Farming for the Future

the environmental sustainability of agriculture in a changing world

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The Global Food System in 2050
35% increase in food production by 2030 (FAO)

4.5% income growth per year for smallholders farmers in poorer countries (to end poverty)

Improved health outcomes
- Reduced undernourishment and child stunting
- Reduced obesity

Sustainable use of natural resources – land, water, biodiversity, atmosphere
Projected Trends Will Not Get Us There

Increase in Food Production (%) by 2030

- Trend: +20%*
- Vision: +35%

* Trend assumes a 2°C warmer world by 2030 and an associated 10% reduction in food crop yields

Income Increase to 2030 (% per year)

- Trend: 2.5%*
- Vision: 4.5%*

* 2.5% is 10 yr trend growth (2003-2012) of agricultural labor productivity in low income countries projected forward to 2030; 4.5% is estimated agricultural incomes gains of the poor needed to end poverty by 2030.

Health Outcomes (bn people) by 2030

- Trend: 0.5 Undernourished, 0.2 Obese
- Vision: 1.4 Undernourished, 0.7 Obese

* Trend assumes 8% undernourishment rate and 6.8 bn people in developing countries by 2030, Vision is 3%.

GHG Emissions from Agriculture (% change) by 2030

- Trend: +13%*
- Vision: -25%

* Trend: WRI estimates
Three Challenges
PRODUCTIVITY
Feeding 9 Billion People in 2050

Food Production by Region 1972-2050
(Constant 2004-06 US$)

Food Demand By Commodities in 2050 relative to 2005-07
(Billion kg per year)

CEA 2013 based on FAO 2012
ADAPTATION
Climate Change Impacts on Food Systems

Problems Today:
Short Term Volatility

Recent price spikes for food commodities have been linked to extreme weather events

Issues Tomorrow:
Medium Term Yield Losses and Increasing Cost Structures

Maize and wheat yields show climate impacts

Uncertain Future:
Production Collapse in the Longer Term

Maize and wheat yields show climate impacts

CCAFS 2014; World Bank 2008

1. Australia wheat. 2. US maize. 3. Russia wheat. 4. US wheat, India soy, Australia wheat. 5. Australia wheat. 6. Argentina maize, soy.
7. Russia wheat. 8. US maize.
EMISSIONS

Agriculture: Today

Land Use Change: ~11% of total
- Forest Land: 63%
- Cropland: 25%
- Burning Biomass: 11%

Total Emissions: ~13% of total
- Land Use Change: 11%
- Agriculture: 13%
- Buildings: 6.4%
- Transport: 14%
- Industry: 21%
- Other Energy: 9.6%
- Electricity & Heat Production: 25%

Agriculture Emissions:
- Livestock: 62%
  - Fertilization: 16%
  - Rice: 10%
  - Other: 12%

IPCC 2014
By 2050, Agriculture and Land Use Change could represent 70% of Global Emissions - if global emissions are reduced in accordance with a 2C goal, while Agriculture were to remain in business as usual.

By 2050, Agriculture will therefore have to reduce its emission intensity by 60%, if it is to maintain its footprint in parallel with overall emissions reductions. This already assumes emissions from Land Use Change will have fallen to zero.
Solutions
Agriculture Delivering Solutions by Focusing on Three Outcomes: Climate-Smart Agriculture (CSA)

- Increased Productivity
- Enhanced Resilience
- Lower Emissions
Romania can deliver the Triple Win ...

- Promoting climate-smart water management
- Applying good soil management practices
- Strengthening the agriculture risk management tools
- Further refining the agriculture information systems (e.g. prices)
- Differentiating policies to target sector development asymmetries
- Promoting carbon sequestration