The Carbon Benefits Project

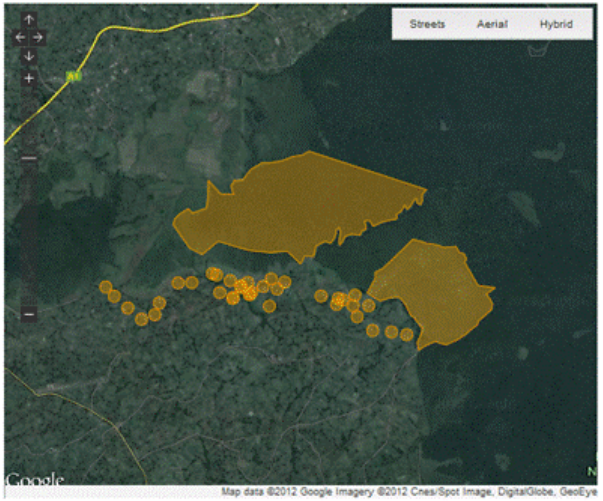
Quick Guide

UNEP gef Colorado State University

a. What methodology does the tool follow?

The Simple Assessment and the Detailed Assessment both use the IPCC method to give a net GHG assessment.

As the tools starts with a map, they can accommodate projects with multiple different activity areas, involving a wide variety of land use and management combinations and changes.



b. What are the input and output data?

Input data

1. Locations of your '**project activity areas'** (the areas where land use or management changes are being made). Users can enter multiple points or polygons or project boundary areas as their 'project activity areas'.

2. For each project activity area the amount of land under different land use categories (forestland, grassland, cropland etc.) plus numbers of livestock.

3. Information for how the land is managed for each land use category in each project activity area.

4. The CBP tools compare net emissions under a project and a baseline scenario. Therefore info for 2 & 3 are needed for initial conditions, a baseline and a project scenario.

Output data

The CBP produces two types of reports:

1. A PDF summary report which gives net GHG balance for a project compared to a baseline scenario. It also presents results by GHG source/sink category with an associated measure of uncertainty. It presents results in the IPCC and UNFCCC format.

Table 3.2 Expanded Report showing Carbon Emissions by IPCC AFOLU Source Categories. Continued.

		Without Project (Baseline scenario)			With Project (Project scenario)			Incremental difference (Project scenario minus baseline scenario)		
		tonnes CO_2 e	tonnes CO_2 e / yr		tonnes CO_2 e	tonnes CO_2 e / yr		tonnes CO_2 e	tonnes CO_2 e / yr	
Source category	Source sub-category	Total	Annual	Uncertainty	Total	Annual	Uncertainty	Total	Annual	Uncertainty
	Forest Land	0	0	0	0	0	0	0	0	0
	Grassland/Savanna	0	0	0	-608642.1	-60864.21	0	-608642.1	-60864.21	0
	Annual Cropland	0	0	0	0	0	0	0	0	0

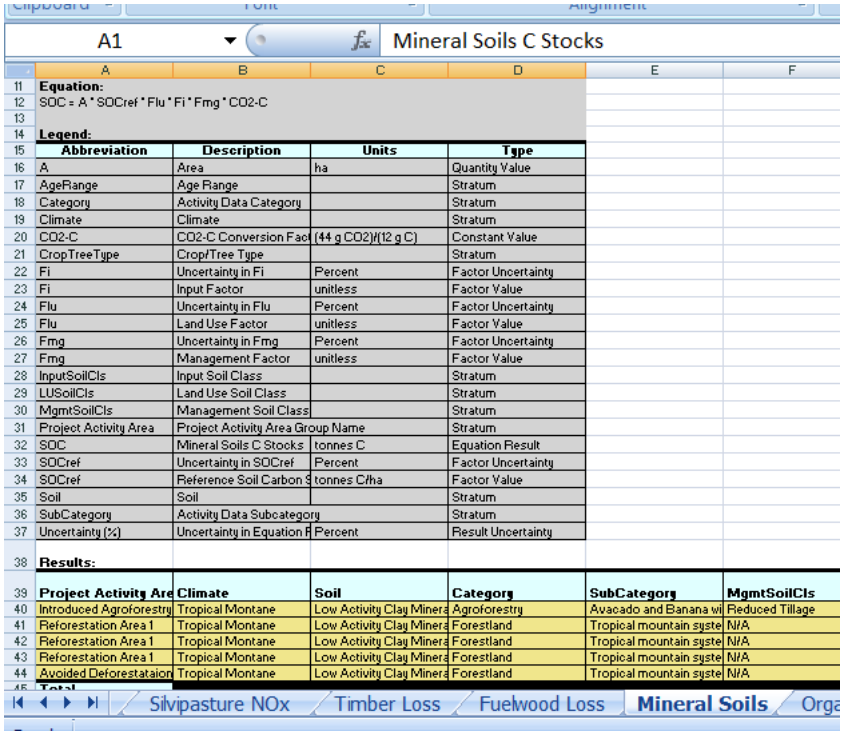
Table 3.1 Simple Summary Report following UNFCCC Common Reporting Guidelines.

Greenhouse Gas Source and Sink Categories	Baseline Emissions (2010)				Project Emissions (2020)				Carbon Benefits		
	CO_2	CH_4	N_2O	GHGs	CO_2	CH_4	N_2O	GHGs			
	tonnes CO_2 equivalent				tonnes CO_2 equivalent				Total tCO_2e	tCO_2e / ha ^{2}	tCO_2e / ha /Yr
Agriculture											
A. Enteric Methane		2698.5				6746.25			40477.5	1.686563	0.1686563
B. Manure Management		116.34	2046			290.85	5115		32435.1	1.351462	0.1351462
C. Rice Cultivation		0				0			0	0	0
D. Agricultural Soils	0	0	2480.93		0	0	6201.86		37209.3	1.550388	0.1550387
E. Prescribed Burning of Savannas		0	0			0	0		0	0	0
F. Field Burning of Agricultural Residues		0	0	0		0	0	0	0	0	0
G. Other	0	0	0	0	0	0	0	0	0	0	0
Land Use Change and Forestry											
A. Forest and other Woody Biomass Stocks	0				-63869.63				-638696.3	-26.61235	-2.661235
B. Forest and Grassland Conversion	0	0	0	0	0	0	0	0	0	0	0
C. Abandonment of Managed Lands	0				0				0	0	0
D. CO2 Emissions and Removals from Soil	0				-41800				-418000	-17.41667	-1.741667
E. Other	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**2814.84**	**4526.93**	**0**	**-105669.6**	**7037.1**	**11316.86**	**0**	**-946574.4**	**-39.4406**	**-3.94406**

Output data ctd.

2. Detailed Reports

These are Excel workbooks with separate sheets for each source and sink category. Results are then further broken down by climate type, soil type, land use category, land management etc. with associated uncertainty. The sheets provide the equations used in the calculations plus explanations of all of the factors.

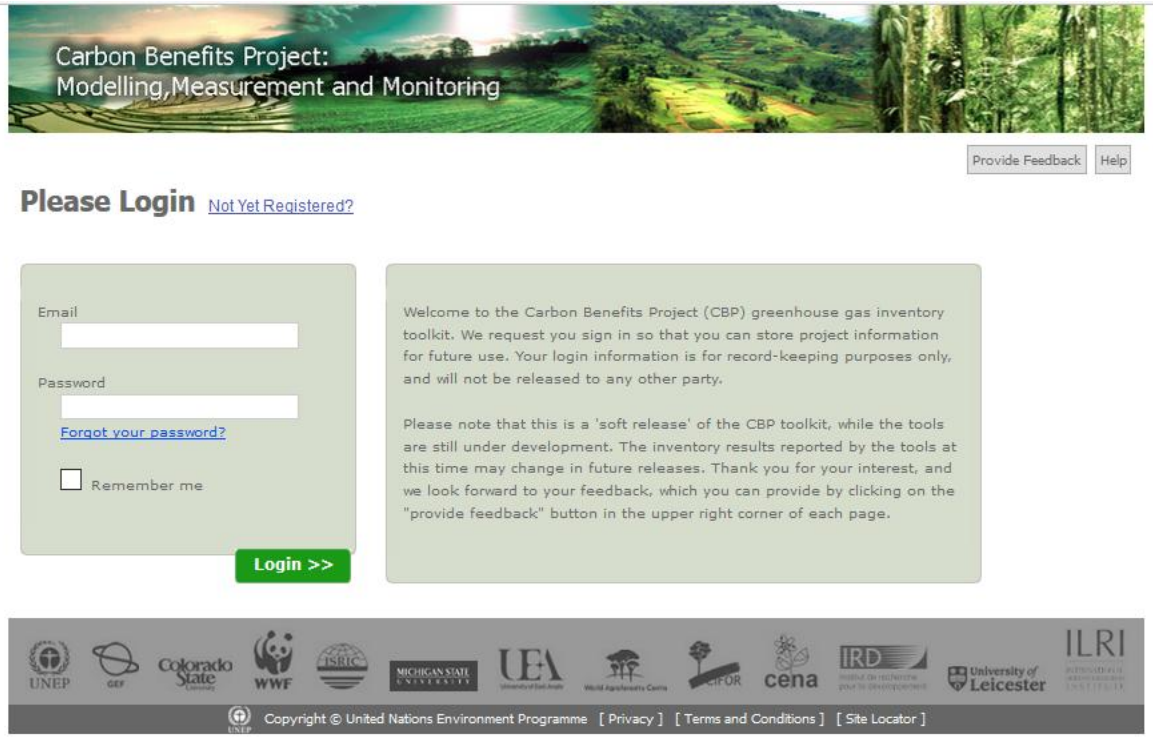


Detailed reports can be produced for the Initial situation, the baseline scenario or the project scenario.

c. A brief step-by-step guide

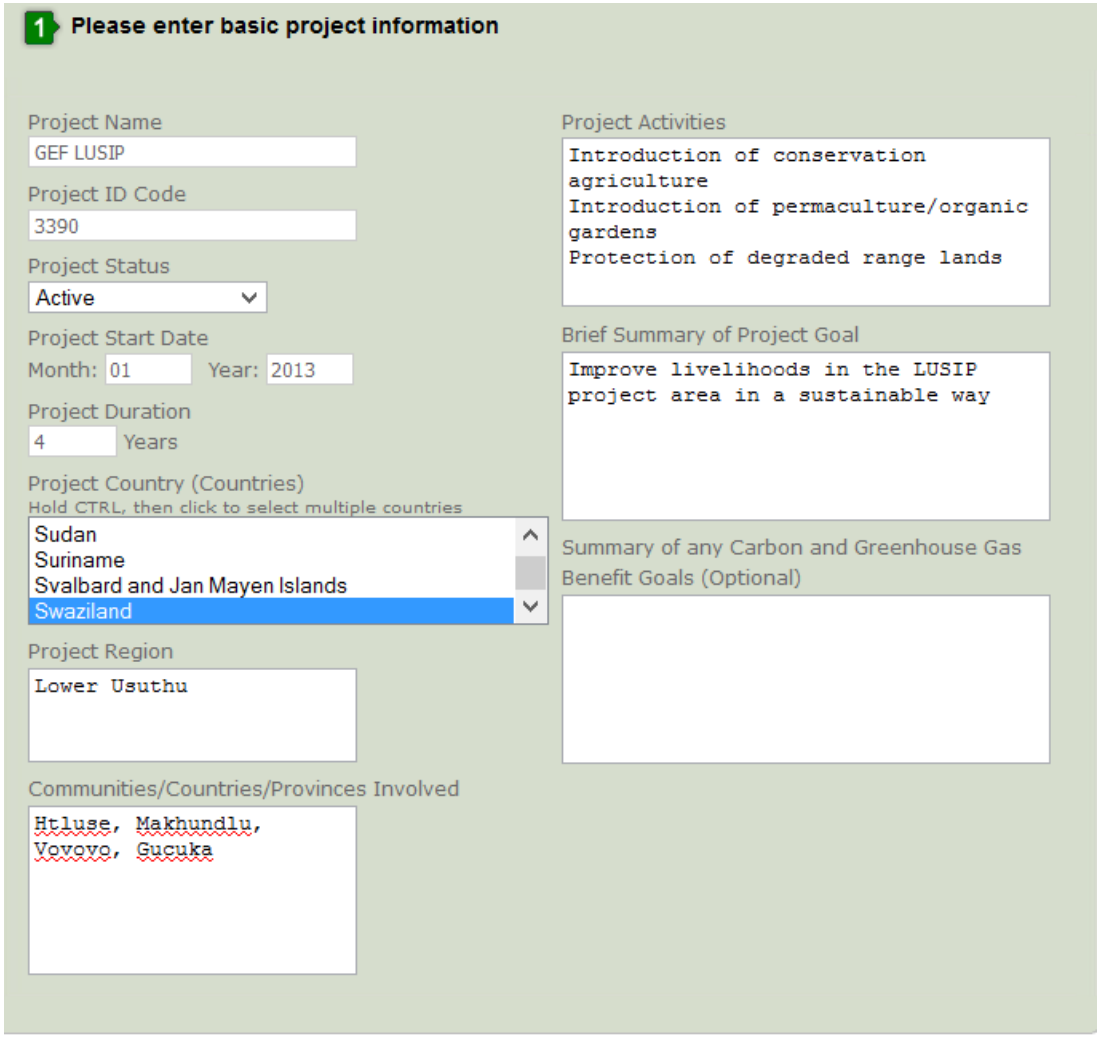
1. Setting up an account:

To start using the CBP tools go to www.unep.org/cbp_pim and set up an account by clicking on 'Not yet registered'. Create a user name and password and then click on the link sent to you by email.



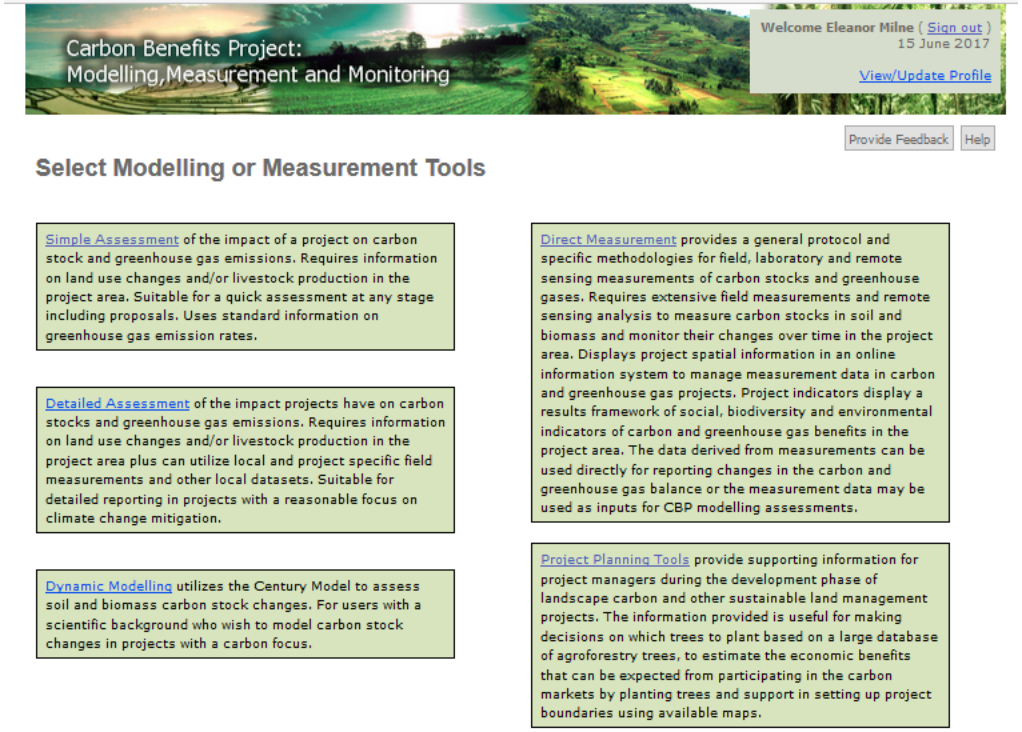
2. Add a new project and enter some basic information about it

E.g. the name of your project, how long it will last, the country or countries where you are working etc. Choosing the country/ies is very important as this will take you to a map in the next step.



3. Choose a tool

Click on ‘Tool Kit Advisor’ and choose either the Simple Assessment or the Detailed Assessment



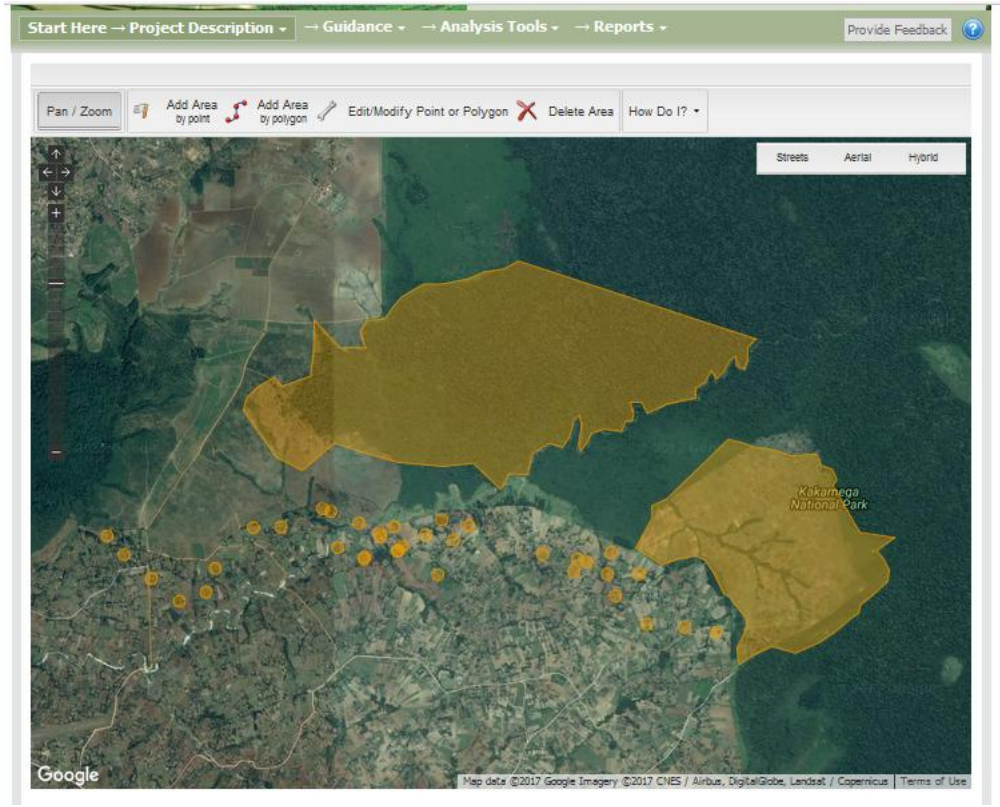
4. Define your project boundaries

Go to ‘Start here’ ‘Project Description’ to define your project activity areas. You can define multiple areas by drawing points or polygons on a map or uploading point or GIS files.

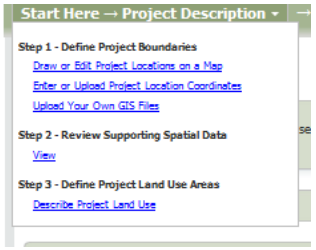
Points are good if you want to represent multiple smallholdings. These can be linked if land use and management is the same for all of them.

Polygons are useful if you want to represent larger areas, for example areas of avoided deforestation.

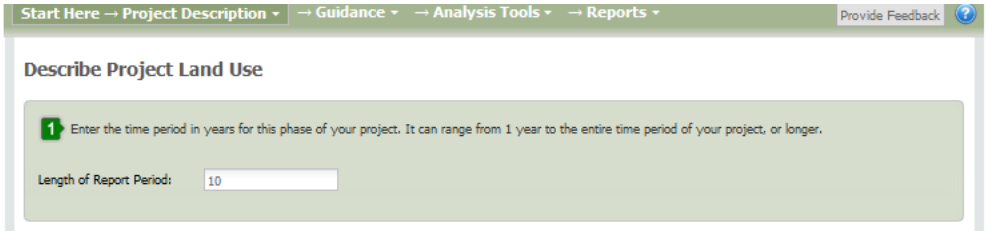
Projects can involve multiple points and polygons and combinations of both.



5. Go to ‘Project Description’ ‘Step 3 – Describe Project Land Use’



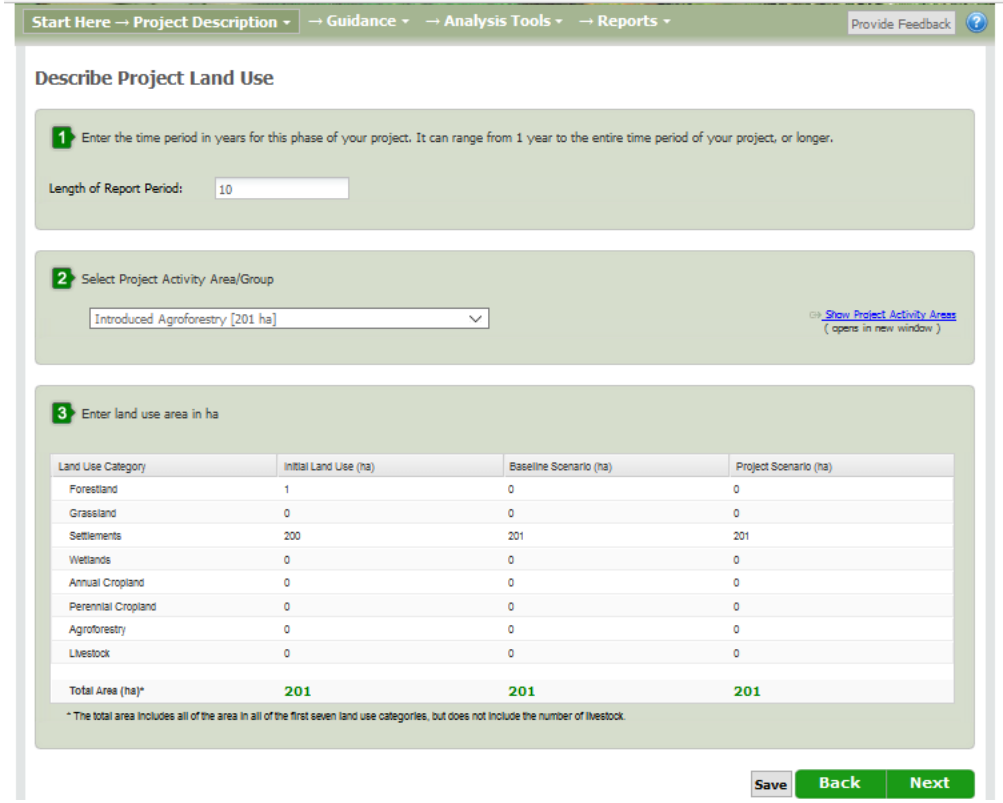
In box 1, enter the number of years you want to create a report for. This can be equal to, shorter or longer than the length of your project.



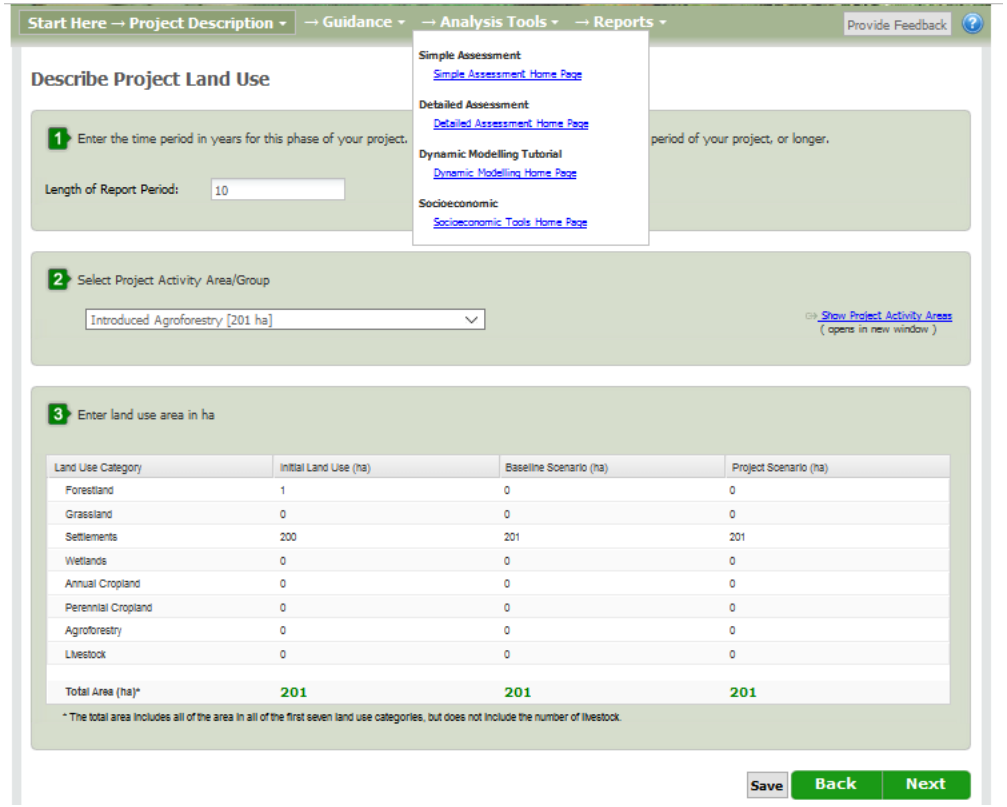
6. For each polygon, point or group of polygons and points tell the system how much land area is in different land use categories (Project Description Step 3):

This needs to be done for the Initial situation before your project started (**Initial land use**) for the situation at the end of the report period under your **Project Scenario** and what the situation would have been at the end of the report period under a **Baseline Scenario**.

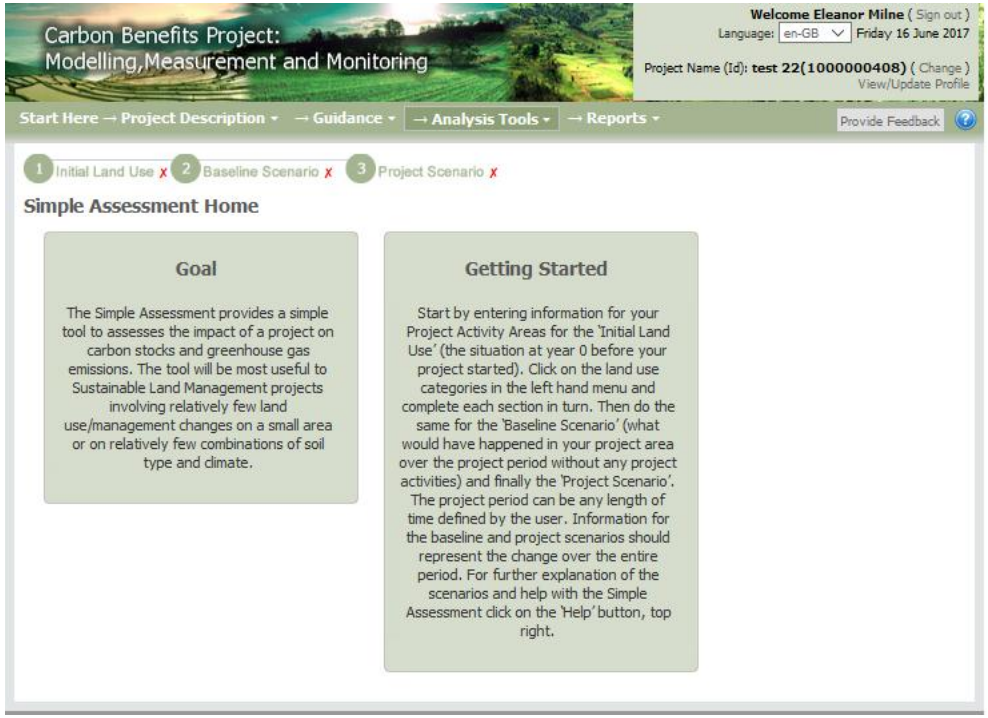
Remember to click ‘Save’ after every entry!



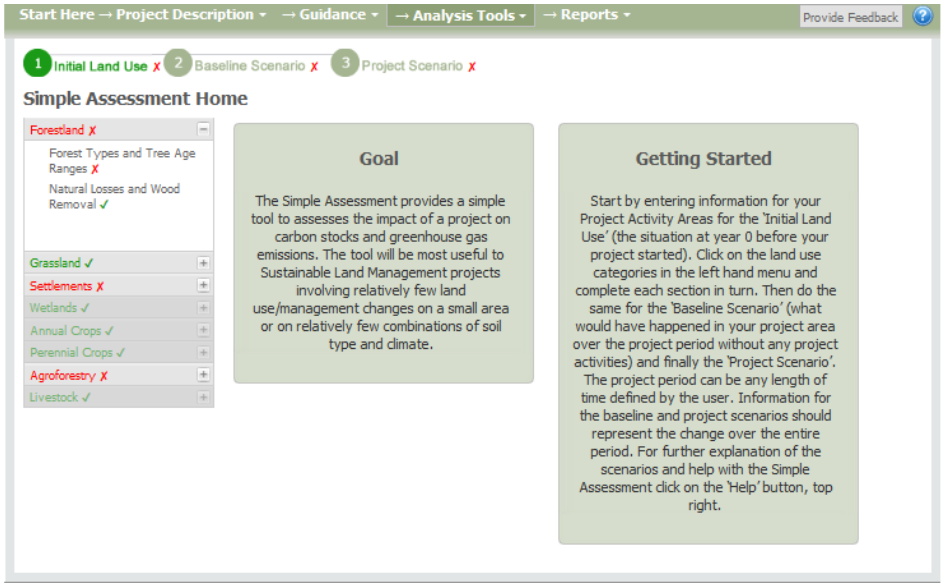
7. Go to ‘Analysis Tools’ and choose either the ‘Simple Assessment’ or the ‘Detailed Assessment’



8. You will be taken to the tools home page. Click on ‘Initial Land Use’ to get started.



9. You then go through and complete land management information for each ‘Project activity area’ (points, polygons or groups of these) for the Initial Land Use, the Baseline Scenario and the Project Scenario. Land use categories that require data entry have a red cross (‘X’) by the side. Land use categories with completed data entry have a green check (‘√’)mark by the side:

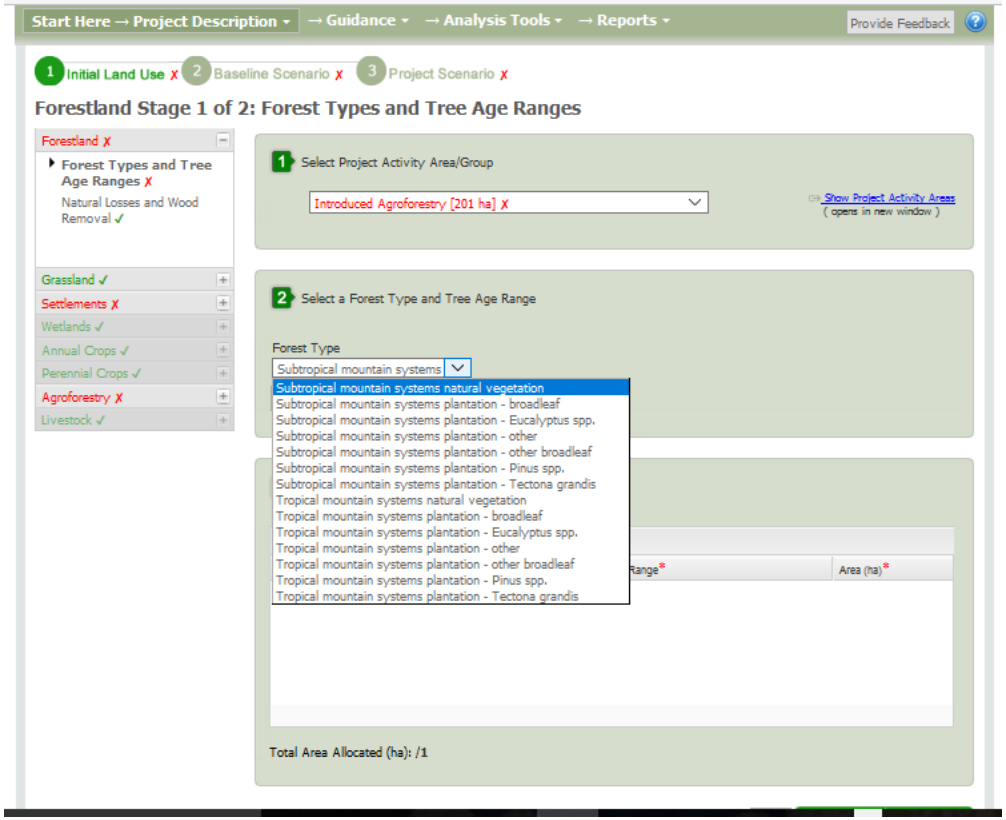


Here is an example of the first page of Forestland in the Simple Assessment

In Box 1 choose your project activity area from a drop down list.

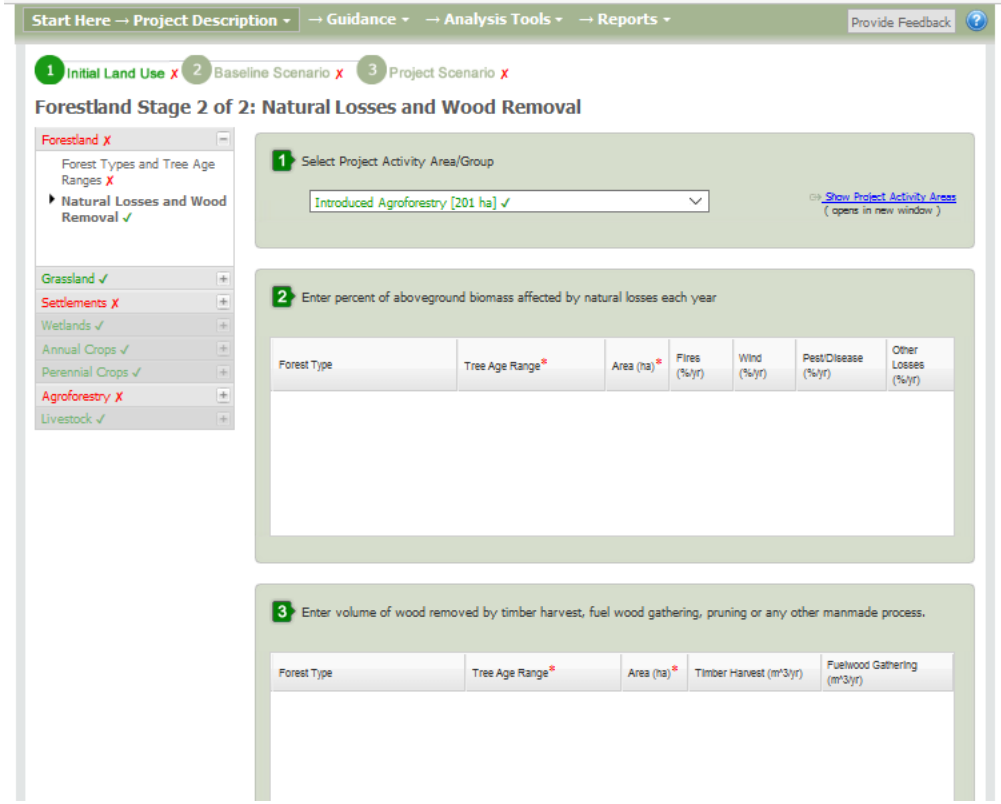
In Box 2 choose the forest types that are present in the area.

In Box 3 choose the age of the forest and the area associated with this forest type.



Here is an example of the second page in Forestland in the Simple Assessment

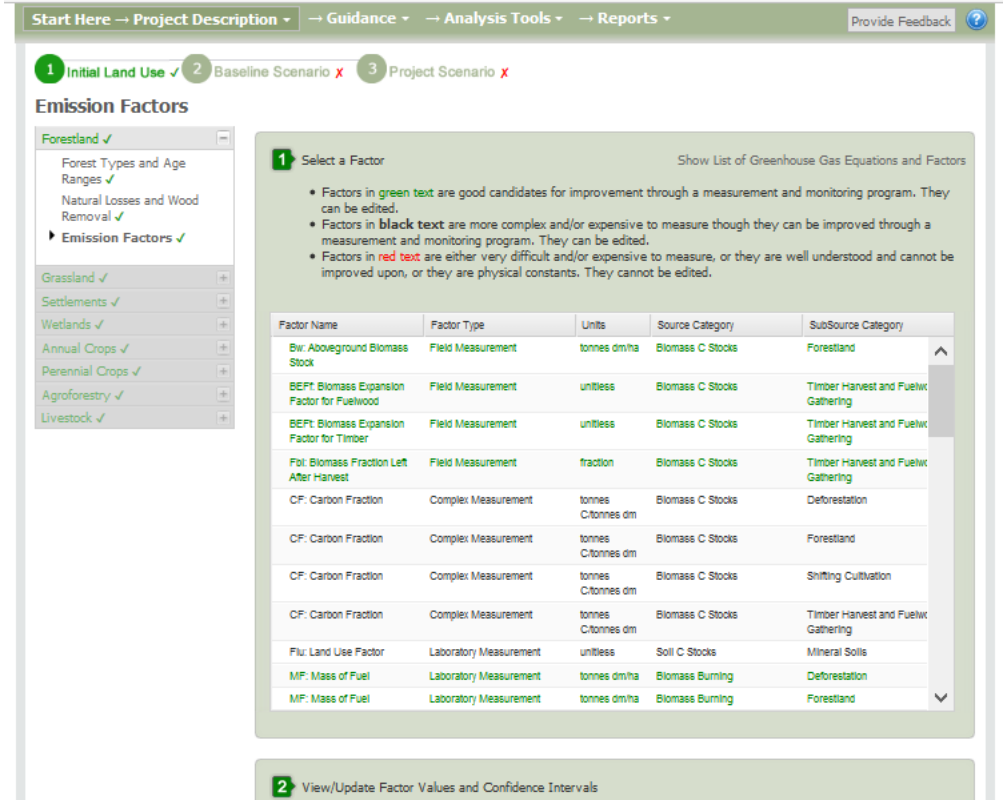
In these pages the user describes the amount of wood being removed by natural losses (fire, pests etc.) and by people (for fuel and timber)



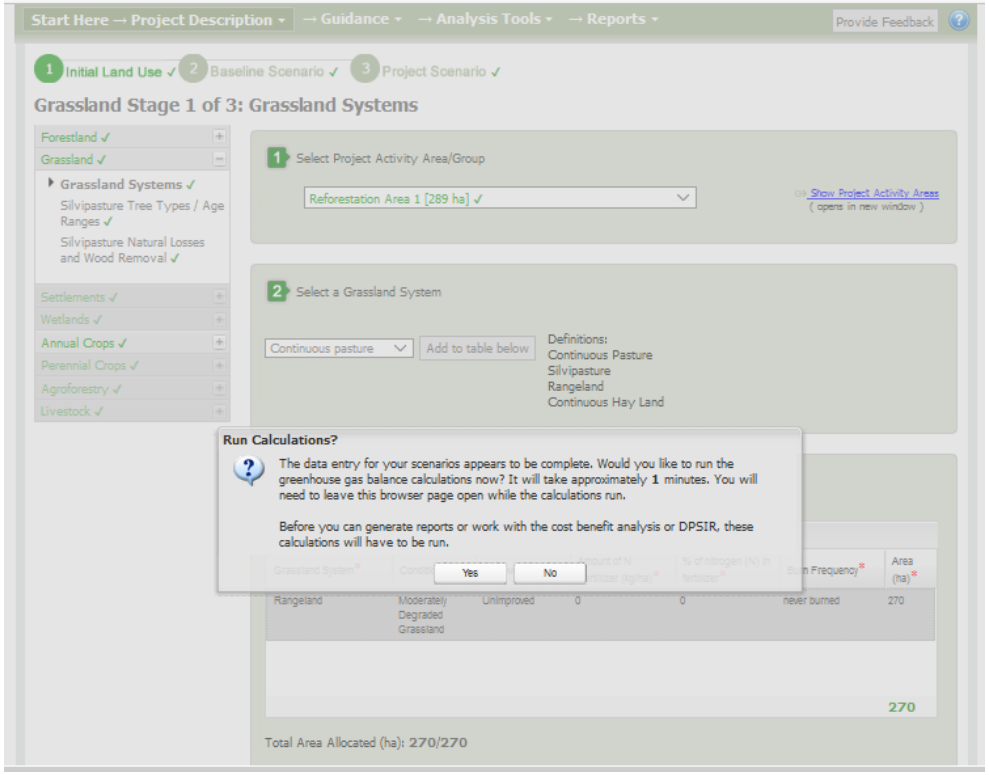
10. If using the Detailed Assessment users can also add their own stock change and emission factors to improve the estimate.

In the Simple Assessment default Tier 1 factors are used, supplied by the IPCC. These area quite generalised, representing large areas or regions.

In the Detailed Assessment users can enter their own factors which can be taken from local scientific studies or field measurements.



11. Once you have described land management for all land use categories in all project activity areas under all scenarios, all options will have a green tick by the side. You will also get a message saying data entry is complete. Users may then run the calculations.



12. Once you have run the calculations you can go to ‘Reports’ and create either a Summary or a Detailed Report.

Table 3.2 Expanded Report showing Carbon Emissions by IPCC AFOLU Source Categories. Continued.

		Without Project (Baseline scenario)			With Project (Project scenario)			Incremental difference (Project scenario minus baseline scenario)		
		tonnes CO_2 e	tonnes CO_2 e / yr		tonnes CO_2 e	tonnes CO_2 e / yr		tonnes CO_2 e	tonnes CO_2 e / yr	
Source category	Source sub-category	Total	Annual	Uncertainty	Total	Annual	Uncertainty	Total	Annual	Uncertainty
	Forest Land	0	0	0	0	0	0	0	0	0
	Grassland/Savanna	0	0	0	-608642.1	-60864.21	0	-608642.1	-60864.21	0
	Annual Cropland	0	0	0	0	0	0	0	0	0
	Perennial Cropland	0	0	0	-3005.42	-300.542	0	-3005.42	-300.542	0
	Agroforestry	0	0	0	0	0	0	0	0	0
	Settlements	0	0	0	0	0	0	0	0	0
	Deforestation	0	0	0	0	0	0	0	0	0
	Shifting Cultivation	0	0	0	0	0	0	0	0	0
Total Biomass Carbon Stocks		**0**	**0**	**0**	**-638696.3**	**-63869.63**	**0**	**-638696.3**	**-63869.63**	**0**
Biomass Burning non-CO2	Cropland Residue	0	0	0	0	0	0	0	0	0
	Grassland/Savanna	0	0	0	0	0	0	0	0	0
	Forest Land	0	0	0	0	0	0	0	0	0
	Agroforestry	0	0	0	0	0	0	0	0	0
	Perennial Crops	0	0	0	0	0	0	0	0	0
	Deforestation	0	0	0	0	0	0	0	0	0
	Shifting Cultivation	0	0	0	0	0	0	0	0	0
Total Biomass Burning non-CO2		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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	tonnes CO_2 equivalent				tonnes CO_2 equivalent				Total tCO_2e	tCO_2e / ha ^{2}	tCO_2e / ha /Yr
Agriculture											
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C. Rice Cultivation		0				0			0	0	0
D. Agricultural Soils	0	0	2480.93		0	0	6201.86		37209.3	1.550388	0.155038 7
E. Prescribed Burning of Savannas		0	0			0	0		0	0	0
F. Field Burning of Agricultural Residues		0	0	0		0	0	0	0	0	0
G. Other	0	0	0	0	0	0	0	0	0	0	0
Land Use Change and Forestry											
A. Forest and other Woody Biomass Stocks	0				-63869.63				-638696.3	-26.61235	-2.661235
B. Forest and Grassland Conversion	0	0	0	0	0	0	0	0	0	0	0
C. Abandonment of Managed Lands	0				0				0	0	0
D. CO2 Emissions and Removals from Soil	0				-41800				-418000	-17.41667	-1.741667
E. Other	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**2814.84**	**4526.93**	**0**	**-105669.6**	**7037.1**	**11316.86**	**0**	**-946574.4**	**-39.4406**	**-3.94406**

d. Advantages of the CBP tools

The CBP tools have a spatial component allowing simultaneous analysis of multiple areas involving a variety of land use and management activities. This makes them ideal for analysing landscape scale projects with a variety of land use types and land management activities.

The CBP includes socio economic tools which allow users to consider land management strategies in terms of economic and social constraints in addition to GHG benefits.

The tools are online and free!

h. A Case study

The CBP Simple and Detailed Assessments were used to estimate the '**Climate Change Mitigation Potential of Ethiopia's Productive Safety-Net Program (PSNP)'**

PSNP introduced various sustainable land management practices (livestock exclosures, grass bunds etc.) at sites throughout Ethiopia in the 1990s and earlier with the aim of improving food security. The CBP tools were used to estimate the climate change mitigation potential of 28 of these sites over a 20 year period.

Results found the mean carbon benefit of all PSNP sites was 5.7 tonnes CO2e /ha /yr. On average, these carbon benefits were primarily due to increases in biomass (40% of total), in soil organic carbon (38%) and reduced livestock greenhouse gas emissions (22%). Extrapolating these results to the whole of PSNP's 600,000 ha of already-established area enclosures would imply that a total carbon benefit in the order of 3.4 million t CO2e /ha /yr has already been achieved by PSNP. (Woolf et al 2015). Read the full report here: https://ecommons.cornell.edu/handle/1813/41296