Targeting Mitigation Benefits in Agriculture with the EX-Ante Carbon-balance Tool

Quantifying Impacts for Mitigation, Adaptation and Agroecological Performance

Louis Bockel (FAO), Martial Bernoux (IRD), Uwe Grewer (FAO)

Context and problem statement

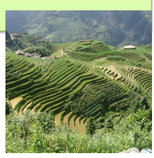
Agriculture and GHG mitigation

Agriculture is …

… the source of 10-12 % of global GHG emissions.

… a cost effective sector for important contributions to GHG mitigation.

Agricultural production systems provide at the same time multiple outcomes of agroecological performance, including the capacity to be resilient to weather variations and a changing climate. Also they determine the amount of net greenhouse gas (GHG) emissions or mitigation that is associated with production practices.



Priority actions for mitigation in agriculture and their co-benefits

Many of the technical options for mitigation in agriculture are readily available and could be deployed immediately.

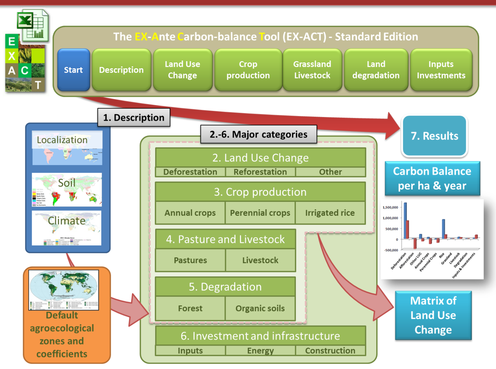
Numerous key mitigation activities provide at the same time outcomes that are central agroecological concerns.

Examples are the increase of soil organic matter that benefits soil structure, water-holding capacity and soil fertility, or the association of annual and perennial crops as in agroforestry systems.

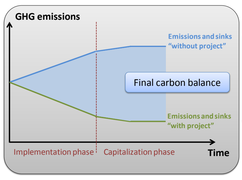
Key mitigation actions and their co-benefits

Agriculture adaptation targets	Multi objective practices	Agriculture mitigation targets
Cropping systems resilient to drought and water stress	Land &water conservation measures	Increase in soils carbon
Reduce flood recurrence and improved resilience to natural disasters	Watershed rehabilitation	Increased carbon stored in forest and rehabilitated land
Diversify rural income and strengthen economic resilience	Payment for Environmental Services	Reduced deforestation and slash and burn practices
Increase investments in long term soil fertility and nutrient cycling	Improved institutions for land tenure	Effective soil conservation measures

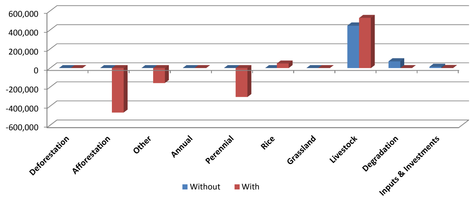
FAO EX-Ante Carbon-balance Tool (EX-ACT)



EX-ACT is a land-based accounting system, estimating C stock changes and GHG emissions per unit of land. It account for a variety of field activities in Agriculture, Forestry and Land-Use Change.



EX-ACT compares a project scenario to a reference (without project) scenario.



Results are given in tCO_2-equivalent by activity. They help project designers to prioritize project components with benefits in both economic and mitigation terms.

EX-ACT uses and benefits

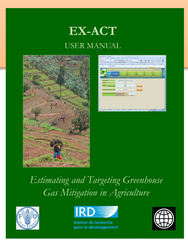
EX-ACT analyses have been carried out in over 50 countries and stakeholders from roughly 40 countries were trained in using the tool.

Analyses

Trainings

International Financial Institutions have agreed in November 2012 on a harmonized approach to project-level greenhouse gas accounting.

In 2014, the World Bank and the French Development Agency (AFD) selected EX-ACT as a suitable tool for Agriculture and Forestry Projects.



The EX-ACT appraisal identifies which project actions are associated to the main mitigation benefits and specifies the type of carbon pool (biomass, soil, other) and GHG which is causing this impact.

The quantification of soil carbon dynamics is a central agroecological variable that generates multiple co-benefits and allows a first performance assessment of different agricultural production systems.

The EX-ACT Tool and all documentation (User Manual, Quick Guidance, cases studies …) are freely available from the FAO website: www.fao.org/tc/exact.
Contact: EX-ACT@fao.org.