iisd International Institute for Sustainable Development / Institut international du développement durable

http://www.iisd.org

International Carbon Market Mechanisms and Agriculture: Is there Any Role for (Organic) Farming?

Matthew McCandless

Organic Agriculture and Climate Change
September 29, 2009
Sofia, Bulgaria

Better living for all—sustainably

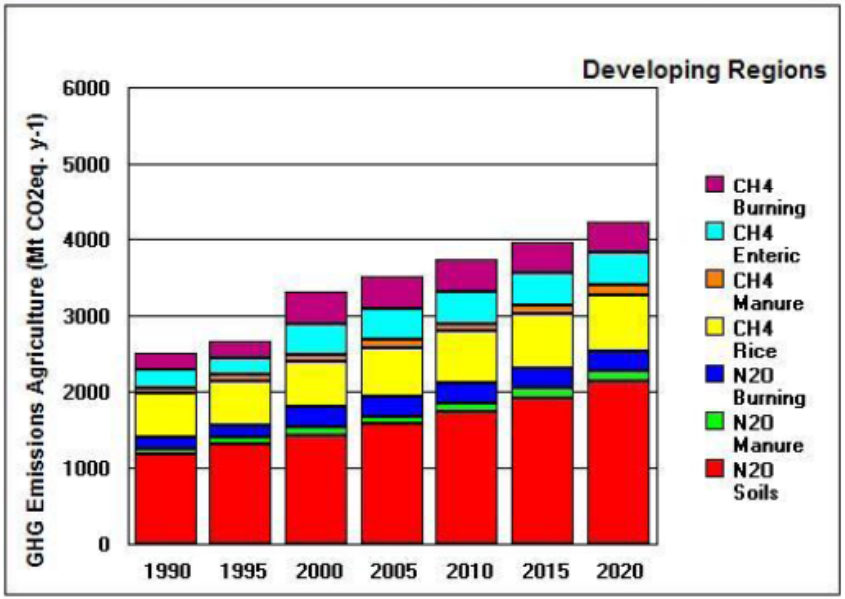
Agriculture and Climate Change

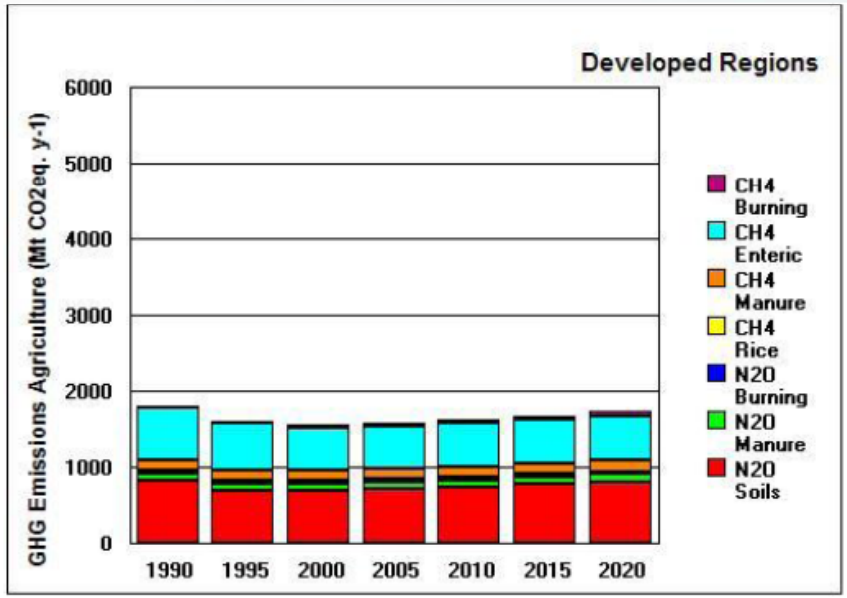
- Agriculture accounts for 40-50% of Earth's surface area
- 10-12% of global GHG emissions
- 5.1 to 6.1 Gt of CO_2 eq. per year presently
  - 50% of CH_4 (GWP_{100}: 25)
  - 60% of N_2O (GWP_{100}: 298)
- CH_4 and N_2O emissions have increased 17% from 1990 to 2005, and are projected to increase by 13% per decade

Agriculture and Climate Change

- Agriculture is unique in that it can influence many other environmental factors (EGS)
- Agricultural emissions must continue to increase to feed a growing global population
- Mitigation practices also foster additional SD benefits (economic, social, environmental)
- Agricultural mitigation and adaptation can occur simultaneously

Agriculture and Climate Change





1990-2005:
Developed countries, EIT: -12%
Developing countries: +32%

(source: Martino 2009)

Agriculture and Greenhouse Gases

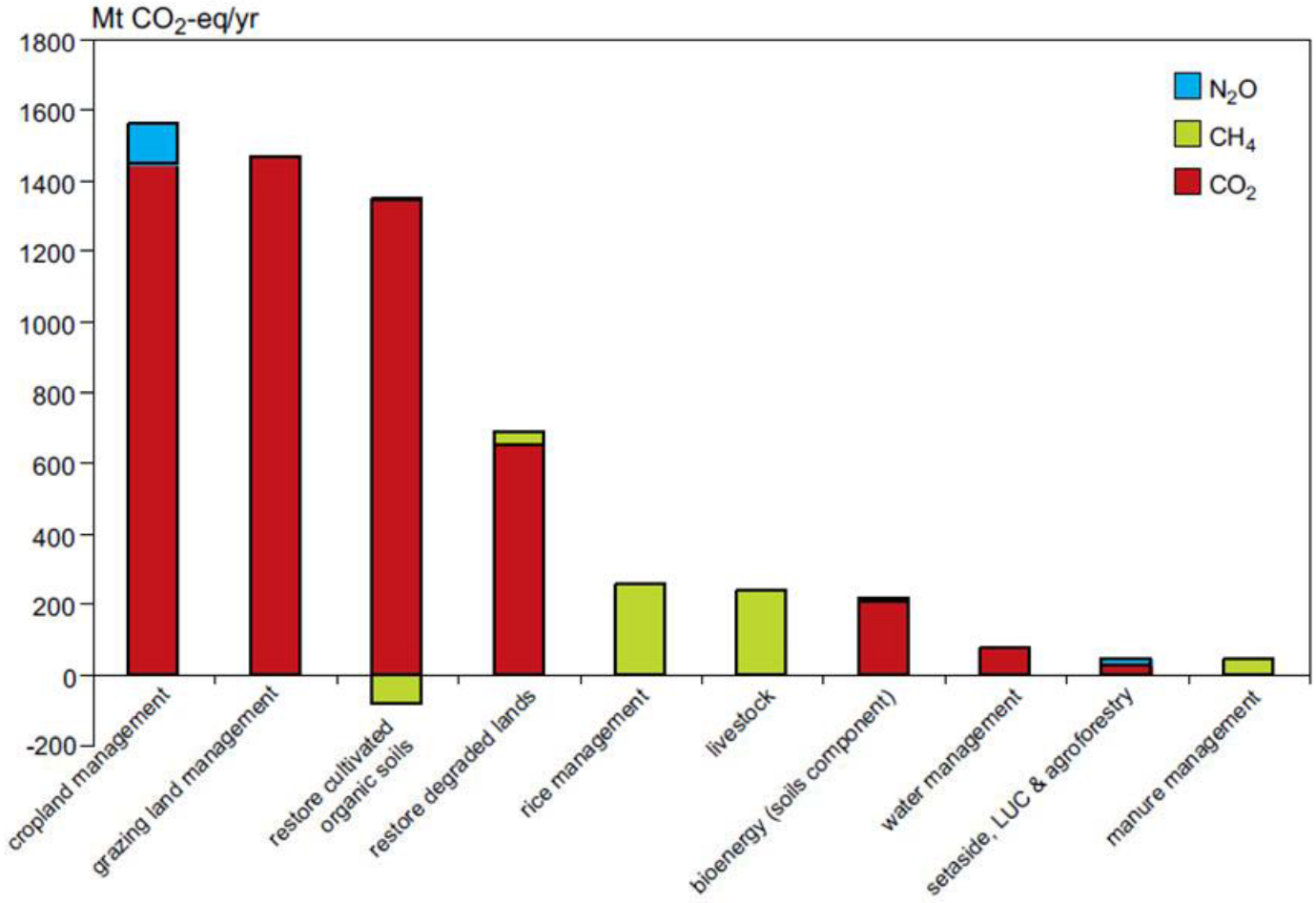
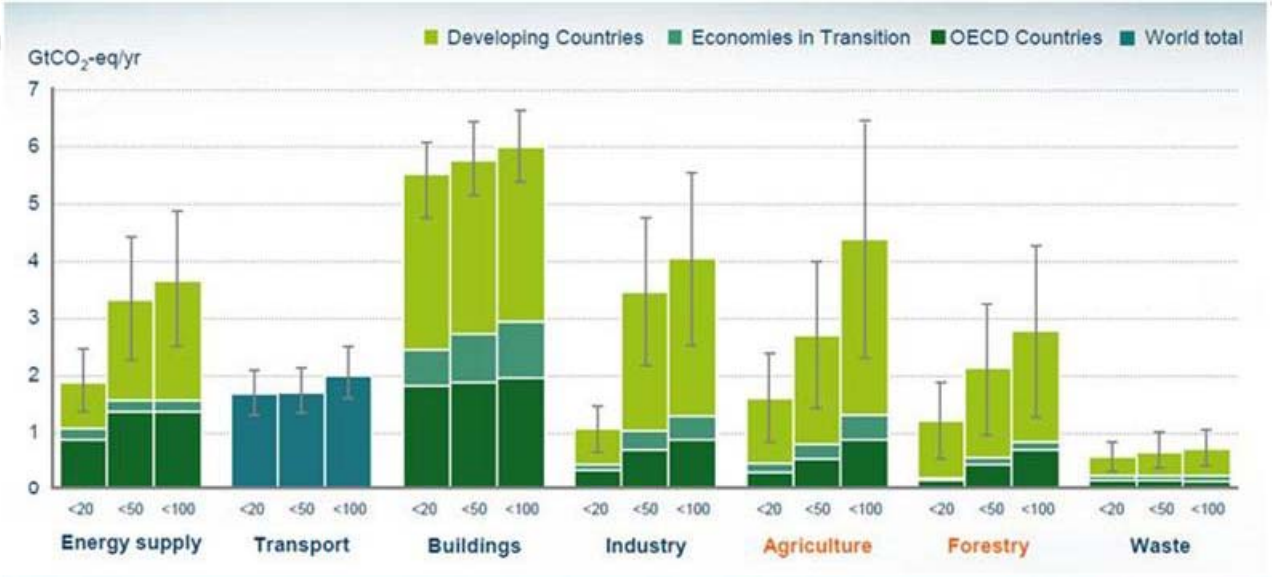
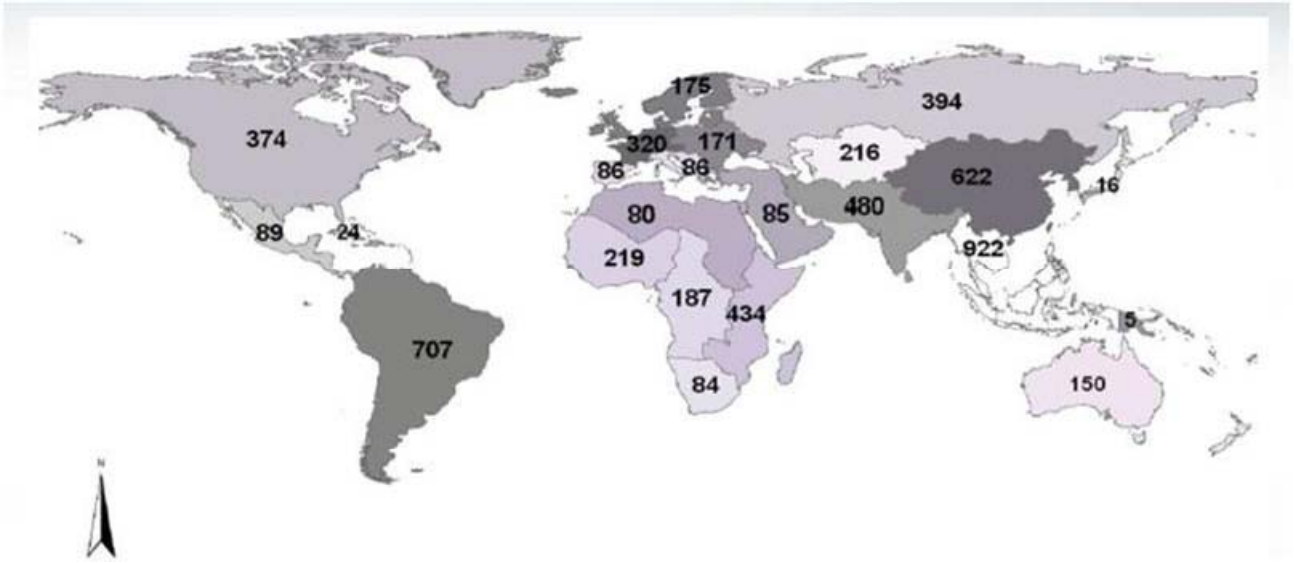


Figure 8.4: *Global technical mitigation potential by 2030 of each agricultural management practice showing the impacts of each practice on each GHG.*
Note: based on the B2 scenario though the pattern is similar for all SRES scenarios.

(source: Smith et al, IPCC 2007)

Agriculture and Greenhouse Gases





(source: Martino 2009)

Agriculture and Climate Change

	Economic Potential 2030 ($GtCO_2$-eq/yr)	
Carbon price (US/tCO_2-eq)	**Agriculture**	**Forests**
20	**1.6** (0.3-2.4)	**1.2** (0.5-1.8)
50	**2.7** (1.5-3.9)	**2.1** (0.9-3.2)
100	**4.4** (2.3-6.4)	**2.7** (1.3-4.2)
Emissions 2030	**8.2**	**5.8**

(source: Martino 2009)

- Relative contribution of Agriculture + Forestry to total mitigation potential

US$ 20/tCO2 –21%
US$ 50/tCO2 –32%
US$ 100/tCO2 –45%

Kyoto Protocol

Credits must be:

- Real
- Additional
- Quantifiable
- Based on a realistic baseline
- Quantifiable
- Verifiable

- Address leakage
- Address permanence

Agriculture and Kyoto

Annex 1 Countries

- Agriculture was included for Annex 1 countries
- Agriculture category
  - CH_4 and N_2O
- LULUCF cropland category
  - CO_2 emissions
- Agricultural mitigation programs are in place or in development in many places: Australia, Canada, Alberta, US (proposed under Waxman-Markey), WCI, MGA, CCX

Agriculture and Kyoto

Non-annex 1 Countries

- Largely excluded
- CDM allows for afforestation/reforestation only
  - Uptake of forestry has been low in CDM

Kyoto Protocol

- Barriers preventing wider scale inclusion
  - Permanence
  - MRV
  - Renewable energy interests who need a high carbon price
  - Environmentalists who want reductions in industrial emissions

Agriculture after Kyoto

Shared Vision

" With land used being linked to sustainable development, adaptation, mitigation, agriculture plays an important role, especially in the context of food security and poverty reduction. Therefore, adaptation as well as mitigation efforts in the AFOLU sector are required to enable substantial increase in production and productivity needed for ensuring food security. Reducing GHG emissions in agriculture is a challenging task and may thus require attention in the context of any shared vision for long-term cooperative action"

In support: most developed countries, UN-FAO, IFAP

Opposed: most developing countries

Agriculture after Kyoto

Expanded CDM

- The Clean Development Mechanism of the Kyoto Protocol presently includes projects on animal manure and bio-energy from waste. The CDM could be expanded to include agricultural LULUCF activities such as REDD, soil carbon, agroforestry, cropland and grazing management.

In support: some developed countries, most developing countries

Opposed: some developing countries (China, *Brazil*, AOSIS)

Agriculture after Kyoto

REDD-plus

- Drawn from the Bali Action plan and discussed primarily at the AWG-LCA table. A mechanism that would allow for compensation to governments, companies and forest owners to keep forests intact. This could include agricultural carbon enhancement activities in later phases

In support: many developing and developed countries

Opposed: Brazil (India and China are silent)

Agriculture after Kyoto

NAMAs

- Voluntary country-driven plan that a developing country intends to undertake in support of a low carbon development strategy, pursued either with developed country financing, or independently for the sale of credits. Inclusion of agriculture would be at the discretion of the countries.

In support: most developed countries, most developing countries, some making distinction for agriculture (Uruguay, EU, UN-FAO, Brazil, China, India, Malawi)

Agriculture after Kyoto

Other Inclusion Options

- Cooperative sectoral approaches
- Adaptation frameworks and funds
- Discrete agreement within UNFCCC
- Research partnerships and networks

Organic Farming

- Agricultural mitigation is typically assessed on a practice by practice basis
- Opinions are mixed to whether organic farming is more GHG efficient (more efficient on an area basis, less efficient per unit of output – UNCTAD-WTO)
- Organic practices are becoming increasingly GHG efficient
  - crimping
- Organic may offer additional adaptation and sustainability benefits
  - preserving and improving soil quality
  - minimizing water use
  - preserving biodiversity
  - halting the use of harmful chemicals

(photo: Organic Food Council of Manitoba)

Organic Farming

- Organic farming in developed countries may be well positioned to influence GHG reductions in developing countries, especially those that have not embraced industrial agriculture
- The world will need to increase food output if it its to feed a global population expected to reach 9 billion by 2050
- By linking productivity with ecology, organic agriculture will play a role in ensuring that the increase in production is done sustainably, and efficiently

(photos: Organic Food Council of Manitoba)

Organic Farming

To increase the participation and recognition of organic agriculture in global mitigation efforts it is important to:

- Continue research on the benefits of organic practices
- Publicize findings of this research
- Develop protocols for estimating reductions
- Lobby governments for inclusion of these protocols in climate change policies

(photo: Organic Food Council of Manitoba)

International Carbon Market Mechanisms: is there Any Role for (Organic) Farming?

International Carbon Market Mechanisms: is there Any Role for (Organic) Farming?

We’ll know next year..

Thank you!

Matt McCandless
Project Manager
Climate Change and Energy
International Institute for Sustainable Development
Winnipeg, Manitoba
CANADA
+1 204 958 7729
mmccandless@iisd.ca

http://www.iisd.org

(photo: Organic Food Council of Manitoba)