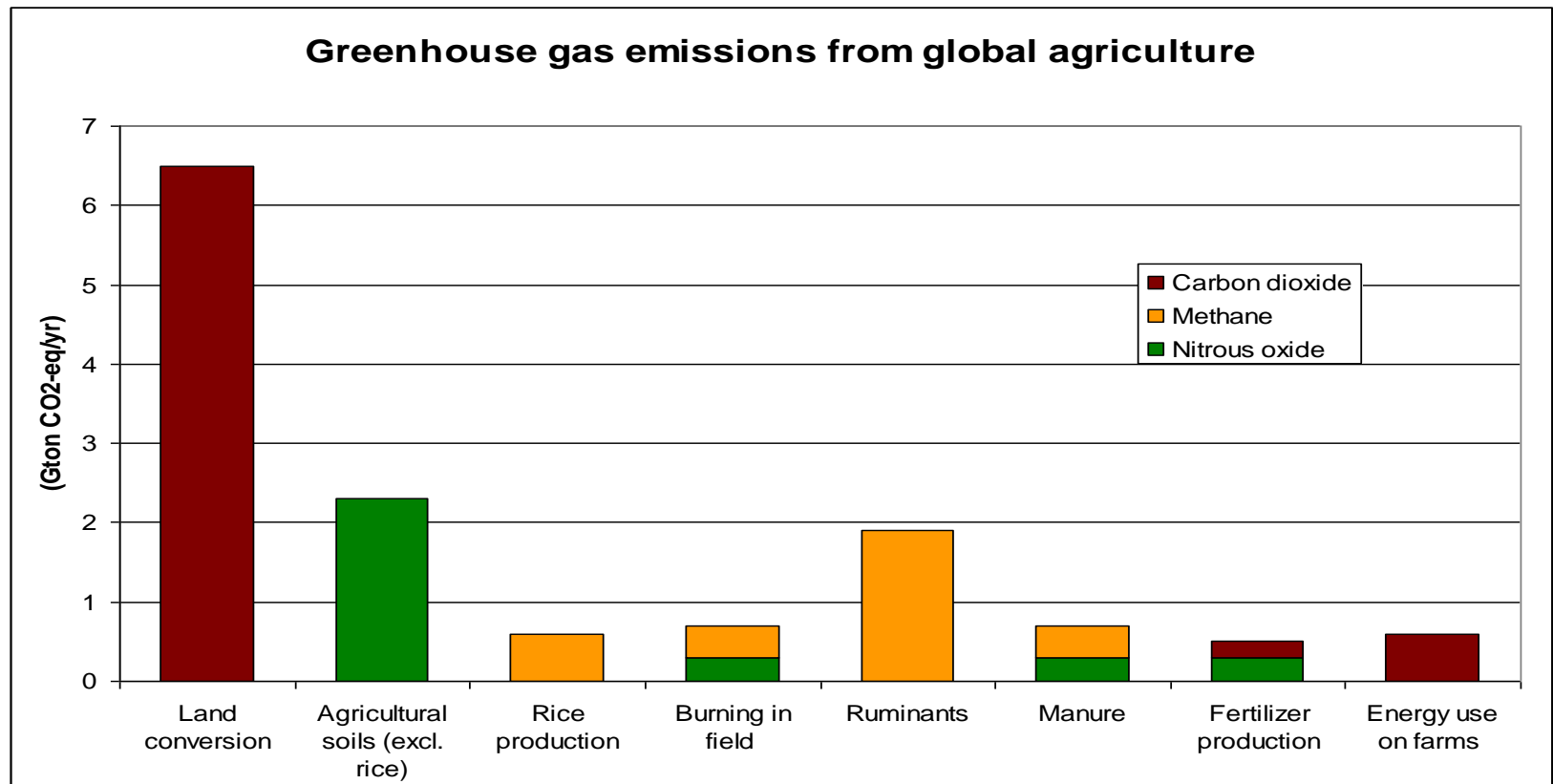

Climate tax on food – an effective policy instrument?

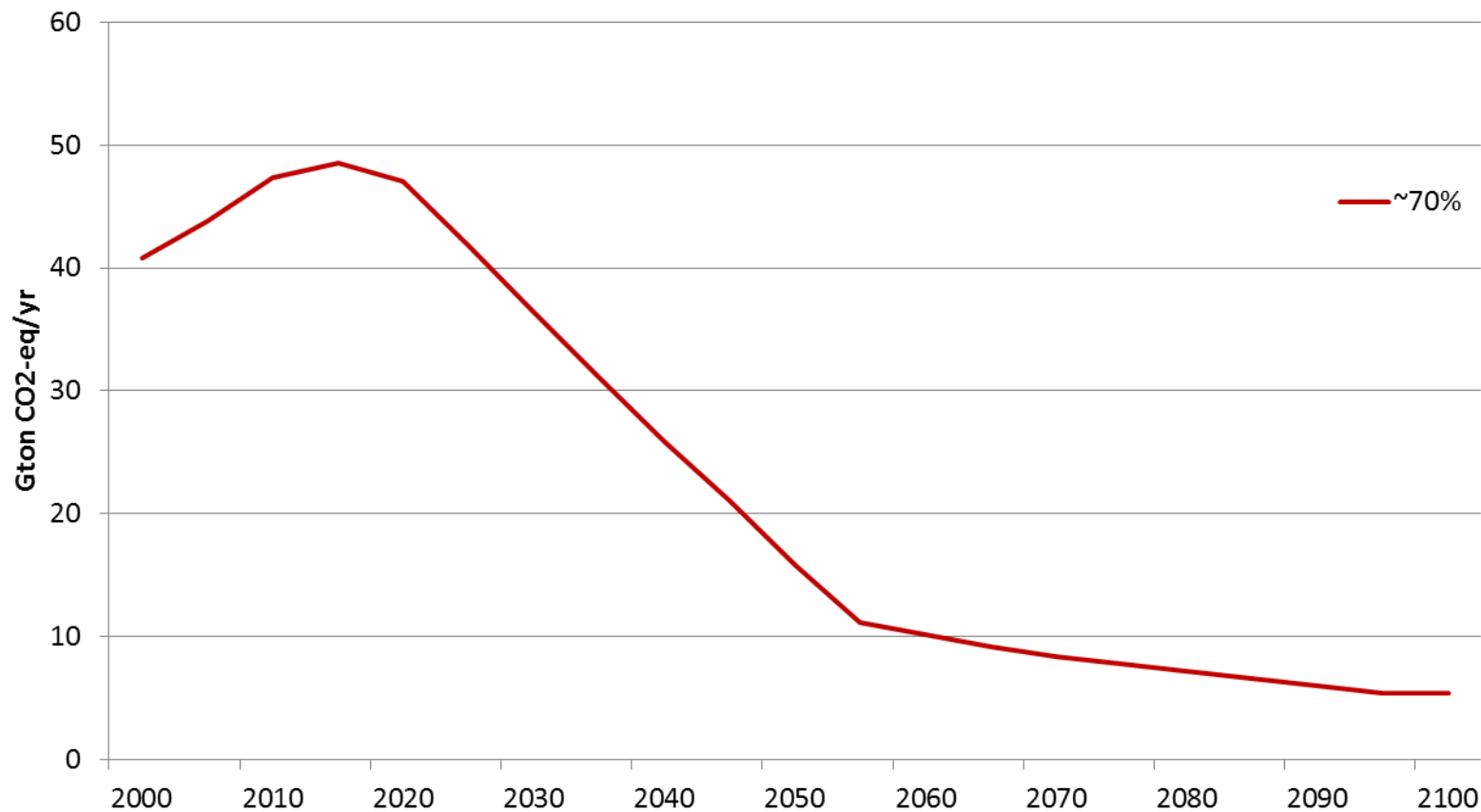
Fredrik Hedenus, Stefan Wirsenius
Physical Resource Theory,
Chalmers University of Technology, Sweden
hedenus@chalmers.se

Food and greenhouse gases

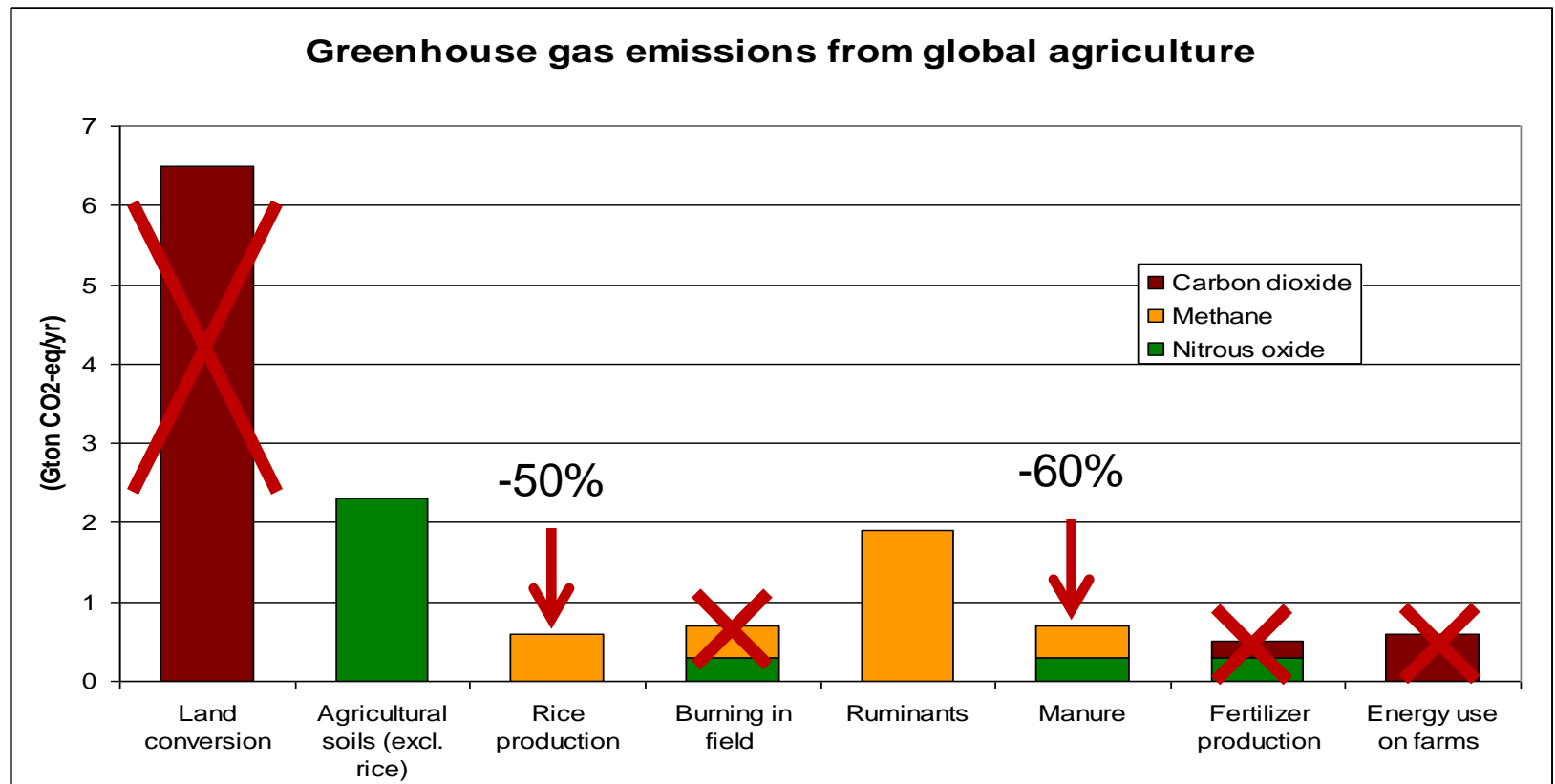


25 - 30 % of the global anthropogenic greenhouse gas emissions

Global emissions and the 2-degree target

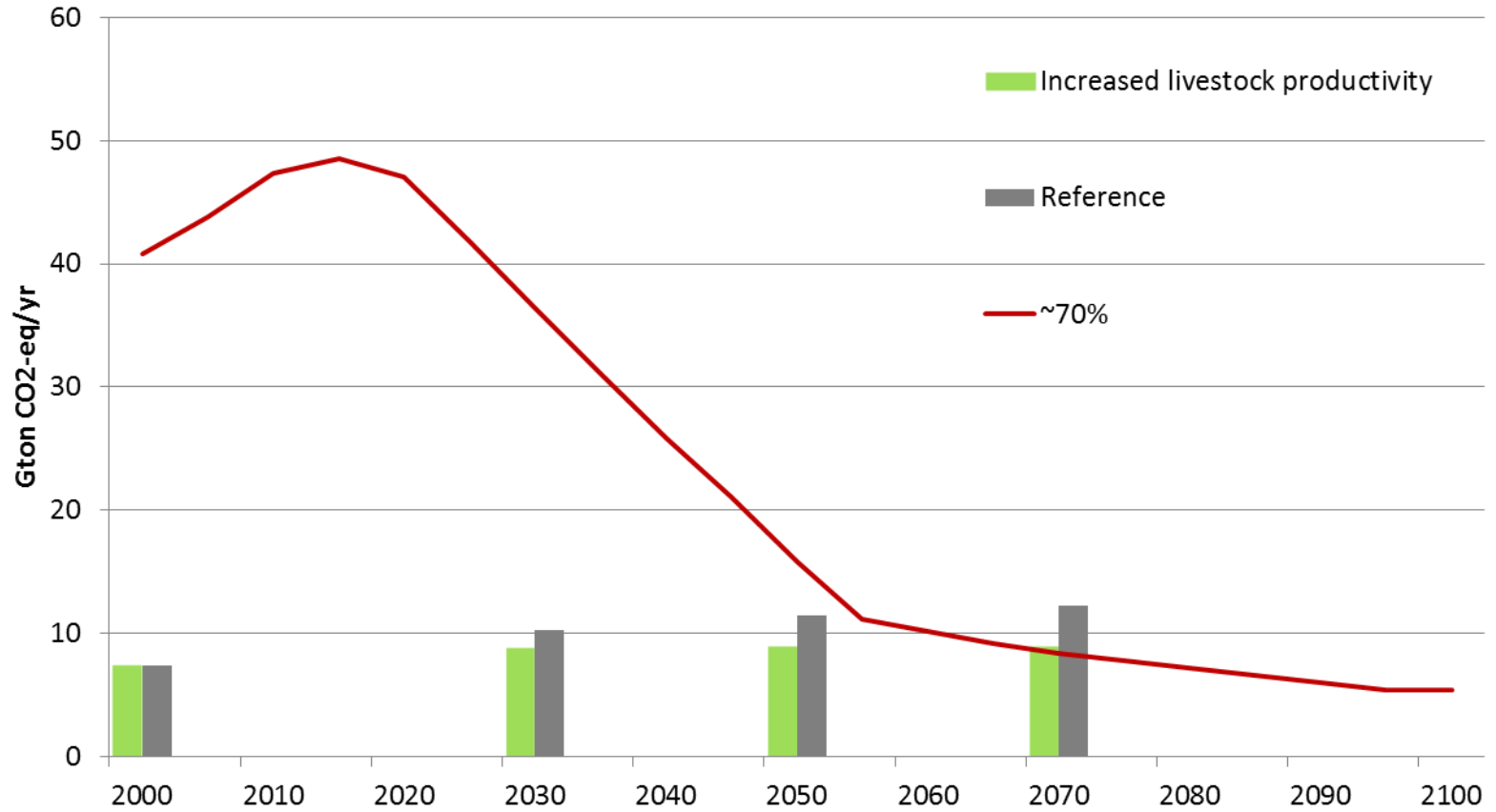


An optimistic scenario



FAO consumption projection

Increased livestock productivity in all regions (mainly in developing world)

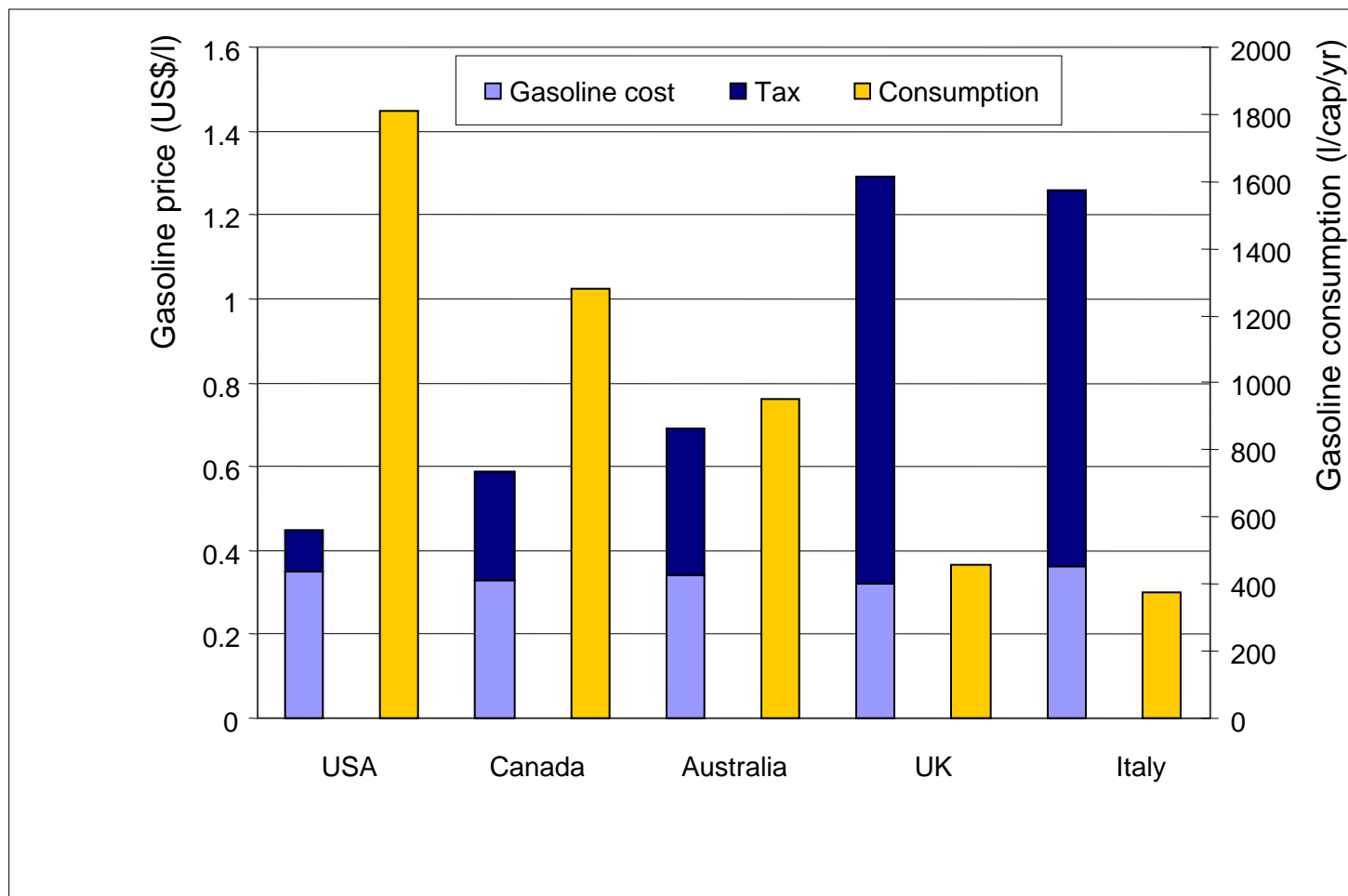


Hedenus et al 2012

What to tax?

- Emissions
 - Directly related to the emission
 - Requires good monitoring
 - Gives incentives for abatement in both production and consumption
- Consumption
 - Approximately correlated to the emission
 - More cost-effective than direct emission taxes if
 - emissions are expensive to monitor
 - small technical abatement potential
 - Large substitution possibilities in output
 - No incentives to improve production

Gasoline tax, a consumption tax

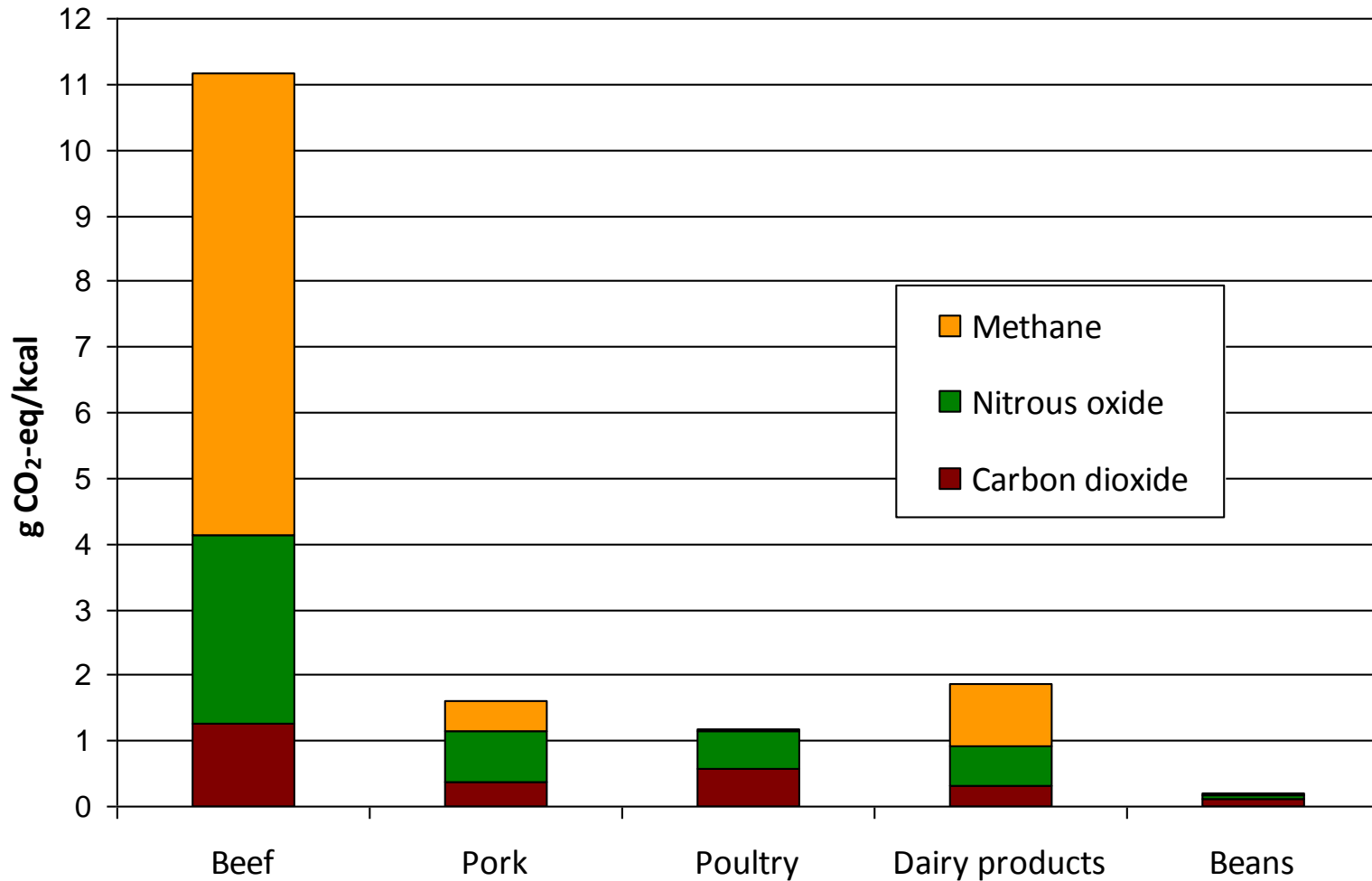


Stern (2006)

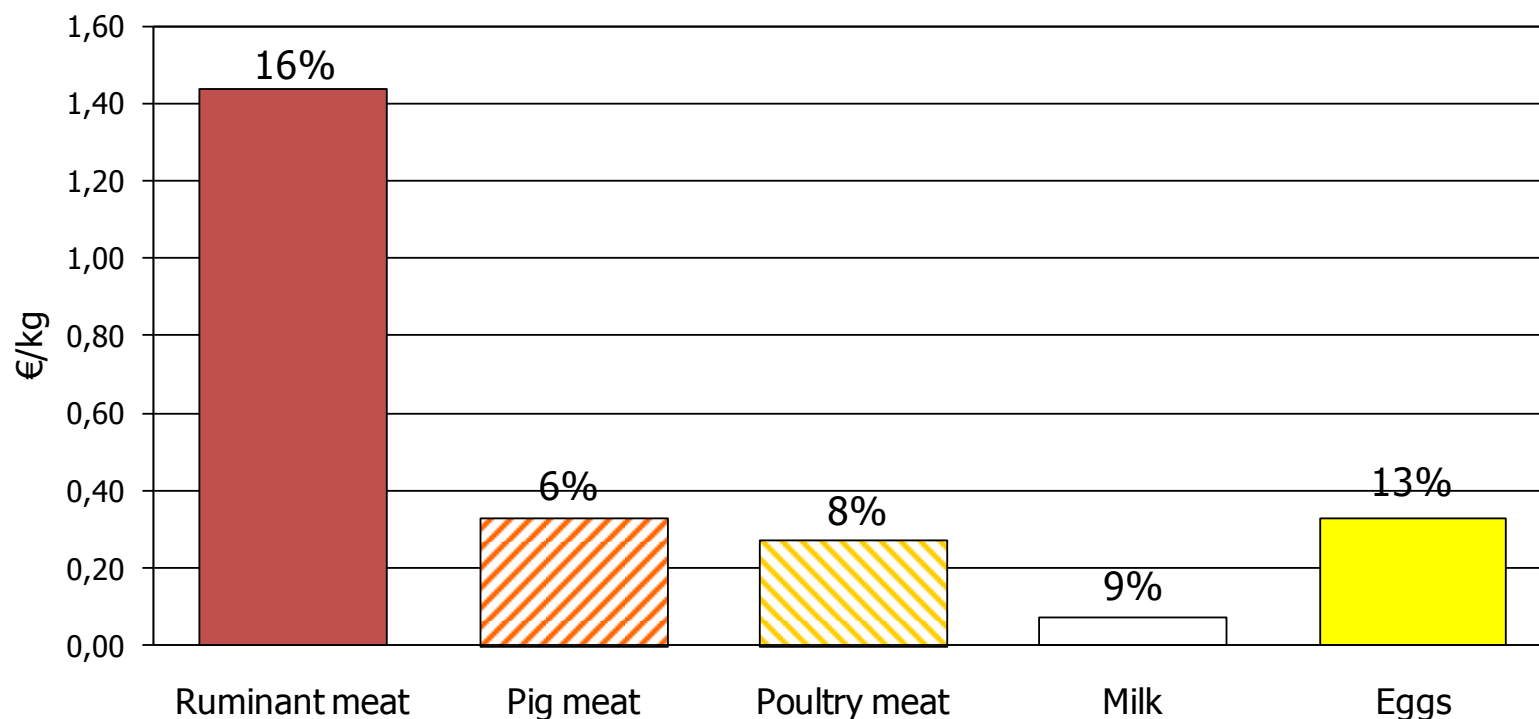
Consumption tax for food in the EU

- Consumption taxes on food, differentiated for their emission intensity is likely more cost-effective than emission taxes.
 - a) Farm-level monitoring of methane and nitrous oxide is extremely difficult and expensive.
 - b) Potentials for emission reductions of methane and nitrous oxide in agriculture is limited.
 - c) Substitution possibilities between similar kinds of food is substantial
 - d) Imported products do not get a advantage over domestic products.

Greenhouse gas emissions per kcal of food



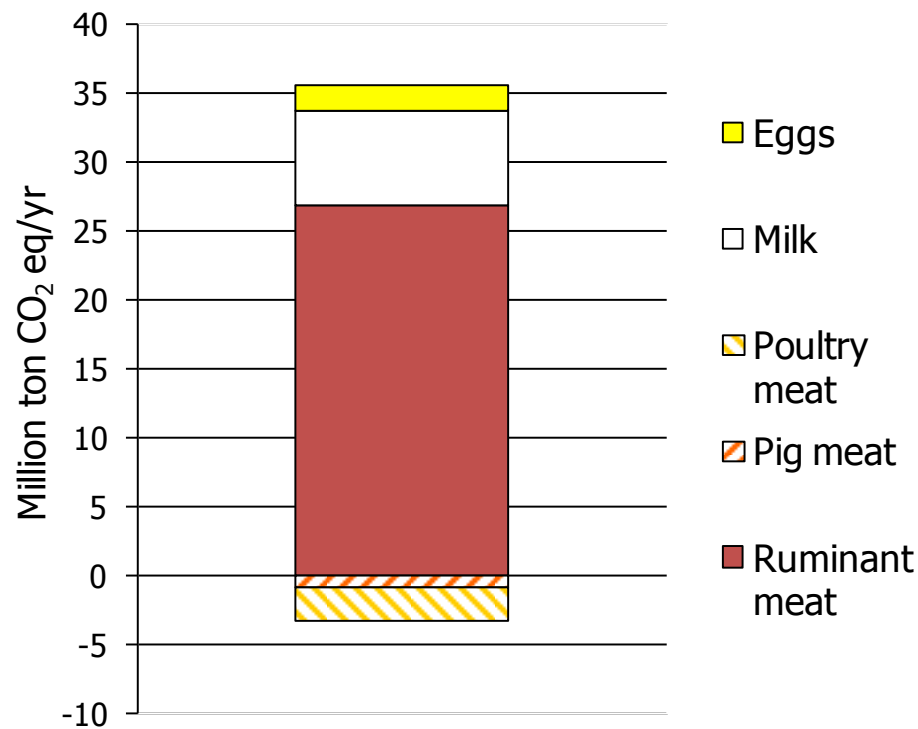
Differentiated consumption tax on animal food based on average emission per kg of food. (60 €/ton CO₂-eq)



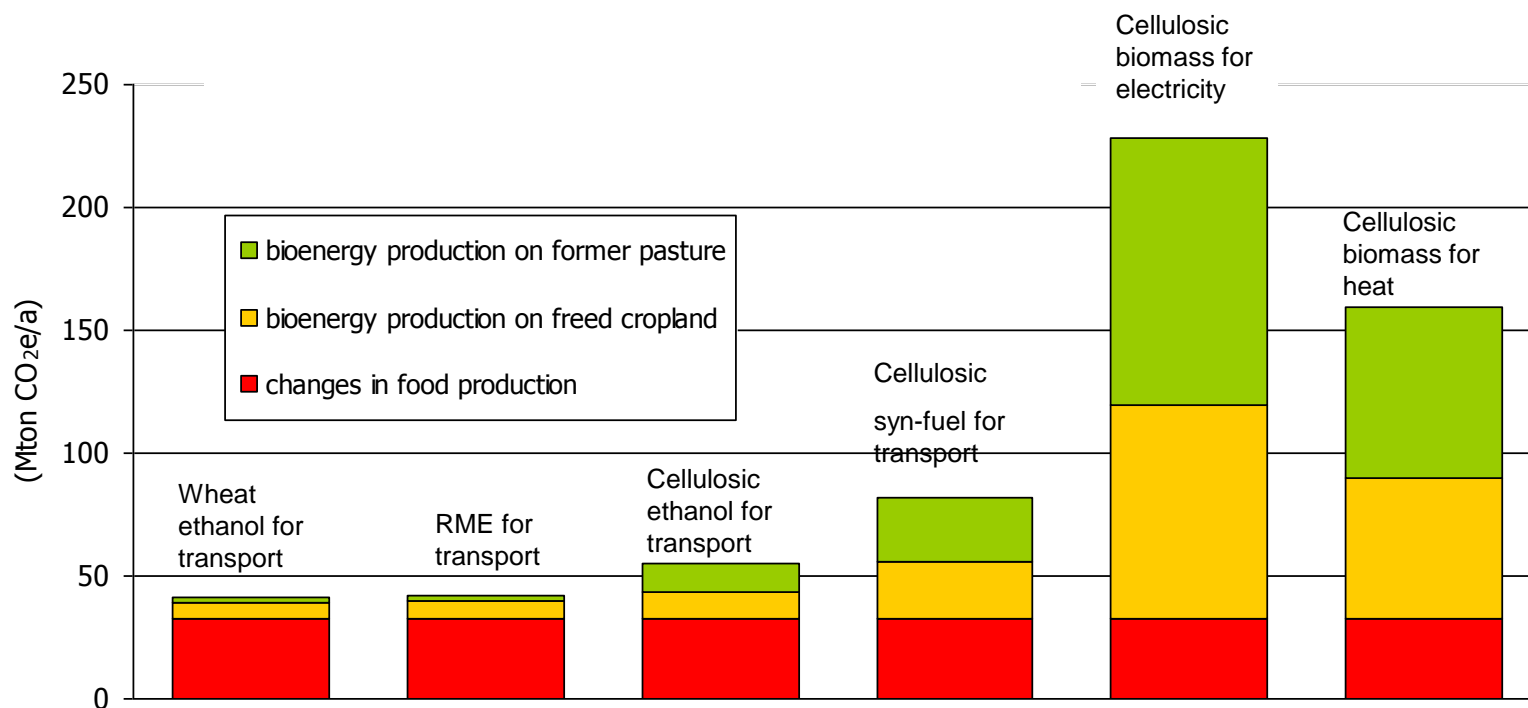
Model

- EU-consumption of food
- Cross-price elasticities for food categories
- Consumption changes cause changes in production within the EU
- Surplus land due to reduced animal food consumption may be used for bioenergy

Emission reductions for a GHG consumption tax on animal food equivalent to €60 per ton CO₂eq.



Emission reductions by bioenergy production on freed land and changes in food production



Wirsenius, Hedenus, Mohlin (2011)

Grazing och biodiversitet

Grazing can be vital for preserving biodiversity

- A climate tax on food would reduce the number of ruminants
- Support for grazing on high biodiversity land will be necessary in many cases also without a climate tax
- Focus should be on support to cattle production in certain areas, not general high consumption



Some common objections

Argument

Does not give incentives for farmers to reduce emission

Hits low-income households the most

Reform CAP instead

What we eat is private

Politically infeasible

Counter argument

Should be complemented with requirement for manure handling and measures for improved nitrogen efficiency

Redistribution of taxes

CAP mainly affects where production takes place, less how much that is consumed

Yes, but all have to pay their environmental costs.

Who thought that we would have a 200% gasoline tax in 1970?

Conclusions

Greenhouse gas weighted consumption tax on food may be a cost-effective climate policy

An output tax corresponding to 60 €/ton CO₂ results in

- EU agricultural emissions reduced by 5 %
- 7 times larger emission reduction if freed land are planted with bioenergy used for electricity

Supplementary policies needed to exploit the technical mitigation potentials

Land requirement per produced unit of food

