

# Challenge of Climate Change for Agriculture and Food Security (Bern, 16 April 2010)

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**Technical, policy and financing responses  
across agriculture, food security and  
climate change**

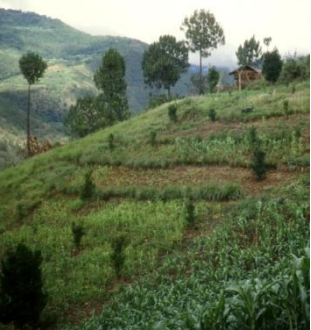
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# Introduction

During workshops keep in mind political economy of issues

- (i) interdependence of FS and CC in the AG sector, need to consider together. If not, possible perverse outcomes (biofuels, REDD). Global/nat. architecture work against integration.
- (ii) technical solutions need to be adopted by farmers, policies and financing to ensure farmers benefit from adoption (design of financing for AG mitigation has to consider farmer perceptions, including of risk and opportunity costs).
- (iii) in developing countries, CC mitigation and adaptation cannot be at the expense of development and food security. Fortunately, there are:  
a range of agricultural investment options that improve FS, increase adaptive capacity of food systems to respond to CC, and contribute to mitigation but there are also options that involve trade-offs.





# Synergies and Trade-offs

Wide range of sustainable land management practices that also lead to increased carbon sequestration: food security + mitigation + adaptation

However, location-specific technical information needed to identify synergies and trade-offs

Analyzing where potential trade-offs might occur gives opportunity to determine how they can be minimized

Innovative financing and increased access to information required to reduce household costs of adoption

Initiatives to revive research and extension offer opportunities to promote low-carbon emissions agricultural growth strategies that meet food security





## Food Security Potential



Photos: FAO Mediabase

<p><b>Food Security Potential : High</b> <b>C. Seq. Potential: Low</b></p> <p>Expand cropping on marginal lands Expand high energy-intensive irrigation Expand energy-intensive mechanized systems</p>	<p><b>Food Security Potential : High</b> <b>C-Seq. Potential: High</b></p> <p>Restore degraded land Expand low energy-intensive irrigation Change from bare to improved fallow Agro-forestry options that increase food or incomes</p>
<p><b>Food Security Potential : Low</b> <b>C-Seq. Potential: Low</b></p> <p>Bare fallow Continuous cropping without fertilization Over-grazing</p>	<p><b>Food Security Potential : Low</b> <b>C-Seq. Potential: High</b></p> <p>Reforestation/afforestation Restore/maintain organic soils Agro-forestry options that yield limited food or income benefits</p>

**Carbon Sequestration Potential**

# TECHNICAL evidence base to underpin decision-making on policies and financing

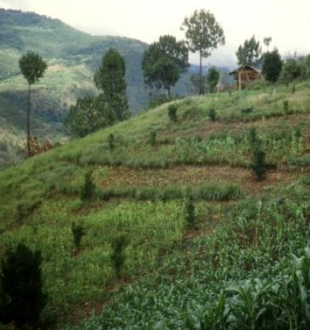


## BETTER DATA/MODELING, UNDERSTANDING OF:

- **Impacts** (at different scales, time horizons and site-specific) for adaptation policies/planning;
- **AG's emissions, mitigation potential and LCA** (in short-term proxy measurements-default values) for baselines-reference levels, MRV/financing policies, greater sampling combined with modeling over longer-term
- **Permanence, leakage** (in short-term buffer/conservative approach, longer-term better quantification needed) for MRV/financing and landscape policies
- **TECHNOLOGIES** for improved livestock and rice systems, more efficient fertilizer use
- **Through RESEARCH, FIELD TESTING, DEMONSTRATION** within suite of coordinated projects.



# POLICY: alignment/coherence across food security, adaptation, mitigation



- Coherence across CC, FS and dev frameworks needed at global and national levels
- Alignment also needed in major donor strategies (multilaterals, bilaterals, foundations)
- **Aligning parallel nat. policy processes requires**
  - Assessment of current frameworks (NAMAs, NAPAs, PRSP, NFSS, NDPs) and of possible integration
  - Tools/analysis for assessing cross effects
  - Capacity building (inc. ministries)
- **Aligning global policy processes requires**
  - A more holistic vision of FS, AG mitigation/adaptation and development to permeate global agendas and outputs (UNFCCC and CFS)
  - Explore new ways to pool collective expertise, role of creative engagement in overcoming policy and governance barriers.

# POLICY: AG mitigation in UNFCCC process



We need an international instrument that provides a global framework for action and support, including for agriculture.

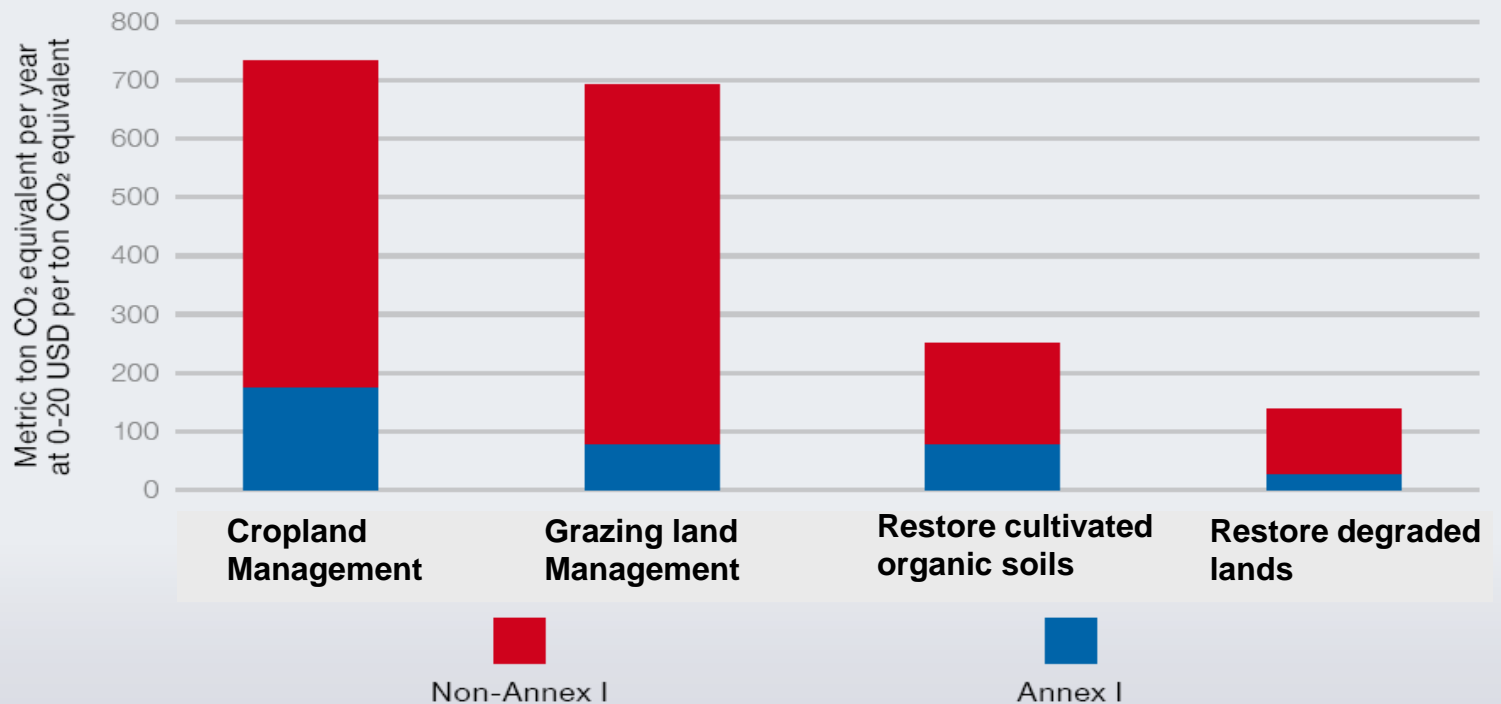
- Initially AG marginal in negotiations.
- AG has high mitigation potential but importance for food security raises concerns about mitigation policies (e.g. Biofuels, REDD)
- Difficulties of agricultural mitigation (complexity, permanence, leakage) raised concerns about viability
- Now seen as part of the solution
- Development of NAMA concept: funding for developing country mitigation linked to national development goals and not necessarily linked to offsets, increases importance of agriculture,



# Potential financial flows from ag. mitigation significant



## Mitigation potential from agriculture, Annex I (Developed) and Non-Annex I (Developing) countries



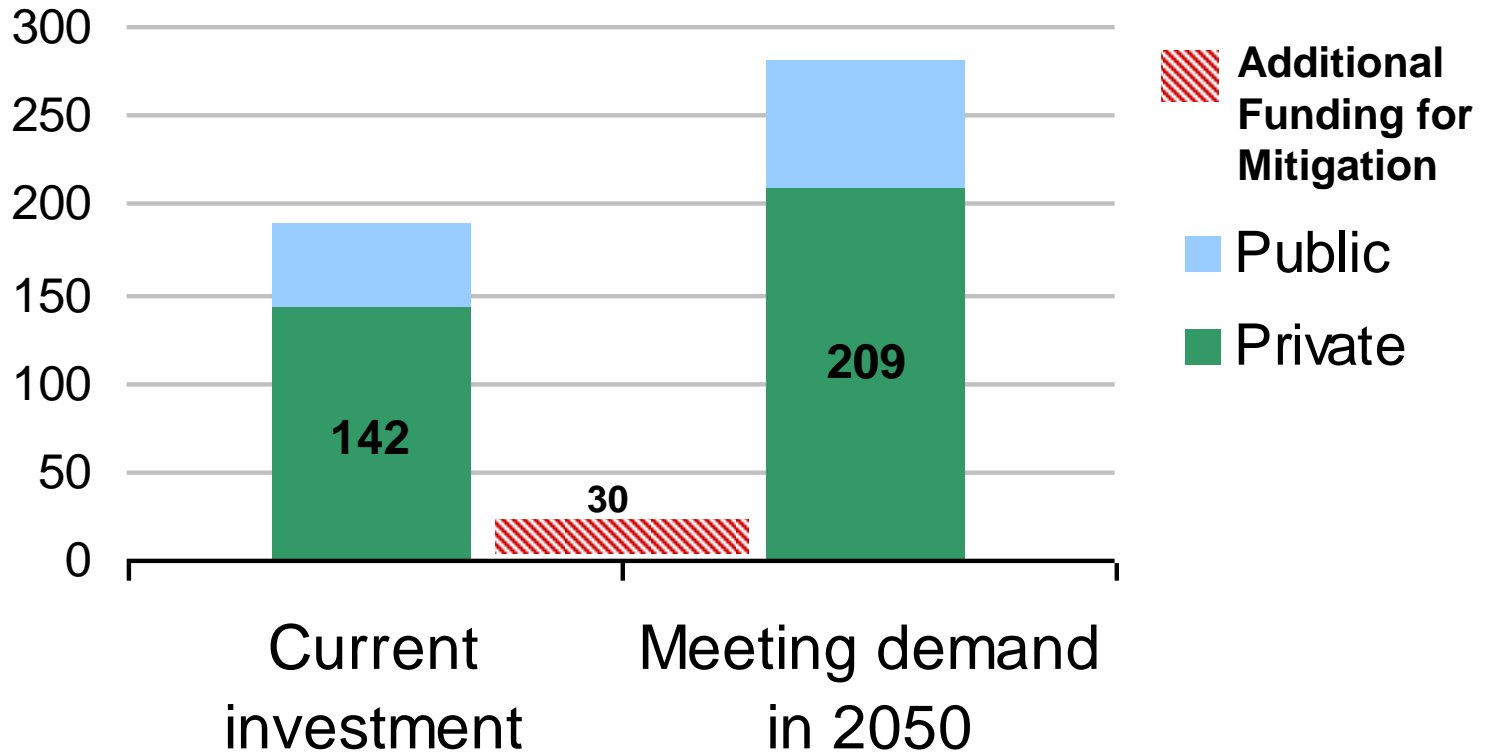
Source: Smith et al, 2008

Developing countries: \$30 billion @\$20/Cton from top 4 mitigation actions

# But only a small share of what is needed



US\$ billions per year (gross)



# Successfully linking to mitigation finance will require:



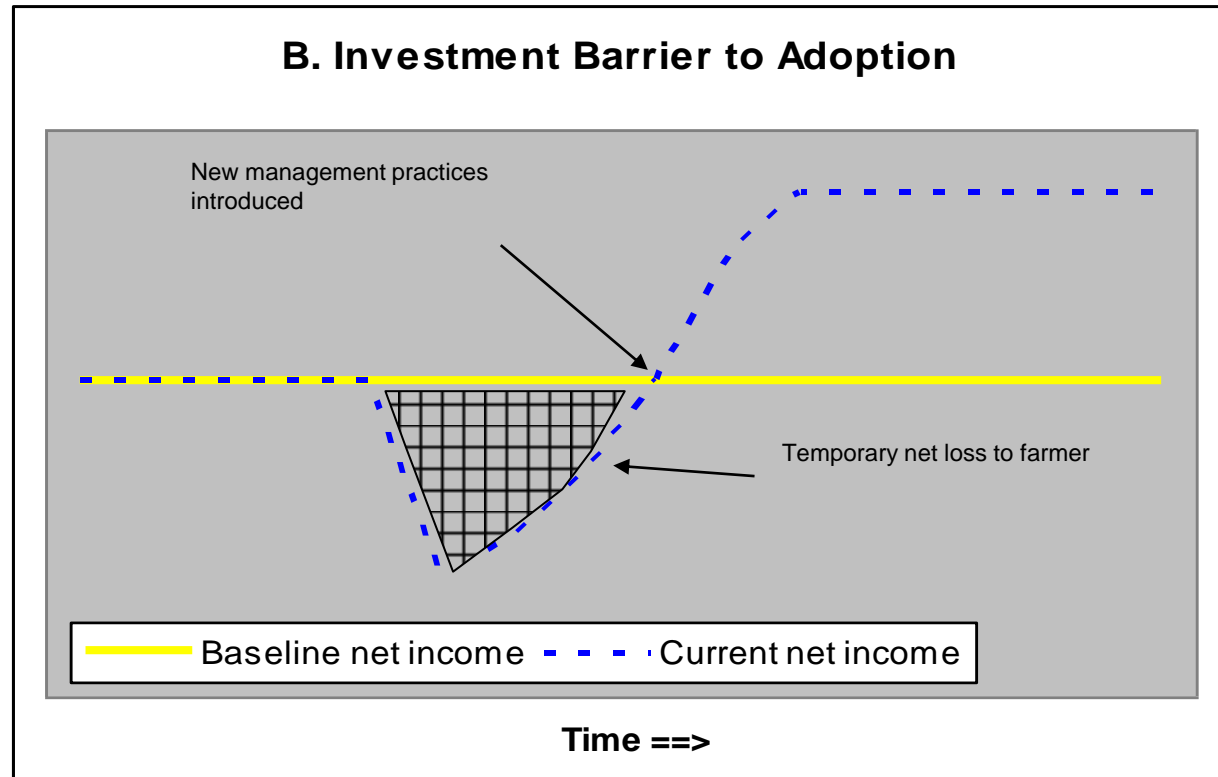
- **Institutions for aggregation, modeling** (Reduces costs of MRV)
- **Building databases/tools**
  - Emission reduction coefficients by farming system/agro-ecologies, Ex-Act(Ex-ante Appraisal Carbon-balance Tool)
- **Public as well as private sources**
  - Looking beyond offsets to wider financing streams and internationally funded NAMAs
  - Scaling up and linking to ag. financing
- **Piloting**
  - Establishing a coordinated suite of pilots, learning from REDD
  - Developing new project-based methodologies
  - Crediting for restoration of degraded lands
- **Incentives responsive to farmer decision-making**



# Adoption Barriers: Up-Front Financing Costs



## B. Investment Barrier to Adoption



Source: FAO 2007



# Conclusions

- For an effective response to the global challenges of addressing climate change and food security, sustainable agricultural development that generates multiple benefits is essential.
- The agriculture sector of developing countries, including smallholder sector, can generate these multiple benefits. Now poised for major transformations and could bring additional financing to the sector.
- To achieve synergies between mitigation, adaptation and food security through changes in smallholder agricultural production systems, a coordinated set of activities to fill technical knowledge, policy and financing gaps is needed, as well as international agreement linking action and support.





# Possible next steps

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1. SBSTA to recommend establishment of a work programme on agriculture, which could tap research and field testing
2. Research on FS, CC and AG to be pursued within CG Challenge programme and Global Research Alliance – bring together?
3. Pilots to test synergies approach and build confidence/readiness (negotiations + NAMAs)



**Thank you.**

**FAO report “*Food Security and Agricultural Mitigation in Developing Countries : Options for Synergies*” can be downloaded from:**

**<http://www.fao.org/docrep/012/i1318e/i1318e00.pdf>**