Feeding 9 billion while reducing the environmental footprint

Can agriculture and forestry work together?

Bruce Campbell, Program Director CCAFS
Outline

• The three challenges
• Current status of forestry and agriculture in the UNFCCC?
• 4 key action points
• Conclusions
Challenge 1: Food security
Challenge 2: Adaptation
Length of growing season is likely to decline.

To 2090, taking 14 climate models

Four degree rise

Length of growing period (%)

Thornton et al. (2010) ILRI/CCAFS
Food prices are likely to increase…

Nelson et al., 2010  IFPRI/CCAFS
Climate change will add greatly to price increases...

Nelson et al., 2010  IFPRI/CCAFS
Climate change will add greatly to price increases...

% price increase 2010-2050

- Maize
- Rice
- Wheat

Optimistic, Baseline, Pessimistic

Economic effect
Climate effect

Nelson et al., 2010  IFPRI/CCAFS
Challenge 3: Reducing the ecological footprint
Greenhouse Gas Emissions

- Industry: 27%
- Electricity and heating: 24%
- Transport: 13%
- Land Cover change: 18%
- Agriculture: 14%
- Waste: 4%
Rockström et al. (2009); Bennett et al. (in prep.)

Role of Agriculture

Ocean acidification

Nitrogen cycle

Safe operating space

Climate change

Phosphorous cycle

Current status

Biodiversity loss

Global freshwater use

Change in land use

Rockström et al. (2009); Bennett et al. (in prep.)
“Freeze the footprint of food”
Jason Clay, July 21st 2011 Nature

OR redistributing the footprint?
Adaptation

Food security

Mitigation

X
Climate change adaptation will sometimes drive increases in emissions

- No rice planting before 15\textsuperscript{th} June
- Harvest rice in October; reincorporate residues
- Plant wheat in November
- But high temperatures in March dictate an earlier planting time for wheat
• 2 million hectares now being burnt
• CO2 and haze
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Forestry

• Well advanced in the negotiations (REDD+)
• Plenty of Early Action
• But very poor consideration of “agriculture as a driver of deforestation”
Article 2 UNFCCC:

“......stabilization of greenhouse gas concentrations ..... 

...... to ensure that food production is not threatened .....
What is needed?

• Text on agriculture and food security in the common vision for Long-Term Cooperative Action (LCA)

• An **agriculture work program** under the Subsidiary Body for Scientific and Technological Advice (SBSTA)

http://www.agricultureday.org/
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1. Integrated action across REDD+ and agriculture

• What is the role of commodity roundtables? (certification)

• How can incentives for smallholder agriculture be linked to compliance? (payments for environmental services vs. command and control)
2. ‘Climate-smart’ agriculture that achieves the triple-win will strengthen the impacts of REDD+.

- What technologies and approaches are the best bets?
- What are the landscape and livelihood outcomes of different options?
- What is needed for climate risk management?
Cellphone ownership

% of households

- Kenya
- Tanzania
- Uganda
- Ethiopia

- Male-headed
- Female-headed
3. Financing is currently insufficient for agriculture to tackle climate change and food security challenges in support of REDD+
Incentives for climate-smart solutions?

Wassmann et al. (2010) IRRI/CCAFS
Transformative adaptation

- Relocation of grape production or wineries to cooler regions
- Shifts to other crops
- Diversification
• What are the costs/benefits of the technologies and practices?
• How can incentives be put in place?
• When is transformative adaptation needed? And at what cost?
4. The role of forest-based ecosystem services in sustainable agriculture requires more recognition in land-use planning

• What ES are needed?
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Some really important policy-related questions are waiting to be answered.

Some significant policy advances are within our grasp for forests/agriculture.

THE Commission ON Sustainable Agriculture

AND Climate Change
Thank you

- Strength through variety? Seed systems in future climates
- Earth is a small REDD+ planet
- Adaptation: all talk and no action?
- Emissions efficiency: are some animals more equal than others?
- Fertilizing grounds for change in Chinese agriculture
- Hamburgers and yamburgers? Four-degree futures for food in Africa

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