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# The EX-ACT suite of tools

21/06/2023

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# Outline of the presentation

- Introduction to the EX-ACT suite of tools
- Theoretical presentation of EX-ACT modules;
- Application of the tool through hands-on exercises.

## OBJECTIVES:

- Understand the structure of the tool;
- Understand the scope of application of the tool;
- Understand data needs;
- Read and interpret results from EX-ACT.



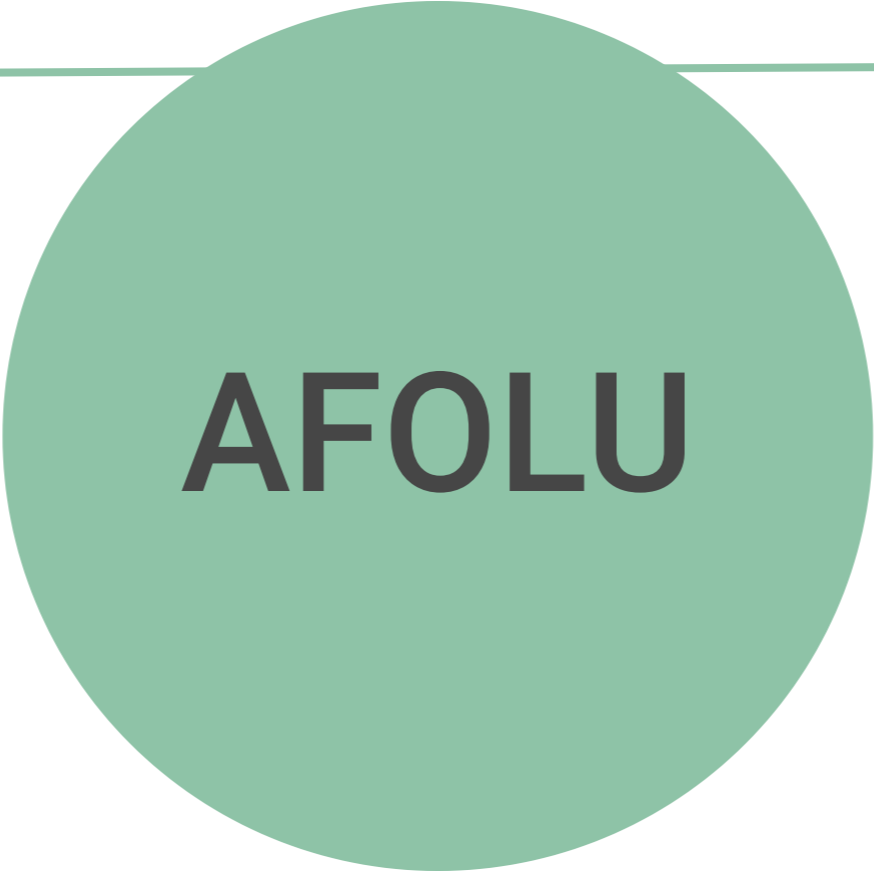
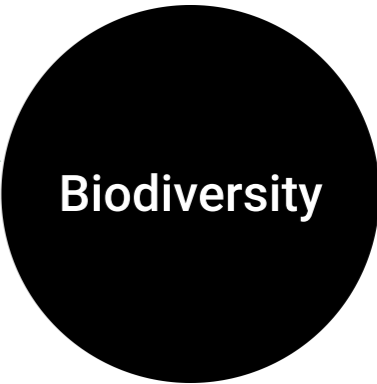
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History and scope of the EX-ACT tools

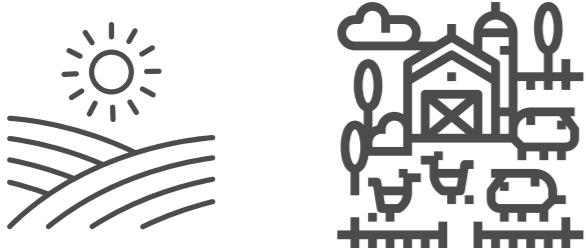
Application of the tools

The EX-ACT tool

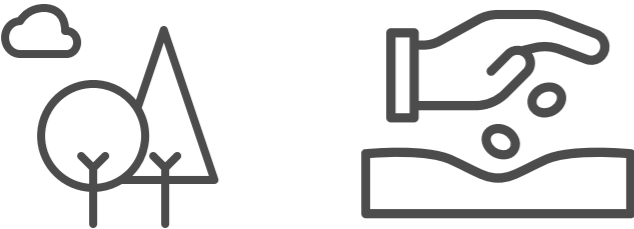
# AFOLU, biodiversity and Climate Change:



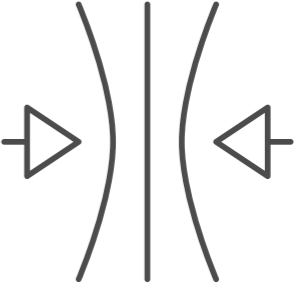
Reduce emission sources



Increase sinks



Enhance biodiversity preservation



Reduce negative biodiversity impacts from projects

# EX-ACT suite of tools

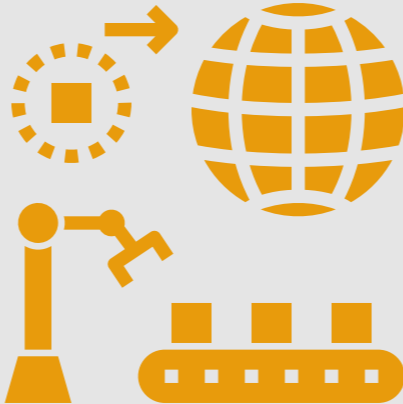
## EX-ACT

EX-Ante  
Carbon-balance Tool



## EX-ACT VC

EX-ACT  
for Value Chains



## B-INTACT

Biodiversity Integrated  
Assessment and  
Computation Tool



# The EX-ACT suite of tools



Excel based tools that measure GHG and biodiversity impacts of activities in the AFOLU\* sector



Require activity data on agricultural practices, resource use and land impacted at project or policy level



Based on IPCC, GHG Protocol, PBL, ... and always reviewed by thematic expert to ensure reliability

\*Agriculture, Forestry and Other Land Use

# EX-ACT suite of tools

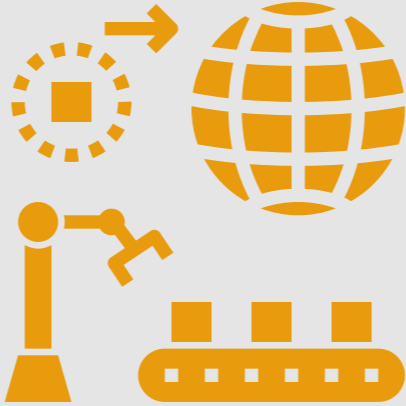
## EX-ACT

EX-Ante  
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for Value Chains



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# The first tool: EX-ACT



An Excel based tool that quantifies in tCO<sub>2</sub>-eq the amount of GHG released or sequestered from activities in the agricultural\* sector



Requires activity data on agricultural practices, resource use and land use change



Primarily based on the IPCC Guidelines for National GreenHouseGas Inventories (2019, 2014, 2006)

\*Agriculture, Forestry and Other Land Use (AFOLU), wetlands, fisheries and aquaculture, inputs and infrastructure.



# EX-ACT suite of tools

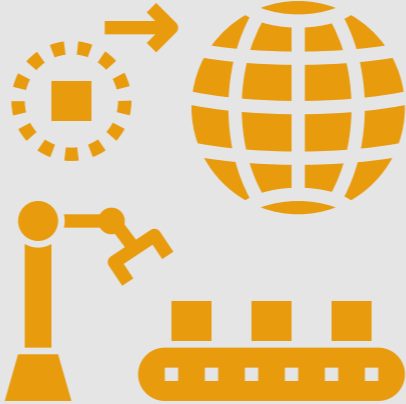
## EX-ACT

EX-Ante  
Carbon-balance Tool



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EX-ACT  
for Value Chains



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# The Ex-Ante Carbon-balance Tool for Value Chains (EX-ACT VC)



Integrates impact analysis of downstream activities of agri-food value chains



Environmental component allowing for a carbon footprint estimation integrating food loss and waste and water usage



Socio-economic component tracking activity impacts on value added, gross income and employment

# Final outputs of the tool

## Environmental indicators

- GHG emissions
- Carbon footprint
- Food loss
- Water usage

## Socio-economic indicators

- Gross production value
- Gross & net value added
- Net income
- Employment indicators
- Gender & youth participation

## SDG progress tracker

- SDG 1 Zero hunger
- SDG 5 Gender Equality
- SDG 6 Clean water and sanitation
- SDG 9 Industry, innovation and infrastructure
- SDG 12 Responsible consumption and production

# EX-ACT suite of tools

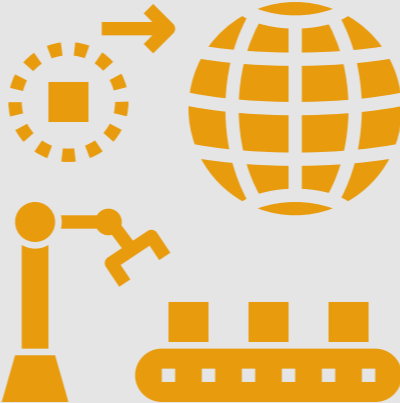
## EX-ACT

EX-Ante  
Carbon-balance Tool



## EX-ACT VC

EX-ACT  
for Value Chains



## B-INTACT

Biodiversity Integrated  
Assessment and  
Computation Tool



# Biodiversity Integrated Assessment and Computation Tool (B-INTACT)



Enables to account for anthropogenic impacts on biodiversity of AFOLU interventions that change land use, infrastructure, fragmentation of habitats, human encroachment



Measures changes in the Mean Species Abundance and translates into policy indicators including area of biodiversity loss and added/lost social value of biodiversity

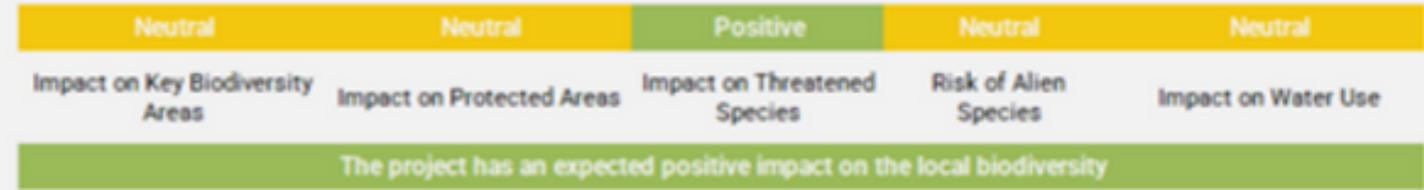


Evaluates biodiversity pressures by analysing (qualitatively) biodiversity sensitivity of the implementation zone, biodiversity management activities and agrobiodiversity practices

# B-INTACT results

## Qualitative Biodiversity Impact Summary

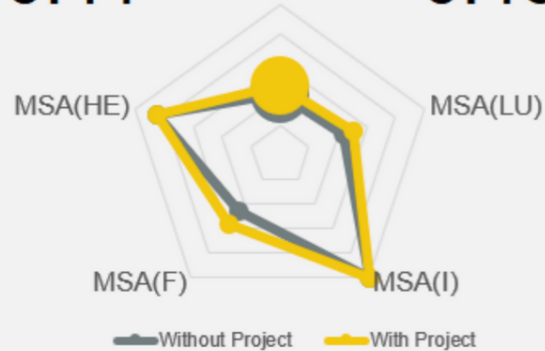
Biodiversity Sensitivity & Impact Analysis



## Mean Species Abundance

Level of biodiversity intactness (0 = complete loss, 1 = complete intactness)

Without project: **0.41** MSA(final)  
With project: **0.46**



	Without	With
MSA(final)	0.41	0.46
MSA(LU)	0.44	0.51
MSA(I)	1.00	1.00
MSA(F)	0.46	0.57
MSA(HE)	0.85	0.85

## MSA

2 scenarios



disaggregated by pressure



## Policy indicators



easy-to-interpret

## Policy Indicators

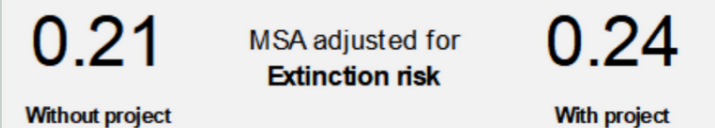
### I. Area of Biodiversity Loss



### II. Added Social Value of Biodiversity

**USD 835,444,124**

### III. MSA+



# EX-ACT development



2009

Tool development

2016  
EX-ACT VC

2020-2023  
EX-ACT VC  
v.3&4  
EX-ACT v.9

2010  
EX-ACT v.1

2019  
B-INTACT

2023/2024  
EX-ACT suite  
app

2008

Tool concept





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Application of the tools

The EX-ACT tool



# The EX-ACT suite of tool applicability

**COUNTRY  
LEVEL**



**REGION or  
DISTRICT  
LEVEL**



**PROJECT or  
FARM LEVEL**



# The EX-ACT suite of tool applicability

**PORTFOLIO  
ANALYSES**



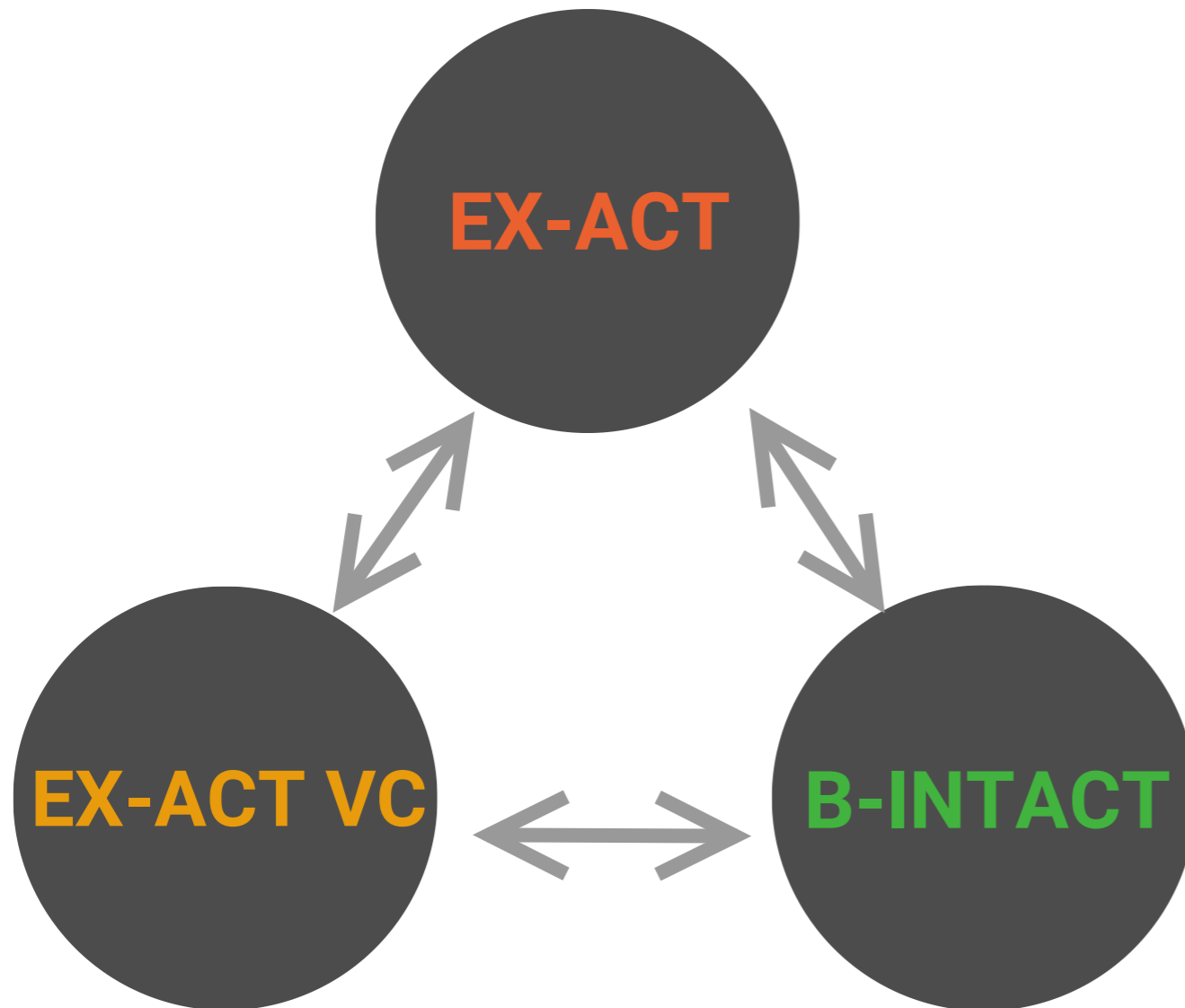
**INTEGRATED  
ASSESSMENTS**



**INDIVIDUAL  
PROJECT  
APPRAISALS**



# The EX-ACT suite of tool applicability



**The tools can be used:**

- Individually  
(specific indicators)
- As a suite of tools  
(comprehensive assessment)

# The role of the EX-ACT team



**Tool development**



**Capacity building**

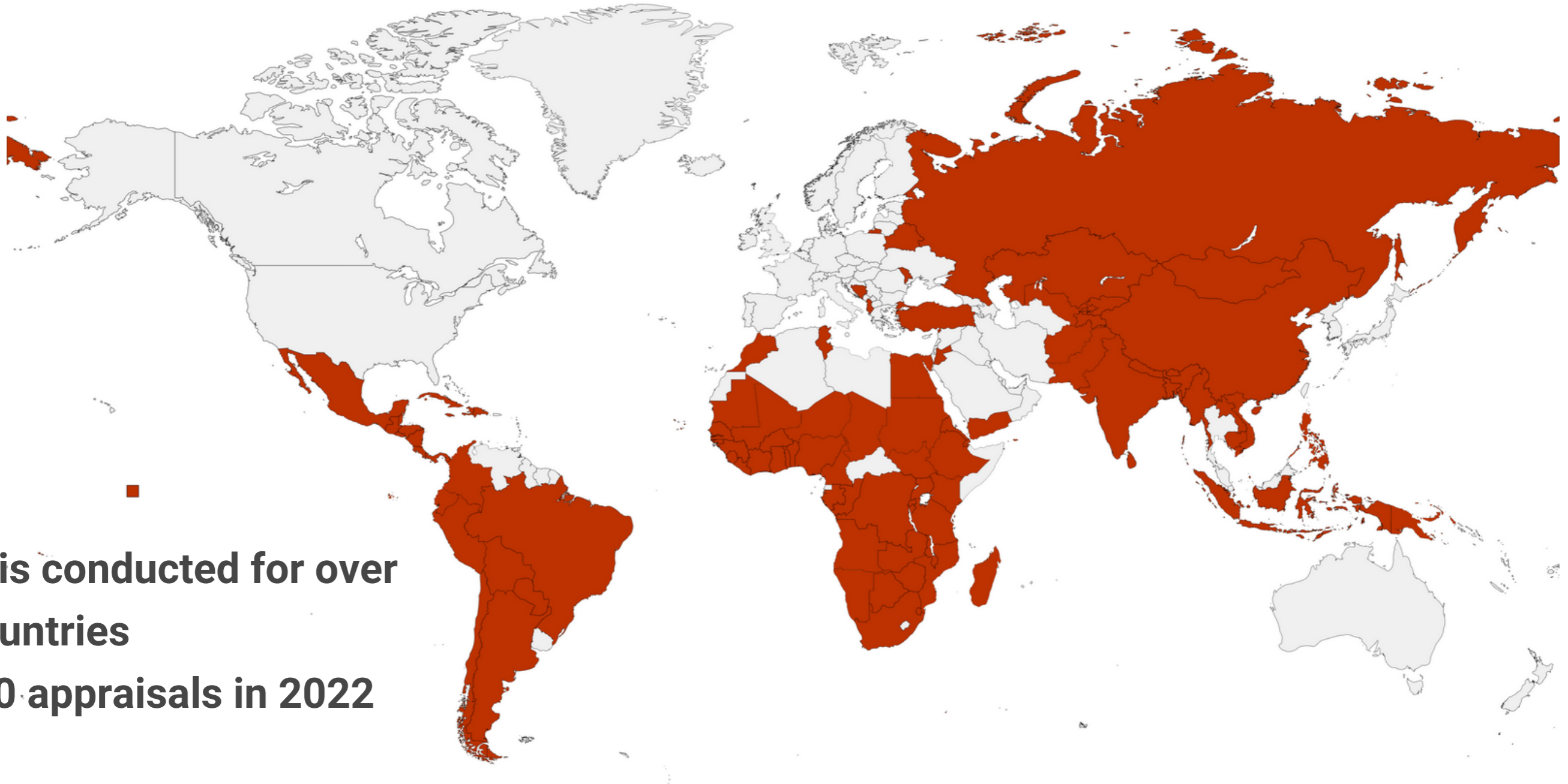


**Assessments**



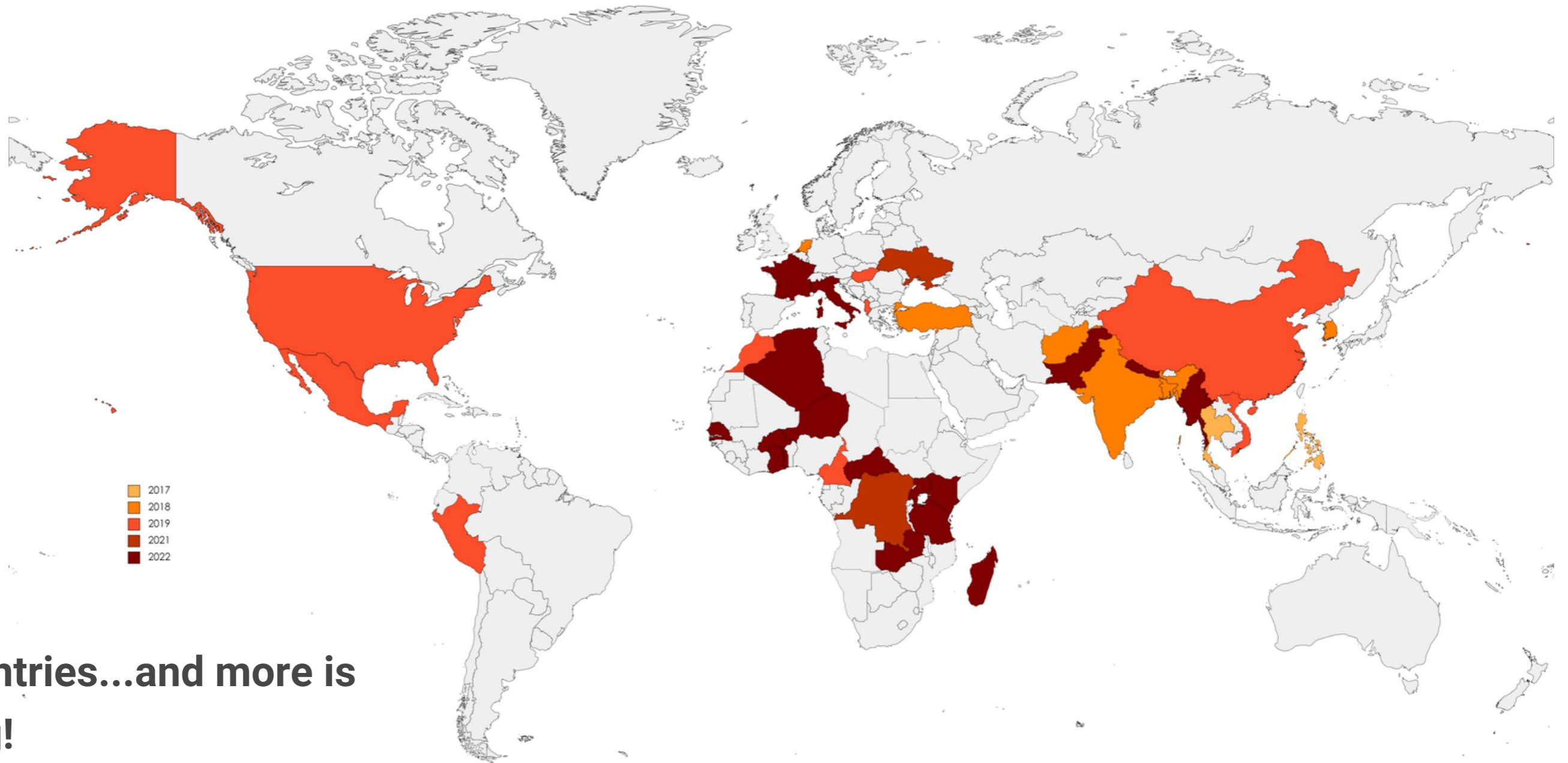
**Analysis**

# The role of the EX-ACT team: appraisals



**Analysis conducted for over  
150 countries  
Over 50 appraisals in 2022  
alone**

# The role of the EX-ACT team: capacity building



**45 countries...and more is coming!**

**200 people trained in 2022 alone**



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The EX-ACT tool

# Necessary data

**All activities**  
that could impact on GHG fluxes (reduction/emissions)

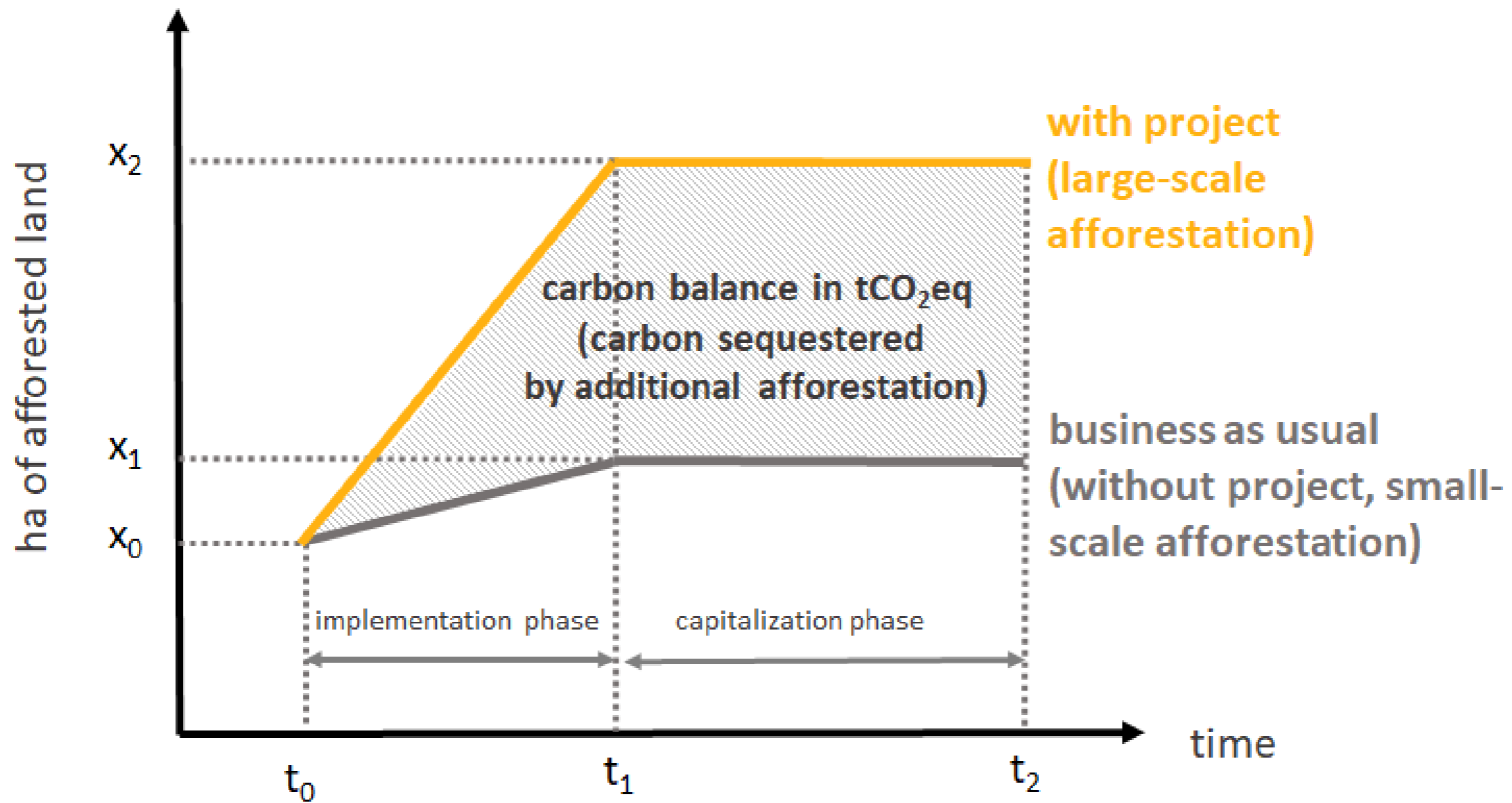
Different areas of land uses and land use changes in ha  
Management practices (residue burning, improved agronomic practice, nutrient management, Organic management, tillage management)  
Quantities of inputs used  
For livestock, evolution of herd  
Energy consumption  
Investments in infrastructure

**Initial Situation**  
What is the initial situation ?

**Without project**  
What would happen in the future if the project was not implemented?

**With project**  
What will happen in the future if the project is implemented ?





# The logic behind the tool

## Takes into account activities

Deforestation, a-re/forestation, forest degradation, restoration of grasslands, livestock, cultivation of annual crops, cultivation of perennial crops, fertilization of crops, installation of buildings, installation of irrigation systems...

## ...that impact GHG fluxes...

$\text{CO}_2$ ,  $\text{CH}_4$ ,  $\text{N}_2\text{O}$

## ... or changes in carbon stocks

above-ground biomass, below-ground biomass, soil, litter & deadwood

=

# Carbon Balance in tCO<sub>2</sub>-eq

# The logic behind the tool

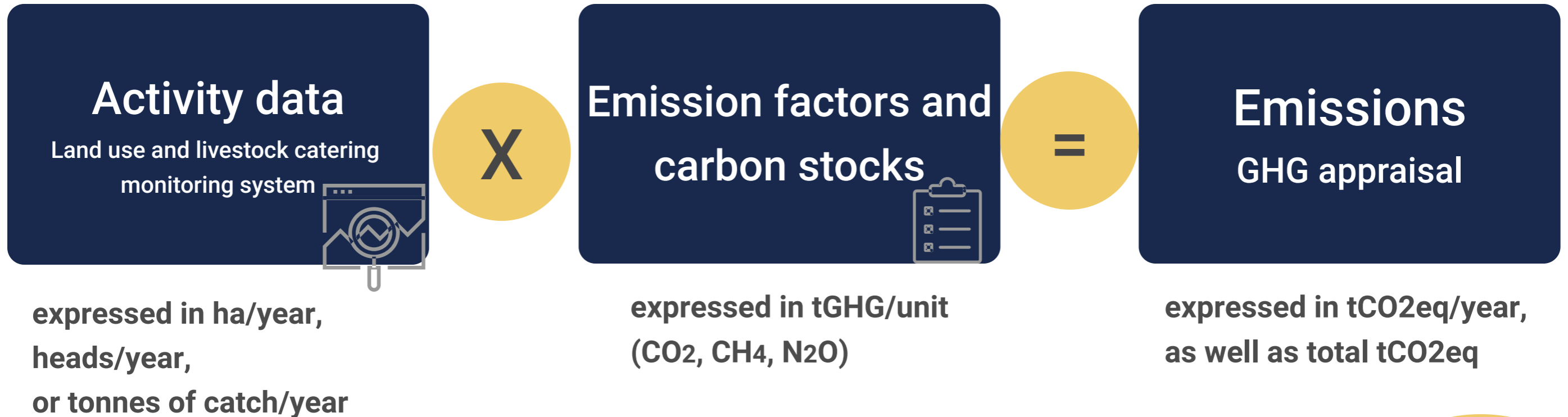
What is a carbon balance?

Carbon balance in EX-ACT: difference of all total quantified results between two scenarios, the without project scenario and the with project scenario.

The carbon balance can be disaggregated by activity, by module, by scenarios, or aggregated for the total carbon balance of the project.

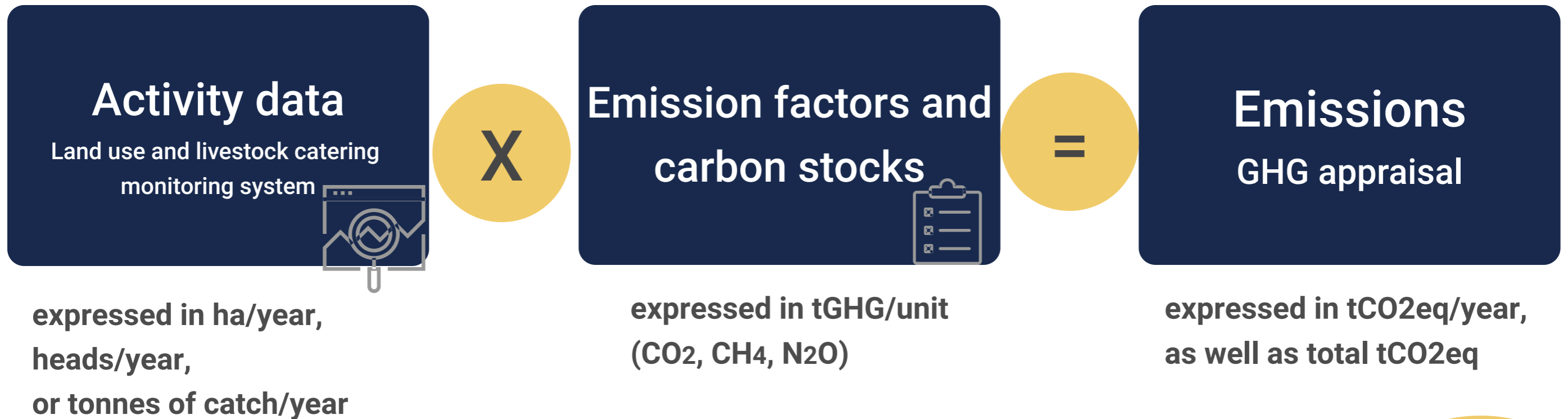
The carbon balance is a numerical value always expressed in tonnes of CO<sub>2</sub> equivalent.

# The logic behind the tool



**With  
project  
scenario**

# The logic behind the tool



**Without project scenario**

# The logic behind the tool

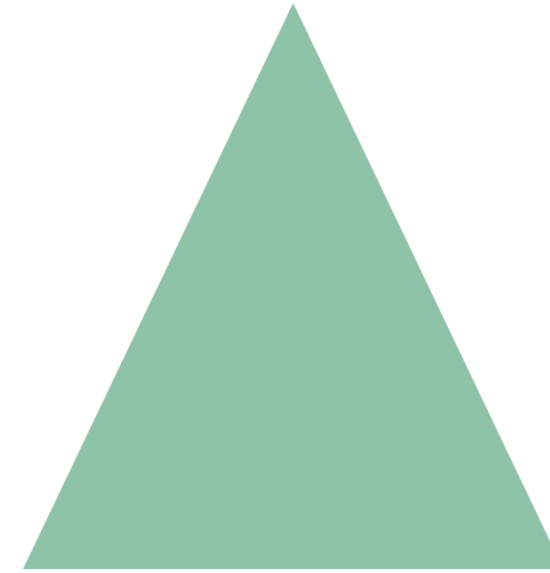


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**Carbon balance**

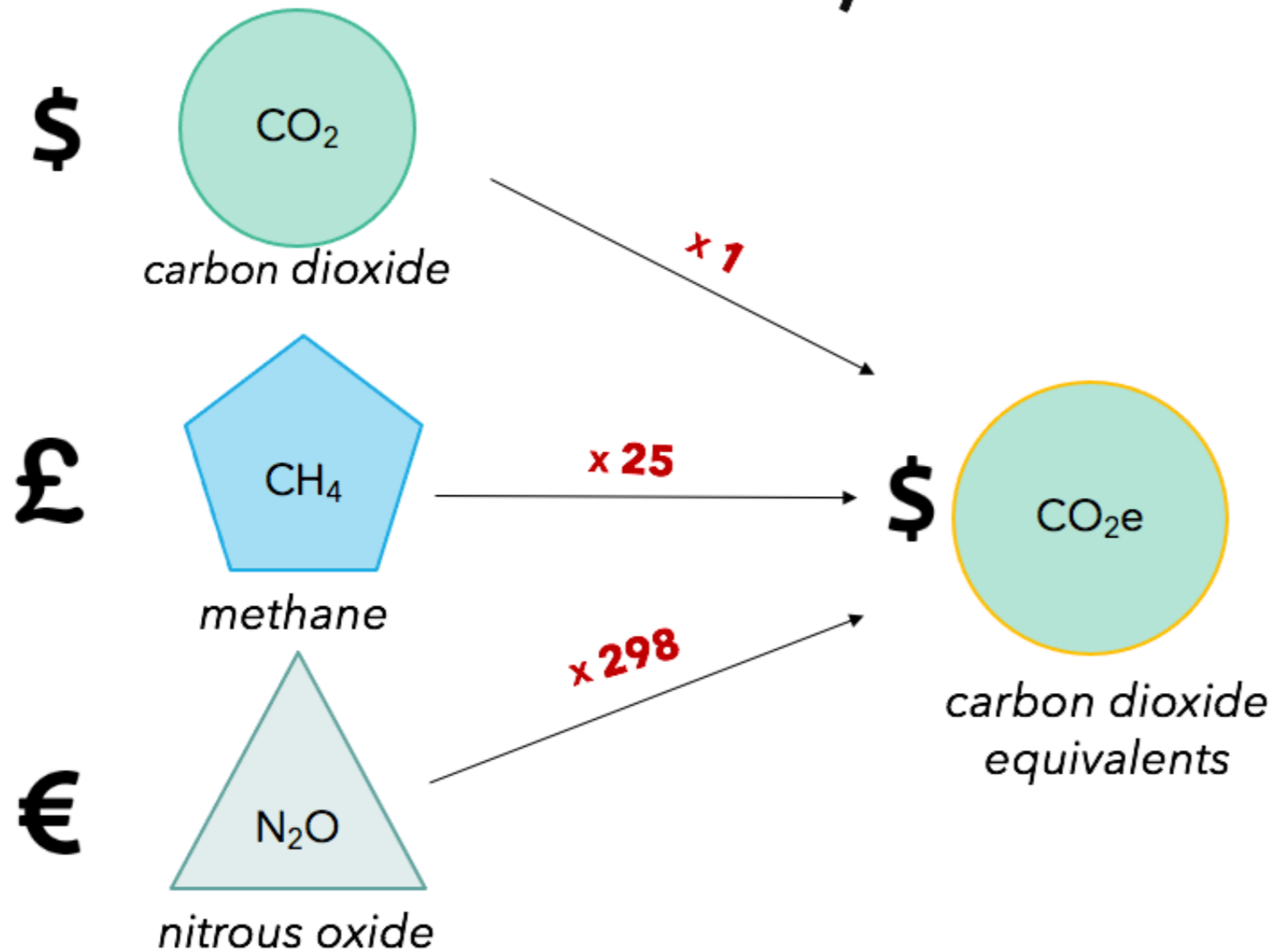


**Negative result** = less emissions, or carbon sequestration



**Positive result** = more emissions, or less carbon sequestration

# What is... carbon dioxide equivalent (CO<sub>2</sub>-eq)



## Global Warming Potential (GWP)

is a measure of how much a given mass of greenhouse gas is estimated to contribute to global warming. It is a relative scale which compares the gas in question to that of the same mass of carbon dioxide.

Assessment and GHG accounting tools (like EX-ACT) express results in a common "currency": CO<sub>2</sub>-eq.

# The results

## Summary GHG analysis

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**Continent** Eastern Africa  
**Country** Ethiopia  
**Climate** Tropical  
**Moisture** Dry

**Total area (ha)** 2,570

---

**Project duration (in years)**

**Implementation Phase** 5  
**Capitalization Phase** 15  
**Total Duration of Accounting** 20

### MITIGATION POTENTIAL

**301,432**

tCO<sub>2</sub>-e

+ = Source / - = Sink





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## Technical composition of the tool

# The different EX-ACT modules



9 modules with data entry

Last module: Results

# 1. Description



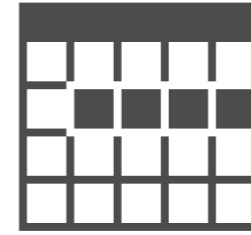
Localisation



Soil type



Climate



Duration

EX-ACT version 9  
Start

Description of  
project

Land-use  
changes

Cropland  
management

Grassland and  
Livestock

Forest  
management

Inland wetlands

Coastal wetlands

Fisheries and  
aquaculture

Inputs and  
Investments

Detailed  
results

## 1. DESCRIPTION

### 1.1 Project description

User Name

Date

Project name

Project code

Project cost (in USD)

Funding agency

Executing agency

Project status

Please select

### 1.2 Project site and duration

Continent

Caribbean

Country

Haiti

Climate

Tropical

Moisture

Dry

Soil Type

High activity clay soils

Project duration (in years)

Implementation Phase

5

Capitalization Phase

15

**Total Duration of Accounting**

**20**

Climate?

Soil?

# The different EX-ACT modules

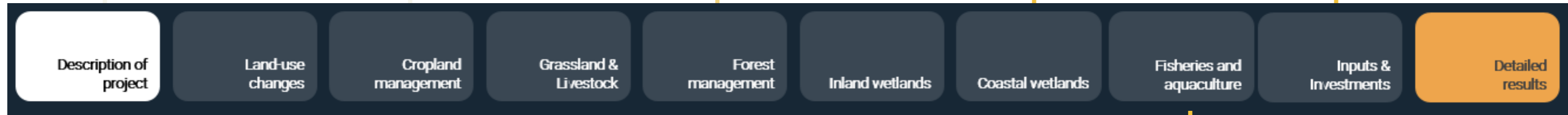
Description:  
geographical  
features and duration  
of the project

Cropland: annuals  
and pluriannuals,  
perennials and  
agroforestry, flooded  
rice

Forest degradation  
levels and fire  
occurrence

Coastal wetlands and  
coastal waterbodies

Inputs, energy,  
irrigation and  
infrastructure



Deforestation,  
Afforestation, Other  
Land Use Changes

Grassland  
degradation levels  
and livestock  
management

Inland wetlands and  
inland waterbodies

Small scale fisheries,  
large scale fisheries,  
and aquaculture

Results

# Land-use changes

EX-ACT version  
9 Start

Description of  
project

Land-use  
changes

Cropland  
management

Grassland and  
Livestock

Forest  
management

Inland wetlands

Coastal wetlands

Fisheries and  
aquaculture

Inputs and  
Investments

Detailed  
results

## Deforestation

Land use change from a forest to a non-forest land use

## Afforestation/Reforestation

Planting of forest in a non-forest area (including plantations)

## Other land use changes

All other land use changes not involving forests as initial land use or final land use. ex: shift from grassland to annual cropland; expansion of coffee cultivation on degraded land.

# Cropland management

EX-ACT version  
9 Start

Description of  
project

Land-use  
changes

Cropland  
management

Grassland and  
Livestock

Forest  
management

Inland wetlands

Coastal wetlands

Fisheries and  
aquaculture

Inputs and  
Investments

Detailed  
results

## Annual cropland

Any change in crops and management practices (soil and water management, inputs, residue management)

## Perennial cropland (agroforestry)

Any change in management practices (change in cropping system, soil, water, inputs and residue management)

## Flooded rice

Any change in management practices (period and seasons of cultivation, water table management, residue management)

# Grassland and livestock

EX-ACT version  
9 Start

Description of  
project

Land-use  
changes

Cropland  
management

Grassland and  
Livestock

Forest  
management

Inland wetlands

Coastal wetlands

Fisheries and  
aquaculture

Inputs and  
Investments

Detailed  
results

## Grassland management

Any change in the management or degradation state of grasslands, rangeland and pastures, including fire impacts

## Livestock management

Any change in the number, type and management of livestock (livestock species, number of heads, productivity levels)

# Forest management

EX-ACT version 9  
Start

Description of  
project

Land-use  
changes

Cropland  
management

Grassland and  
Livestock

Forest  
management

Inland wetlands

Coastal wetlands

Fisheries and  
aquaculture

Inputs and  
Investments

Detailed  
results

## Forest degradation management

Any improvement or degradation of existing forests, including through fire impact and severity



# Inland wetlands

EX-ACT version 9  
Start

Description of  
project

Land-use  
changes

Cropland  
management

Grassland and  
Livestock

Forest  
management

Inland wetlands

Coastal wetlands

Fisheries and  
aquaculture

Inputs and  
Investments

Detailed  
results

## Management of organic soils

Land use changes, land management and forest management for organic soils

## Peat extraction

Any activity that relates to peat extraction and changes in quantity extracted

## Inland waterbodies

Any activity that relates to changes in trophic class

# Coastal wetlands

EX-ACT version  
9 Start

Description of  
project

Land-use  
changes

Cropland  
management

Grassland and  
Livestock

Forest  
management

Inland wetlands

Coastal wetlands

Fisheries and  
aquaculture

Inputs and  
Investments

Detailed  
results

## Management of coastal wetlands

Any activity that relates to extraction and excavation of coastal vegetation; drainage of coastal vegetation and rewetting of coastal vegetation.

## Management of coastal waterbodies

Any activity that relates to waterbody management (changes in trophic class)

# Fisheries and Aquaculture

EX-ACT  
version 9  
Start

Description of  
project

Land-use  
changes

Cropland  
management

Grassland  
and Livestock

Forest  
management

Inland  
wetlands

Coastal  
wetlands

Fisheries and  
aquaculture

Inputs and  
Investments

Detailed  
results

## Small scale fisheries

Any activity that relates to fishing vessels at a small scale (fuel use, inland and marine use, choice of fishing gear)

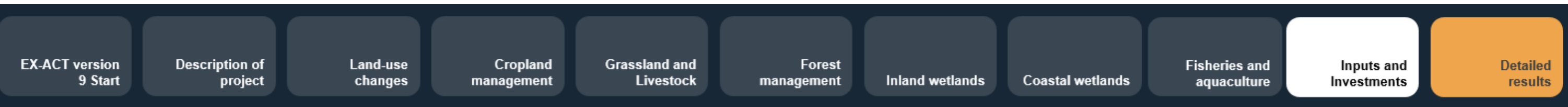
## Large scale fisheries

Any activity that relates to fishing vessels at a large scale (fuel use, type of fish, choice of fishing gear)

## Aquaculture

Any activity that relates to inland or coastal aquaculture

# Inputs and Investments



## Inputs

Any changes in use of fertilizers, pesticides, or animal feed

## Energy consumption

Any changes in use of energy (source and/or consumption)

## Irrigation

Establishment of new irrigation infrastructure and energy use for water pumping in existing irrigation infrastructure

## Construction of buildings and roads

Construction of new buildings or new and rehabilitated roads

# EX-ACT modules: Results

## DETAILED RESULTS

<b>Project name</b>		<b>Project duration (in years)</b>		<b>Total area (ha)</b>	1,500	<b>Global warming potential</b>	
<b>Continent</b>	Caribbean	Implementation Phase	5	Mineral soil	1,500	CO <sub>2</sub>	1
<b>Country</b>	Haiti	Capitalization Phase	15	Organic soil	0	CH <sub>4</sub>	28
<b>Climate</b>	Tropical	Total Duration of Accounting	20	Waterbodies	0	N <sub>2</sub> O	265
<b>Moisture</b>	Dry						

### GROSS FLUXES

In tCO<sub>2</sub>-e over the whole period analysis

PROJECT COMPONENTS		WITHOUT	WITH	BALANCE
Land use changes	Deforestation	151,038	0	-151,038
	Afforestation	0	0	0
	Other land-use	0	0	0
Cropland	Annual	1,872	234	-1,638
	Perennial	0	0	0
	Flooded rice	0	0	0
Grasslands & Livestock	Grasslands	0	0	0
	Livestock	0	0	0
	Forest mngt.	0	-41,376	-41,376
	Inland wetlands	0	0	0
	Coastal wetlands	0	0	0
	Fisheries and aquaculture	0	0	0
	Inputs & Invest.	0	0	0
<b>Total emissions, tCO<sub>2</sub>-e</b>		<b>152,910</b>	<b>-41,142</b>	<b>-194,052</b>
<b>Total emissions, tCO<sub>2</sub>-e/ha</b>		<b>101.9</b>	<b>-27.4</b>	<b>-129.4</b>
<b>Total emissions, tCO<sub>2</sub>-e/ha/yr</b>		<b>5.1</b>	<b>-1.4</b>	<b>-6.5</b>

### SHARE PER GHG OF THE BALANCE

In tCO<sub>2</sub>-e over the whole period analysis

CO <sub>2</sub> BIOMASS	CO <sub>2</sub> SOIL	N <sub>2</sub> O	CH <sub>4</sub>	ALL NON-AFOLU EMISSIONS*
-136,454	-14,553	-31	0	
0	0	0	0	
0	0	0	0	
0	-1,550	-88	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
-41,376	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	0
0	0	0	0	0
<b>-177,830</b>	<b>-16,103</b>	<b>-119</b>	<b>0</b>	<b>0</b>
<b>-118.6</b>	<b>-10.7</b>	<b>-0.1</b>	<b>0.0</b>	<b>0.0</b>
<b>-5.9</b>	<b>-0.5</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

### AVERAGE ANNUAL EMISSIONS

In tCO<sub>2</sub>-e/yr

WITHOUT	WITH	BALANCE
7,552	0	-7,552
0	0	0
0	0	0
94	12	-82
0	0	0
0	0	0
0	0	0
0	0	0
0	-2,069	-2,069
0	0	0
0	0	0
0	0	0
<b>7,646</b>	<b>-2,057</b>	<b>-9,703</b>

Tier 2 Annual emissions

+ = Source / - = Sink



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Practical example, reading results and case study

# Examples

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The activities of a rural development project in Haiti are summarized as follows:



To avoid deforestation of 400 ha of tropical dry forest



To promote good agricultural practices on 500 ha of maize (residue retention, organic fertiliser)



To restore 600 ha of degraded tropical dry forest

## Building scenarios

Description	Initial situation	Without the project	With the project
Deforestation	400 ha of Tropical dry forest	400 ha of Degraded land	400 ha of Tropical dry forest
Improved practices on cropland	500 ha of maize land under unimproved practices (residue burning; no organic fertilizer; full tillage)	NO CHANGE	500 ha of maize land under Improved practices (residue retention; organic fertilizer; full tillage)
Forest management	Level of degradation is moderate (40% of biomass loss)	NO CHANGE	Level of degradation will become low (20% of biomass loss)



# EX-ACT modules: Results

## DETAILED RESULTS

<b>Project name</b>					
<b>Continent</b>	Caribbean	<b>Project duration (in years)</b>		<b>Total area (ha)</b>	1,500
<b>Country</b>	Haiti	Implementation Phase	5	Mineral soil	1,500
<b>Climate</b>	Tropical	Capitalization Phase	15	Organic soil	0
<b>Moisture</b>	Dry	Total Duration of Accounting	20	Waterbodies	0
					<b>Global warming potential</b>
					CO <sub>2</sub> 1
					CH <sub>4</sub> 28
					N <sub>2</sub> O 265

### GROSS FLUXES

In tCO<sub>2</sub>-e over the whole period analysis

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	Forest mngt.	0	-41,376	-41,376
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	Coastal wetlands	0	0	0
	Fisheries and aquaculture	0	0	0
	Inputs & Invest.	0	0	0
<b>Total emissions, tCO<sub>2</sub>-e</b>		<b>152,910</b>	<b>-41,142</b>	<b>-194,052</b>
<b>Total emissions, tCO<sub>2</sub>-e/ha</b>		<b>101.9</b>	<b>-27.4</b>	<b>-129.4</b>
<b>Total emissions, tCO<sub>2</sub>-e/ha/yr</b>		<b>5.1</b>	<b>-1.4</b>	<b>-6.5</b>

### SHARE PER GHG OF THE BALANCE

In tCO<sub>2</sub>-e over the whole period analysis

CO <sub>2</sub> BIOMASS	CO <sub>2</sub> SOIL	N <sub>2</sub> O	CH <sub>4</sub>	ALL NON-AFOLU EMISSIONS*
-136,454	-14,553	-31	0	
0	0	0	0	
0	0	0	0	
0	-1,550	-88	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
-41,376	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	0
0	0	0	0	0
<b>-177,830</b>	<b>-16,103</b>	<b>-119</b>	<b>0</b>	<b>0</b>
<b>-118.6</b>	<b>-10.7</b>	<b>-0.1</b>	<b>0.0</b>	<b>0.0</b>
<b>-5.9</b>	<b>-0.5</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

### AVERAGE ANNUAL EMISSIONS

In tCO<sub>2</sub>-e/yr

WITHOUT	WITH	BALANCE
7,552	0	-7,552
0	0	0
0	0	0
94	12	-82
0	0	0
0	0	0
0	0	0
0	-2,069	-2,069
0	0	0
0	0	0
0	0	0
<b>7,646</b>	<b>-2,057</b>	<b>-9,703</b>

Tier 2  
Annual  
emissions

# EX-ACT modules: Results

## DETAILED RESULTS

<b>Project name</b>		<b>Project duration (in years)</b>		<b>Total area (ha)</b>	1,500	<b>Global warming potential</b>	
<b>Continent</b>	Caribbean	Implementation Phase	5	Mineral soil	1,500	CO <sub>2</sub>	1
<b>Country</b>	Haiti	Capitalization Phase	15	Organic soil	0	CH <sub>4</sub>	28
<b>Climate</b>	Tropical	Total Duration of Accounting	20	Waterbodies	0	N <sub>2</sub> O	265
<b>Moisture</b>	Dry						

### GROSS FLUXES

In tCO<sub>2</sub>-e over the whole period analysis

PROJECT COMPONENTS		WITHOUT	WITH	BALANCE
Land use changes	Deforestation	151,038	0	-151,038
	Afforestation	0	0	0
	Other land-use	0	0	0
Cropland	Annual	1,872	234	-1,638
	Perennial	0	0	0
	Flooded rice	0	0	0
Grasslands & Livestock	Grasslands	0	0	0
	Livestock	0	0	0
	Forest mngt.	0	-41,376	-41,376
	Inland wetlands	0	0	0
	Coastal wetlands	0	0	0
	Fisheries and aquaculture	0	0	0
	Inputs & Invest.	0	0	0
<b>Total emissions, tCO<sub>2</sub>-e</b>		<b>152,910</b>	<b>-41,142</b>	<b>-194,052</b>
<b>Total emissions, tCO<sub>2</sub>-e/ha</b>		<b>101.9</b>	<b>-27.4</b>	<b>-129.4</b>
<b>Total emissions, tCO<sub>2</sub>-e/ha/yr</b>		<b>5.1</b>	<b>-1.4</b>	<b>-6.5</b>

### SHARE PER GHG OF THE BALANCE

In tCO<sub>2</sub>-e over the whole period analysis

CO <sub>2</sub> BIOMASS	CO <sub>2</sub> SOIL	N <sub>2</sub> O	CH <sub>4</sub>	ALL NON-AFOLU EMISSIONS*
-136,454	-14,553	-31	0	
0	0	0	0	
0	0	0	0	
0	-1,550	-88	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	
-41,376	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	0
0	0	0	0	0
<b>-177,830</b>	<b>-16,103</b>	<b>-119</b>	<b>0</b>	<b>0</b>
<b>-118.6</b>	<b>-10.7</b>	<b>-0.1</b>	<b>0.0</b>	<b>0.0</b>
<b>-5.9</b>	<b>-0.5</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

### AVERAGE ANNUAL EMISSIONS

In tCO<sub>2</sub>-e/yr

WITHOUT	WITH	BALANCE
7,552	0	-7,552
0	0	0
0	0	0
94	12	-82
0	0	0
0	0	0
0	0	0
0	0	0
0	-2,069	-2,069
0	0	0
0	0	0
0	0	0
0	0	0
<b>7,646</b>	<b>-2,057</b>	<b>-9,703</b>

Tier 2 Annual emissions

+ = Source / - = Sink

# EX-ACT modules: Results - main takeaway

## GROSS FLUXES

In tCO2-e over the whole period analysis

PROJECT COMPONENTS		WITHOUT	WITH	BALANCE
Land use changes	Deforestation	151,038	0	-151,038
	Afforestation	0	0	0
	Other land-use	0	0	0
Cropland	Annual	1,872	234	-1,638
	Perennial	0	0	0
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Grasslands & Livestock	Grasslands	0	0	0
	Livestock	0	0	0
	Forest mngt.	0	-41,376	-41,376
	Inland wetlands	0	0	0
	Coastal wetlands	0	0	0
	Fisheries and aquaculture	0	0	0
	Inputs & Invest.	0	0	0

The carbon balance is key to measure the project's mitigation potential!

<b>Total emissions, tCO2-e</b>	<b>152,910</b>	<b>-41,142</b>	<b>-194,052</b>
<b>Total emissions, tCO2-e/ha</b>	<b>101.9</b>	<b>-27.4</b>	<b>-129.4</b>
<b>Total emissions, tCO2-e/ha/yr</b>	<b>5.1</b>	<b>-1.4</b>	<b>-6.5</b>

+ = Source / - = Sink

# Downloading EX-ACT

Economic and Policy Analysis of Climate Change

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Overview

What we offer  
EX-ACT and CSA

Overview

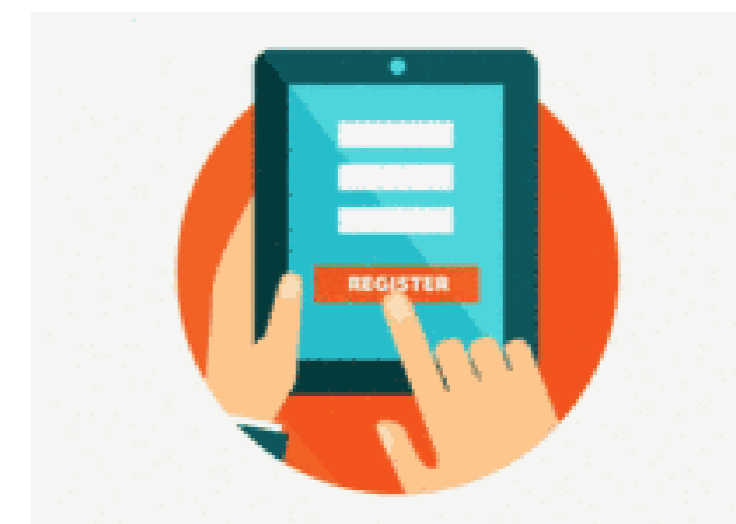
The Agriculture, Forestry and Other Land Use (AFOLU) sector accounts for around 20-25% of global anthropogenic emissions, and is currently one of the largest sources of greenhouse gases. It also is one of the main drivers of biodiversity loss, which is a key pre-requisite for the resilience of ecosystems.

Resources



- Go to the website: <http://www.fao.org/in-action/epic/ex-act-tool>
- Go to the EX-ACT page
- Register online
- Click on the confirmation link you receive on your personal e-mail
- Login and download the tool(s) of your interest

**REGISTER** to download  
the EX-ACT tool or **LOGIN**



**Technical requirements**

EX-ACT v.9 requires MS Excel version  
2011 or newer