

TREE PLANTING BY COCOA FARMERS ON FARMS (A GHANA COCOA- AGROFORESTRY REDD+ MODEL)

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FOCUS OF GHANA'S RESEARCH

To develop economic models to assess the impact of REDD+ architecture on small-land holders, using the following identified models:

- Tree planting on farms
- Sustainable forest management and char coal production in Ghana's Transitional Forest Zone and
- Tree planting under Community-Based Forest Plantation Programmes

CONTEXT

Land ownership

- Land ownership and tenure is characterized by legal pluralism under which customary and statutory laws operate side by side
- Traditionally, both land and forests are owned by Stool lands as Traditional Authorities
- Under Ghana's laws, selected and defined forest areas, forming the permanent forest estate (Forest Reserves [FRs]) are vested in the State and managed as production forests, protection of watersheds, shelterbelts, globally sensitive biodiversity areas on behalf of the owners
- Outside reserves, the State also lays claims on timber trees
- Land and forest conflicts exist and explain the depletion of forests controlled by the State

Returns to labour

COCOA GROWERS' COPING CAPACITY

Labour return in small-scale cocoa farming, US\$/ha; 2011	
Producer price	1,070
Harvesting/processing/marketing costs	530
Labour (60% hired)	230
Chemicals	150
Net Income	160
Add back own labour	90
Return to labour	250
Cf .to farmers' estimation of return from rubber	470

COCOA GROWERS' COPING CAPACITY

- Cocoa farmers say they are not surviving: declining yield; high cost of marketing
- Cocoa policy penalizes farmers in many respect
- R-PP includes strategy to address cocoa cultivation as a key driver of deforestation
- Cocoa generates NPV Discounted @20% over 25 years of US\$1,240
- And rubber of US\$2,320

REDD+ MODEL: TREE PLANTING BY FARMERS ON COCOA FARMS

Baseline Analysis (“Do Nothing scenario)

- Continued decline in cocoa yields from existing farms (Farmers cannot afford improved farm technology)
- Increasing population pressure
- Political interference in reforms that could partially reverse forest reservation
- NPV @20% discount estimate = US\$870 (Assumed rotation of 25 years)

REDD+ MODEL: TREE PLANTING BY FARMERS ON COCOA FARMS

REDD+ Scenario

- Farmers engagement in tree planting on farms is estimated to cost US\$230/ha, compared with planting in woodlots
- Cost of planting is about 90% of the annual household income available

Tree planting cost on farms, US\$/ha	
Seedlings/Planting	15
Maintenance	190
Land registration	30
Total cost	230
Cf Woodlots	500

REDD+ MODEL: TREE PLANTING BY FARMERS ON COCOA FARMS

Return on investment in trees

- NPV (@20%) of Return on farmers investment in tree planting = US\$4,200/ha
- Carbon revenues (estimate) = US\$ 1,300/ha
i.e. US\$10/tCO₂ (Source: HRC, 2009)

(Cost effectiveness of the model compared with costs of avoiding deforestation have not yet been assessed)

REDD+ MODEL: TREE PLANTING BY FARMERS ON COCOA FARMS

Pro-poor Issues:

Farmers' incomes are not adequate to meet livelihood costs and finance the cost of tree planting.

Tree planting and carbon revenues are promising but subject to gestation period

ALs such as Bee-keeping provides opportunities for farmers to secure some financing gap at US\$720 per annum (Source Samartex)

An agro farmer's perspective on pro-poor approaches to REDD+:

Tree planting can be expensive. The most feasible option is through agro-forestry:

Start Short term with food crops; medium term with tree crops and long term with timber species

- . Growing timber in this way will be sustainable and will generate sustainable carbon sequestration.

REDD+ MODELING IN GHANA

Next Steps

- Meet data challenges by addressing specific trade-offs, eg. changes in cost of chemical application on one hand and changes in cocoa yield on the other as a result of increased shade
- Improve carbon estimates with specific site references
- Develop simulation models to predict likely responses of small-holders to changes in REDD+ architecture