منتدى التغيرات المناخية

Forum sur les changements climatiques
Climate Change Forum

The EX-ante Appraisal Carbon-balance Tool

The lack of methodologies is a major barrier for the integration of significant mitigation effects in agriculture and forestry development projects at the stage of project design. To fill that gap, three FAO divisions (TCA, TCI and ESA) jointly developed the EX-ante Appraisal Carbon-balance Tool (EX-ACT). EX-ACT provides ex-ante evaluation of the impact of agriculture and forestry development projects on GHG emissions and C sequestration, indicating its effects on the carbon balance.

The logic behind EXACT is based on the comparison of a dynamic business as usual scenario with a with-project scenario, as shown below in figure 1:

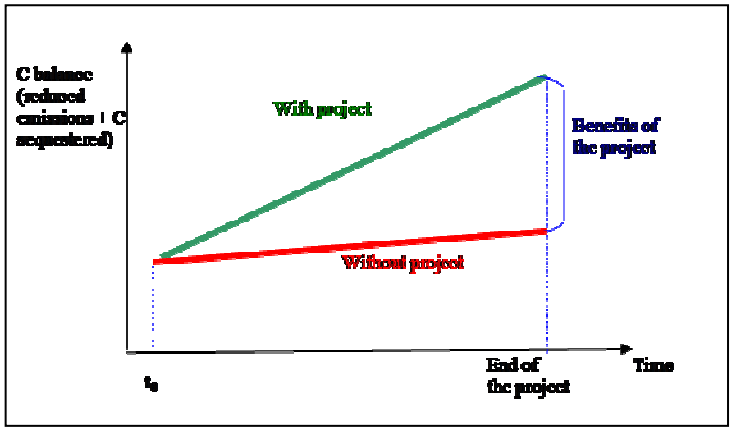

Figure 1. Carbon balance of the project calculated by EX-ACT

EX-ACT has been developed using mostly the Guidelines for National Greenhouse Gas Inventories (IPCC, 2006) completed with other existing methodologies (ADEME2, European Environmental Agency, AFD3, A/R CDM, voluntary C markets) in order to be acceptable to the scientific community.

The tool consists of a set of linked Microsoft Excel sheets in which the project designer will insert basic data on land use and management practices foreseen under the project's activities. It adopts a modular approach – each "module" describing a specific land use – and following a three-step logical framework:

a. general description of the project (geographic area, climate and soil, duration of the project);
b. identification of changes in land use and technologies foreseen by the project (deforestation, afforestation/reforestation, annual/perennial crops, rice, grasslands, livestock, inputs, energy); and
c. computation of C-balance with and without the project using IPCC default values and – when available – ad-hoc coefficients.

It therefore requires a minimum amount of data that are usually collected in the phase of project appraisal.

The main output of the tool consists of the C-balance resulting from project activities. In the example shown below (the "National Agricultural and Pilot Fishery Programme''- Eritrea), each

module is characterized as either a source or a sink, and the total carbon-balance of the project appears in the ''Final Balance'' box.

Components of the Project	Without Project	With Project	Balance with Project (tCO2eq for 20 yrs)		Mean per year
Deforestation	77801	0	-77801	this is a sink	-3890
Afforestation and Reforestation	0	-1386178	-1386178	this is a sink	-69309
Other Land Use Change	0	-59517	-59517	this is a sink	-2976
Agriculture					
Annual Crops	0	-1511109	-1511109	this is a sink	-75555
Agroforestry/Perennial Crops	0	-146242	-146242	this is a sink	-7312
Rice	0	0	0		0
Grassland	4890	-192500	-197390	this is a sink	-9869
Other GHG Emissions					
Livestock	0	44423.42258	44423	this is a source	2221
Inputs	0	37961	37961	this is a source	1898
Project Investment	837.056	1621.7308	785	this is a source	39

Final Balance	-3295068	This is a sink
Mean per ha	-37.9	
Mean per ha / yr	-1.9	

Total Area (ha)=	86994.36

Positive value = Source of GHG
Negative value = Sink of GHG

Peer review of EX-ACT is being undertaken now, with overall good results in terms of practicability and reliability; the tool will be available for free use by donors and technical partners in 2010. The next step will be to test its efficiency in the design of national sector strategies and policies, thus offering possibilities beyond other currently available, equivalent tools in terms of scope of applications, as shown in figure 2 below:

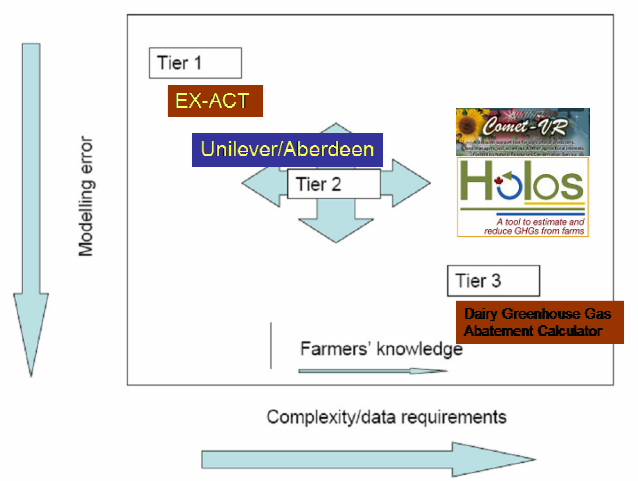

Figure2. Comparative test of EX-ACT with other Green House Gas Appraisal Tools

The possibility of integrating an assessment of the adaptation benefits of project or programme components in the functions of EX-ACT is currently being studied.

In the NENA region, the progression of degraded land (estimated at 68.4 percent of the total area in 2009), caused by overgrazing and clearing, and its adverse effects on water scarcity is a serious issue that threatens food security. With soil degradation and deforestation being directly translated into carbon dioxide emissions, using EXACT could help design more efficient sustainable land and water management projects, programmes and policies.

The tool also offers interesting perspectives for the region to integrate carbon credits as an additional source of funding for food security and reduction of poverty projects including afforestation-reforestation and avoided deforestation activities. With the development of official soil carbon sequestration methodologies, carbon credits in the Agriculture, Forestry and Other Land Use sector will increasingly represent an opportunity for the region.

References and further information about EXACT:
Developing EXACT, FAO
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