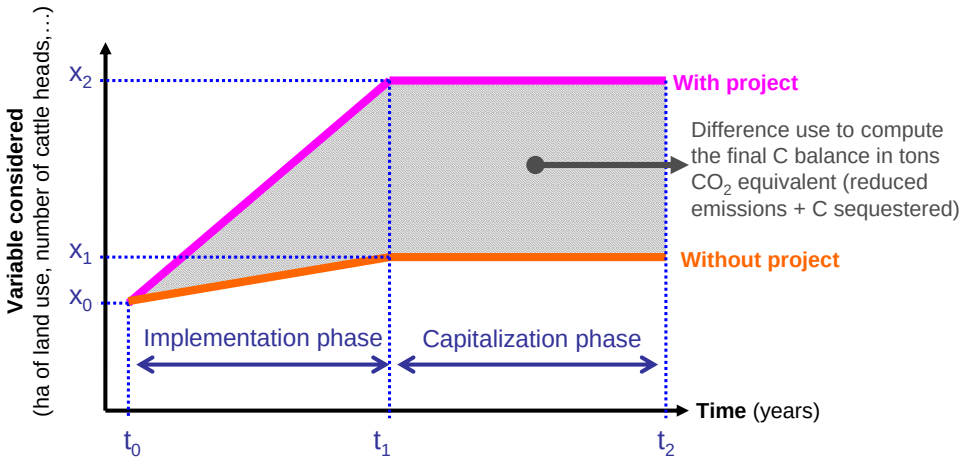
Updates from EX-ACT v3.4 to v4.0

The new version of EX-ACT includes several new features in order to get more accurate results or to perform GHG analysis in new situations.

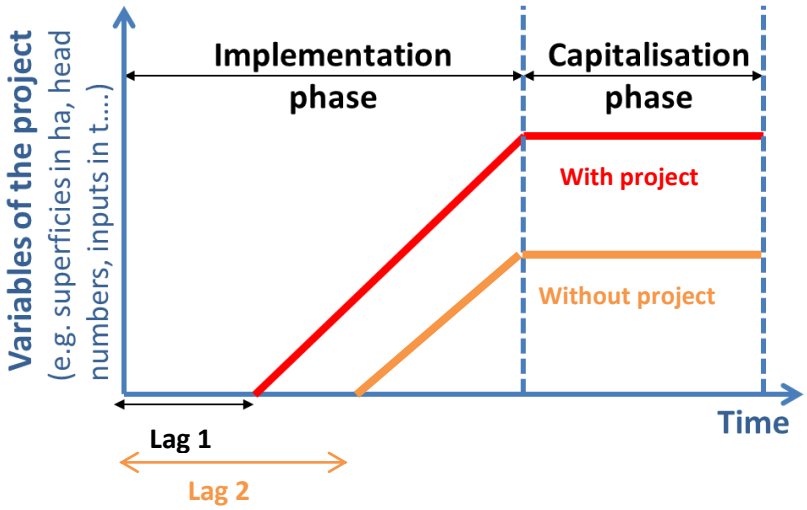
IMPORTANT: the version 4.0 is experimental and does not aim at replacing specific Life Cycle Analysis (LCA) tools. We would therefore be grateful for any feedback and suggestions to improve it.

1. Time lag

It is now possible to define a time lag, a delay before the implementation phase. This allows project manager to account for a planning phase before the effective implementation of the project. If irrelevant for his case, the user can ignore it.



EX-ACT v3.4 t0 = start of implementation phase



EX-ACT v4.0

2. Time spent in pasture by livestock

The new version of EX-ACT includes the time spent in pasture for the livestock. It enables to calculate the share of dejection that is managed, and the share that goes directly into the field.

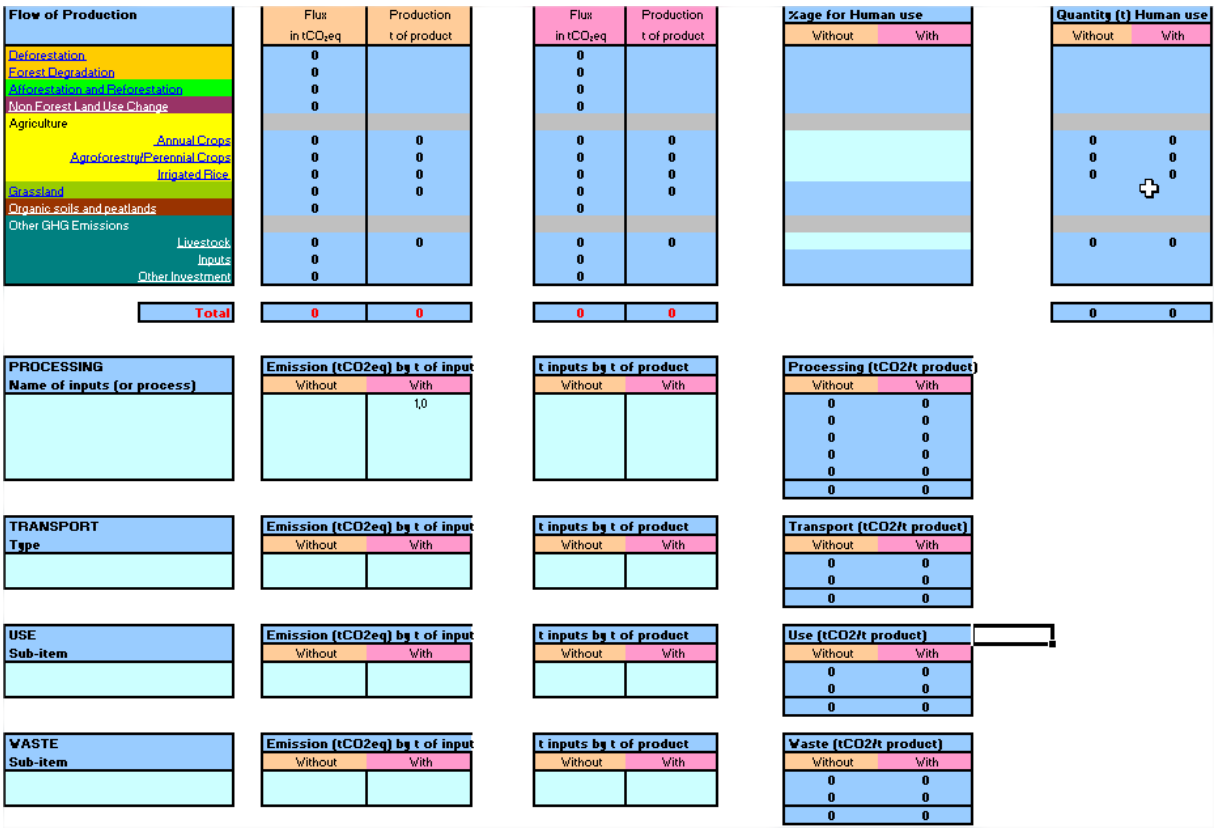
The share that is managed by the farmer emits N_2O during dejection management ("Livestock sheet", lines ;54;56;58;60;62;64;65:69), and then when it is spread onto the field as an organic fertilizer ("Inputs sheet", line 28). As organic fertilizers can be imported or exported, the value needs to be reported (and possibly modified) in the "Input sheet". The value of organic N available from livestock dejection is provided in the "Livestock sheet", line 72; be aware of the loss of N during dejection management. For the share of dejections left in pasture, N_2O emissions are accounted for in Livestock (lines 53;55;57;59;61;63).

The default value for the time spent in pastures comes from the IPCC Tables in Annex 10.A.2.

3. Value chain sheet

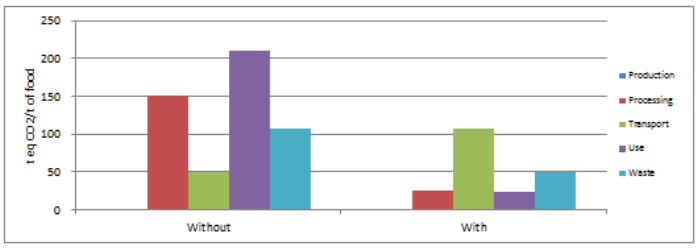
This "value chain sheet" enables to estimate GHGs for each production stage from "field to plate" or even "field to trash bin". The idea is to propose a more life cycle approach for environmental assessment and to link GHG emissions with a production level. The aim is to obtain a value in t eq CO2 per ton of human food. The share of production dedicated to human consumption is necessary to take into account the fact that large quantities of cereals are used for animal feed and not for human food.

Due to the diversity of products, transports, packaging or end of life options, no default value is proposed here. The user has to find them in scientific and technical literature; such research can be quite time demanding. The tool does not aim at replacing specific value chain tools (ex: LCA software), it provides a conceptual framework for the analysis.



Total emissions (tCO2 per ton of product for human use)

	Without	With
Production	0	0
Processing	150	25
Transport	50	108
Use	210	24
Waste	108	50
Total	518	207



4. Indicators

Environmental sustainability cannot be restricted to GHG emissions. EX-ACT provides here complementary indicators to evaluate the impacts of the project on water consumption and land degradation, burning. The user does not have to fill in any new data. The module only aims at highlighting the risk of trade-off between GHG mitigation measures and other sustainability criteria.

5. Yield

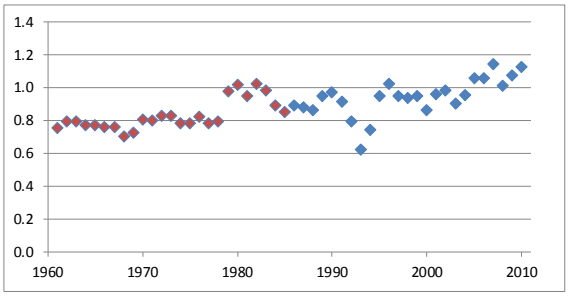
Yields or production levels can be filled in in different modules (Annual crops, Perennial Crop, Irrigated rice, Livestock). Therefore, the new “yield sheet” provides some indication on the evolution of yields across time for major productions and regions.

This additional information on the tons of products is used in the value chain module, to calculate emissions per ton of product, as well as in the indicator module, to estimate the ratio between GHG emissions and the level of production.

Region	Eastern Africa (see Map below)
Item	Sorghum

Year	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Yield (t/ha)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.0	1.0	1.0	1.0	1.0	0.9	0.9

Year	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Yield (t/ha)	0.9	0.9	0.9	0.9	1.0	0.9	0.8	0.6	0.7	0.9	1.0	0.9	0.9	0.9	0.9	1.0	1.0	0.9	1.0	1.1	1.1	1.1	1.0	1.1	1.1



Période	Moyenne	Tx (%)	Projections		
			2015	2020	2030
Last 5 yr (2006-2010)	1.08	0.7	1.13	1.16	1.23
last 10 yr (2001-2010)	1.03	2.0	1.21	1.31	1.51
Last 20 yr (1991-2010)	0.95	1.6	1.18	1.26	1.42
Last 25yr (1986-2010)	0.94	1.0	1.11	1.16	1.26
1961-1985	0.83	0.9	1.20	1.25	1.34

These data are from FAOSTAT, if you need more detailed information (e.g. by country) please go to FAO site