



Agriculture ... the joker in mitigation?

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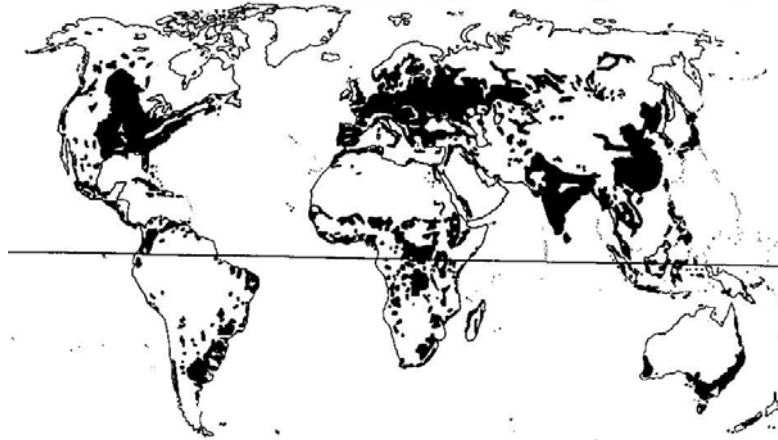
Themes

- **A little geography and history**
- Mitigation
- What does agriculture need?

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Global agroecosystems

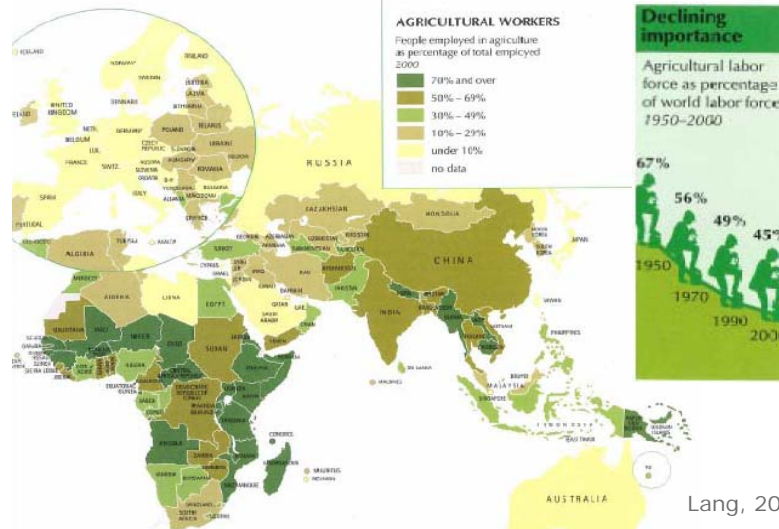


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Evans 1998



The global agricultural workforce

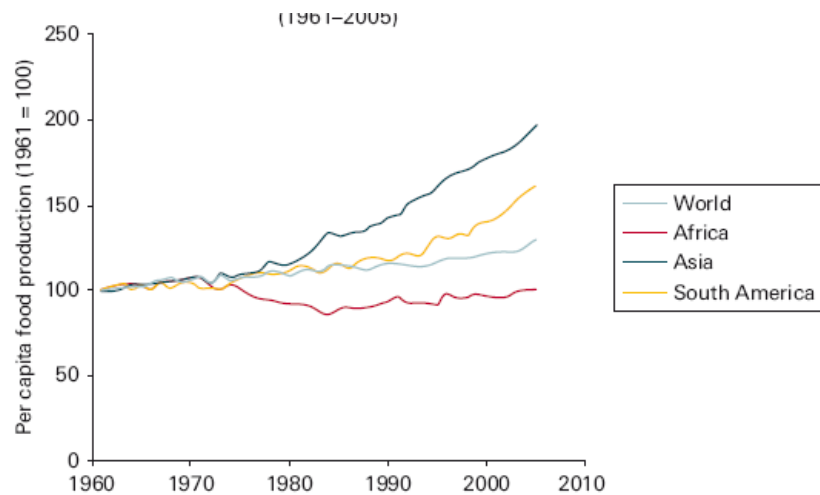


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Lang, 2007



Agricultural production per capita: 1961 to 2005



Royal Soc 2009



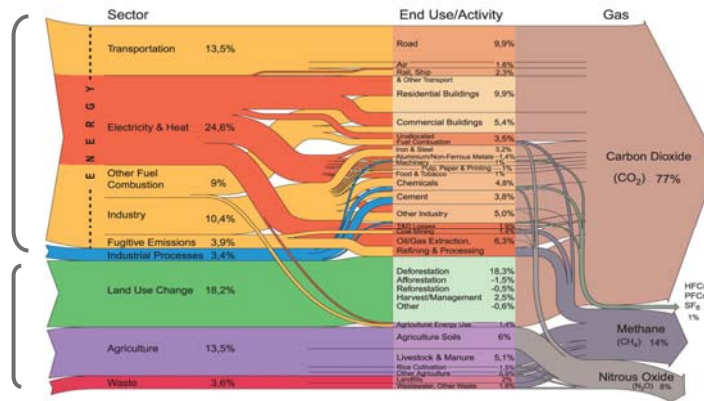
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GHG emissions by sector

World Greenhouse gas emissions by sector



All data is for 2000. All calculations are based on CO₂ equivalents, using 100-year global warming potentials from the IPCC (1996), based on a total global estimate of 41 755 MtCO₂ equivalent. Land use change includes both emissions and absorptions. Dotted lines represent flows of less than 0.1% percent of total GHG emissions.

Source: World Resources Institute, Climate Analysis Indicator Tool (CAIT), Navigating the Numbers: Greenhouse Gas Data and International Climate Policy, December 2005; Intergovernmental Panel on Climate Change, 1996 (data for 2000).

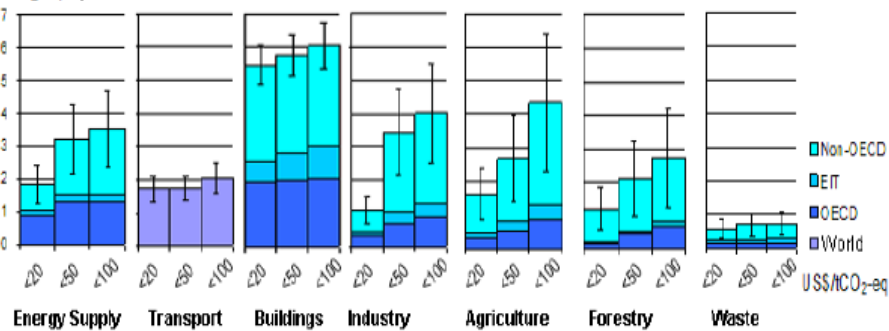
Udby

(Fig. UNEP)



GHG mitigation in sectors

GtCO₂-eq / year



IPCC, 2007

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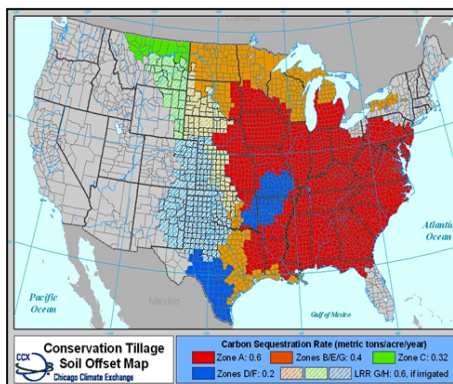
What makes a good carbon offset?

- Additional
- No Leakage
- Measurable
- Permanent
- Transparent
- Verifiable by a third party

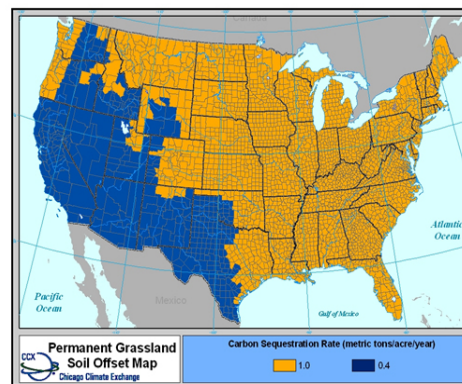


The US agricultural C market

Conservation Tillage



Permanent Grassland



Canadell 2009



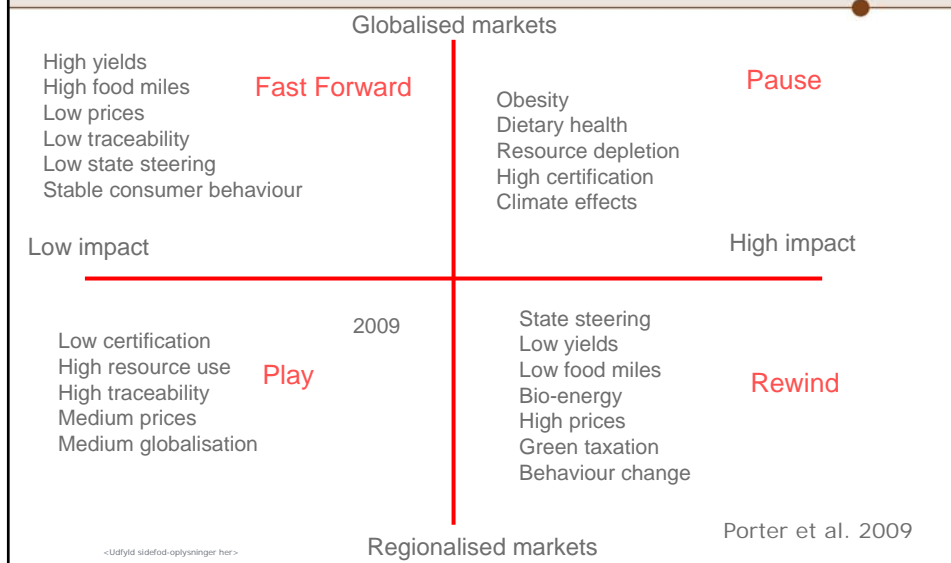
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- **What does agriculture REALLY need?**

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1. Global agricultural future scenarios





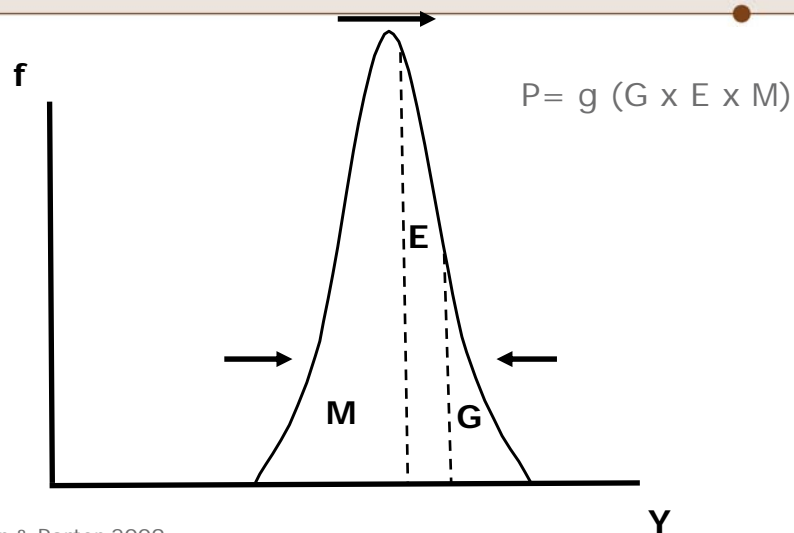
Scenarios summary

- Fast-forward: Leads to increased globalisation and deals with problems as they arise.
- Pause: Hold technology at current levels and accept the limits to growth.
- Play: Regional markets continue and problems dealt with piecemeal.
- Rewind: Strong legislative framework, centralised and highly regional.

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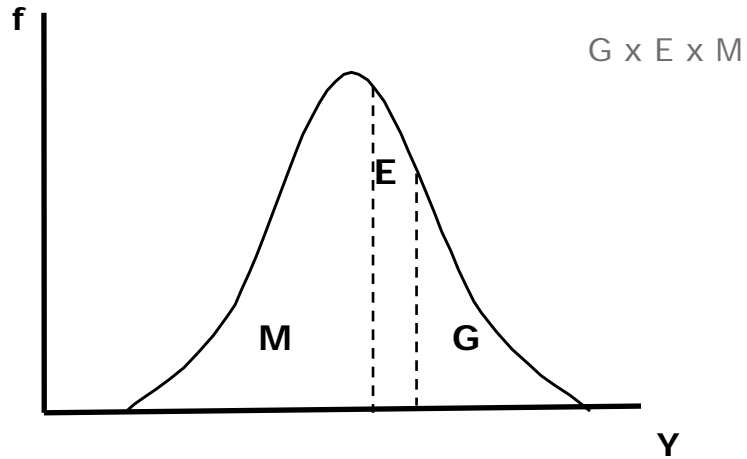
2. The factors of production of food - GxExM



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More variable and lower yields – adaptation??

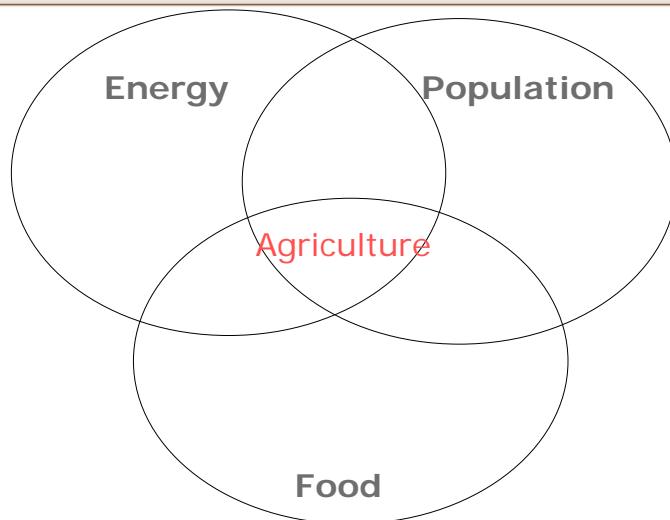


Porter et al, unpubl

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Issues for the 21st Century



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