



Global demand for food in 2030: How climate policy and bioenergy might change demand structure

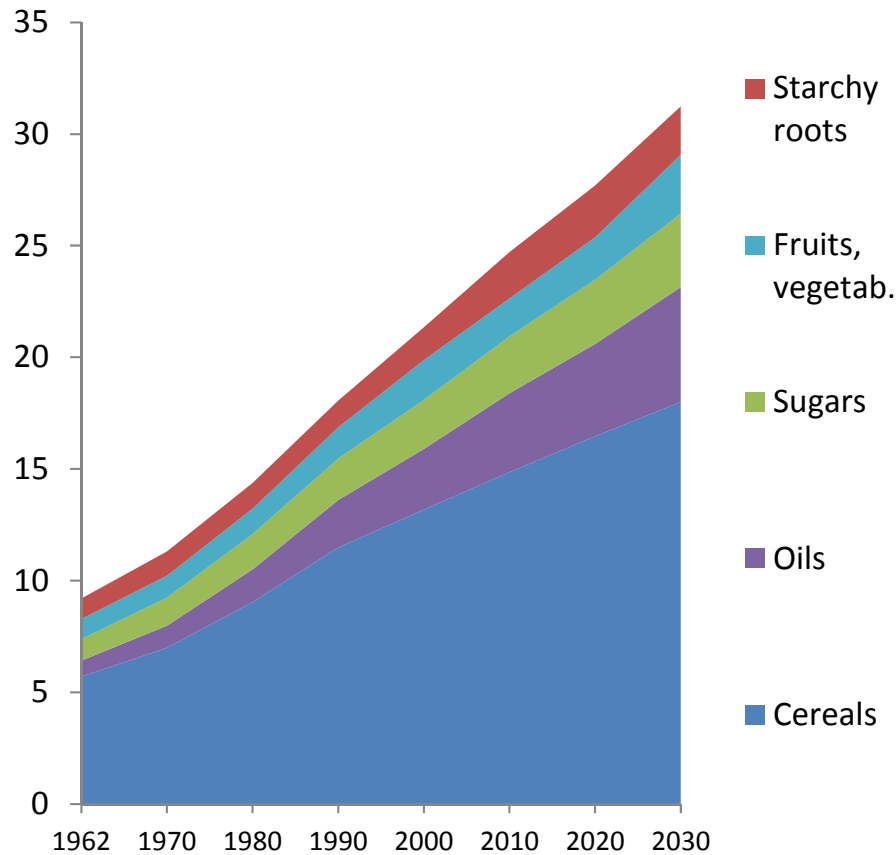
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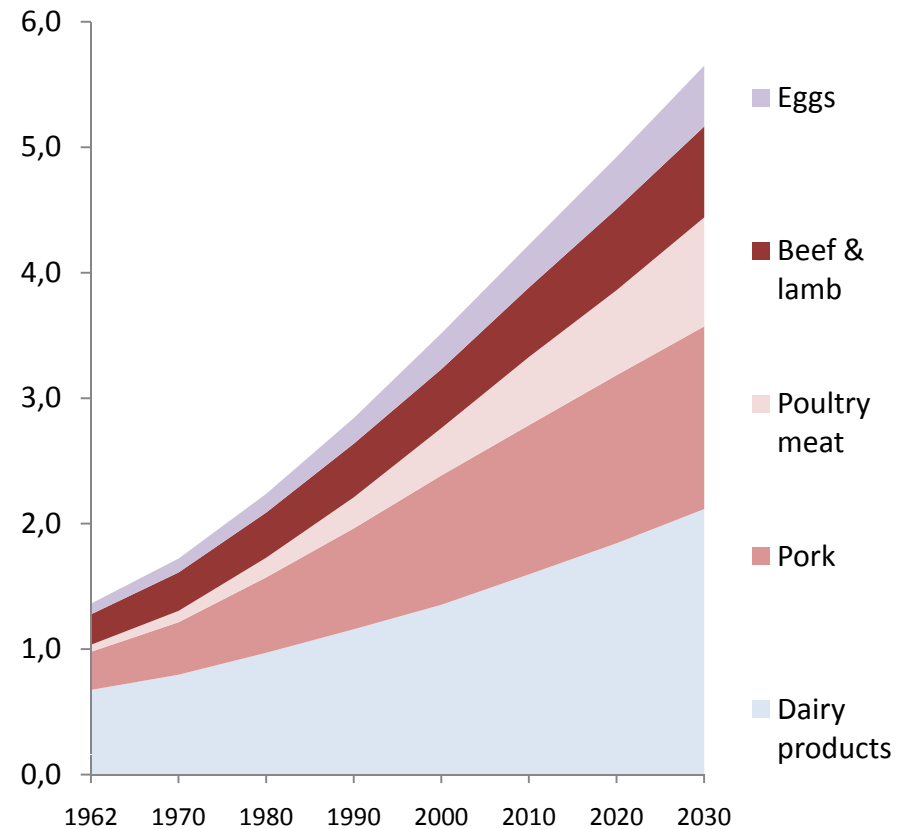


Demand projections to 2030 by the FAO

Vegetable food (Exajoule ME/yr)



Animal food (Exajoule ME/yr)

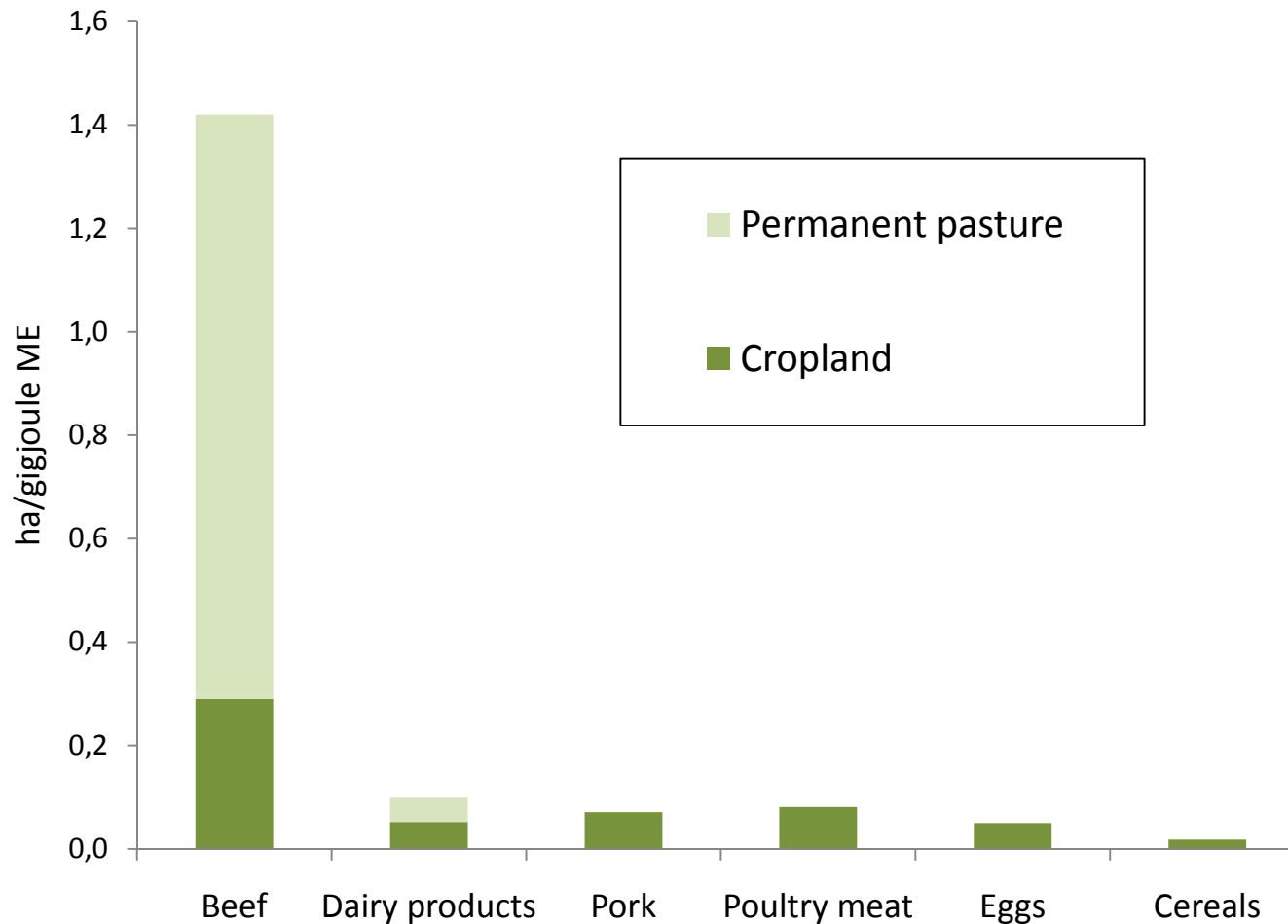


Source: Compiled from Bruinsma (2003)

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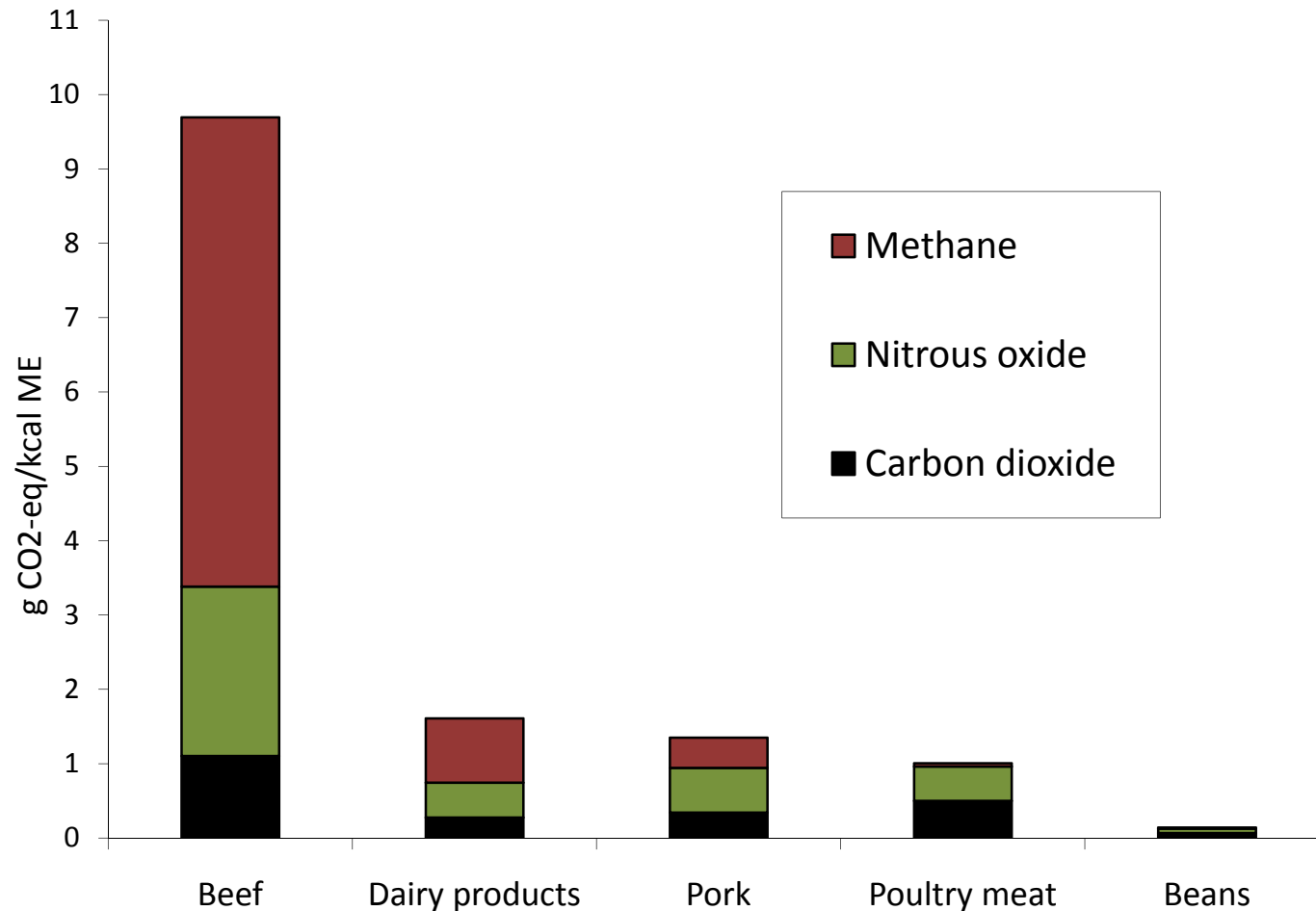


Background 1: Land requirements per unit of food (aver. for EU27, 2005)





Background 2: Greenhouse gas emissions per unit of food (aver. for EU27, 2005)



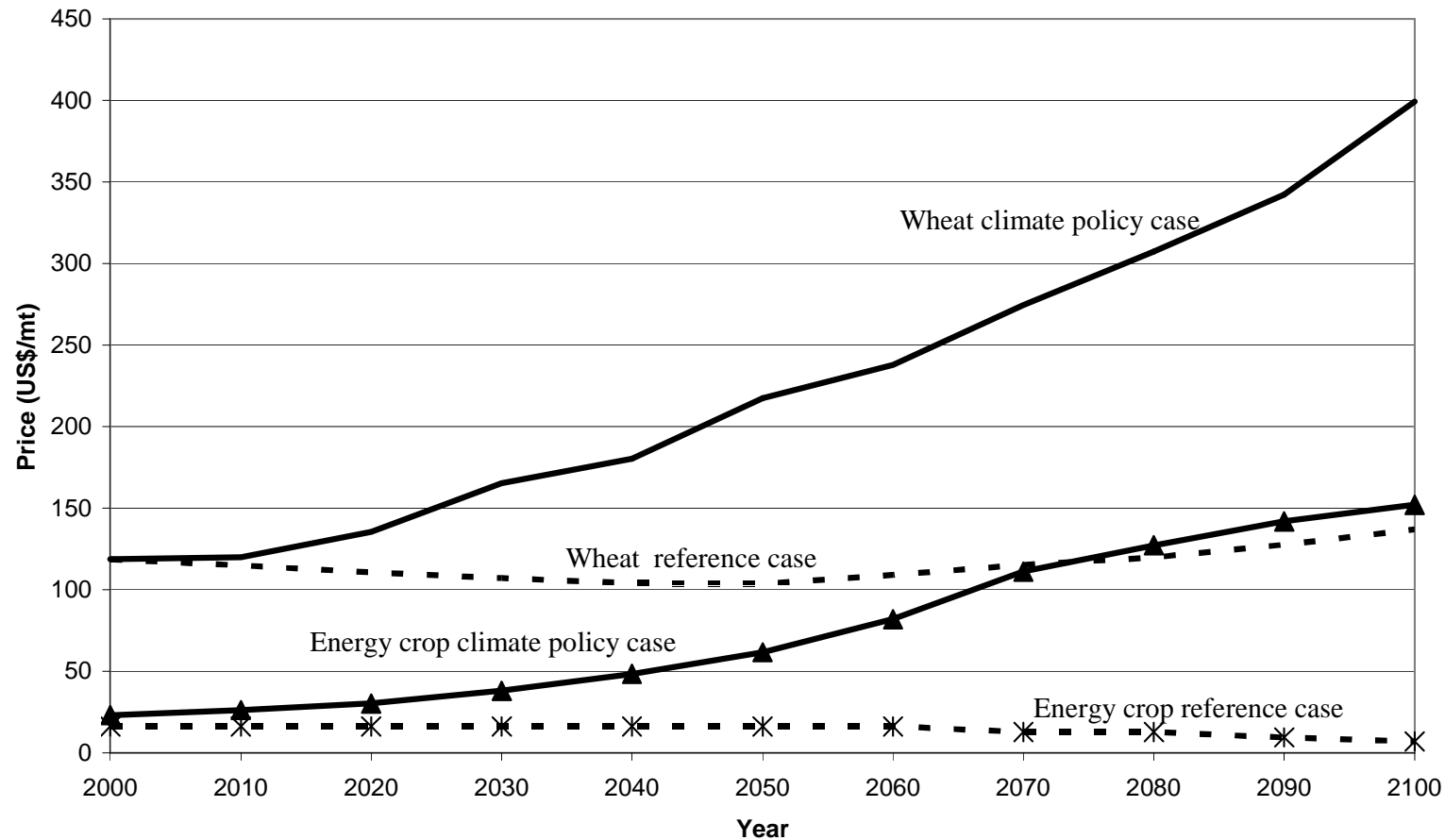


Some upcoming factors that may influence long-term food demand

- Stringent climate mitigation policies
 - Higher CO₂ costs in the energy and transport sectors
→ bioenergy more competitive → higher land rents
 - Internalization of emission costs in the agricultural sector
 - Halt of deforestation
- Even higher oil prices
 - Multiple effects, incl. making bioenergy more competitive
- Faster development and dispersion of high-productivity and low-emitting livestock systems

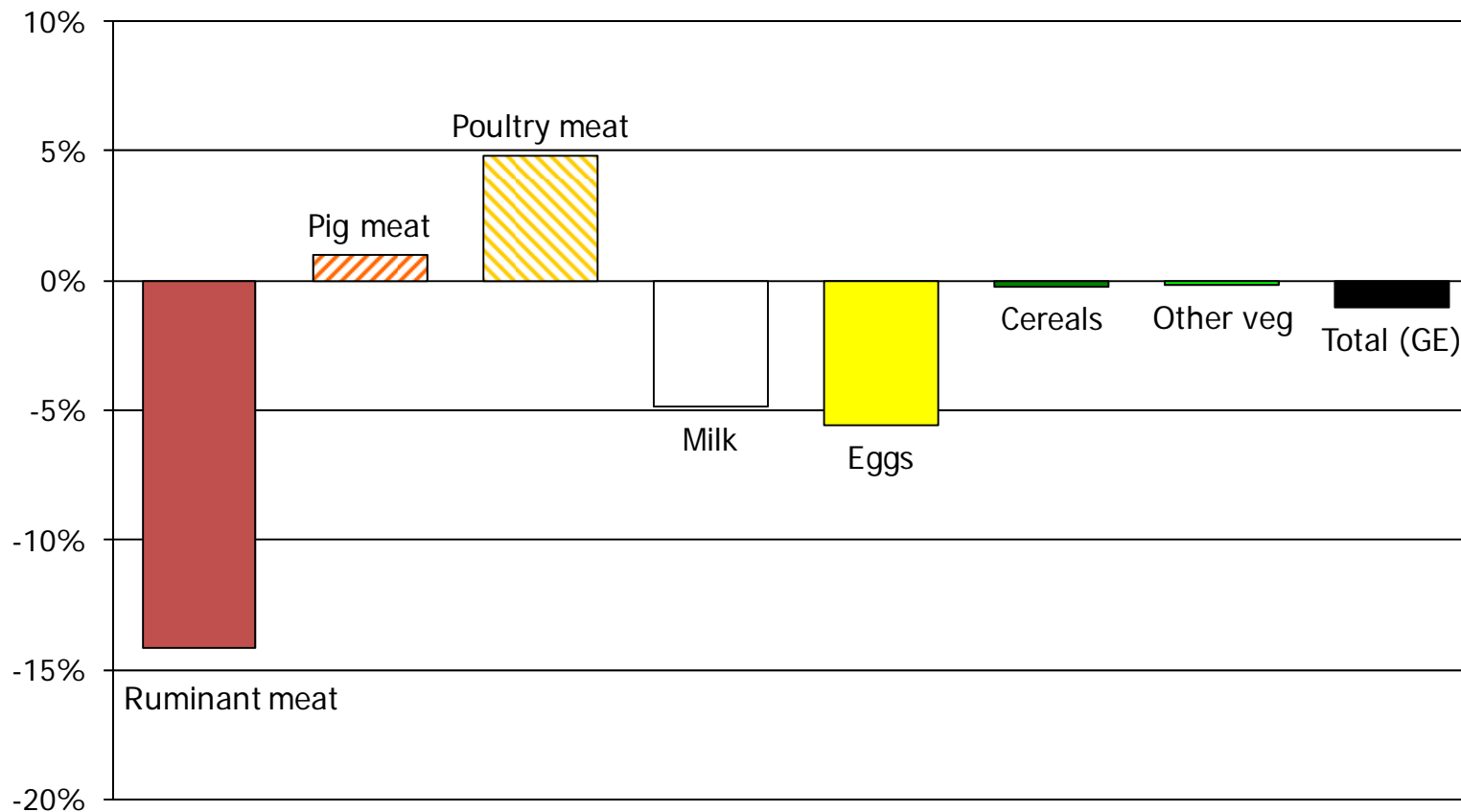


Example of climate policy effects I: Estimated US farm gate prices for wheat at increasing CO₂ costs for energy



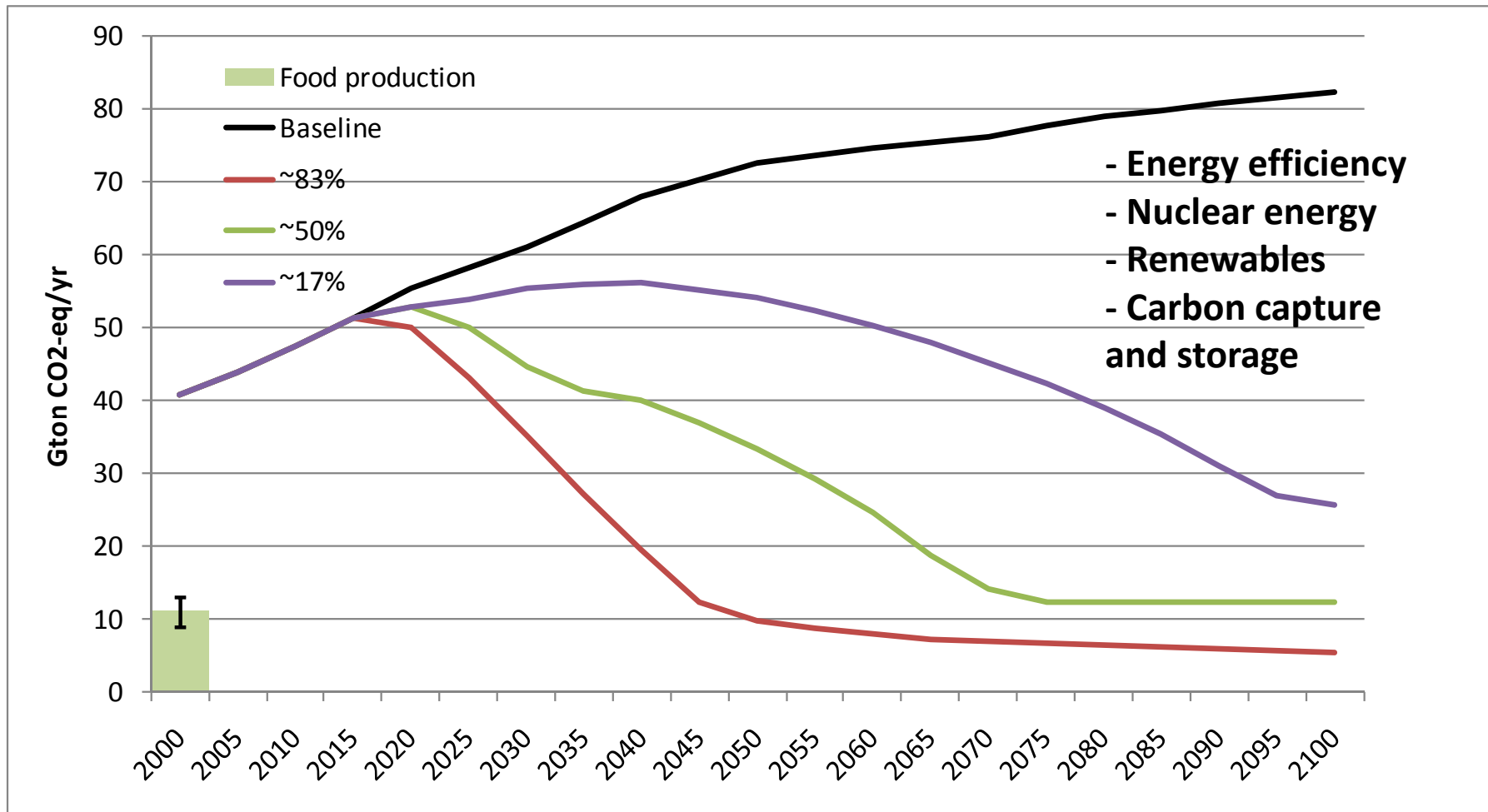


Example of climate policy effects II: Changes in EU27 food demand for a emission cost at €60/ton CO₂eq





Emissions from agriculture might be critical for meeting a 2 degree target

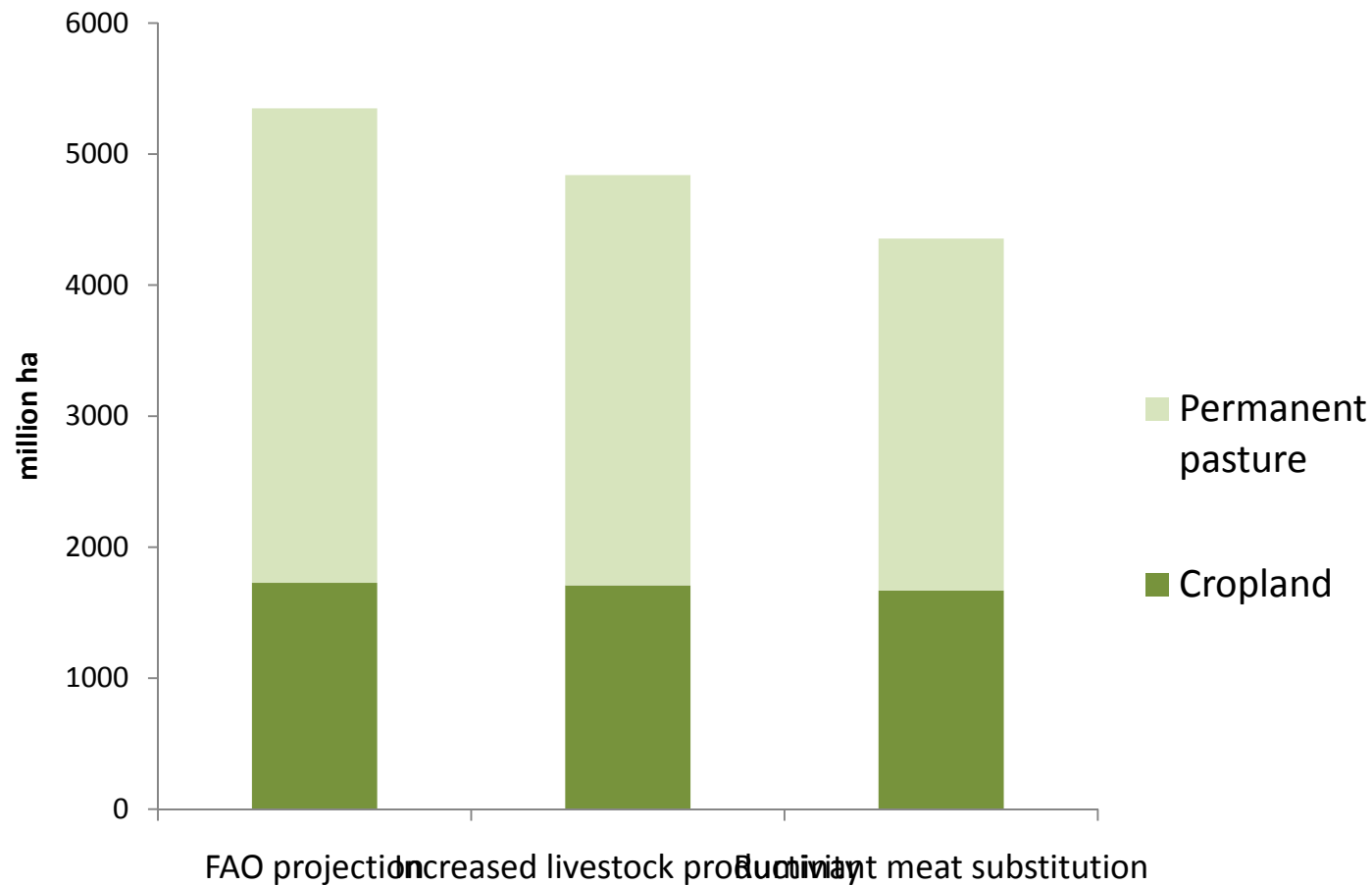


Source: Hedenus, Wirsenius, Johansson (2010)

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Example of possible effects of stringent climate policies: Scenarios of global land use for food in 2030





Conclusion

- The implementation of stringent climate policies is likely to entail significant changes in food demand, especially as regards meat and milk
- The magnitude of such demand changes will depend on producer's ability to respond to higher land rents and emissions costs by:
 - raising productivity
 - developing and adopting new technology