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Bioenergi fra skoven sammenlignet med landbrug

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Publication date:
2009

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Citation (APA):

Callesen, I. (2009). Bioenergi fra skoven sammenlignet med landbrug. Abstract from The Copenhagen Climate Exchange 2009 : Workshop om skovenes rolle i klimaet', Øksnehallen, København, .

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Bioenergi fra skoven sammenlignet med landbrug

Ingeborg Callesen
post doc

Afdelingen for Biosystemer
Programmet for Bioenergi og Biomasse

Præsenteret ved:

'Workshop om skovenes rolle i klimaet

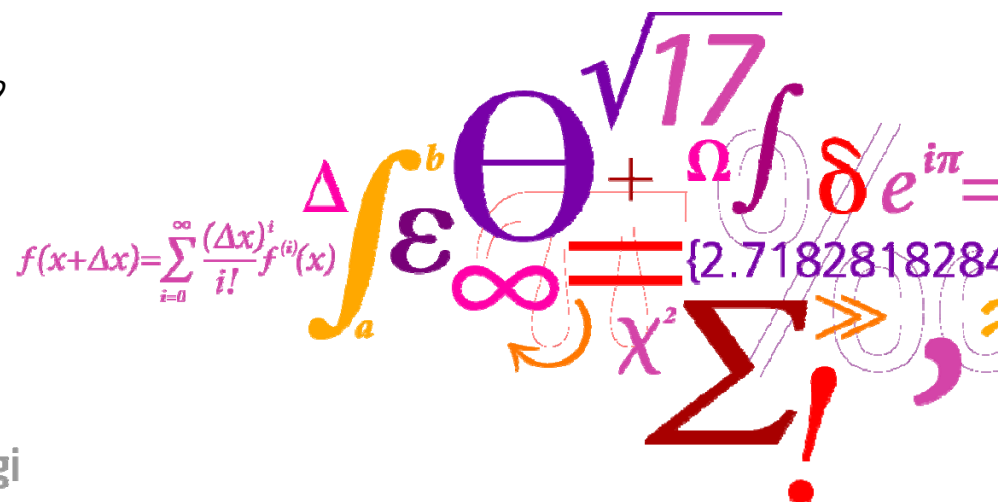
The Copenhagen Climate Exchange, Dec. 4 2009

Øksnehallen, København

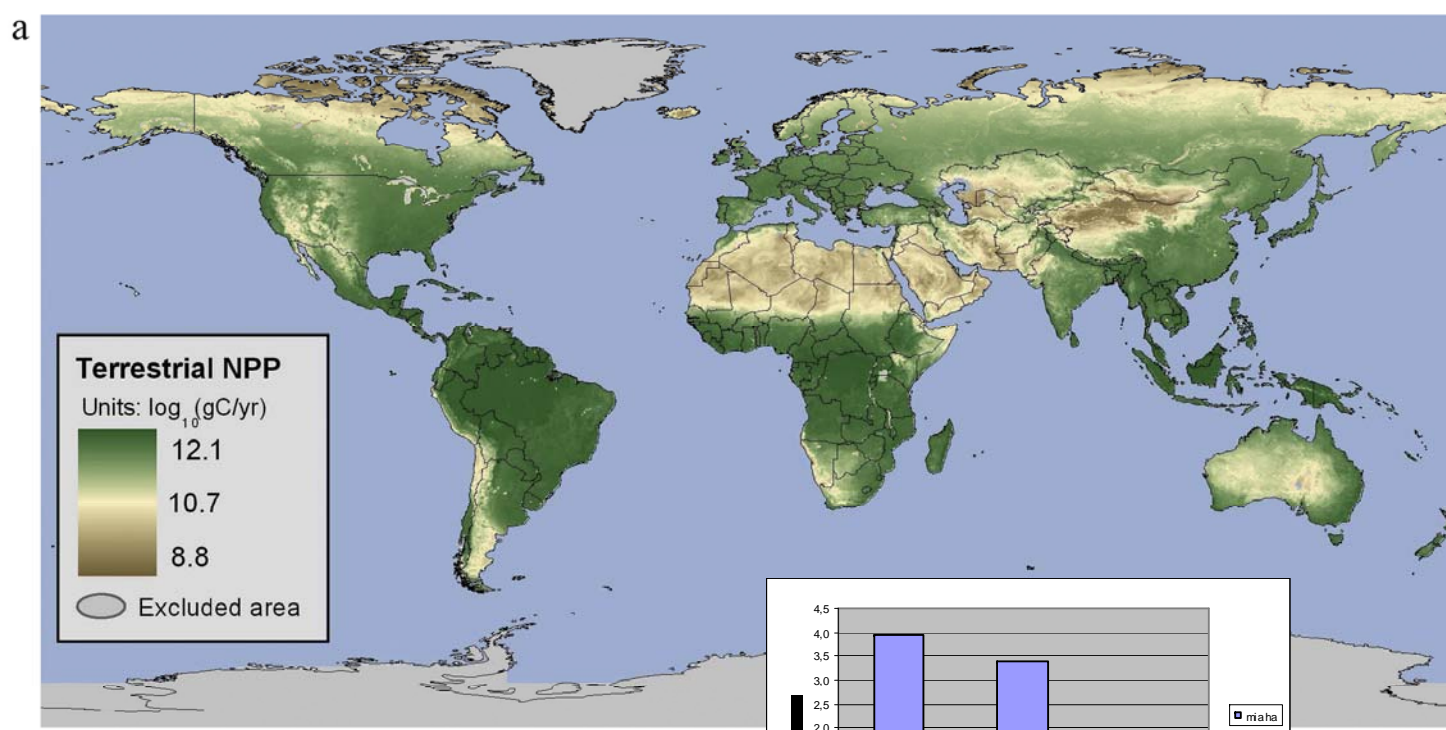
Arrangør: Danmarks Naturfredningsforening

Risø DTU

Nationallaboratoriet for Bæredygtig Energi

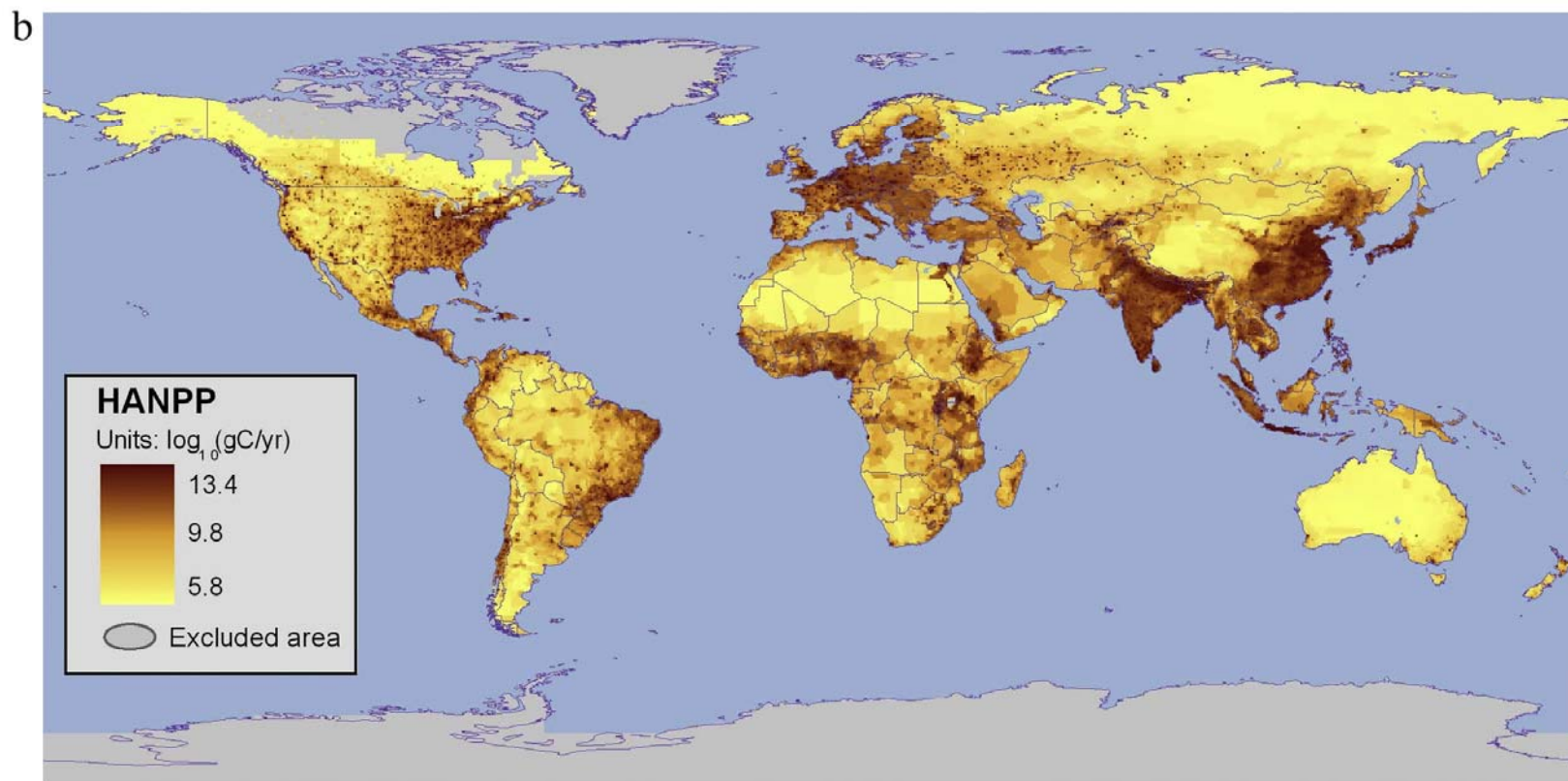


Fotosyntese er planteproduktion

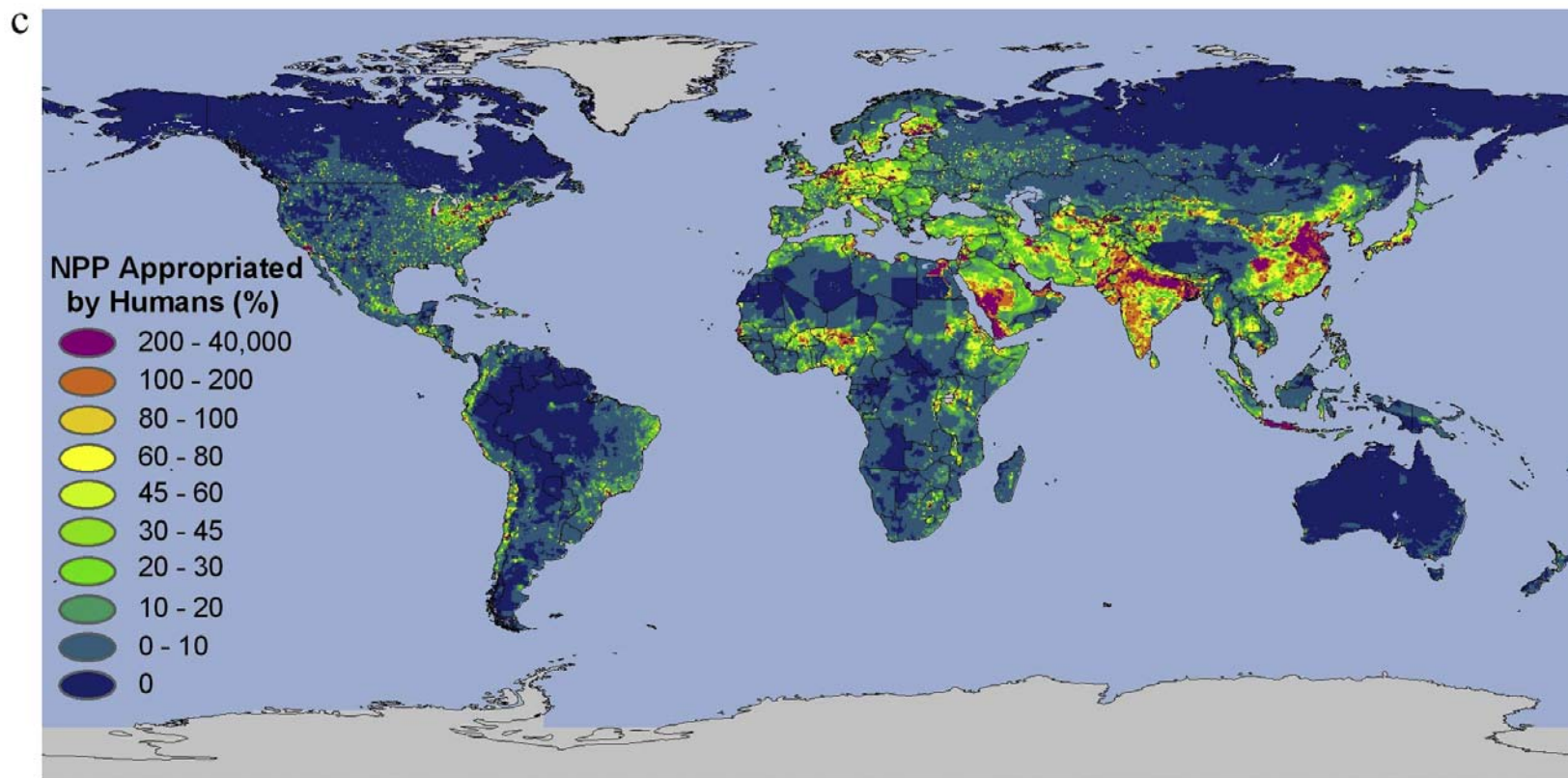


Imhoff & Bounoua, 2006

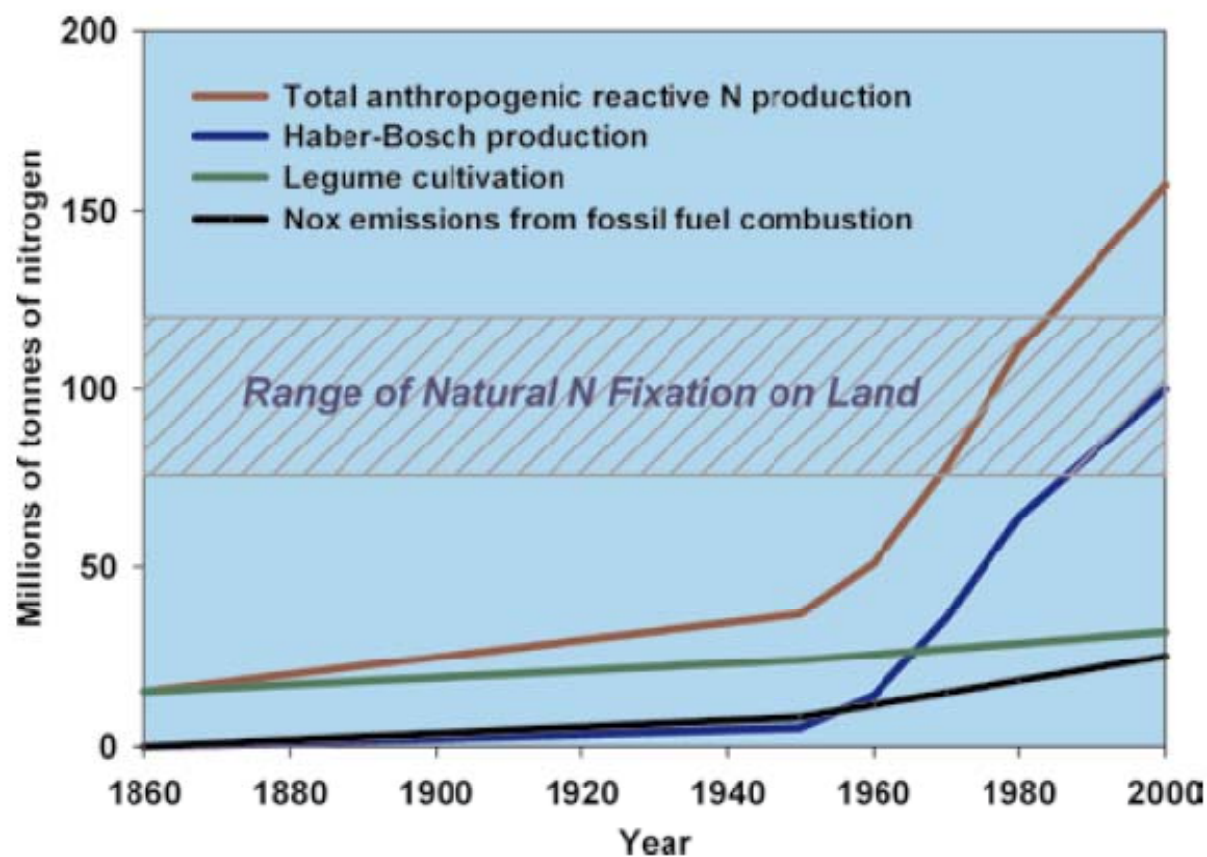
Menneskeligt forbrug af biologiske ressourcer



Andel af den samlede produktion anvendt af mennesker

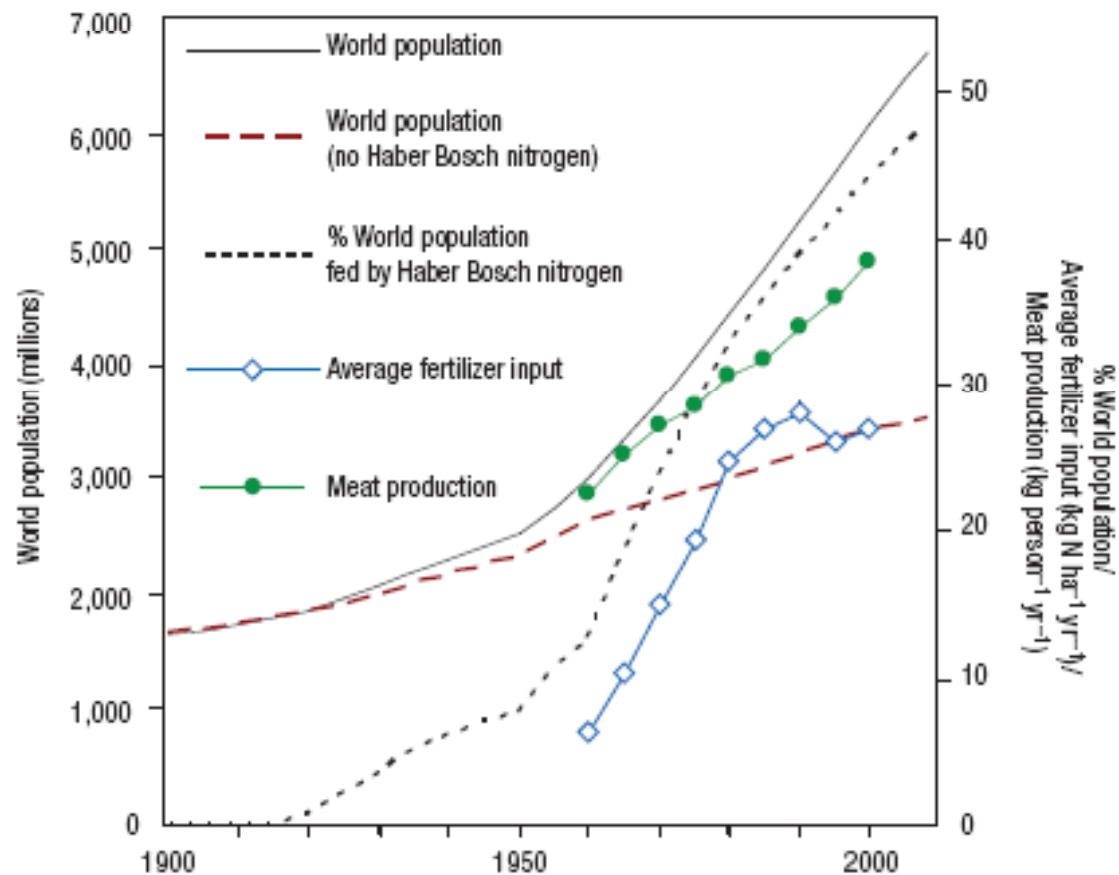


Naturligt og menneskeskabt reaktivt kvælstof



United Nations Environment Programme, WHRC 2007

Den grønne revolution – syntetisk kvælstof



United Nations Environment Programme, WHRC 2007

Kvælstof i eksporterede afgrøder



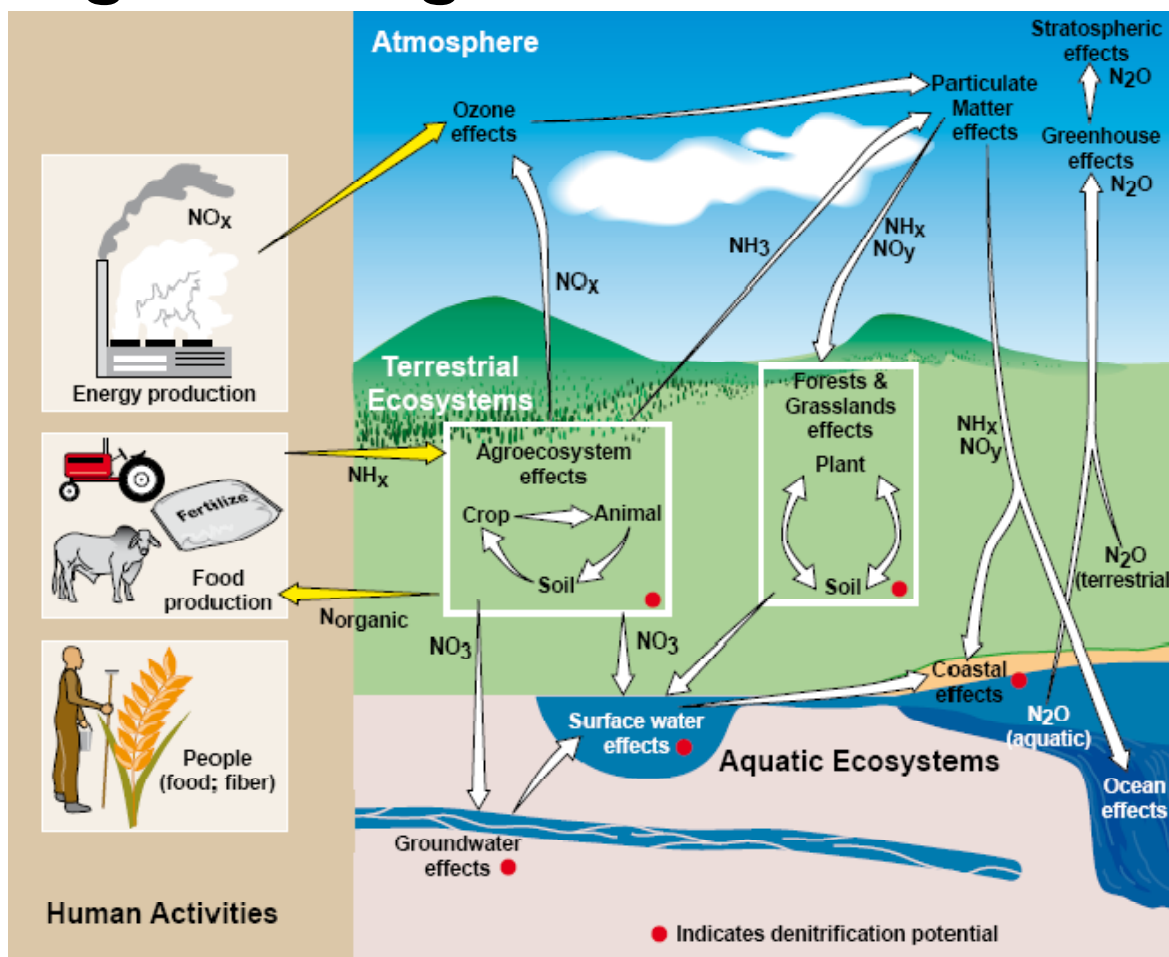
FIG 3B Nitrogen contained in internationally traded crops, by continent.

2004 data in thousands of tons of N; minimum requirement for drawing a line is 20,000 tons N.

Total international N trade in crops, 2004 – 11.5 million tons N.

United Nations Environment Programme, WHRC 2007

Reaktivt kvælstof tabes som lattergas – en kraftig drivhusgas



United Nations Environment Programme, WHRC 2007

Dansk natur – uden dyrkning

Kvælstofnedfald

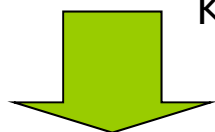
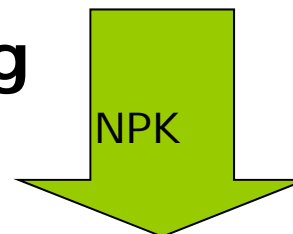
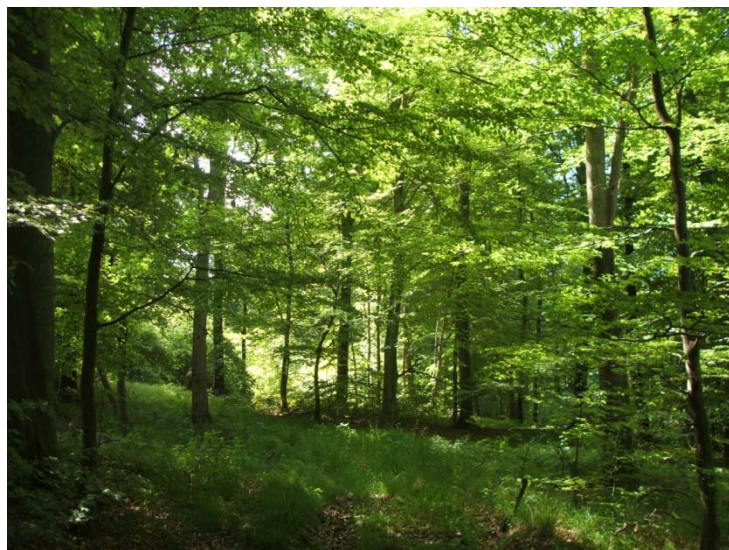
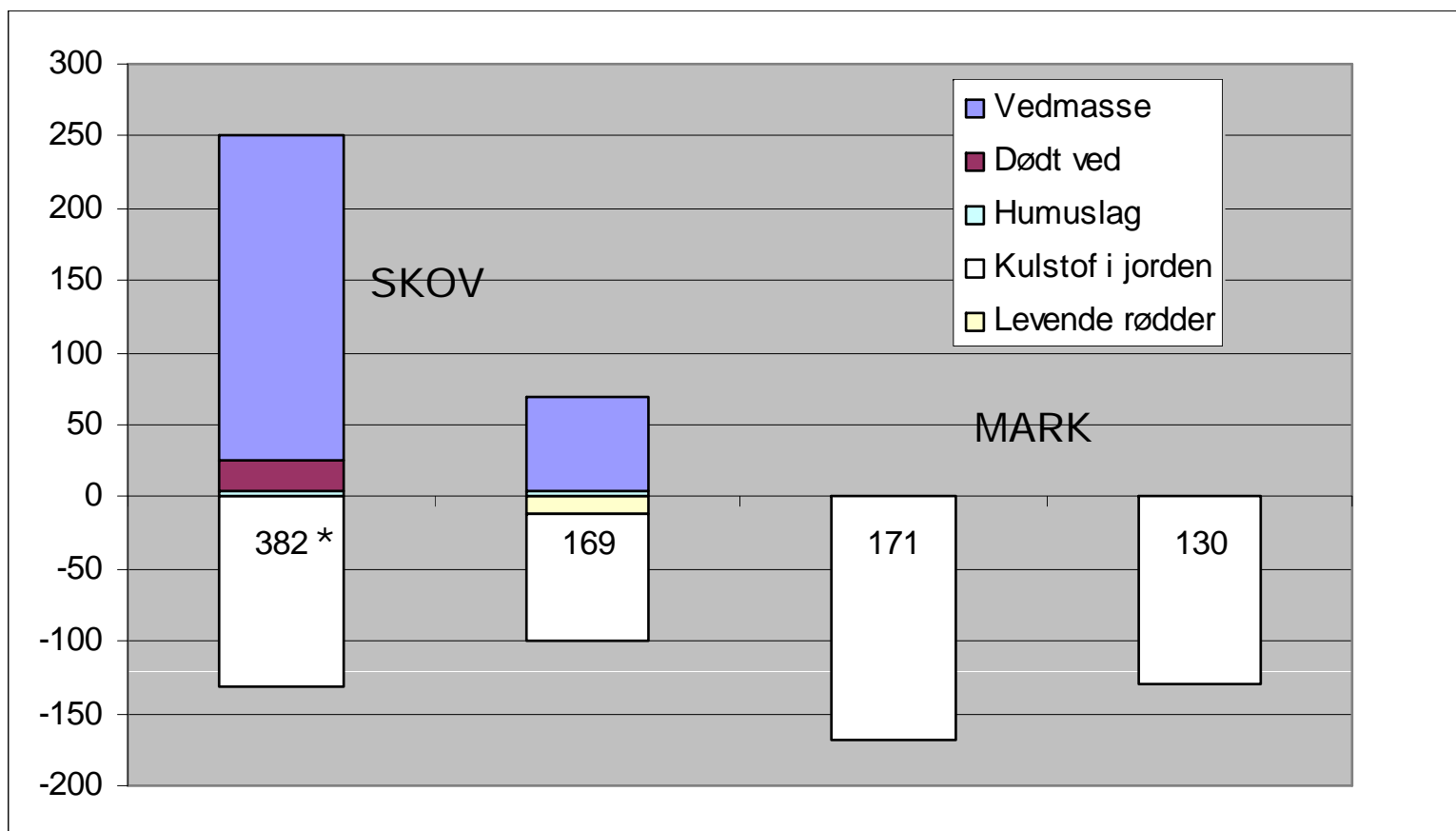


Foto L. Dalsgaard

Dansk natur – med dyrkning

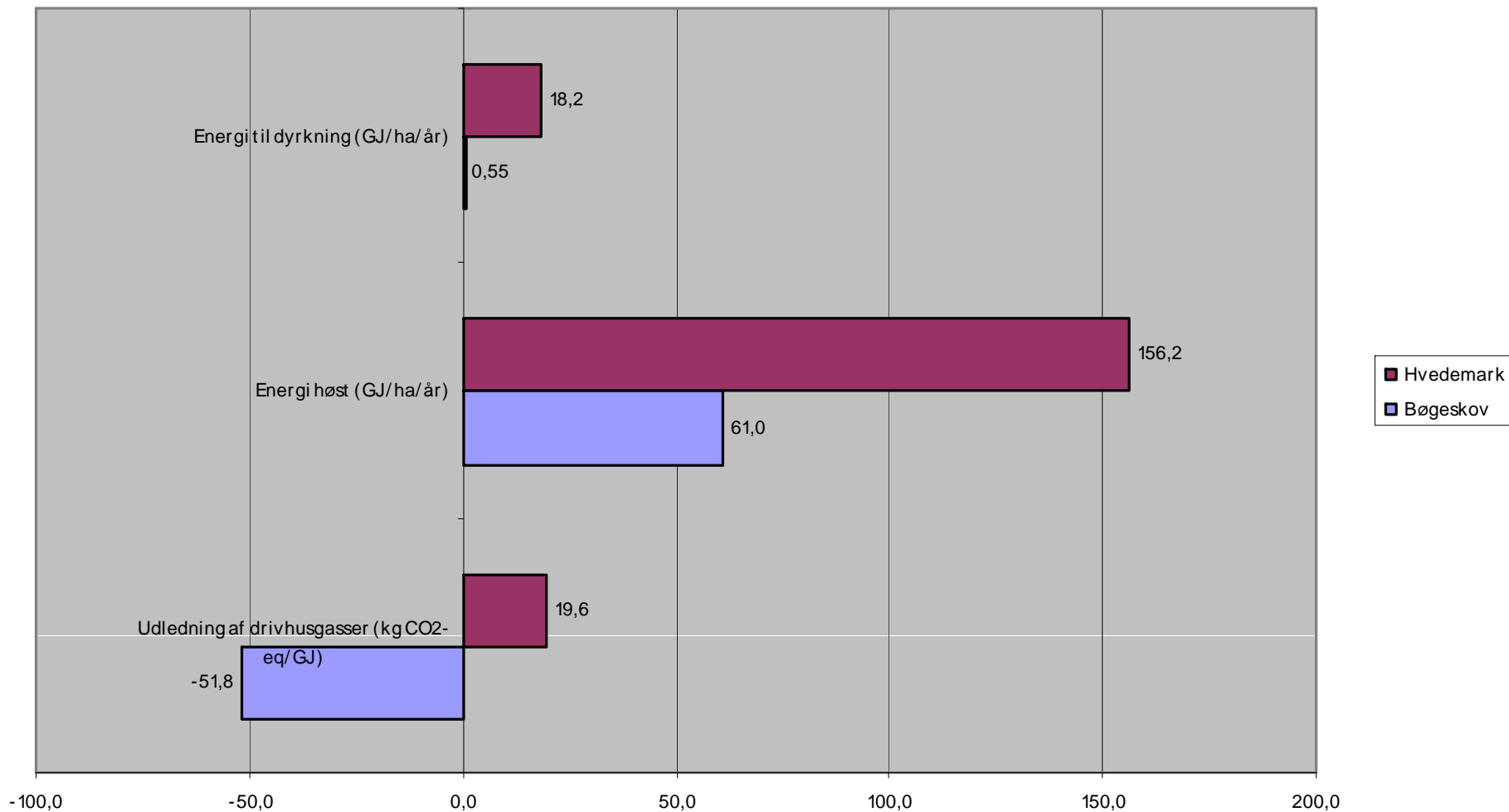


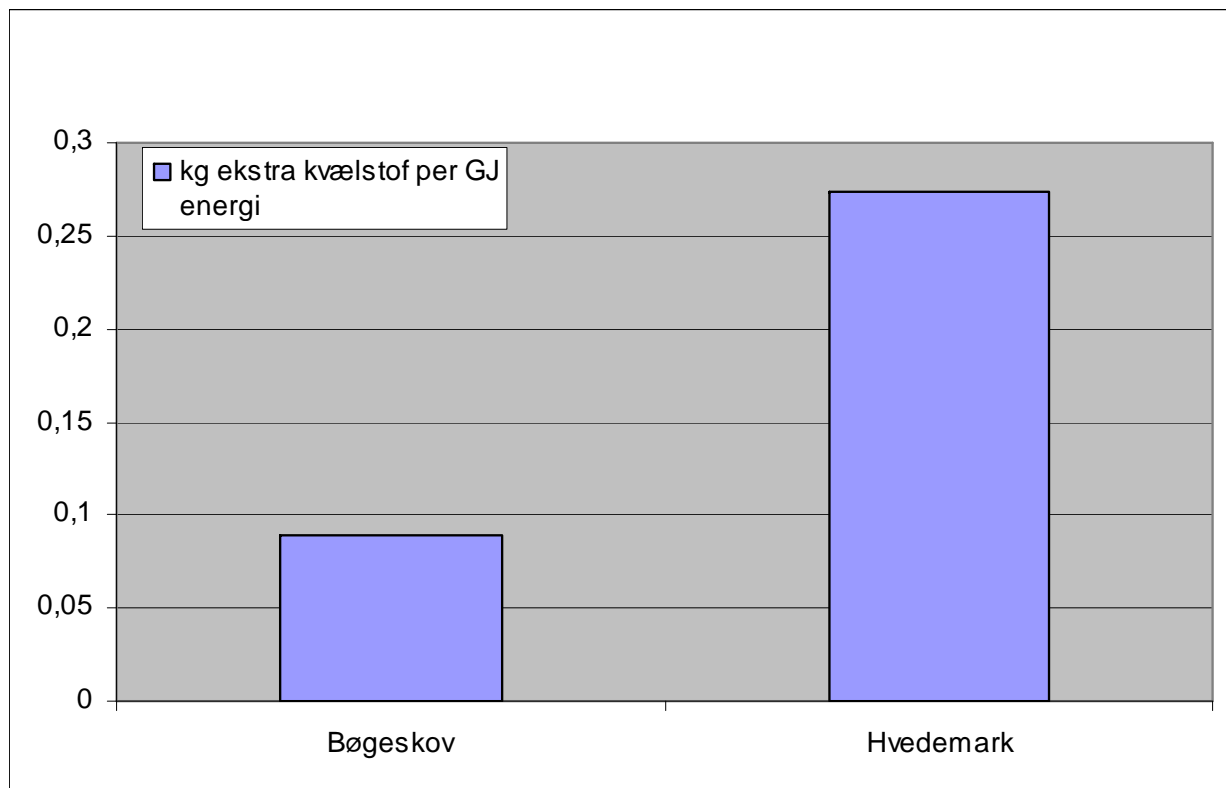
Kulstoflageret i de fire typer



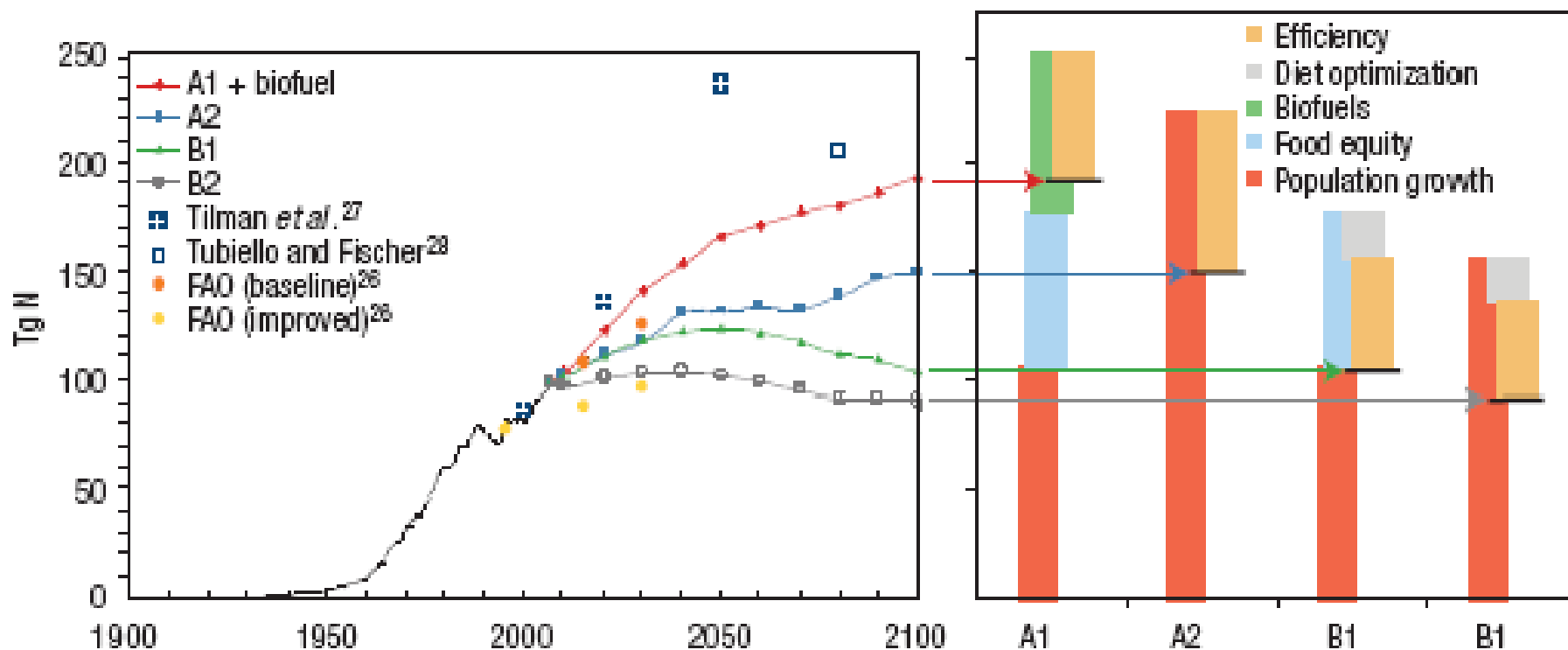
* Vesterdal & Christensen, 2007

Bioenergi fra skov eller landbrug ?

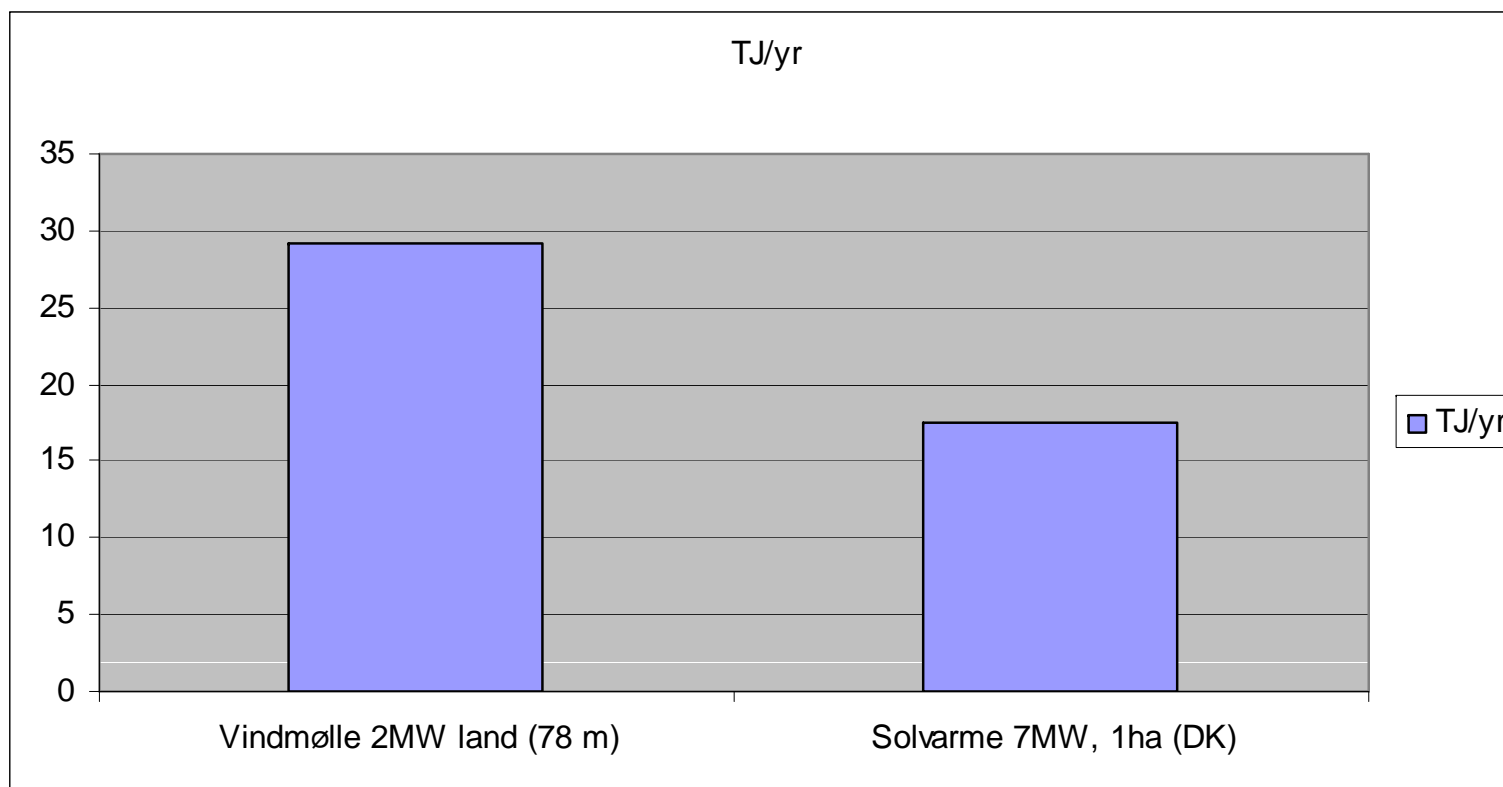


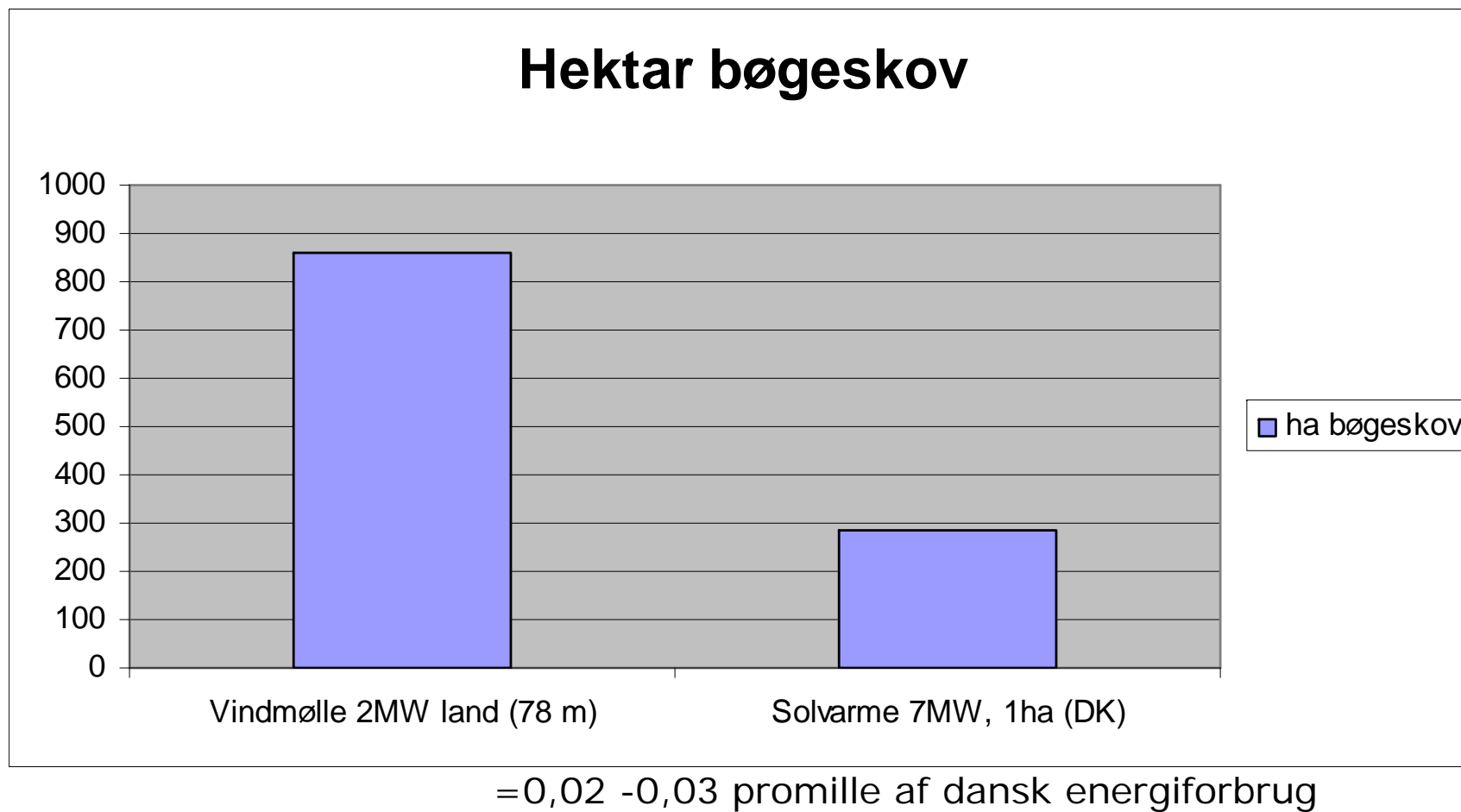


Der bliver mere reaktivt kvælstof



Bioenergi fra skov eller andre vedvarende energikilder





Perspektiver

- Vi skal sætte grænser for dyrkning – og give plads til den udyrkede natur
- Bioenergi kan være kvælstof-negativ !
- Landbruget har en energi- og kvælstofgæld
- Gælden kan mindskes, men aldrig blive 0
- Først mad, så biomaterialer, så bioenergi
- Bioenergi har en rolle blandt andre vedvarende energiformer