


Climate Change and Mitigation in Agriculture
in Latin America and the Caribbean:
Investments and Actions
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Food Security and Agricultural Mitigation in Developing Countries: Options for Capturing Synergies

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Key arguments

- Improving smallholder agricultural systems to increase food security can also result in mitigation
- Currently much attention/potential new finance going to institutions/technologies for smallholder agricultural systems
- Mitigation finance could be used to leverage ag. investment finance in reducing barriers to adopt synergistic actions
- Transactions costs involved in mitigation finance are a key barrier in linking to smallholder agriculture
- Transactions costs vary by financing source and crediting mechanism
- Some promising approaches:
  - Scaled up (sub-sectoral approaches)
  - Linking to existing financing/project activites
  - Integrating/leveraging private/public sources of finance




Global challenges

- FS and CC are challenges at the top of global agenda
- Agriculture sector is where these challenges intersect
- **AG** called upon to deliver multiple benefits: food, income, employment, environmental services, adaptation + mitigation and under difficult demographic trends, consumption patterns and following 3-F crises and decades declining investments.
- **CC** ultimate objective to stabilize emissions in such a way that ecosystems can adapt normally and food production is not threatened (Art. 2 of UNFCCC)

Options for realizing the multiple benefits urgently needed for early implementation

Key issues re agriculture mitigation in UNFCCC process

- Agriculture has high mitigation potential but importance for food security raises concerns about mitigation policies (including REDD)
- Difficulties of agricultural mitigation (complexity, permanence, additionality) raises concerns about viability
- Development of NAMA concept – funding for developing country mitigation linked to national development goals and not necessarily linked to offsets increases importance of agriculture




Photos: FAO Mediabase

Agriculture Development Strategies and Mitigation

- Mitigation through Carbon Sequestration
- Following IPCC (2007), four broad categories
  - Cropland Management
  - Grassland Management
  - Management of Organic Soils
  - Restoration of Degraded Lands

- Cropland Management includes:
  - Avoiding bare fallow, use of cover crops
  - Soil and water conservation structures
  - Tillage management (e.g. conservation agriculture

- Grassland Management includes:
  - Reduced fires
  - Seeding fodder grasses
  - Grazing management




Food Security Potential

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

Carbon Sequestration Potential





Photos: FAO Mediabase

Knowledge Gaps to "place" practices/investments

- Impacts will vary depending on:
  - Agro-ecological characteristics
  - Socio-economic conditions
  - History of land use

- Implication:
  - Need site specific information



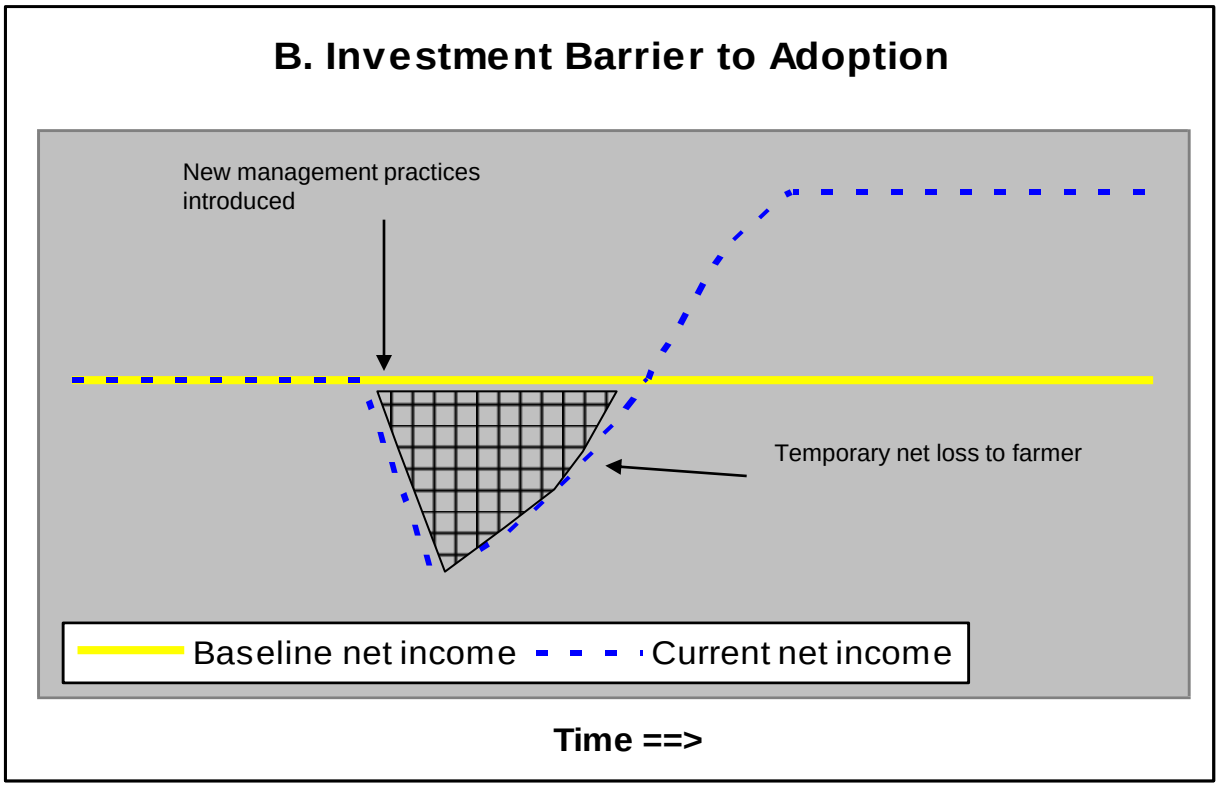

Photos: FAO Mediabase

SLM Adoption Costs and Barriers

- Up-front financing costs can be high, whilst on-farm benefits not realized until medium-long term
  - Local credit markets very thin
  - Local insurance options very limited
- Tenure Security & Management of Common-Pool Resources
- Limited Access to Information, e.g. Research & Extension

Photos: FAO Mediabase

Adoption Barriers: Up-Front Financing Costs



Source: FAO 2007




Photos: FAO Mediabase

Adoption Barriers: Up-Front Financing Costs

- Need to expand access to credit and insurance outside of locality
  - Particularly important where incidence of broad-reaching weather shocks is increasing (floods, droughts)
  - To reduce transactions costs of reaching smallholders, intermediary institutions to aggregate smallholders are required
  - Mitigation and environmental service payment programs face similar transactions costs in reaching smallholders as with credit and insurance – again, aggregation to lower transactions costs are key

Adoption Barriers: Tenure Security & Common-Pool Resources

- SLM practices may require collective action, e.g. management of communal resources (forests, grazing resources), and provision of local public investments (soil & water management measures)

- Lack of tenure security and limited property rights (limits on transfer), may hinder adoption of SLM
  - But… Access to non-private land (e.g. customary commons, state land) often used as insurance mechanism; may become even more important where increased weather variability and extreme weather events




Photos: FAO Mediabase

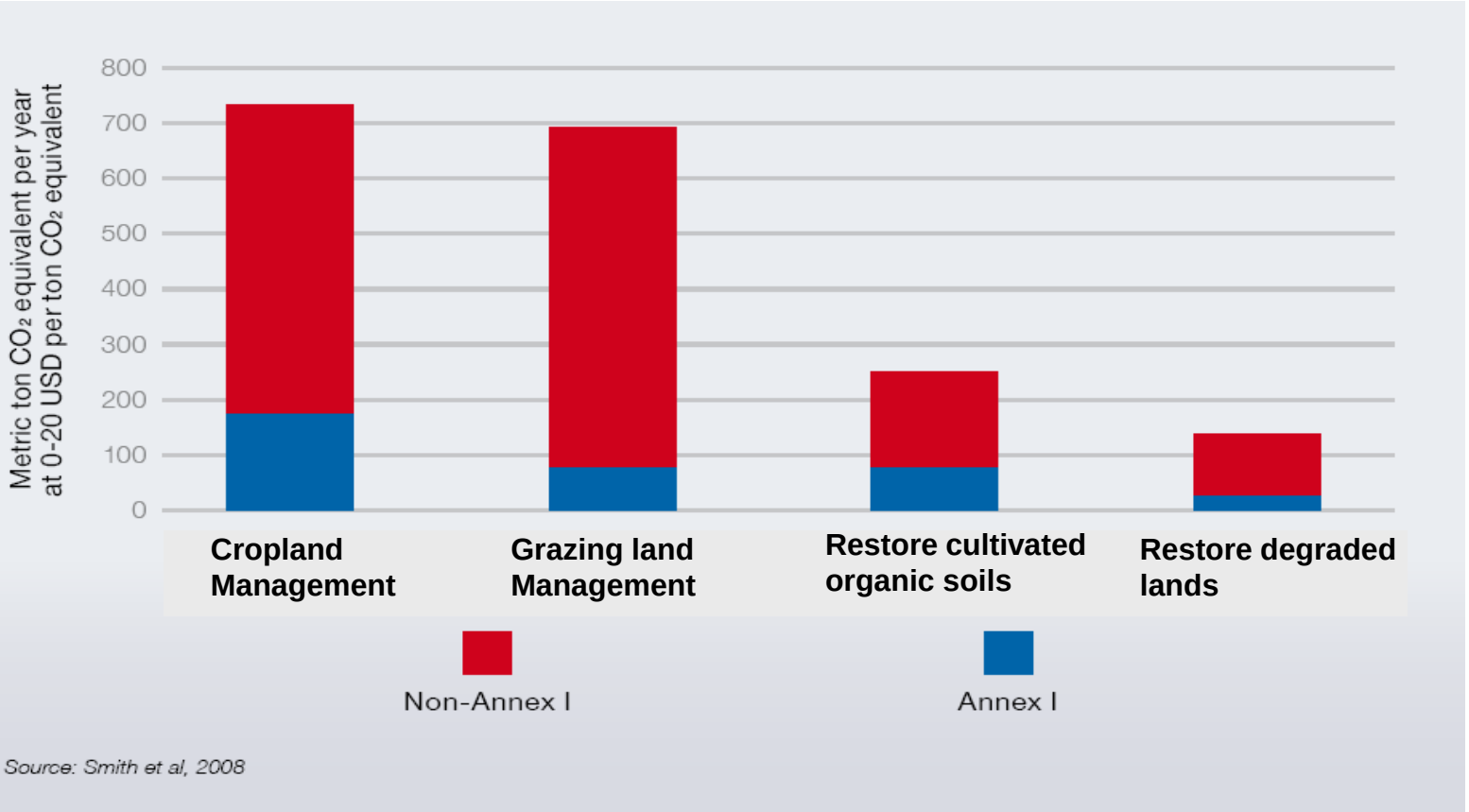
Adoption Barriers: Lack of Access to Information

- Very low levels of investment/support for agriculture research and extension in many countries
- Increased Awareness of Climate Change and Information on Alternative Production Practices required to:
  - Increase adoption of practices that reduce output variability and yields
  - Changing practices often lead to increased variability while the farmer “learns” new practice; extension and farmer-farmer sharing can reduce initial variability




Value of ag. mitigation potentially significant

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

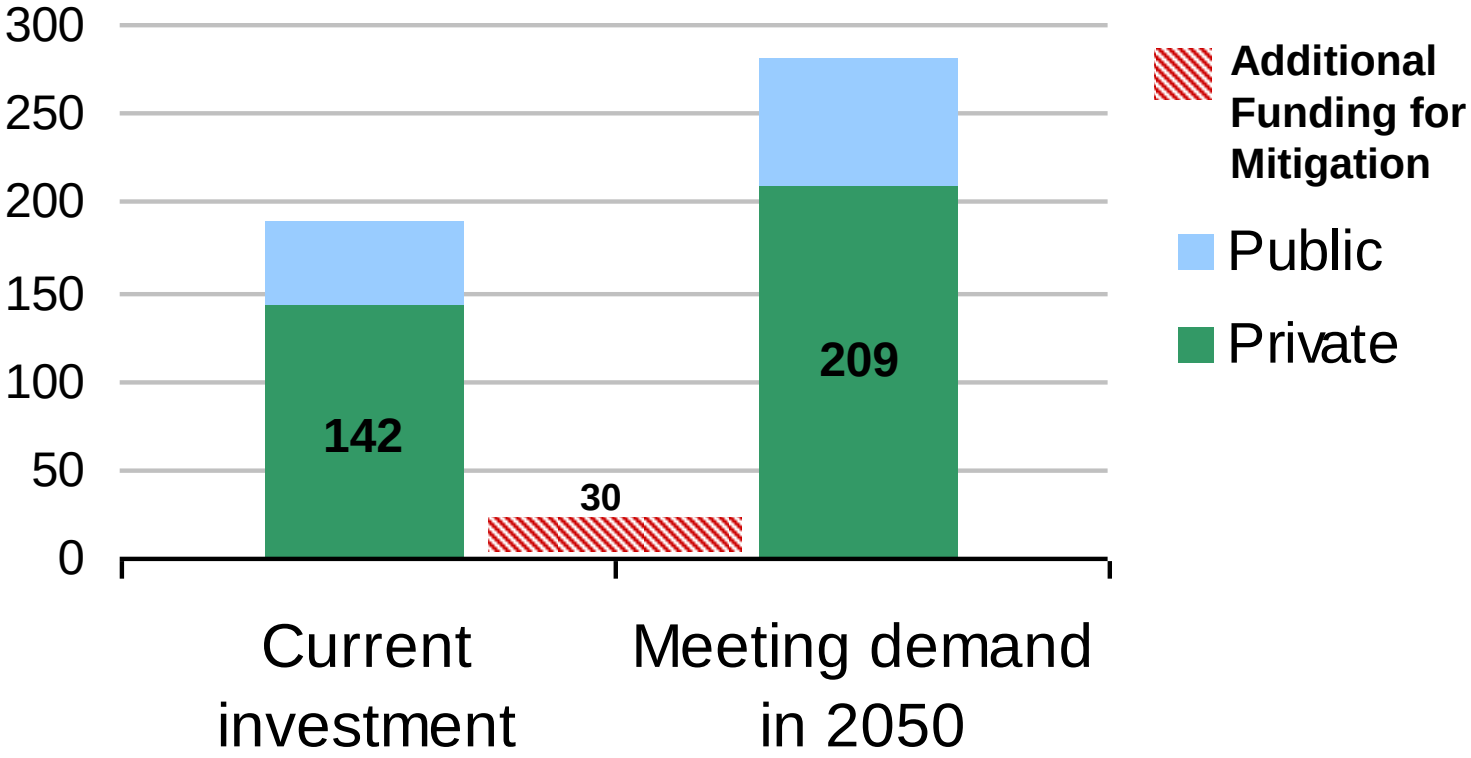


Source: Smith et al, 2008

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)



Source: FAO (preliminary estimates)



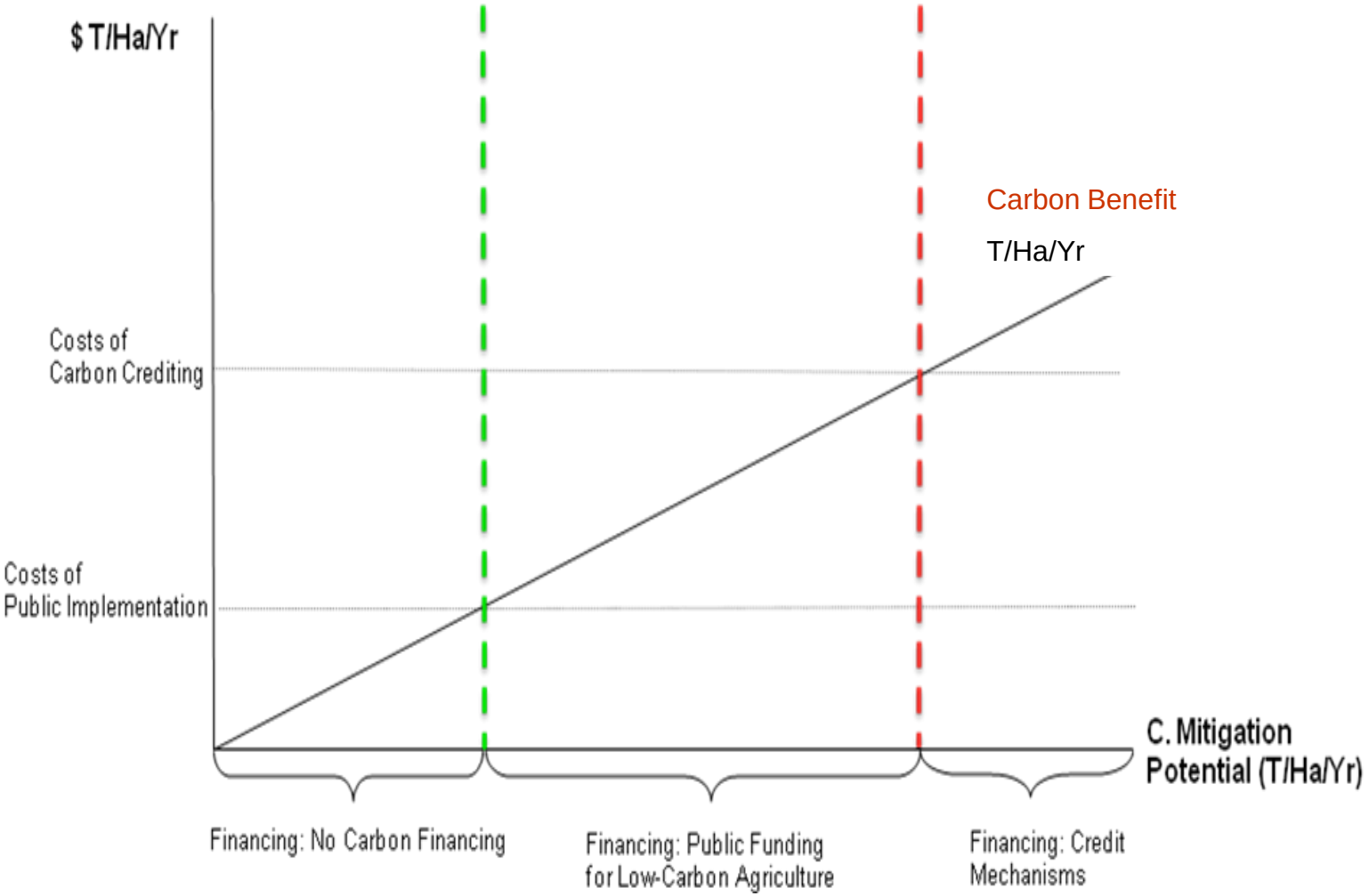

Measuring, Reporting, Verification (MRV) a key barrier to accessing finance

- High fixed costs favor larger projects
  - Up front fixed planning, registration project costs 200,000 USD per project
- Monitoring (recurring costs) C stock/flow checks expensive but no activity based methods yet accepted
- Costs can be lowered by building data/methods, but difficult for projects based on carbon alone to support due to low price of AFOLU VERs: 0.10 USD
- Financing streams with lower certainty requirements (e.g. public) have lower TCs.




Options for capturing synergies

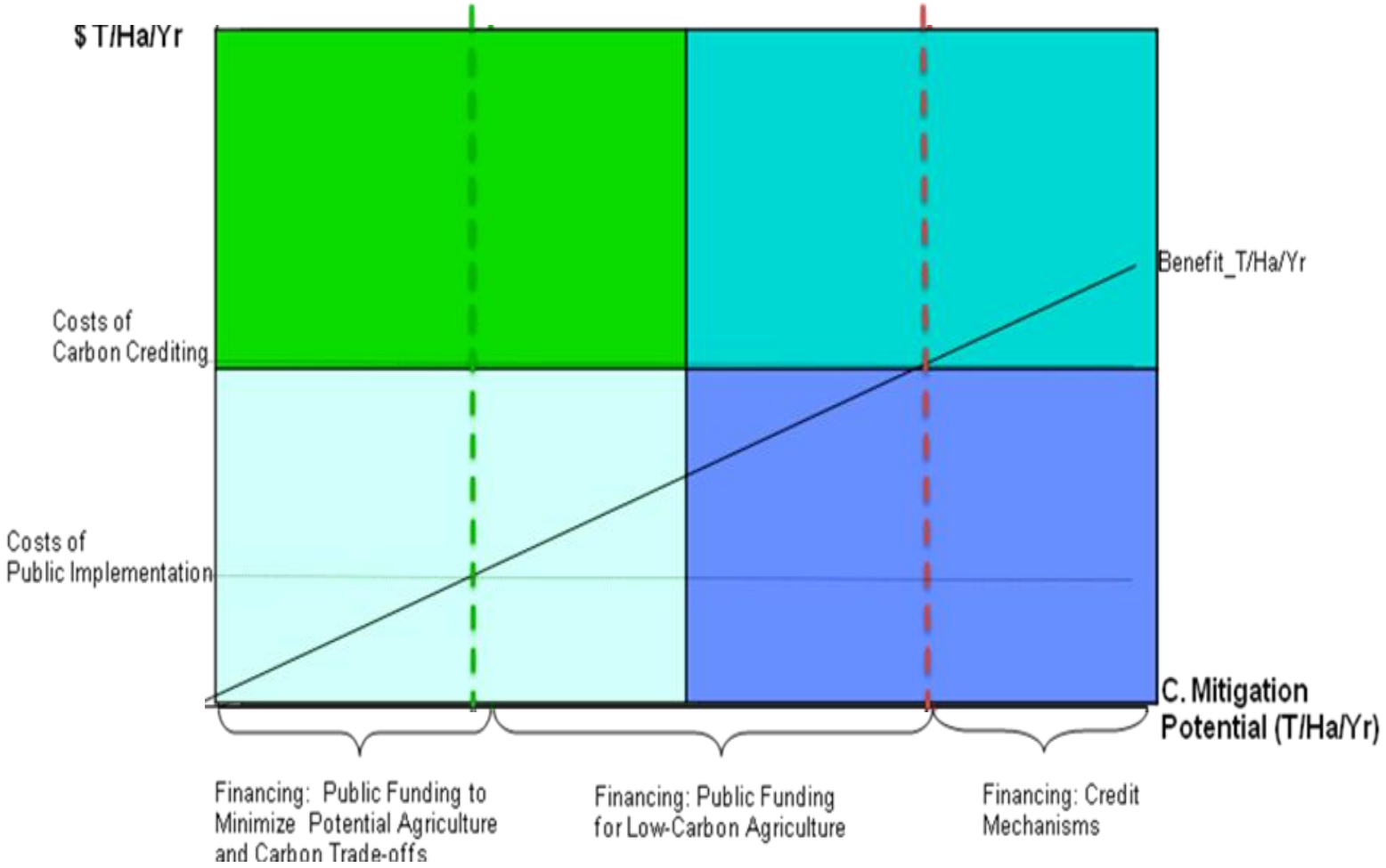
Linking mitigation finance to FS






Options for capturing synergies

MRV costs vs Ag benefits






How to reduce TC's?

- **Development of appropriate financing/crediting mechanisms for a range of project types**
  - Public vs. private sources of financing: Public sector finance important -Looking beyond offsets to internationally funded NAMAs, including GEF and Adaptation funds (LDCF and SCCF)
  - Project vs. scaled up (sectoral/sub-sectoral approaches)
  - Financing to sector/project level or direct to farm

- **Building databases/tools for identification/monitoring/verification**
  - Emission reduction coefficients by farming system/agro-ecologies
  - EX-ACT(EX-Ante Carbon-balance Tool)




How to reduce TC's?

- **Develop methodologies for crediting mitigation from agriculture**
  - Example – FAO work on developing a methodology for carbon crediting from restoration of degraded grasslands
  - Need for work on sub-sectoral crediting approaches; program of activities
  - Integrate mitigation financing into agricultural financing channels
  - Conditional cash transfers
  - Micro-credit programs
  - Insurance




Collaborative work

1. Build knowledge on where the synergies are:
   - Application of EX-ACT for ag. investment projects
   - Tier 2 and 3 empirical studies

2. Pilots for scaling up (how to establish baseline, MRV for financing):
   - Program of activities
   - Sub-sectoral crediting
   - Policy based

3. Piloting integration of ag investment and mitigation finance
   - Some GEF project experience here (Brazil)




Thank you!!

The report can be downloaded from:

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