

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



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## Quantifying Impacts for Mitigation, Adaptation and **Agroecological Performance**

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#### Context and problem statement



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 agroecological of 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  | Key mitigation actions and their co-benefits  |  |  |
|--|---|--|--|
| agriculture are readily available and could be deployed immediately.   | Agriculture adaptation targets  | Multi<br>objective practices   | Agriculture mitigation<br>targets                        |
| Numerous key mitigation activities provide at<br>the same time outcomes that are central<br>agroecological concerns.                   | Cropping systems<br>resilient to drought and<br>water stress  | Land &water<br>conservation<br>measures<br>Watershed<br>rehabilitation | Increase in soils carbon                                 |
|  | Reduce flood recurrence<br>and improved resilience<br>to natural disasters                                |  | in forest and<br>rehabilitated land                      |
| Examples are the increase of soil organic<br>matter that benefits soil structure, water-<br>bolding capacity and soil fertility or the | Diversify rural income<br>and<br>strengthen economic<br>resilience  | Payment for<br>Environmental<br>Services                               | Reduced deforestation<br>and slash and burn<br>practices |
| association of annual and perennial crops as in agroforestry systems.  | Increase investments in<br>long term soil fertility<br>and nutrient cycling                               | Improved<br>institutions for<br>land tenure                            | Effective soil conservation measures                     |
| AO EX-Ante Carbon-balance Too  | OI (EX-ACT)   |  |  |
| Start Description Land Use Crop Grassland Land Land Inputs<br>T T  | Emissions and sinks<br>"without project"<br>Final carbon balance<br>EX-ACT compares<br>scenario to a refe |  | compares a project<br>to a reference                     |
| 1. Description   Localization   26. Major categories   7. Results   2. Land Use Change   Deforestation   Other   Carbon Balance        | Implementation phase Capitalization p   | Emissions and sinks<br>"with project"<br>phase Time                    | project) scenario.                                       |



Crop production

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.



Results are given in tCO<sub>2</sub>-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.





per ha & year

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.

International Financial Institutions have agreed in November 2012 on a harmonized approach to projectlevel 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 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.

