

CO₂ as a tool in the transformation of agriculture in Denmark - Tradeoffs and challenges

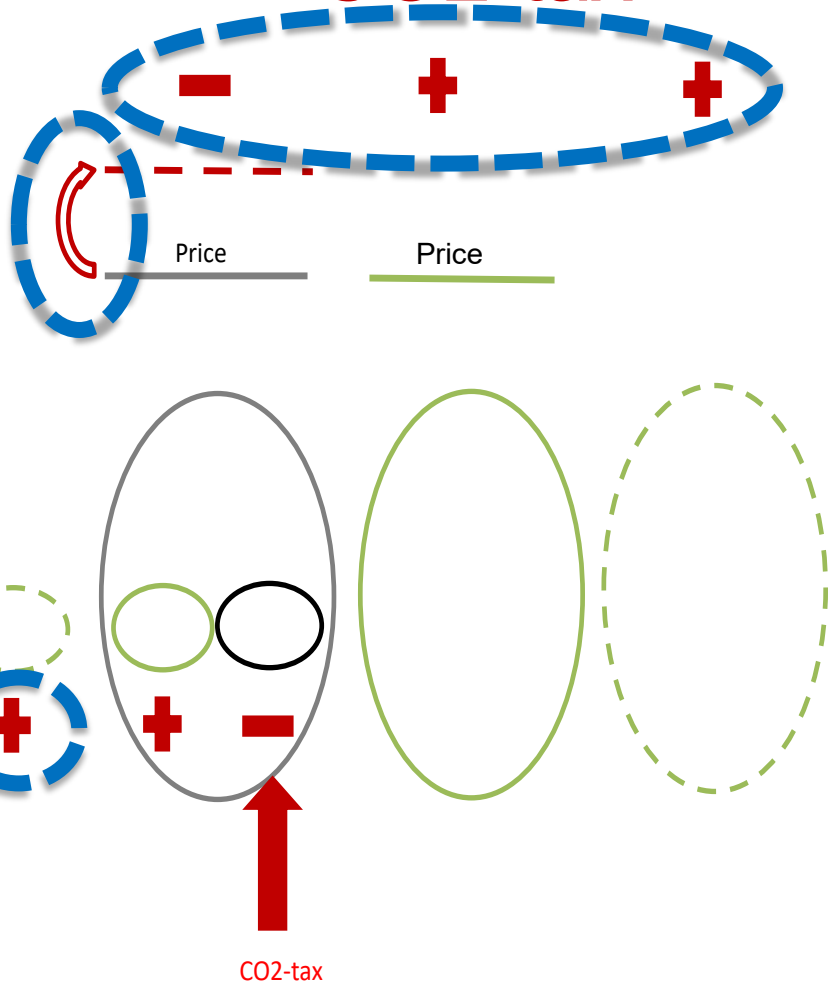
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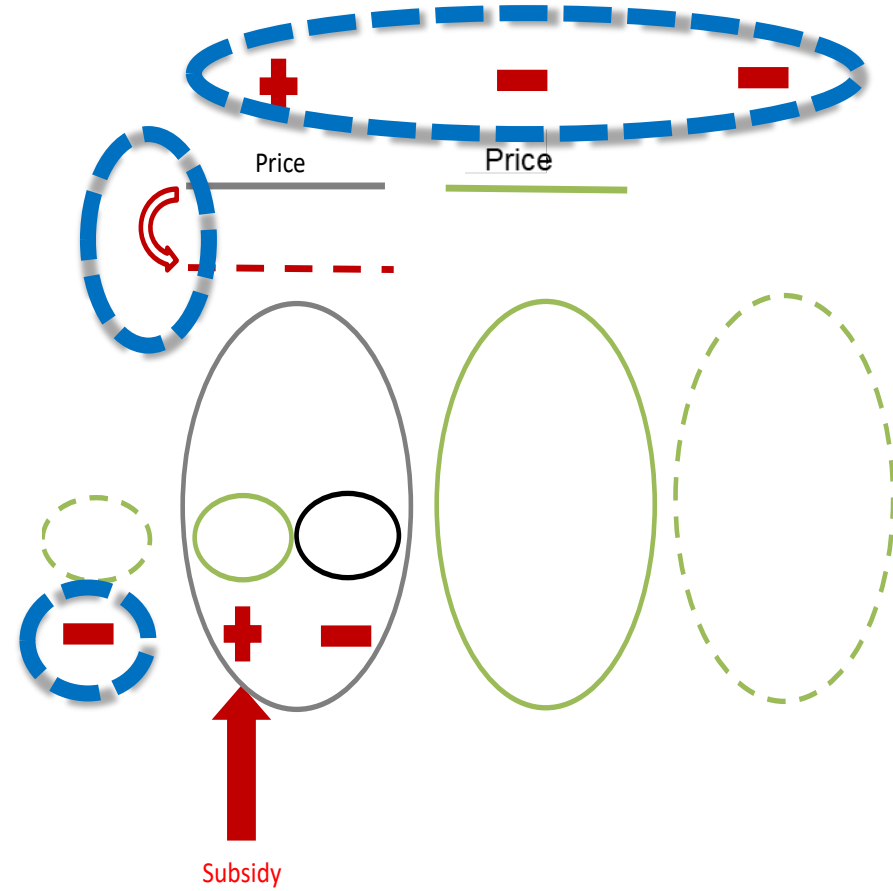
Plan

- Why carbon pricing gives efficient incentives to green transition and innovation ... and subsidies do not The importance of consumer
- The trade offs
- The main (implementation) challenge

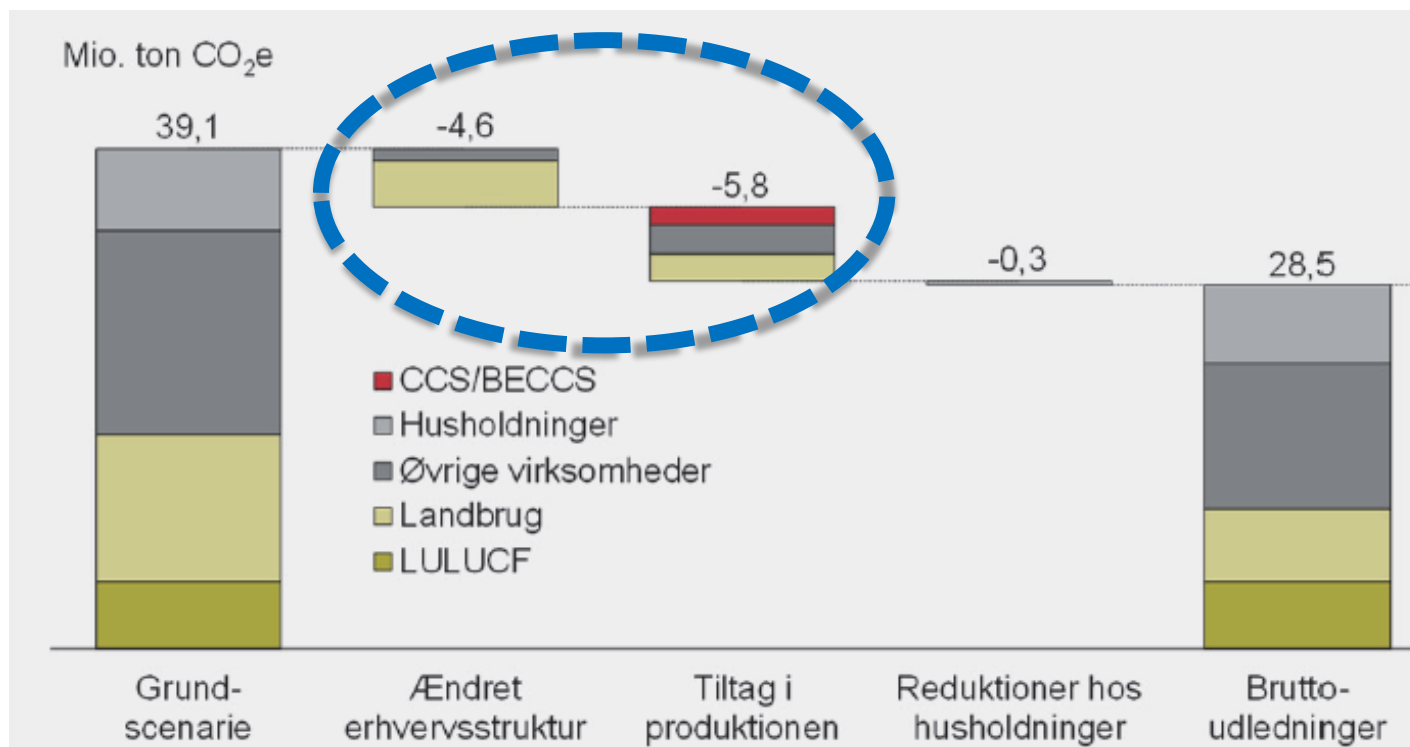
CO2-tax



Subsidy



Output price incentives are important



DØRS (2020)

Effects of Uniform Carbon tax in 2030

	Uniform carbon tax	
Carbon tax	1200 DKR/ton CO ₂ e all CO ₂ e emissions	
Welfare effects		
- Income loss	-6,9 billion DKR/year	
- Air pollution	+2,1 billion DKR/year	
- Nitrate emission	+1,2 billion DKR/year	
Total	-3,7 billion DKR/year	
Effects on agriculture		
- Proportion of CO₂e reductions (2030)	36%	
- Job effect in agriculture	-14.500 jobs (-25%)	
- Job effect in food industry	-4.500 jobs (-9%)	
Effects on total jobs in Denmark		
	-1.000 jobs (-0,0%)	
CO₂e reduction in Denmark (mio. ton)		
	16,0 mio. ton	
Co₂e reduction in the world (mio. ton)		
	12,6 mio. ton	
Leakage rate		
	23%	

Can Leakage be reduced?

	Uniform carbon tax	Uniform carbon tax Except agriculture
Carbon tax	1200 DKR/ton CO ₂ e all CO ₂ e emissions	3000 DKR/ton CO ₂ e all CO ₂ e emissions except methane and N ₂ O from agriculture
Welfare effects (billion DKR/year)		
Total	-3,7 billion DKR/year	-12,4 billion DKR/year
Effects on agriculture		
- Proportion of CO₂e reductions (2030)	36%	13%
- Job effect in agriculture	-14.500 jobs (-25%)	-4.300 jobs (-7%)
- Job effect in food industry	-4.500 jobs (-9%)	-1.900 jobs (-4%)
Effects on total jobs in Denmark	-1.000 jobs (-0,0%)	-6.300 jobs (-0,2%)
CO₂e reduction in Denmark (mio. ton)	16,0 mio. ton	16,0 mio. Ton
Co₂e reduction in the world (mio. ton)	12,6 mio. ton	14,0 mio. ton
Leakage rate	23%	13%

Source: DØRS (2020)

Can Leakage be reduced?

- Yes 2030 assuming our calculation holds

Costs	Welfare loss	Job loss
Cost per ton extra global CO ₂ e reduction by reducing leakage through exempting agriculture	6.100 DKR/ton	0,004 jobs lost

- But over time
 - More countries commit to binding climate reducing agricultural leakage
 - EU quota leakage increase after 2030

Can structure effects be reduced?

- Yes

Costs	Welfare loss	Job loss
Cost per job saved in agriculture and food industry by exempting agriculture	1,0 mio DKR/year	1,4 job lost in other sectors of the economy

- And with greater certainty
- But at a substantial cost

Hvad sker der i Landbrug ved 1200 kr afgift?

Tabel 1. Prisændringer i 2030 ved en generel drivhusgasbeskatning på 1.200 kr. per ton CO₂e

Branchenavn	Produkteksempler	Danskproducerede	Fødevarer i
		fødevarer	alt
Vegetabilske produkter	Foder, frugt, grøntsager	+14%	+6%
Kvæg	Råmælk, slagtekvæg	+33%	-
Svin	Slagtesvin	+9%	-
Fjerkræ, pelsdyr mv.	Slagtekyllinger, æg	+4%	-
Fiskeri	Frisk fisk	+8%	+2%
Slagterier (kvæg)	Oksekød	+17%	+13%
Slagterier (svin)	Svinekød	+5%	+2%
Slagterier (fjerkræ mv.)	Kyllingekød	+1%	+1%
Fiskeindustri	Fiskemel, makrel i tomat	+1%	+0%
Mejerier	Mælk, ost	+14%	+10%
Bagerier, brødfabrikker mv.	Rugbrød	+1%	+1%
Anden fødevarerindustri	Forårsruller	+2%	+1%
I alt, vægtet efter			
Forbrug i DK, uden adfærd		+7,6%	+3,8%
Forbrug i DK, med adfærd		+7,3%	+3,7%
Produktion i DK, uden adfærd		+9,6%	-
Produktion i DK, med adfærd		+8,9%	-

Klimaregnskab

- Retvisende udgangsniveau
- Fradrag for dokumenterede tiltag

Fradrag for dokumenterede tiltag

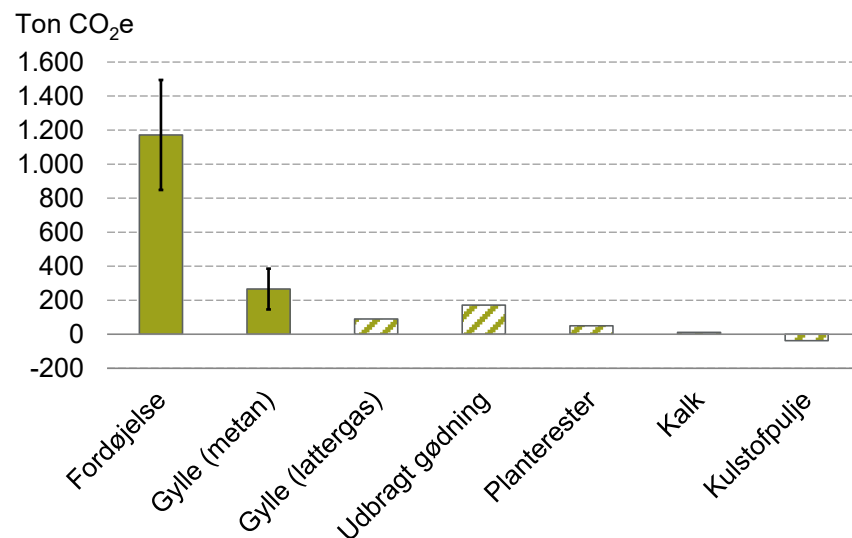
- Viden hos landbrugets aktører
 - De skal vide hvordan reduktionstiltag dokumenteres og indmeldes
 - De skal have incitament til at gøre det



Retvisende udgangsniveau

Detaljeret regnskab muligt i dag:

- For 65 pct. af landbrugets udledninger (metan fra fordøjelse)
- Usikkerhed mellem 3% og 30% for landbrug med 100 køer
- Stort potential for bedre dækning og mindre usikkerhed frem mod 2030



References

DØRS (2020): <https://dors.dk/vismandsrapporter/oekonomi-miljoe-2020>

DØRS (2021): <https://dors.dk/vismandsrapporter/oekonomi-miljoe-2021> ,chapter 2

DØRS (2022): <https://dors.dk/vismandsrapporter/oekonomi-miljoe-2022> ,chapter 3