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Hvorfor er metan nøglen til hurtige klimareduktioner?

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Foto: Rachel Burns

Hvad er metans klimaeffekt i dag?

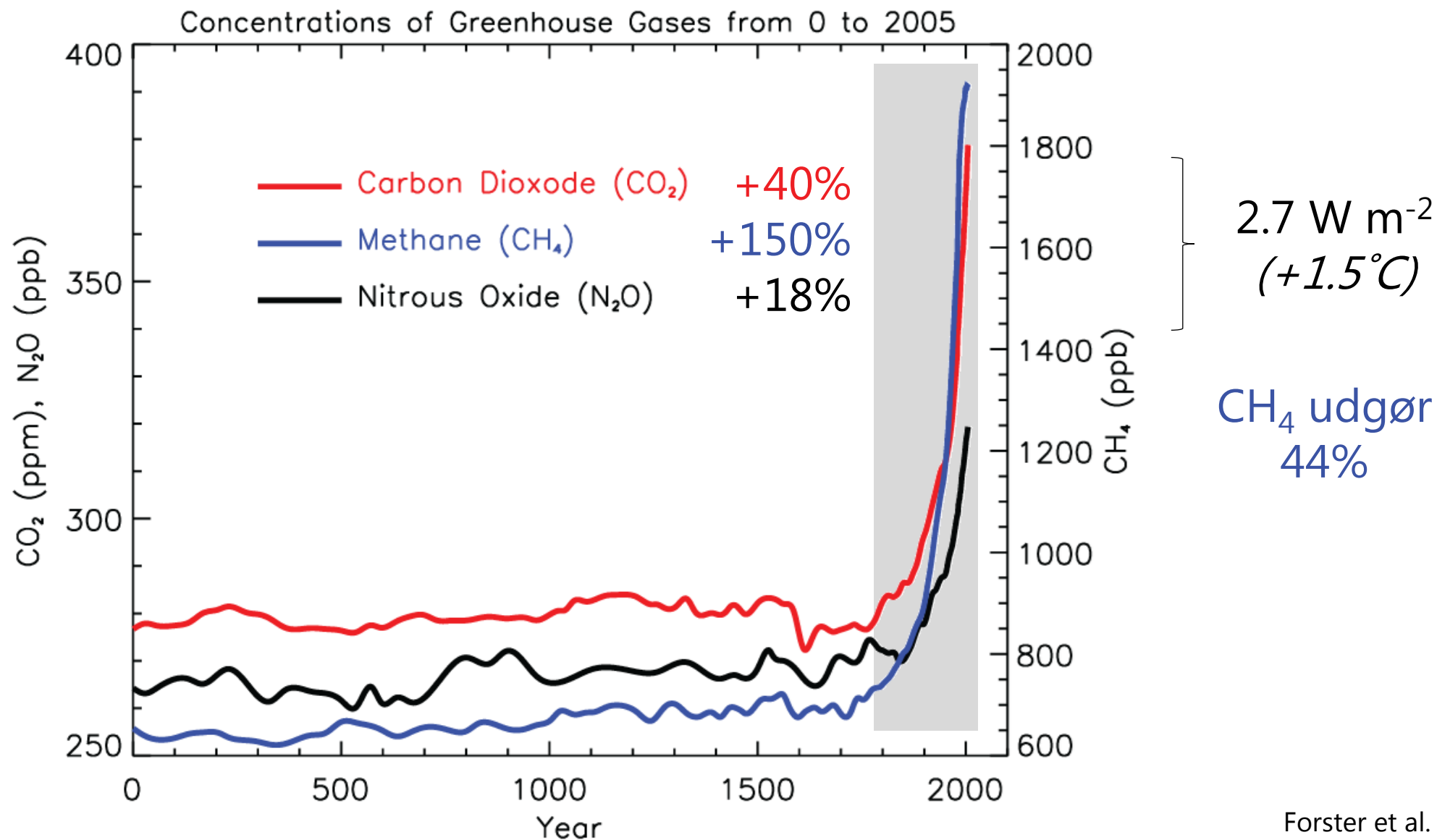
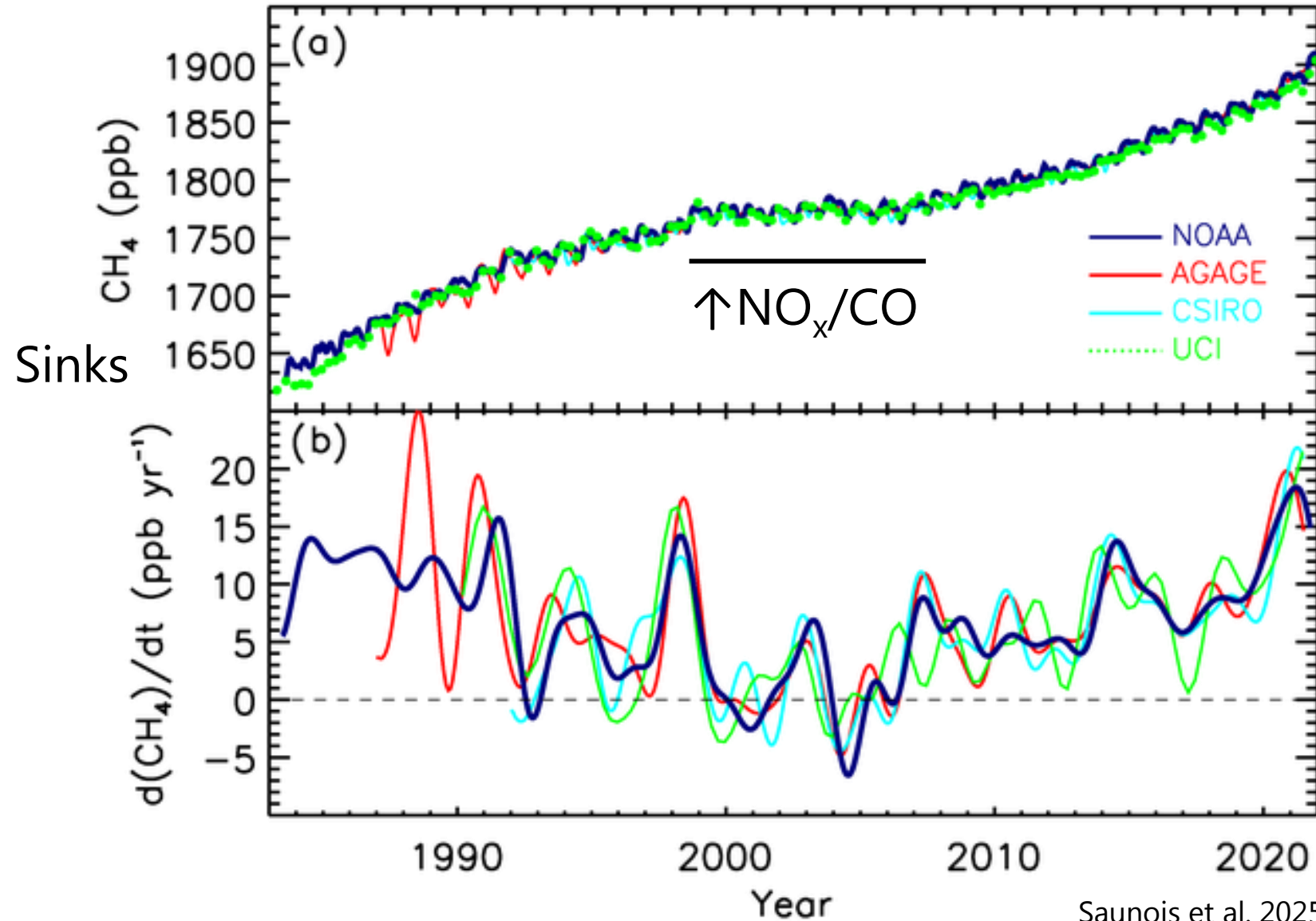
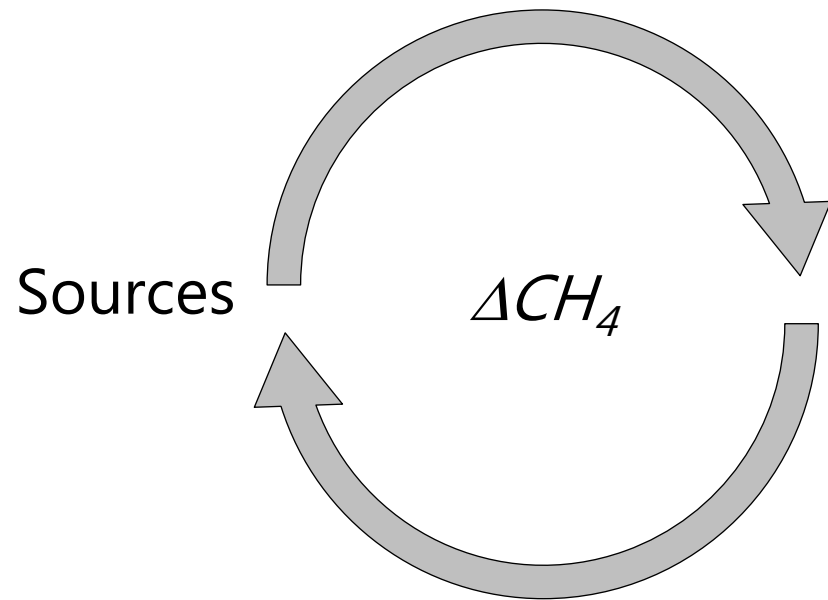
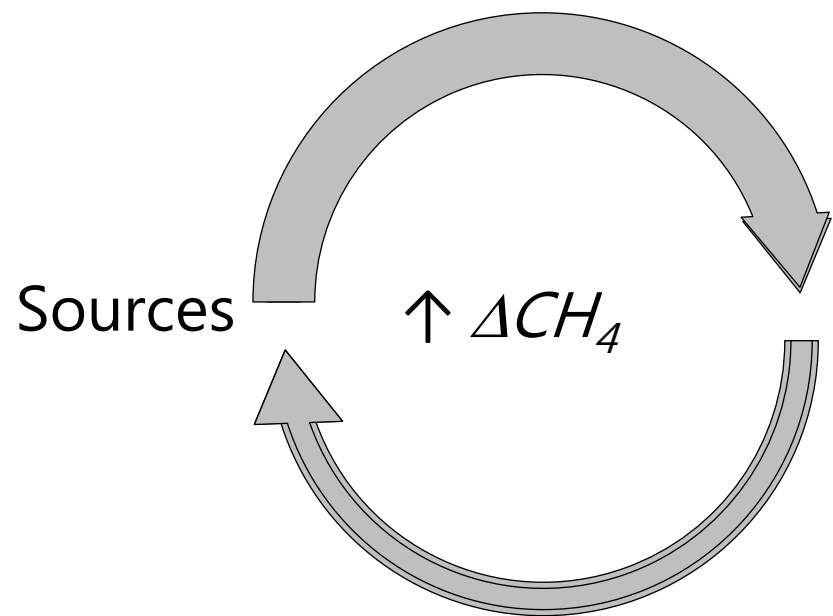


Figure 1 consists of two panels. Panel (a) shows the globally averaged CO₂ concentration in ppm from 1958 to 2020. The concentration increases from approximately 315 ppm in 1958 to over 410 ppm in 2020. The data is sourced from NOAA (blue line), AGAGE (red line), CSIRO (cyan line), and UCI (green dotted line). Panel (b) shows the rate of change of CH₄ concentration in ppb/yr from 1985 to 2020. The rate fluctuates between 0 and 15 ppb/yr, with a general upward trend. The data is sourced from NOAA (blue line), AGAGE (red line), CSIRO (cyan line), and UCI (green line). A small globe icon is located at the bottom center of the figure.

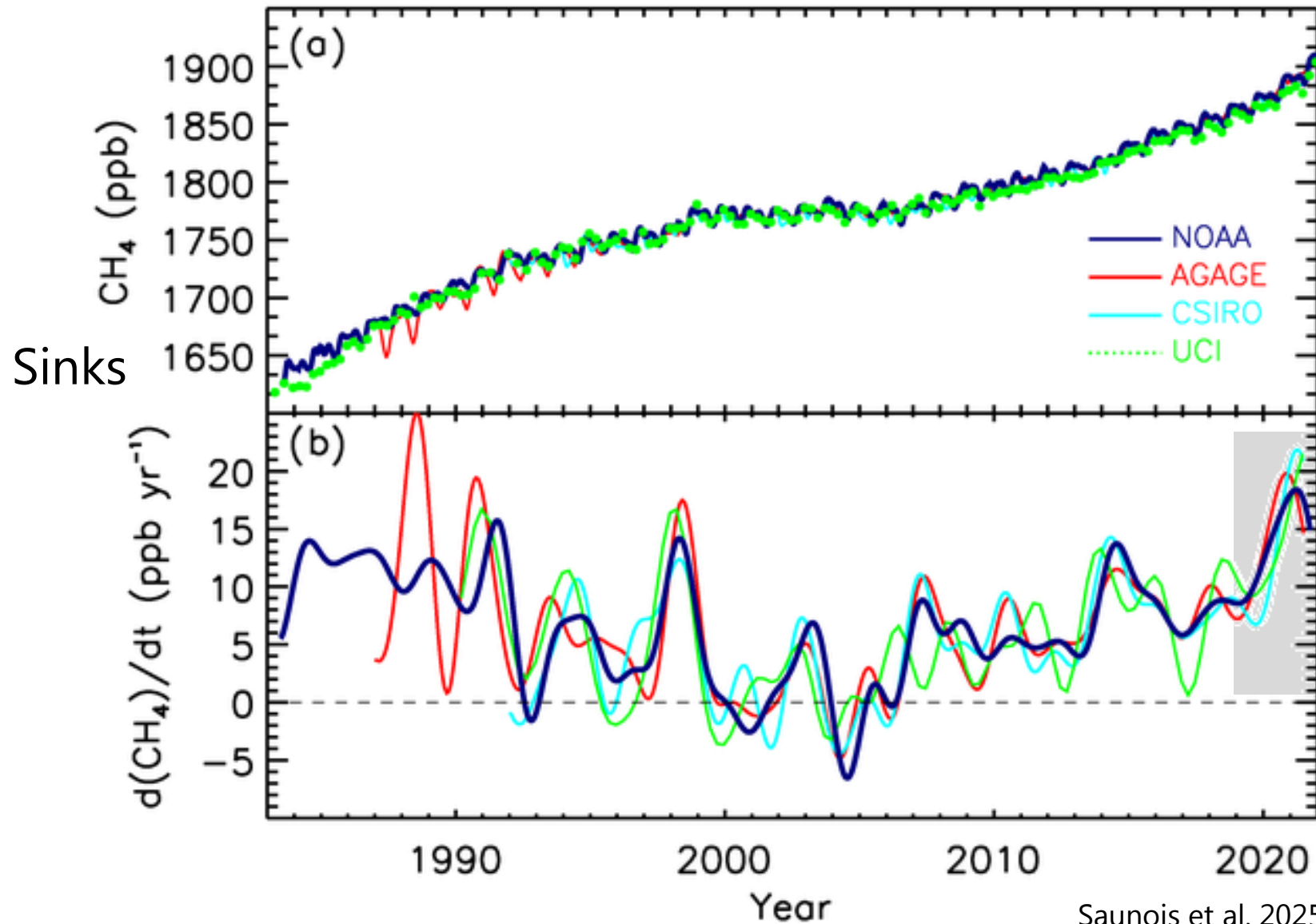
Metan er dynamisk i atmosfæren



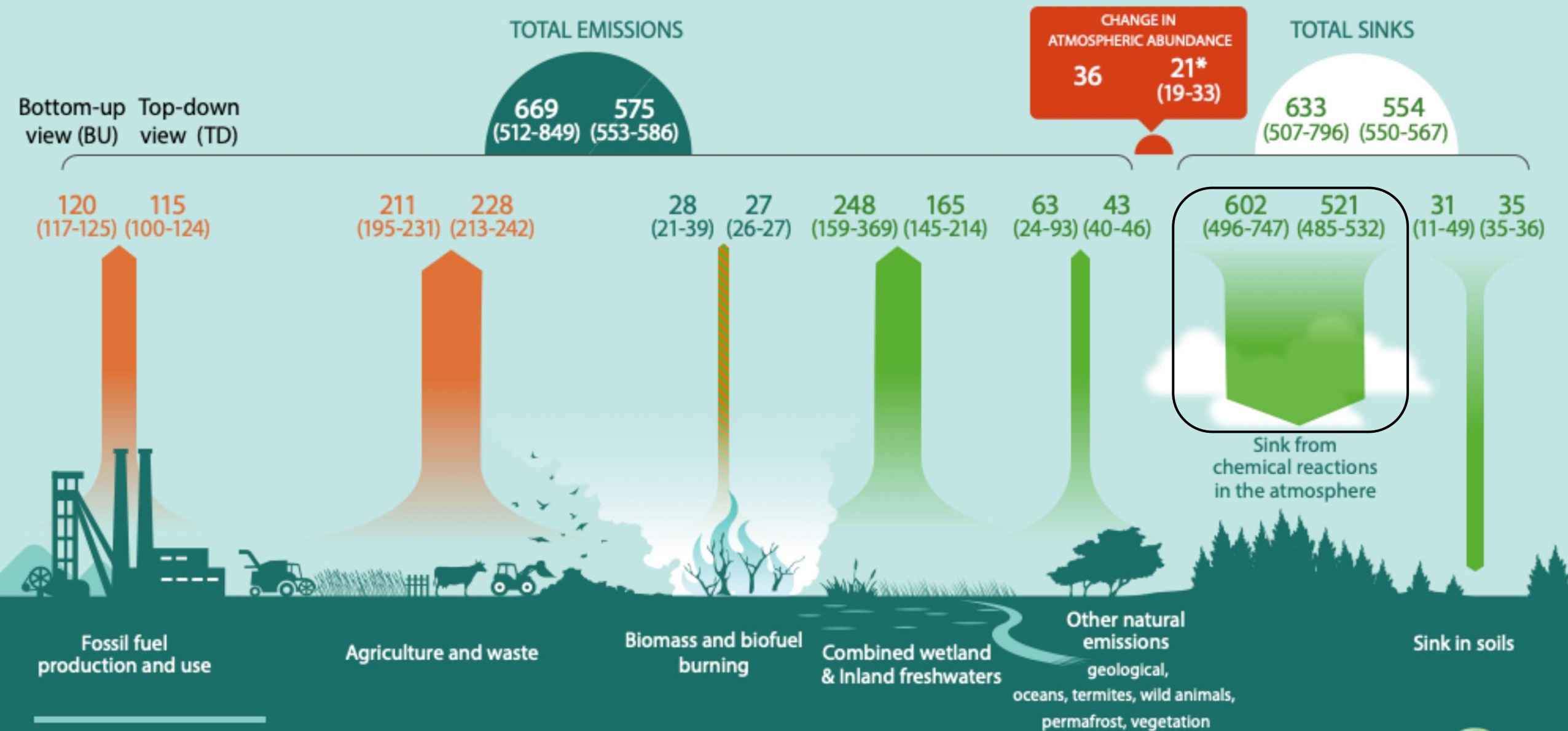
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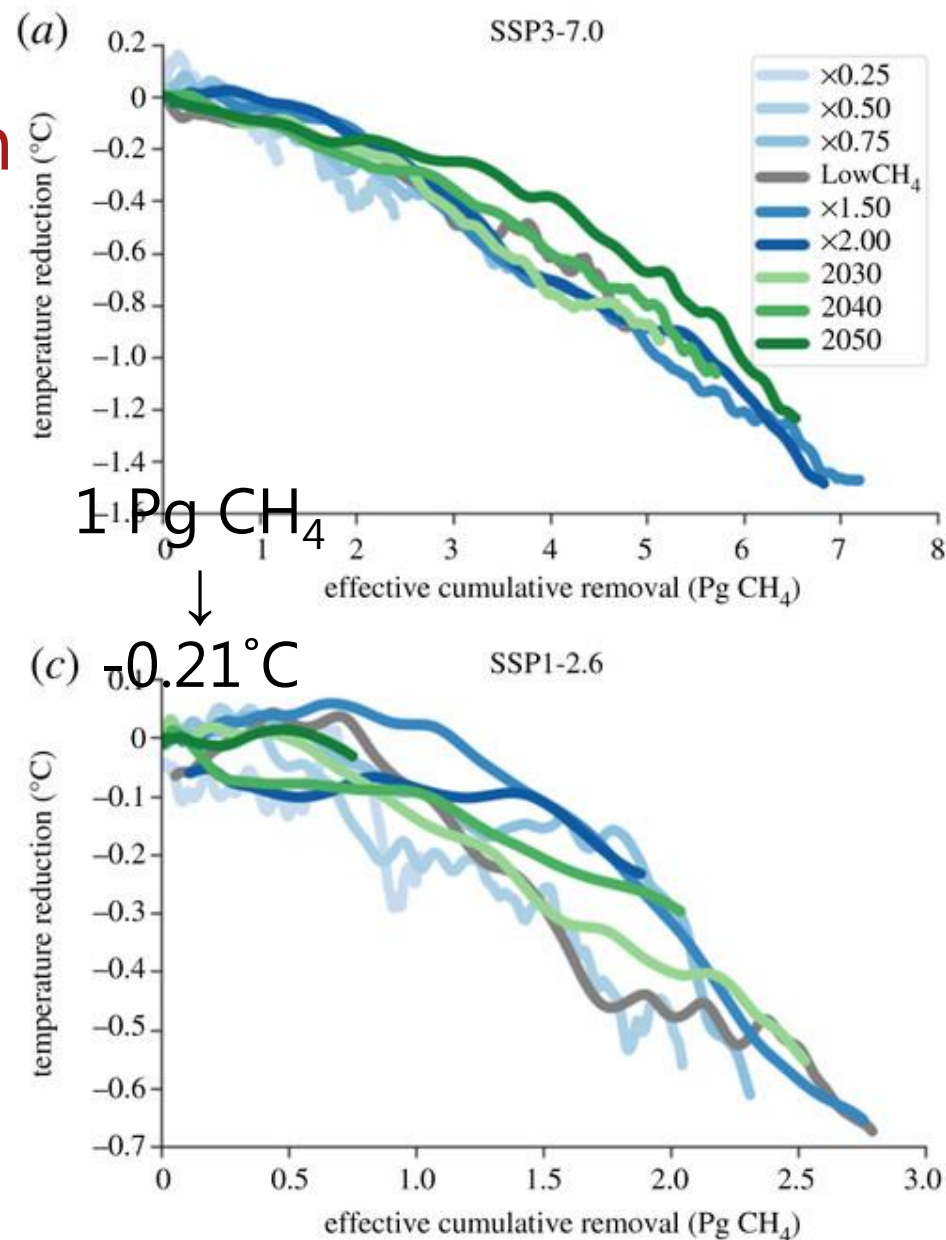
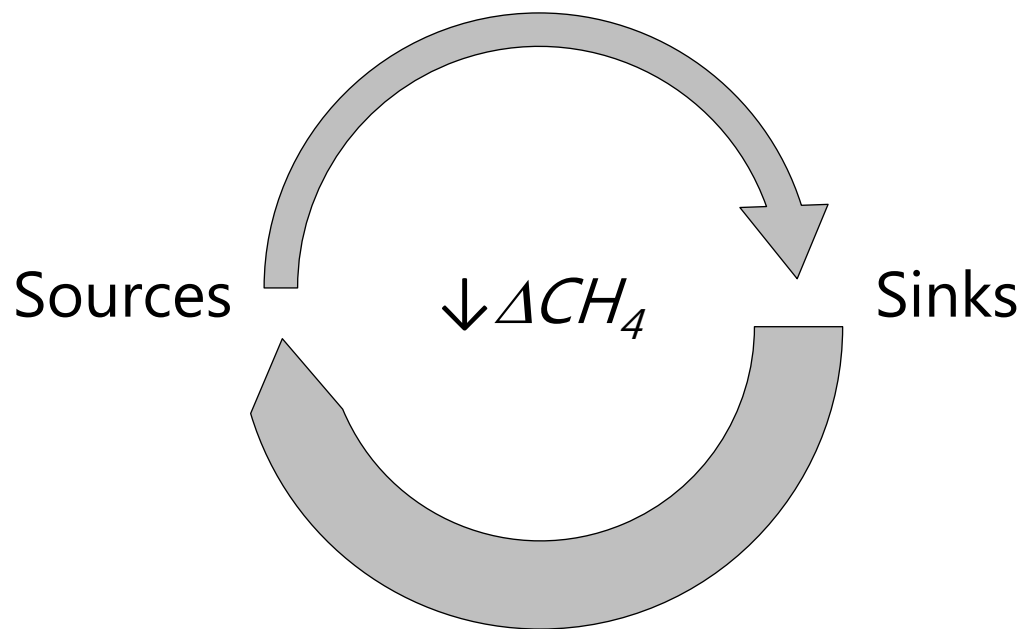
$\uparrow$ Vådområder (*klima*)
 $\downarrow$ NO_x (*covid-19*)



GLOBAL METHANE BUDGET 2010-2019



Teoretiske overvejelser om metan-fangst i atmosfæren



GLOBAL METHANE BUDGET 2010-2019

TOTAL EMISSIONS

Bottom-up view (BU) Top-down view (TD)
669 (512-849) 575 (553-586)

CHANGE IN ATMOSPHERIC ABUNDANCE

36 21* (19-33)

TOTAL SINKS

633 (507-796) 554 (550-567)

120 (117-125) 115 (100-124)

211 (195-231) 228 (213-242)

28 (21-39) 27 (26-27)

248 (159-369) 165 (145-214)

63 (24-93) 43 (40-46)

602 (496-747) 521 (485-532)

31 (11-49) 35 (35-36)

1 Pg CH₄ ~ 3 års udledning

Fossil fuel production and use

Agriculture and waste

Biomass and biofuel burning

Combined wetland & inland freshwaters

Other natural emissions geological, oceans, termites, wild animals, permafrost, vegetation

Sink from chemical reactions in the atmosphere

Sink in soils

EMISSIONS AND SINKS

In teragrams of CH₄ per year (Tg CH₄ / yr) average over 2009-2019

The observed atmospheric growth rate is 20.9 (20.1-21.7) Tg CH₄ / yr. The difference with the TD budget imbalance reflects uncertainties in capturing the observed growth rate.

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1 Pg CH₄ ~ -0.21 °C

Fossil fuel production and use

Agriculture and waste

- Stop the leak – mest effektive vej til reduktion her og nu er at stoppe industrielle leaks...
- Omkring 1/10 af nødvendige reduktion for -0.21°C målet
- Landbrugets emissioner skal også ned
- Landbrugets emissioner er mere komplekse

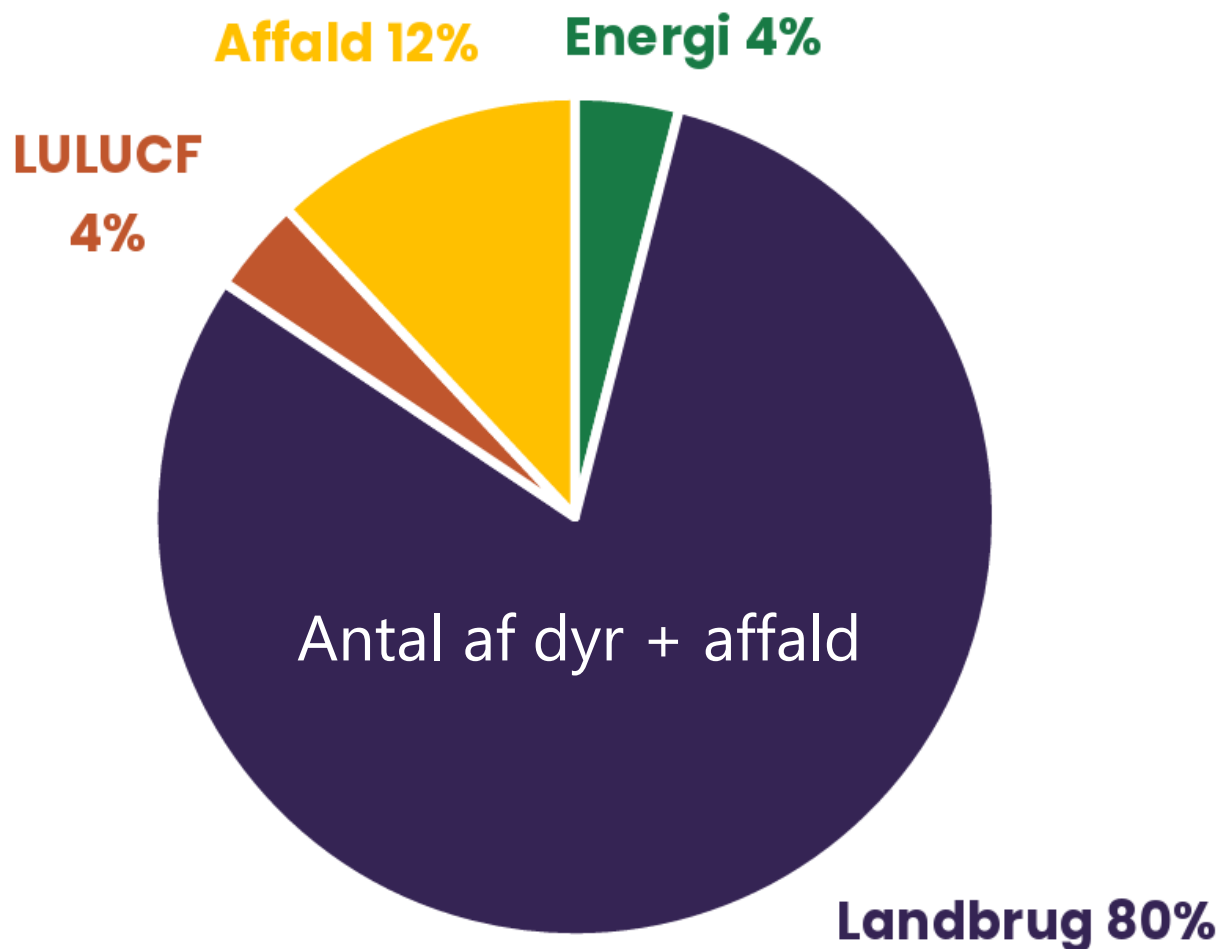
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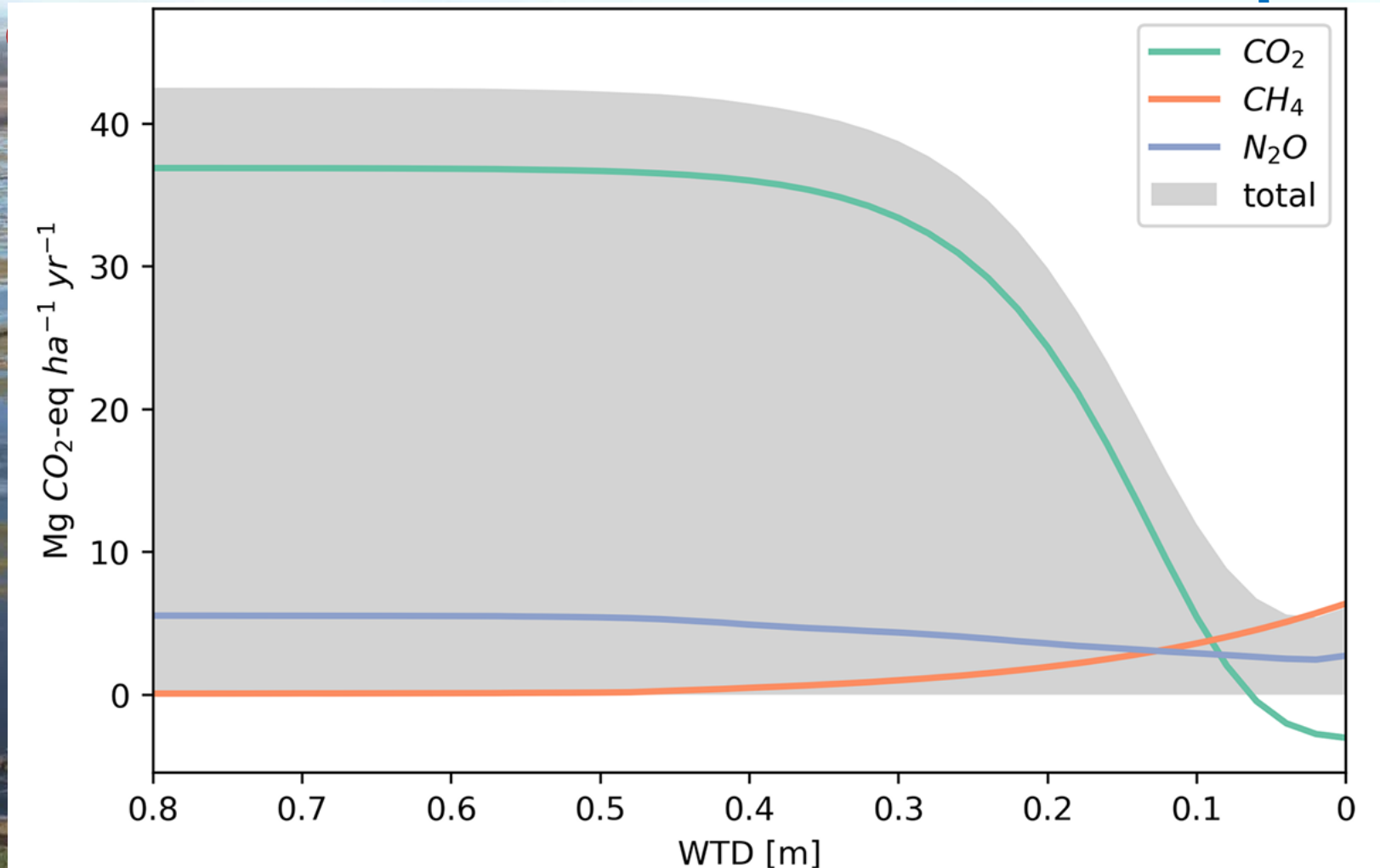
De danske antropogene metan emissioner

- Fokus i Danmark → reduktion af landbrugets emissioner
- Tilsætningsstoffer i fodder
- Aktiv metanfangst fra produktionsenhederne
- Bidraget fra LULUCF er lille nu
- Øgede CH₄ emissioner efter udtagning af lavbundsjorde?
- CO₂ fra lavbundsjorde udgør ~1/3 af landbrugets CO₂ emissioner
- Udtagning af lavbundsjorde er centralt værktøj



Vådlægning – et grønt hul i vores vid

CO₂



Vandvejen



Drænet
Plantage



16 år



20 år

Hvilken rolle spiller metan i
vådlægningens klimaeffekt?



12 år



24 år

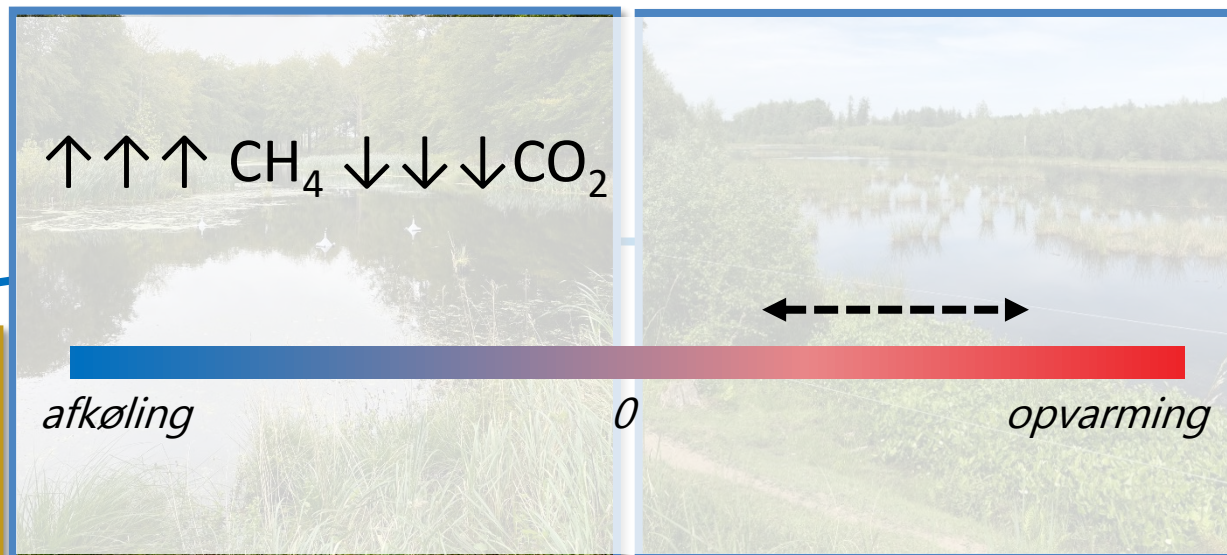


Ikke drænet
Near-natural

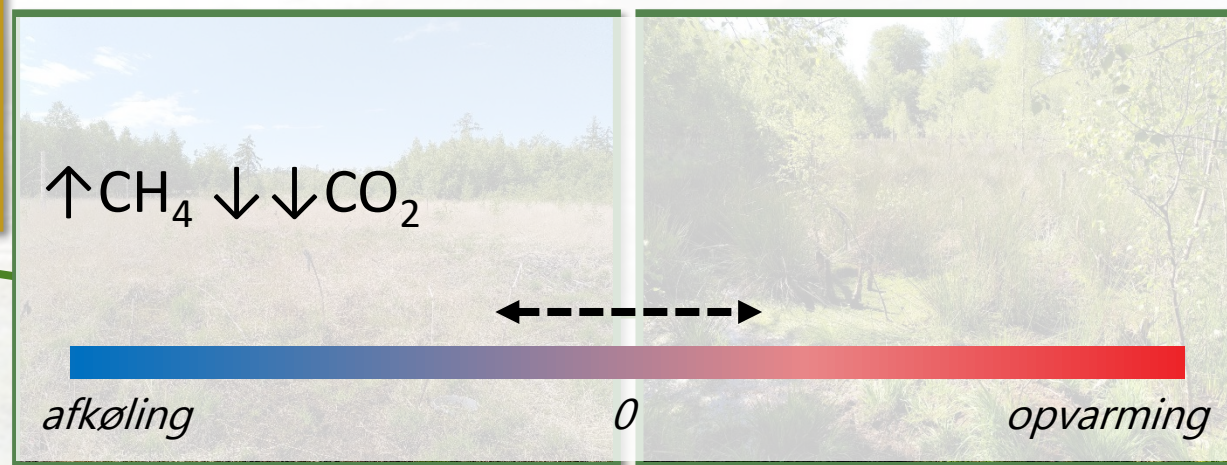
Plantevejen

Vandvejen

Vi arver en metaneffekt
fra arealanvendelsen
før vådlægning

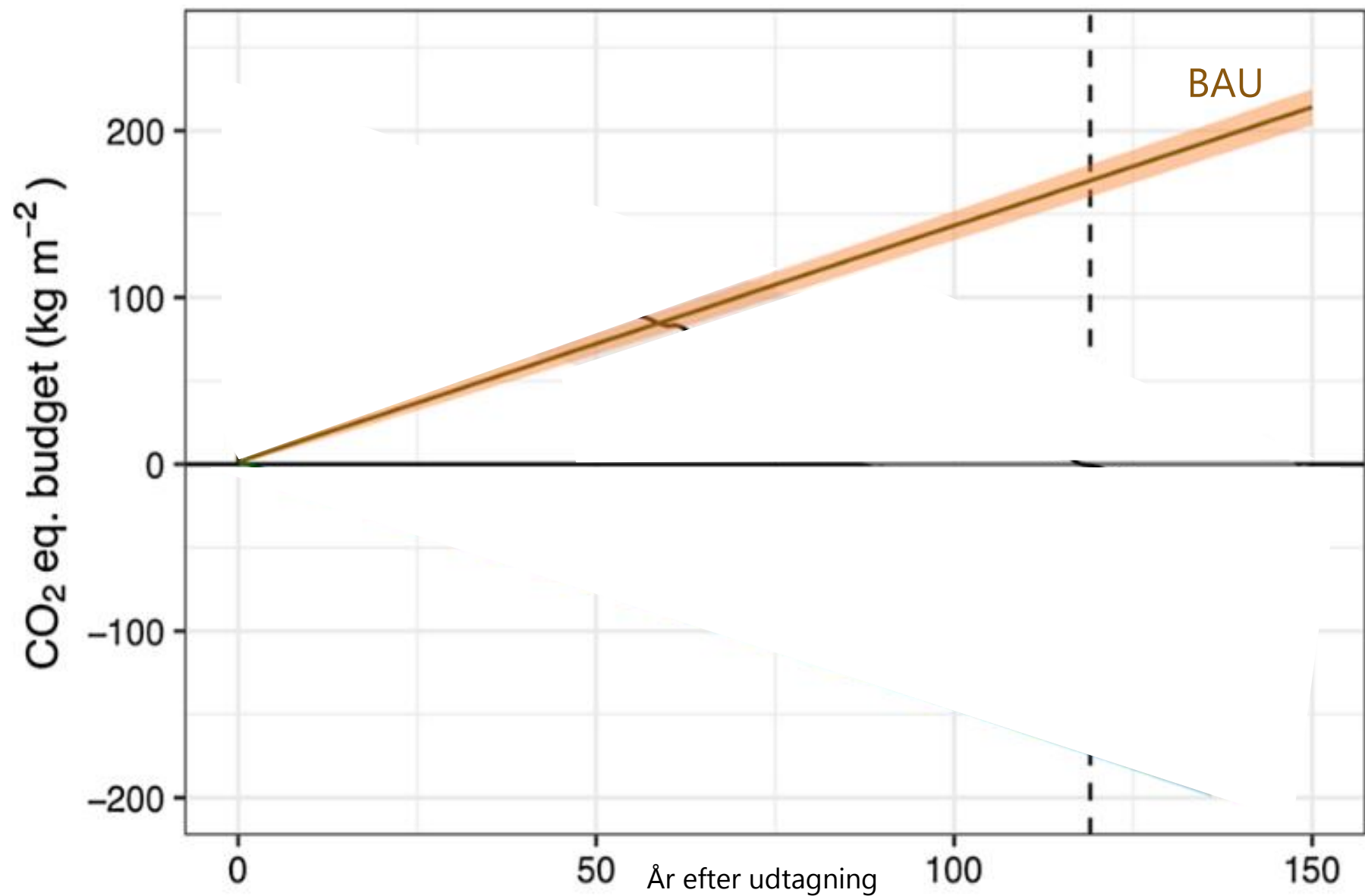


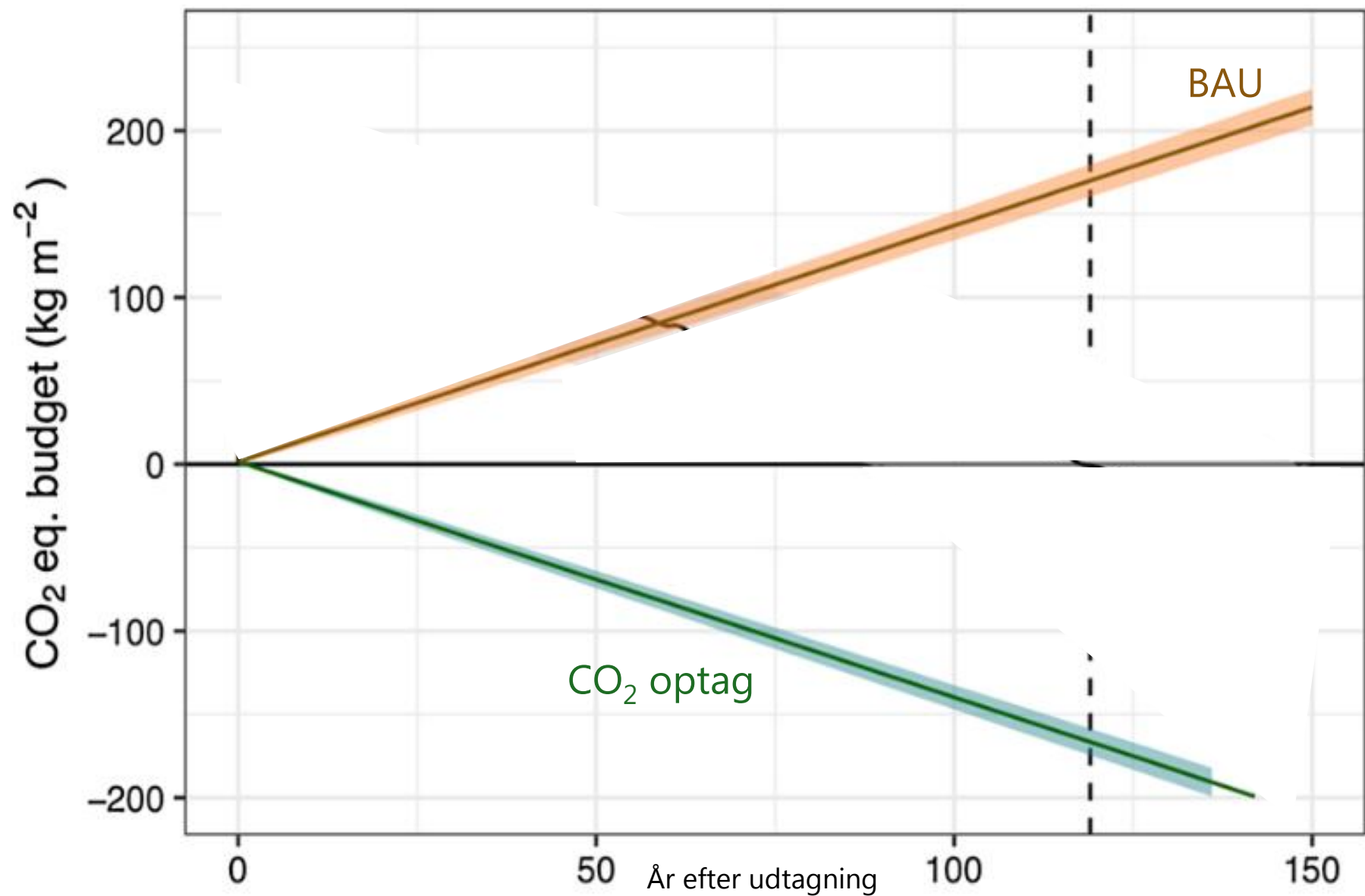
Drænet
Plantage

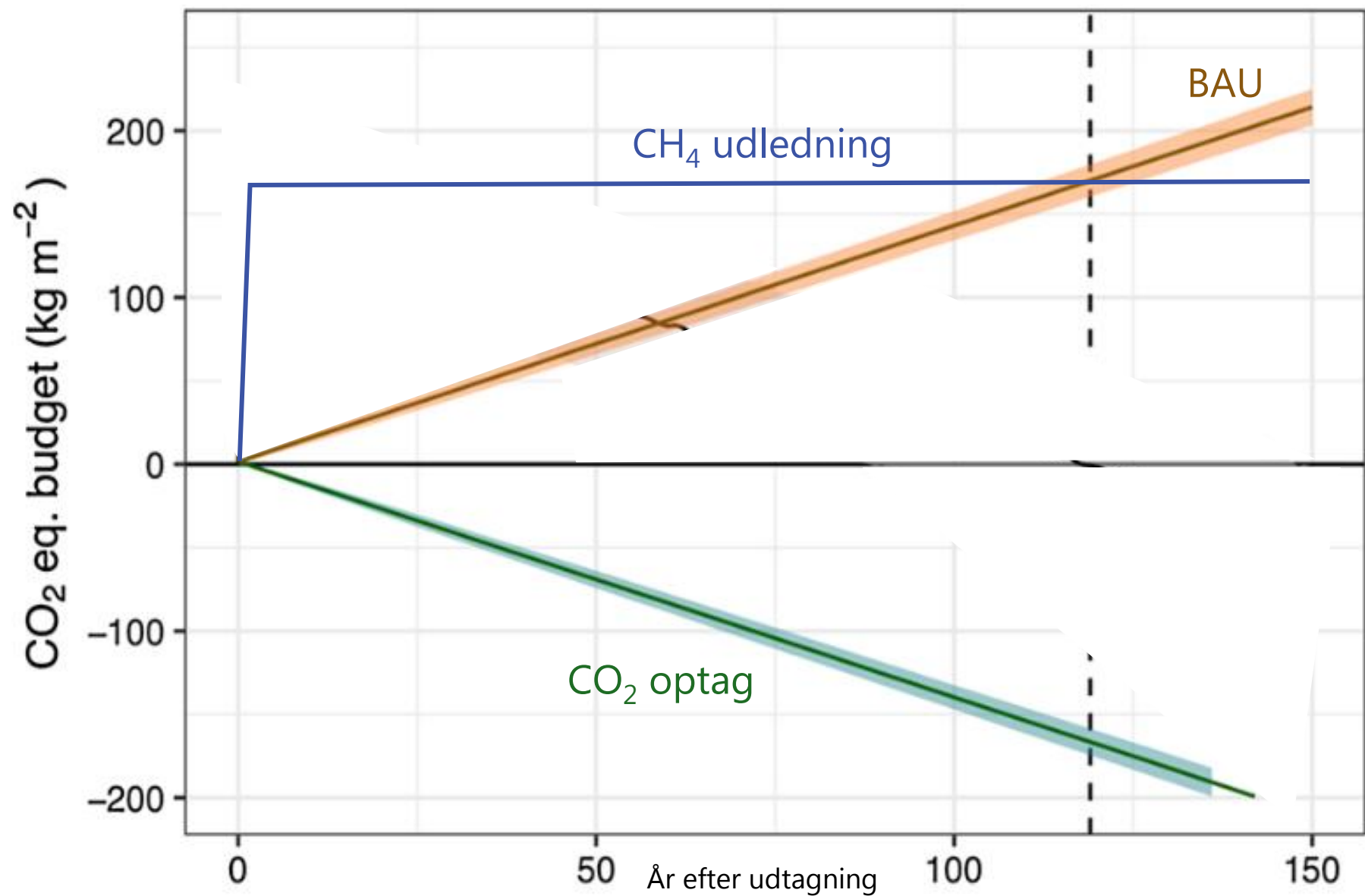


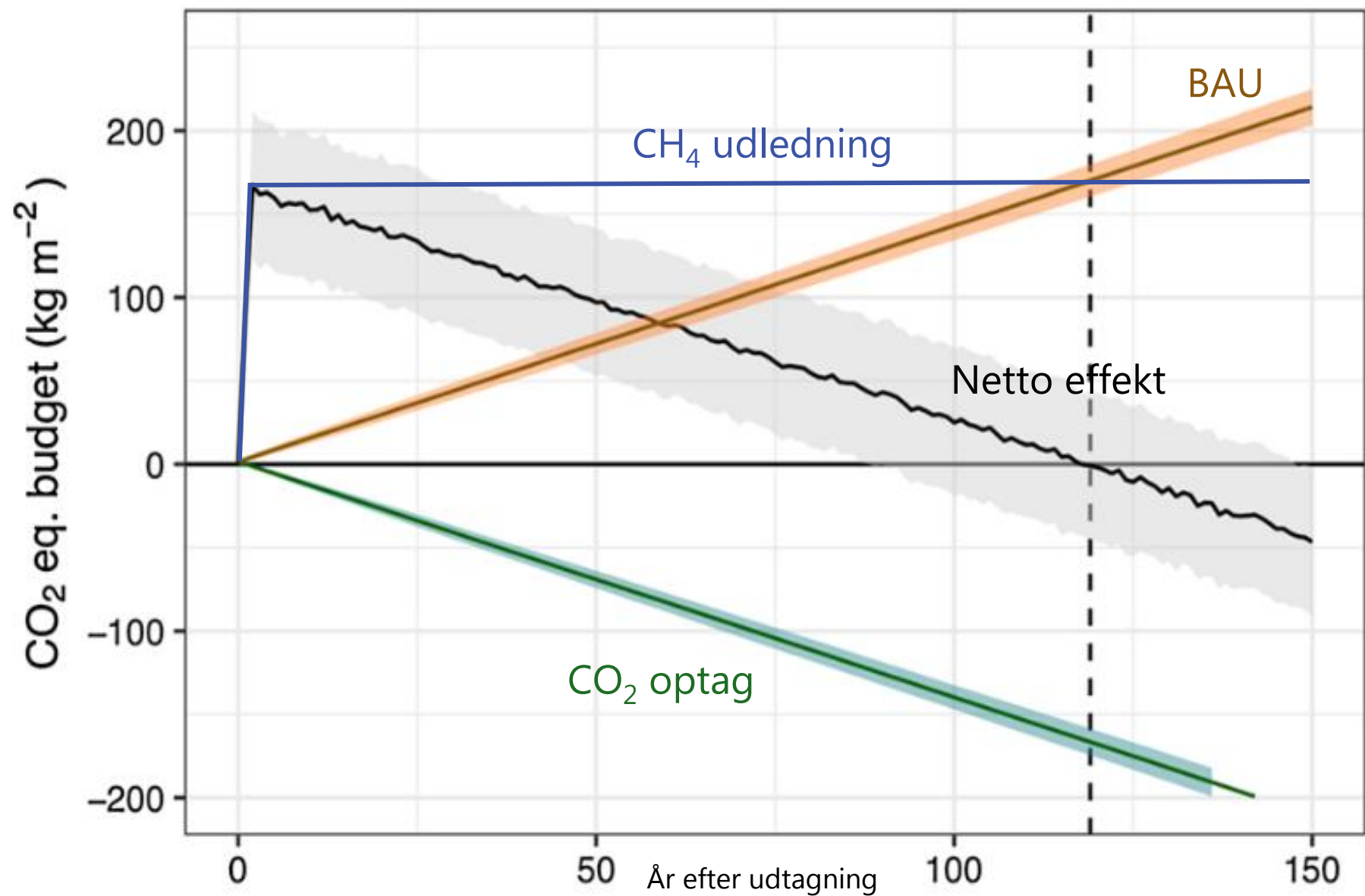
Ikke drænet
Near-natural

Plantevejen









Opsamling

- Metan er dynamisk i atmosfæren → reagerer hurtig på menneskelig aktivitet → forsinkelse af opvarmning er mulig, ikke netto afkøling!
- CH₄ udledninger fra LULUCF er højst sandsynligt underestimeret for fremtiden, da større områder vådlægges + klimaforandringer
- CH₄ er tungen på vægtskålen for hvor hurtig og hvor effektiv vådlægning er for klimaeffekten af udtagning af lavbundsjordene i DGT
- Nødvendiggør muligvis større reduktioner i andre sektorer