



Food and Agriculture
Organization of the
United Nations

Environmental eXternalities **AC**counting **T**ool (EX-ACT)

Greenhouse Gas Accounting Report for Bioremediation-Filiere Verdi

Project Description

Project Identification

Project Name: Bioremediation-Filiere Verdi

Project Code: FV001

Funding Agency: PN JUST TRANSITION FUND ITALIA 2021-2027 - Azione 2.3

Executing Agency: None

Project Cost [USD]: 35,000,000.00

Status: Design

Project Site Characteristics

Country: Italy

Climate: Warm Temperate

Moisture: Dry

Soil Type: Sandy

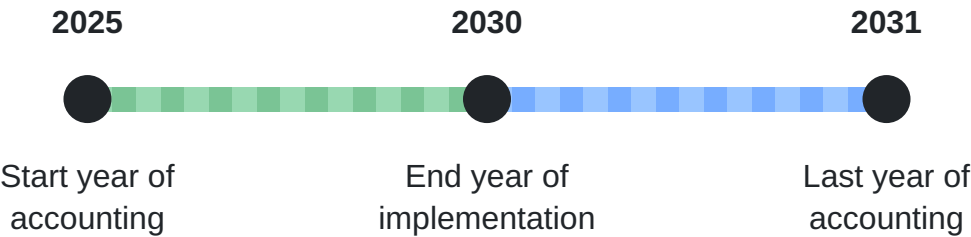
SOCref [tC/ha]: 10.00

Project Duration

Start Year of Accounting: 2025

Implementation phase [no. of years]: 5

Last Year of Accounting: 2031



Project Summary

Project Summary

Total Area (hectares): 66.00

Total Heads: 0.00

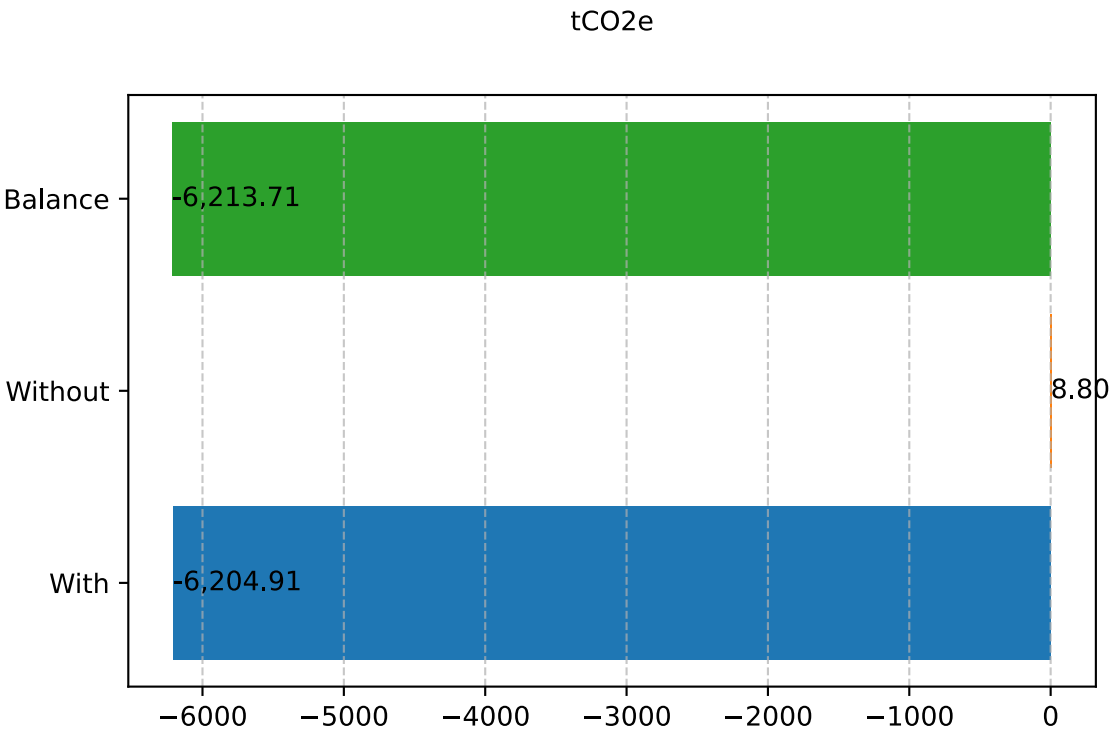
Total Tonnes of Catch: 0.00

GHG Assessment Results

Total Carbon Balance

Bioremediation-Filiere Verdi has an estimated total carbon balance of **-6,213.71** tCO2e over the entire period of accounting of 6 years.

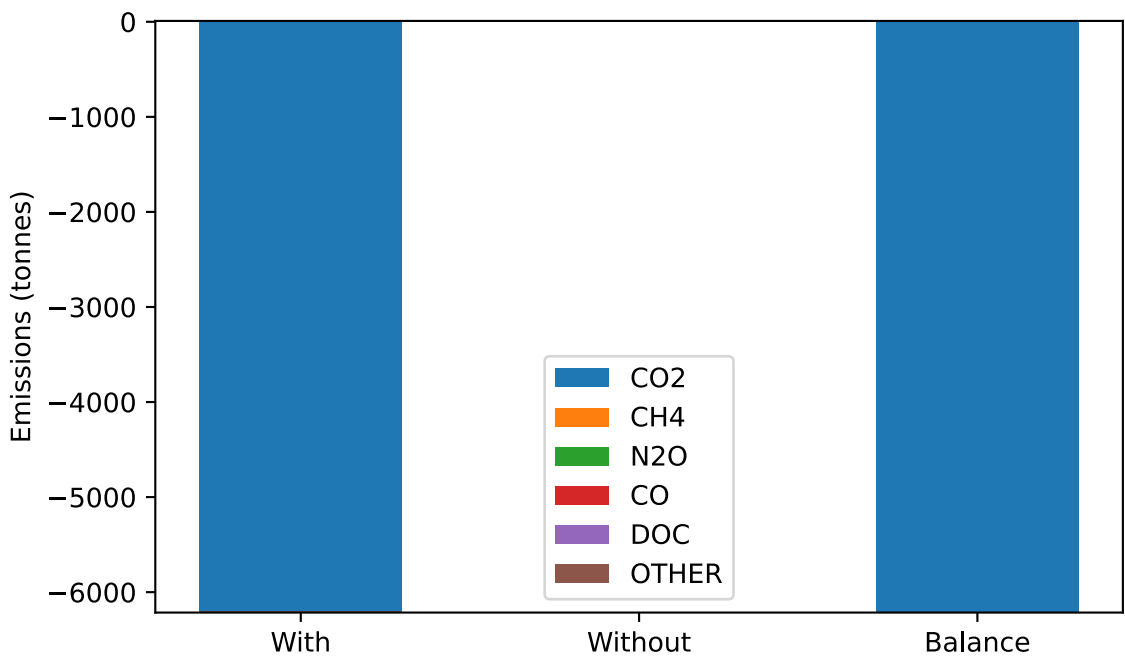
The carbon balance represents the difference of GHG emissions and removals between the With project scenario and the Without project scenario (what would happen if the project was not implemented).



GHG Assessment Results

Carbon Balance by GHG

The main GHG contributing to the balance is **CO₂**, which **decreases** by -6,214.55 tCO₂-e, resulting from the difference with the “Without Project” scenario, followed by **CH₄** which **increases** by 0.57 tCO₂-e and **N₂O** which **increases** by 0.27 tCO₂-e.



Carbon Balance by Activity

Total activities: 1

Activity 1 - Forestazione - inerbimento

The activity will be implemented starting from 2025, for 1 years, ending in 2031.

Impact: 66.0 hectares .

Carbon balance: **-6,213.71 tCO₂-e**.

Interventions include:

1. Forest Management (-6,967.68 tCO₂-e)
2. Organic Soil (0.00 tCO₂-e)
3. Other Land (0.00 tCO₂-e)
4. Land Use Change (242.00 tCO₂-e)
5. Irrigation (511.98 tCO₂-e)

Units Breakdown

	Without Project	With Project
Land-based (hectares)		
Forest Management	0	66.0
Other Land	66.0	0

EX-ACT Methodological Overview

The Environmental EXternalities ACcounting Tool (EX-ACT) has been developed by the Food and Agriculture Organization of the United Nations (FAO) to estimate the effects of interventions in the agricultural sector on climate change mitigation and biodiversity conservation¹. The climate section of EX-ACT estimates greenhouse gas (GHG) fluxes generated by activities implemented at field level, and along the value chain, providing estimates of the emission/mitigation potential of public and private investment projects, policies, and national level programs. The tool covers the whole agrifood sector including the agriculture, forestry and other land use (AFOLU) sector, fisheries and aquaculture, agricultural inputs and infrastructure, and downstream value chain activities. The climate section of EX-ACT is primarily based on the Volume 4 of the 2019 Refinement to the 2006 Guidelines for National Greenhouse Gas Inventories (IPCC, 2019), the 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands (IPCC, 2014), and Volume 4 of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (IPCC, 2006), complemented by other scientific research. GHG emissions for farm operations, inputs, transport, and irrigation systems implementation are based on Lal (2004). Emission factors for electricity use are based on United Nation Framework Convention on Climate Change (UNFCCC, 2021), and those for on-farm infrastructure are from Agence De l'Environnement et de la Maitrise de l'Energie (ADEME, 2021). Emissions factors for the fishery sector are derived from Parker & Tyedmers (2014), Sciortino (2010), Winther et al. (2009) and Iribaren et al. (2010 & 2011). Soil carbon stock in mangroves is complemented by the review from Atwood et al. (2017). These references provide EX-ACT with recognized default values for emission factors and carbon values, the so-called Tier 1 level of precision. The tool consists of a set of different modules allowing for an analysis of carbon dioxide (CO₂) emissions and removals resulting from changes in carbon stocks in the five quantifiable carbon pools (i.e. aboveground biomass, belowground biomass, litter and deadwood, and soil), and non-CO₂ emissions: methane (CH₄), nitrous oxide (N₂O) and hydrofluorocarbons (HFC) originating from activities in the agricultural sector. All GHG fluxes are computed in tonnes of CO₂ equivalent according to Global Warming Potentials provided by the IPCC Assessment Reports. The EX-ACT appraisal assesses how the results of an intervention compare to a scenario where the activities are not implemented (also known as reference or business as usual (BAU) scenario). To compute the carbon balance, the tool requires data for three specific points in time: initial situation, with project scenario, without project scenario. The carbon balance is equal to the difference between GHG fluxes generated from the “with project” scenario and those generated from the “without project” scenario. The carbon balance in EX-ACT represents the estimated impact of the project. Calculations are done using Tier 1 parameters provided by IPCC (2019) that represent average values differentiated by region, climate, moisture level and soil type, drawing from the most recent scientific literature. The users have the possibility to input location-specific parameters (Tier 2) if data is available. For a thorough description of the methodology applied in EX-ACT, please consult the EX-ACT guidelines available at the following link: [EX-ACT Guidelines](#).

Please contact us for any feedback and questions you may have: EX-ACT@fao.org

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Notes

¹The biodiversity section of EX-ACT is not yet public but will be released in mid-2025

