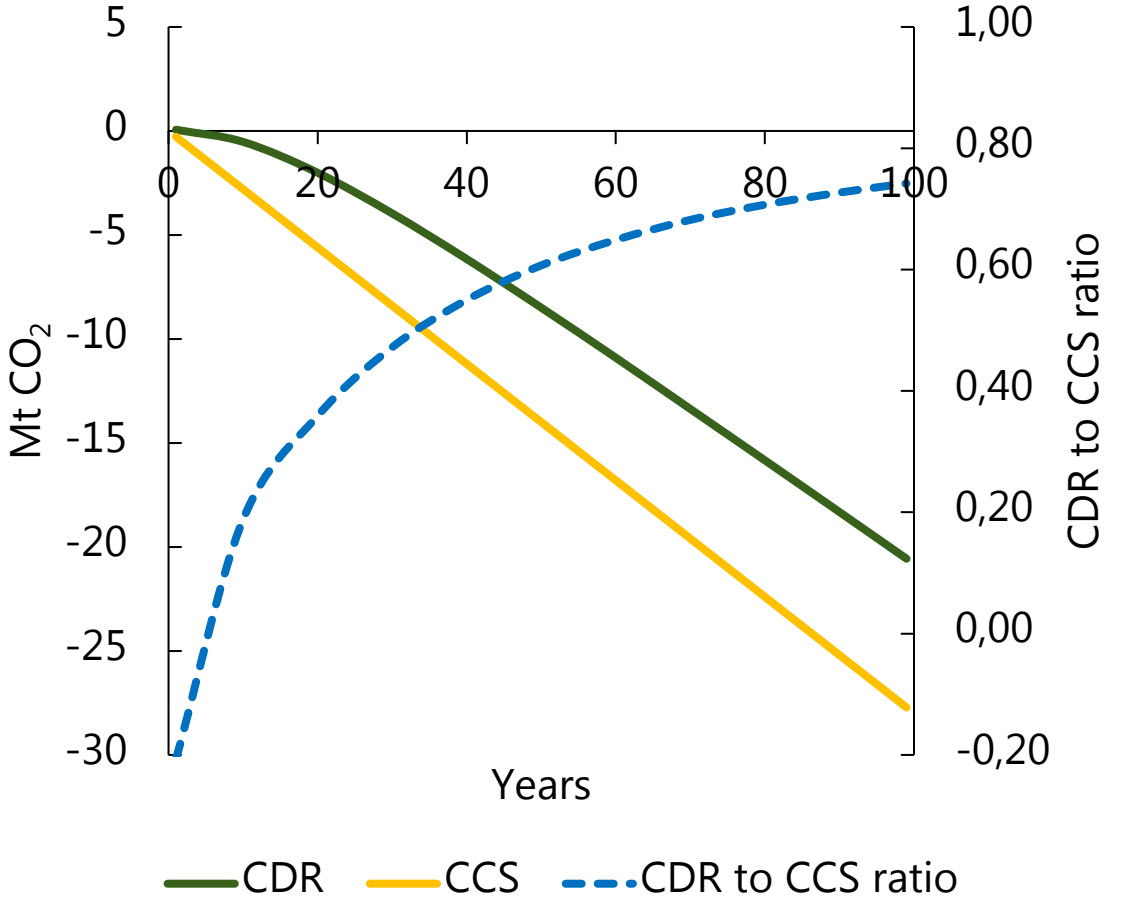
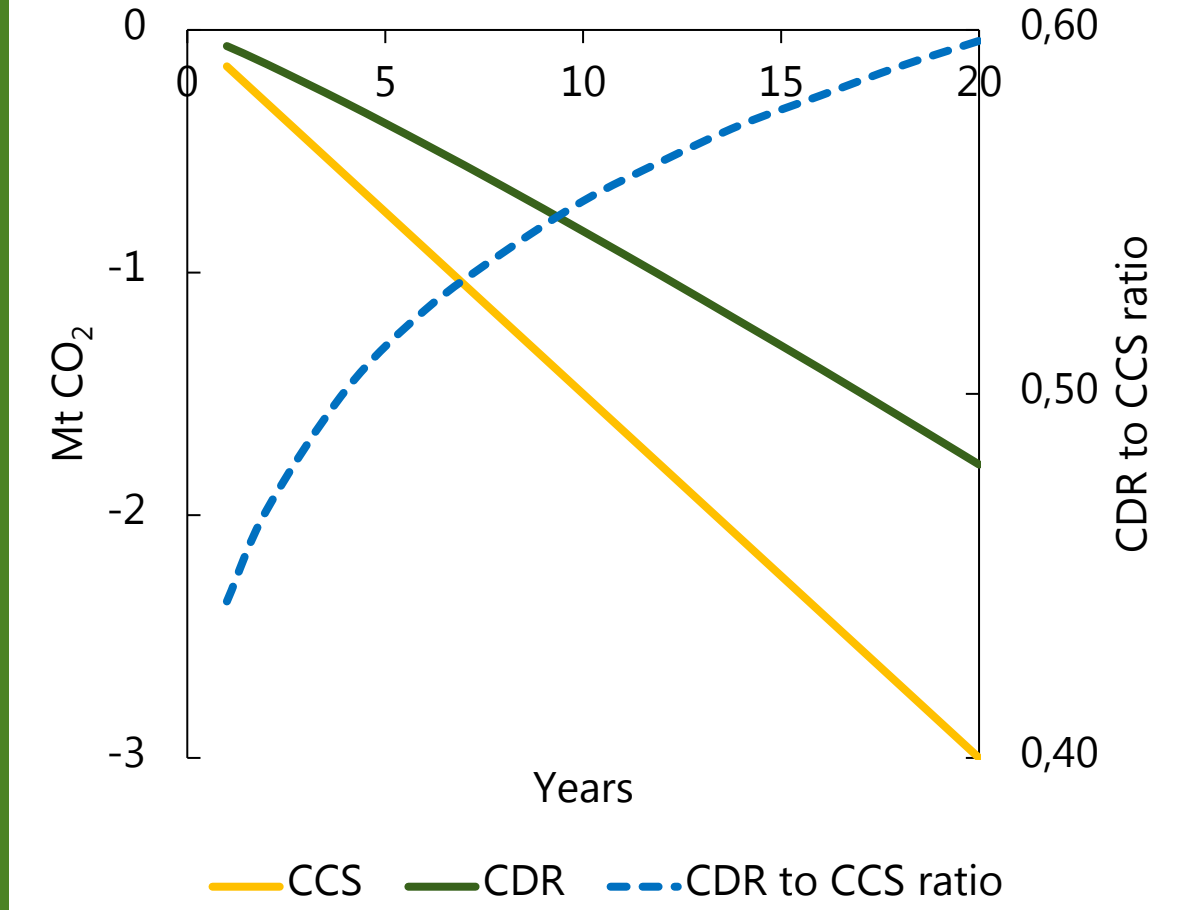
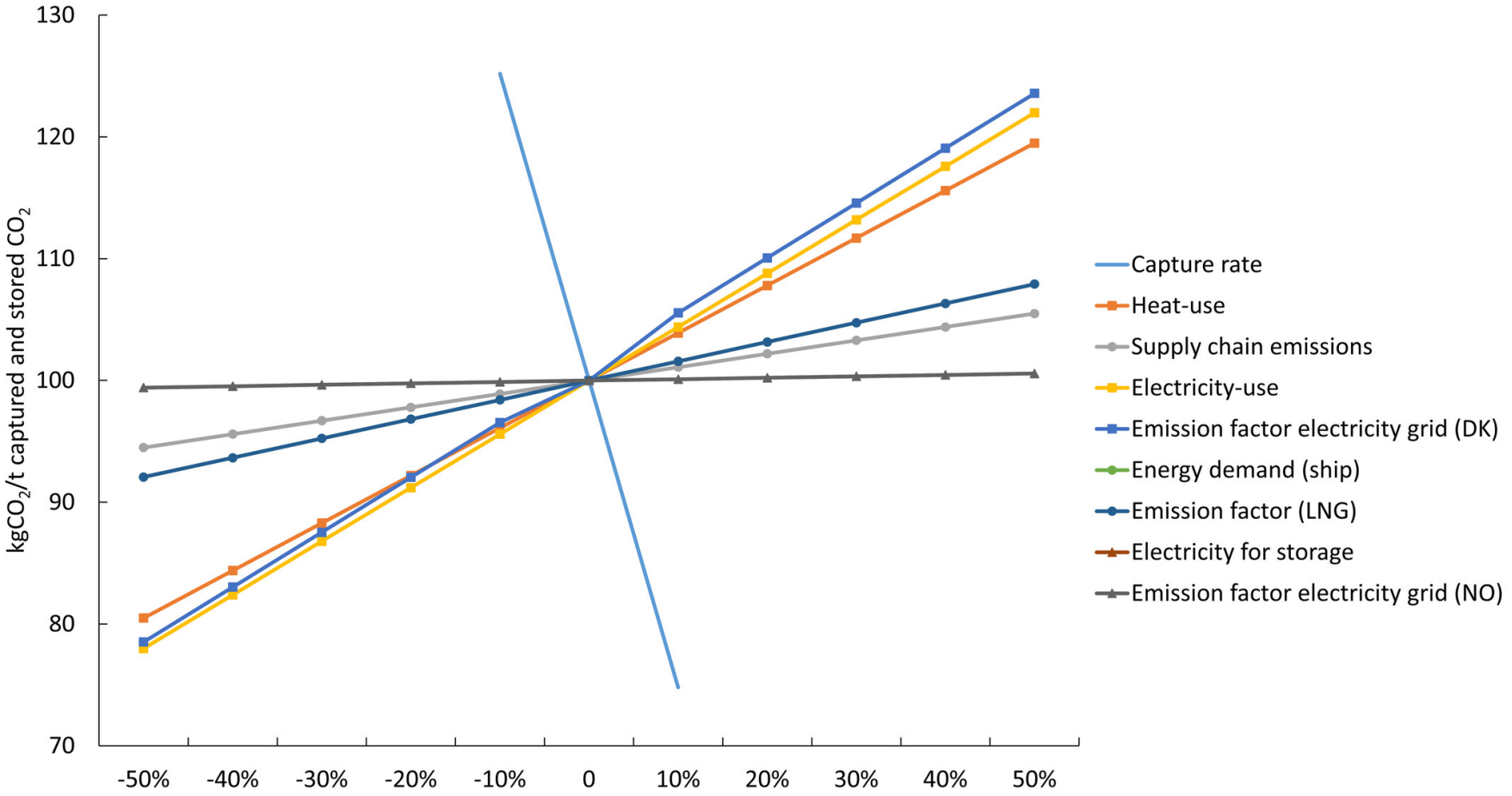
CDR to CCS ratio





Følsomhedsanalyse

1. Fangstrate
2. El- og varmeforbrug til CO_2 fangst og elproduktionens emissioner.
3. Transport og opstrøms emissioner.
4. Elforbrug og el-emissioner i Norge.



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Spørgsmål