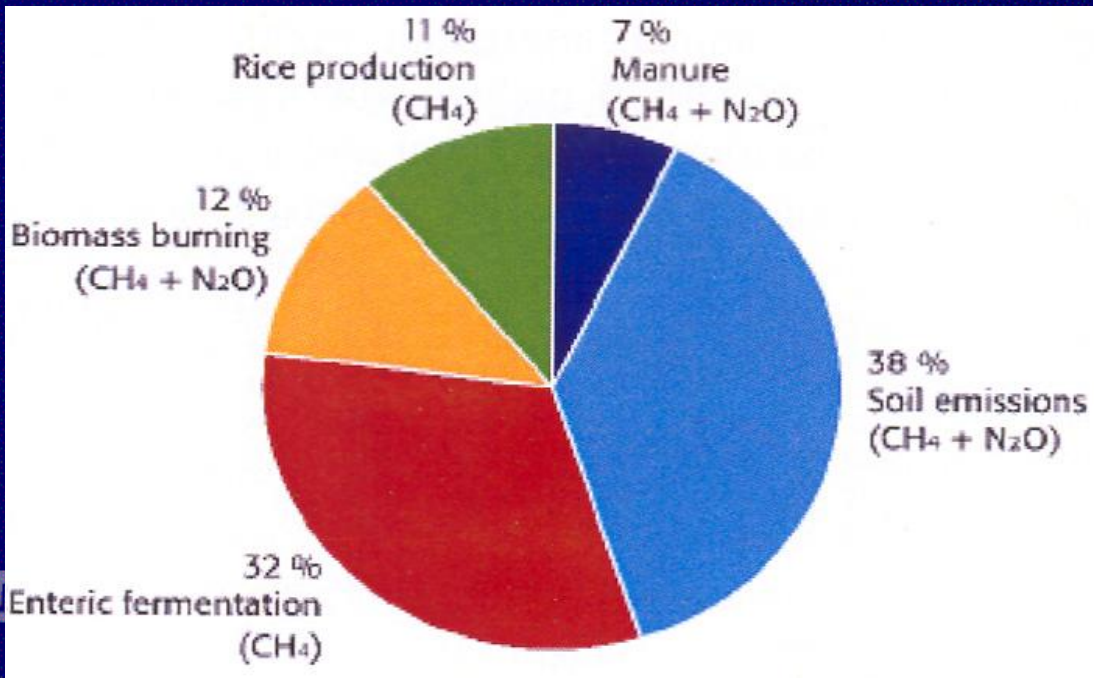
Organic Agriculture and Climate Change

Organic Asia Conference 2008
Kuching, 28-31 October 2008
Presented by: Ulrich HOFFMANN
UNCTAD secretariat

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

Greenhouse Gas Emissions in Agriculture

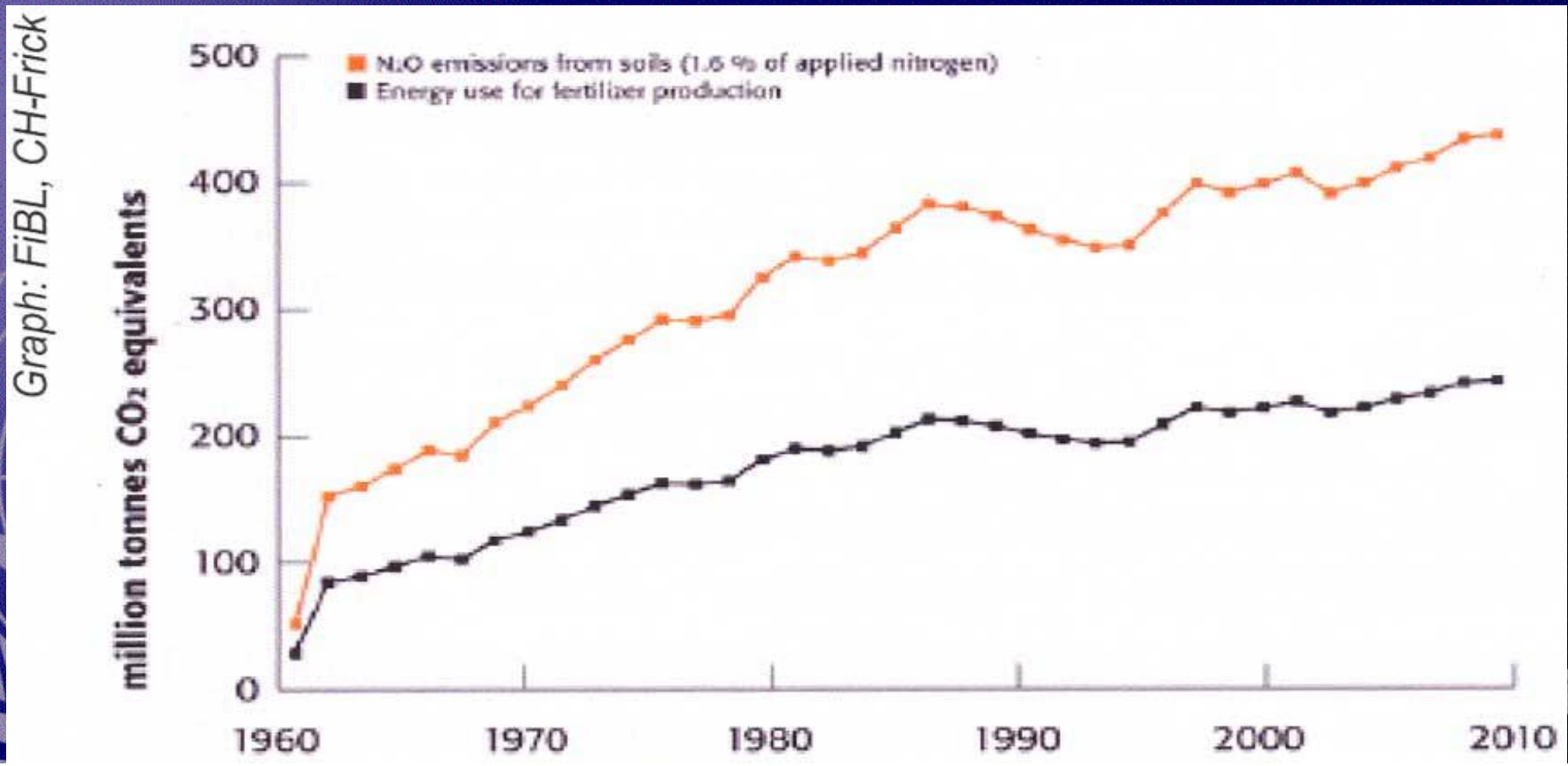
- Agriculture accounts for 13.5% of global GHGE
- Does not include carbon emissions from synthetic fertilizer production (included in chemical industry); GHGE of all sectors related to food production would account for 25-30% of global GGE
- Of agricultural GHGE: Methane – 50%; Nitrous Oxide – 49%, CO2 –1%
  Methane = 20x CO2; Nitrous Oxides = 300x CO2



Potential of OA to Mitigate Climate Change

1. OA has considerable potential for reducing GHGE
2. OA improves soil fertility, which leads to stabilization of soil organic matter – sequestration of CO2 into the soils

Energy Use for Fertilizer Production and Nitrous Oxide Emissions from Soil



Potential to Reduce GGE

Carbon Sequestration – Higher Soil Organic Matter Content

- Conversion from conventional to organic farming would result in increase of soil organic matter of 100-400 kg per ha annually during the first 50 years
- Farming trials in the US have shown that soil organic carbon concentrations under OA are some 15% higher than in conventional systems

Better Adaptation to Climate Change under OA

- CLIMATE CHANGE LEADS TO: Weather extremes will become predominant. Enhanced resilience and adaptiveness are new requirements gaining importance for innovation in agriculture
- Higher soil fertility under OA puts farmers in a better position to maintain productivity in case of droughts, irregular rainfall, floods & rising temperatures
- Also important: “sponge properties” of organic matter (water assimilation of top soil layer is about 15-20% better ; water capture on organic plots during torrential rains was twice as high as on conventional plots)
- High level of diversity of organic farms results in significantly enhanced farm resilience

Weaknesses of OA in the Climate Change Context

- Productivity – GHGE ration:
  - GHGE per land area under OA is lower than in conventional agriculture
  - GHGE per unit of crop/livestock yield is higher under OA than in conventional agriculture, in particular for potatoes, grape fruit, horticultural crops (pest, disease and weed management problems for these crops have not yet been satisfactorily resolved)

  HOWEVER: OA yields tend to be higher in water-constrained areas
- High dependence on nutrients derived from livestock (leads to higher methane-emissions)

Carbon Offset Credits for Organic Farming?

- Clean Development Mechanism currently limits eligible agricultural mitigation projects to land use changes and forestation
  - CO_2 sequestration in soils and lower nitrous oxide emissions are excluded, because they are considered temporary (land-use changes could release them again)
- Only biogas facilities could currently qualify as CDM project
- Voluntary CO_2 offset markets can be used (World Bank's BioCarbon Fund, Chicago Climate Exchange, European Climate Exchange) – emission certificates are however traded below CDM CO_2 market prices, i.e. below US$ 20-30
- Strict and technically sound guidelines for the execution of voluntary carbon reduction projects are needed (such as the Voluntary Carbon Standard, published in November 2007)
- CDM rules should be improved to encourage small farmer participation and reduce their transaction costs

For more detail see:

ITC – FiBL Study

Organic Farming and Climate Change

www.intracen.org