



USAID
FROM THE AMERICAN PEOPLE



WINROCK
INTERNATIONAL

AGRICULTURE, FORESTRY AND OTHER LAND USE (AFOLU) CARBON CALCULATOR

2014

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WINROCK INTERNATIONAL

PRESENTATION OVERVIEW

1. Introduction to the AFOLU Carbon Calculator
2. AFOLU Carbon Calculator Tools and Capabilities
3. Background data/defaults
4. AFOLU Carbon Calculator Geographic Coverage
5. Using the AFOLU Carbon Calculator

HOW TO ESTIMATE HOW USAID AGRICULTURE AND FORESTRY PROJECTS IMPACT THE CLIMATE?

Agroforestry



Reforestation



Reducing agricultural inputs

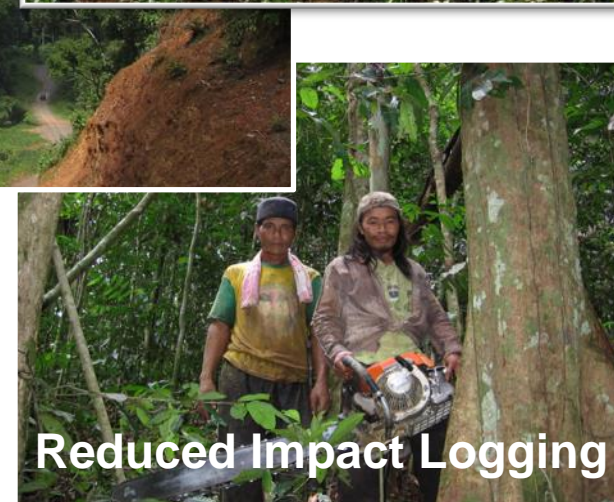
Protected Area Establishment



Livestock Management



Improved Cookstoves



Reduced Impact Logging

www.afolucarbon.org

- Free!
- Publicly available
- Online, easy-to-use platform
- Inputs can be saved and stored
- Transparent, scientifically sound methods and data sources

The screenshot displays the AFOLU Carbon Calculator dashboard. At the top, logos for USAID and Winrock International are visible. The navigation bar includes 'Dashboard', 'Projects', 'Groups', 'Support', and 'Info'. The main dashboard area is divided into several sections: a 'Projects' list with entries like 'Climate-Friendly Agriculture in Albania' and 'Sustainable Livelihoods and Climate in the Philippines', each with a 'View' button; a 'My Account' section for user 'Lara Murray' with profile details; a 'My Groups' section showing a group named 'TestL'; and a 'Reported Projects' section indicating no completed reports. A sidebar on the left provides a 'Welcome' message, a 'Where do I start?' section with a list of basic steps (1. Create or edit a project, 2. Add or edit project activities, 3. Review results, 4. If reporting to USAID, submit report), and a 'Take a tour' section.

THE AFOLU CARBON CALCULATOR

- Designed to assist USAID in estimating the impacts of its worldwide land use based portfolio of project activities worldwide – allows accountability of funds.
- Used for reporting against the standard Sustainable Landscapes indicator – 4.8-7
- Standardizes reporting on 4.8-7 by using same data sources, and methods – IPCC principles of consistency and comparability.
- Saves and stores data on the website, allowing consistent and traceable reporting of project GHG impacts over time – IPCC principle of consistency and transparency.

THE AFOLU CARBON CALCULATOR

- Estimates emissions reduced, sequestered, and/or avoided, for the reporting year and project impacts 30 years into the future to assist with planning – IPCC principle of completeness.
- Estimates impacts of greenhouse gasses (GHGs) including carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), but converts and reports impacts in tons of carbon dioxide equivalent (t CO₂ e) on an annual basis
- Sources of default data and estimation methods for emission factors and sequestration rates are transparently documented and scientifically sound.
- Does NOT generate estimates of marketable carbon offsets

AFOLU CALCULATOR'S TOOLS



Forest Protection

- Deforestation
- Illegal logging
- Fire



Forest Management

- Reduced Impact Logging
- Extended rotation
- Stop logging



Afforestation / Reforestation

- Heterogeneous stands/native species
- Homogeneous stands/plantations



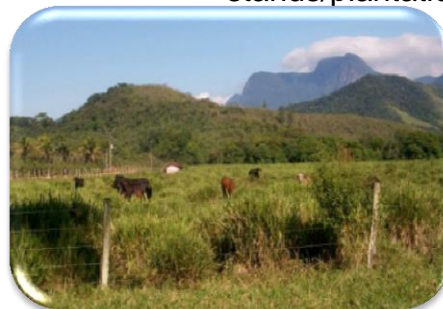
Agroforestry

- Tree intercropping
- Woodlots
- Protective agroforestry
- Silvopastoral
- Multistrata



Cropland Management

- Tillage
- Fertilizer management
- Rice flooding regimes



Grazing Management

- Grassland management
- Livestock management
- Rewet organic soils



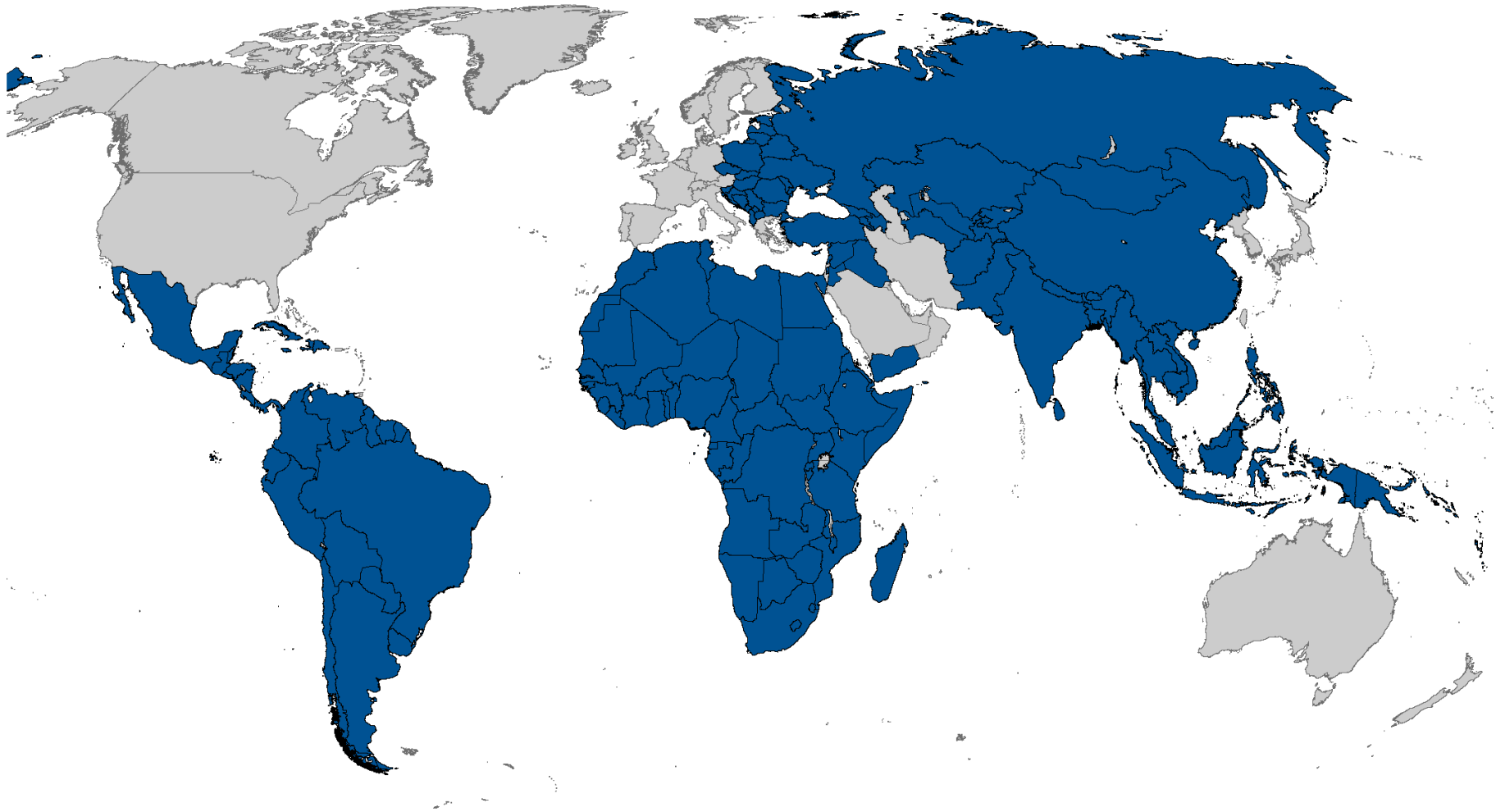
Forest Degradation by Fuelwood

- Direct and indirect benefits from improved cookstoves

DESIGN OF THE AFOLU CARBON CALCULATOR

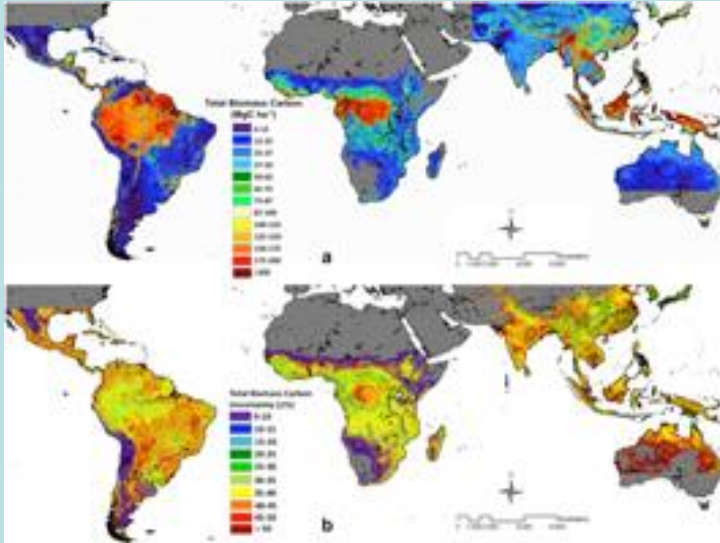
- Users don't need a technical background in emissions accounting to generate sound estimates of carbon benefits – encompass wide array of users!
- Requires minimal user inputs:
 - Geographic location
 - Type of Activity
 - Area activity is taking place on (in hectares)
 - Answer basic multiple choice questions about management practices
- Calculator estimates benefits using built-in default database of geographically specific variables needed to estimate reliable carbon benefits

AFOLU CARBON CALCULATOR COVERAGE



DEFAULT DATABASE

Global datasets



- Deforestation rates: Hansen et al. 2013. High-Resolution Global Maps of 21st Century Forest Cover Change. *Science*.
- Biomass: Saatchi, S.S. In preparation. Unpublished dataset.

- Intergovernmental Panel on Climate Change Tier 1 default data

IPCC Defaults & FAO data

Task Force on National Greenhouse Gas Inventories | ipcc | Intergovernmental Panel on Climate Change

Publications

2006 IPCC Guidelines for National Greenhouse Gas Inventories

2006 IPCC Guidelines for National Greenhouse Gas Inventories

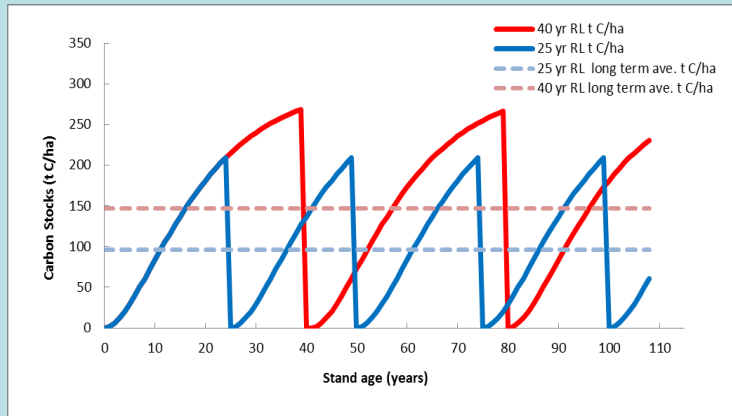
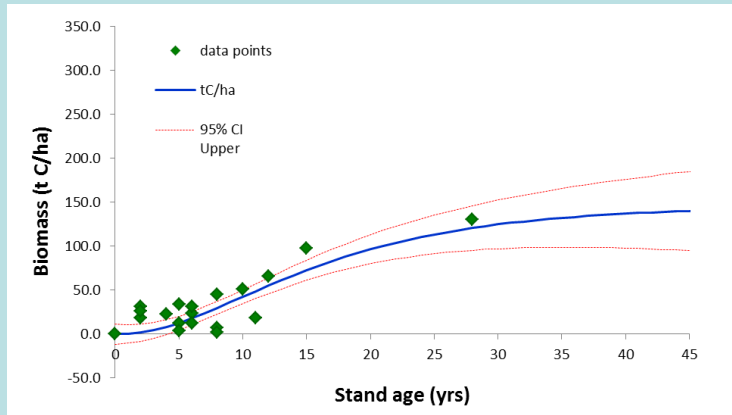
Volume 4
Agriculture, Forestry and Other Land Use

Chapter	Chapter Name
Cover Page of volume 4	Cover Page of volume 4
1	Introduction
2	Generic Methodologies Applicable to Multiple Land-Use Categories
3	Consistent Representation of Land
4	Forest Land
5	Orchards
6	Grassland
7	Wetlands
8	Settlements
9	Other Land
10	Emissions from Livestock and Manure Management
11	N ₂ O Emissions from Managed Soils, and CO ₂ Emissions from Lime and Urea Application
12	Handled Wood Products
Annex 1: Worksheets	
Annex 2: Summary of Equations	
Annex 3: CO ₂ Removals in Residue Combustion Products (Charcoal) Basis for Future Methodological Development	
Annex 4: Possible Approach for Estimating CO ₂ Emissions from Land Converted to Permanently Flooded Lands: Basis for Future Methodological Development	
Annex 5: CH ₄ Emissions from Flooded Land: Basis for Future Methodological Development	



DEFAULT DATABASE

Winrock-developed models and science



- Extensive review of scientific literature
- Field research and data collection
- Development of growth curves
- Application of Winrock-developed, peer-reviewed methodologies for measuring emissions

SUBNATIONAL UNITS

Default values for variables (e.g. aboveground biomass, growth rates, soil carbon, deforestation rates) are assigned to 'subnational units' in the default database. This allows results to reflect local geophysical characteristics.



Navigate the map and click to select Subnational unit relevant to your interests

CALCULATOR USER INPUTS

Calculator applies a tiered approach - if users have access to activity-specific data for default parameters, they may use it.

Required Inputs

- Simplest level
- Minimal data input required
- **Default databases** developed for each tool in the calculator

Advanced Inputs

- User can override default values
- Final result tailored to specific project location

If users choose to override default data, the activity-specific data they use should be generated using *scientifically sound methods* or come from reliable, *peer-reviewed sources*.

The screenshot displays the 'Edit Intercropping in the Kilimanjaro Highlands' interface. At the top, there is a title bar with a pencil icon and the text 'Edit Intercropping in the Kilimanjaro Highlands'. Below this is a section titled 'Edit Activity' containing a table of activity details:

Name	Intercropping in the Kilimanjaro Highlands
Activity Type	Agroforestry
Year	2014
Locations	Tanzania Kilimanjaro
Total Area	925.0 ha
Location	(Edit)
Total Benefit	40,191 t CO ₂

Below the activity details is a section titled 'Required Inputs' with the following fields:

- Name:** Intercropping in the Kilimanjaro Highla
- Effective Percent:** 70 %

Below the 'Required Inputs' section is a section titled 'Advanced Inputs' with the following fields:

- Agroforestry Type:** Tree-Intercropping (dropdown menu)
- Age of plantation:** 5 years
- Carbon accumulation rate:** 2.37 t C/ha-1

At the bottom of the interface is a section titled 'Notes'.

AFOLU C CALCULATOR RESULTS

VIEW RESULTS

- Tabular
 - Reporting year
 - Projects annual and cumulative benefits up to 30 years into the future

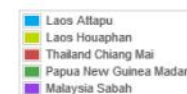
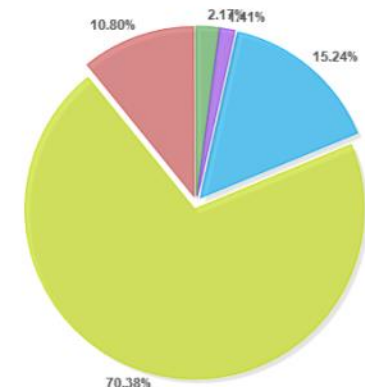
- All estimated impacts from activities are added up to produce overall project impact
- Results shown as tabular data and graphically

- Per location
- Per activity
- Per unit area

Benefits per location Benefits per activity Benefit per unit area

Name	Orangutan Protection Initiative	Project Overview
Activity Type	Forest Protection	
Year	2014	
Locations	Indonesia Kalimantan Selatan Indonesia Kalimantan Timur	Edit this Activity
Total Area	76,403.0 ha	

Year	Estimated effectiveness for avoided deforestation and logging (%)	Annual benefit for avoided deforestation (t CO ₂)	Annual emission from community offtake (t CO ₂)	Total Annual Benefit (t CO ₂)	Cumulative Benefit (t CO ₂)
2014	28	108,258	0	108,258	108,258
2015	35	140,522	0	140,522	248,780
2016	42	174,015	0	174,015	422,795
2017	49	208,774	0	208,774	631,569
2018	56	244,840	0	244,840	876,410
2019	63	282,255	0	282,255	1,158,664
2020	70	321,062	0	321,062	1,479,726
2021	70	335,093	0	335,093	1,814,819
2022	70	349,087	0	349,087	2,163,906



AFOLU C CALCULATOR RESULTS - REPORTING

- Downloadable, printable project reports can be generated as a PDF
- Can submit project results directly to USAID
- Data saved in calculator, making for reporting over many years easier and more consistent

The screenshot shows the Winrock International web application interface. At the top, there is a navigation bar with links for Dashboard, Projects, Groups, Support, and Info. Below this, the user is logged in as 'BrazilCarbon' and has access to 'Reporting' and 'Owner' buttons. The main content area is titled 'BrazilCarbon' and includes tabs for 'Project Overview', 'Activities (12)', and 'Graphs'. A message states 'No Description Available'. At the bottom of the interface, there are buttons for 'Clone Project', 'Submit Report', 'Edit Project', 'Delete Project', and 'Preview Report'.

AFOLU Carbon Calculator Project Report

Sustainable Livelihoods and Climate in the Philippines

Submitted by: Lara Murray
September 5, 2014

USAID reporting: No

Project Summary

Table 1: Summary of project activities

Name	Location	Type	Area	Benefit (CO ₂ e)
Climate-Friendly Rice Cultivation	Philippines Philippines	South Cotabato Sultan Kudarat	Cropland Management	2,300 0
Lowering inputs in Philippine farms	Philippines	Albay	Cropland Management	1,235 0
			Total	3,535 0

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THANK YOU!

For questions and comments:

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Sandra Brown: sbrown@winrock.org