3B Land
Land Representation

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Outline

- Approaches
- Use of the IPCC Inventory Software

Land representation and approaches

- When applying the 2006GL, identifying land conversion is a fundamental issue in the Land sector.
- There are three approaches for land representation:

Approach 1	Approach 2	Approach 3

- A country is allowed to use all three approaches for identifying the land conversion, representation of land.
- The 2006GL suggests that there is no hierarchy among these three approaches.
- In reality, more explicit data is available in approach 2 than approach 1, and approach 3 is sometimes necessary for using a model and higher tier estimation.

Approach 1

- Approach 1 is probably the most common approach used for preparing estimates of emissions and removals.
- The basic methodology of this approach is to compare the area of each land use category at two points in time and to derive the land use change area in each land use category.
- It often uses area datasets likely to have been prepared for other purposes, such as forestry or agricultural statistics.

TABLE 2.3.1
EXAMPLE OF APPROACH 1:
AVAILABLE LAND -USE DATA WITH COMPLETE TERRITORIAL COVERAGE

Time 1			Time 2			Land-Use Change between Time 1 and Time 2		
F	=	18	F	=	19	Forest	=	+1
G	=	84	G	=	82	Grassland	=	-2
C	=	31	C	=	29	Cropland	=	-2
W	=	0	W	=	0	Wetlands	=	0
S	=	5	S	=	8	Settlements	=	+3
O	=	2	O	=	2	Other land	=	0
Sum	=	*140*	*Sum*	=	*140*	*Sum*	=	*0*

Note: F = Forest land, G = Grassland, C = Cropland, W = Wetlands, S = Settlements, O = Other land. Numbers represent area units (Mha in this example).

Approach 2

- he essential feature of approach 2 is that it provides a national or regional-scale assessment of losses and gains in the area of specific land categories, and of what these changes represent (i.e., changes from and to a category).
- Thus, approach 2 includes more information on changes between categories.
- Tracking land-use changes in this explicit manner will normally require the estimation of initial and final land-use categories, as well as of total area of unchanged land by category.
- The final result of this approach can be presented as a non-spatially explicit land-use change matrix.

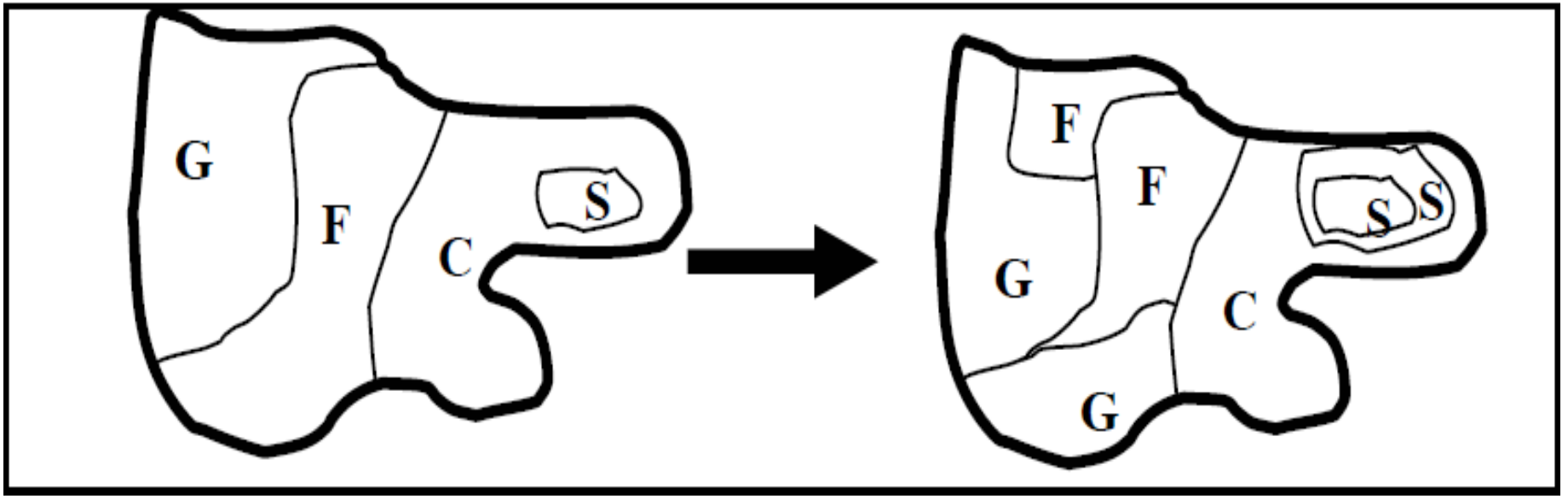
TABLE 2.3.5
SIMPLIFIED LAND-USE CHANGE MATRIX FOR EXAMPLE APPROACH 2

Land-Use Change Matrix							
Final \ Initial	F	G	C	W	S	O	*Final sum*
F	15	3	1				*19*
G	2	80					*82*
C			29				*29*
W							
S	1	1	1		5		*8*
O						2	*2*
Initial sum	*18*	*84*	*31*		*5*	*2*	*140*

Note:
F = Forest land, G = Grassland, C = Cropland, W = Wetlands,
S = Settlements, O = Other land
Numbers represent area units (Mha in this example).
There is no Wetlands in this example. Blank entry indicates no land use change.

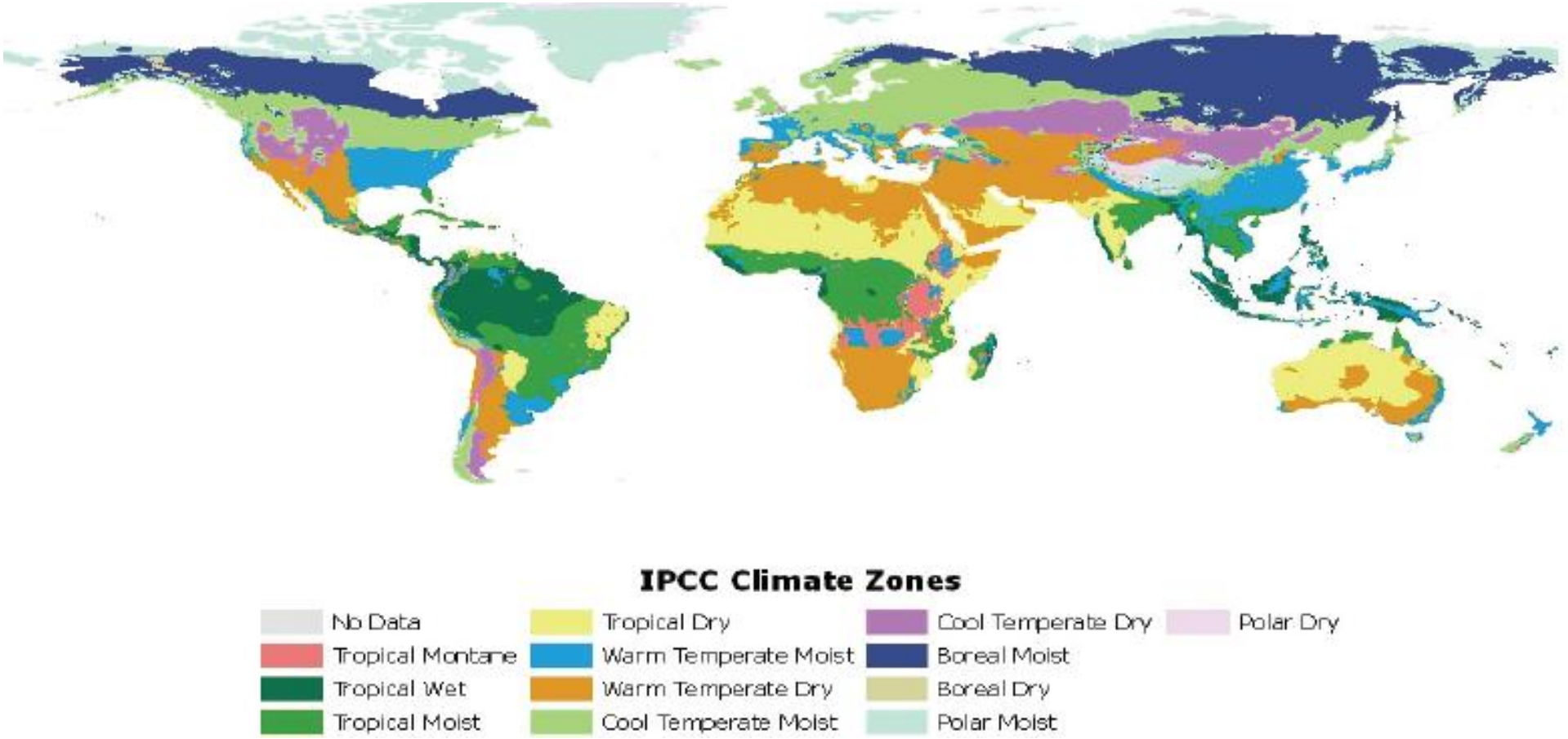
Approach 3

- Approach 3 requires spatially explicit observations of land use and land-use change.
- The data may be obtained either by
  - sampling of geographically located points,
  - a complete tally (wall-to-wall mapping), or
  - a combination of the two.



Climate zone

- IPCC Climate Zone has not changed since the Revised 1996 GL



Identification of Climate zone

- Mean Annual Temperature (MAT)
  - 18 > MAT >10 : Warm Temperate
  - 10 > MAT >0 : Cold Temperate
- Mean Annual Precipitation (MAP) to Potential Evapotransporation (PET) ratio
  - MAP > PET : Moist
  - MAP < PET :Dry

  * PET is estimated from average daily temperature

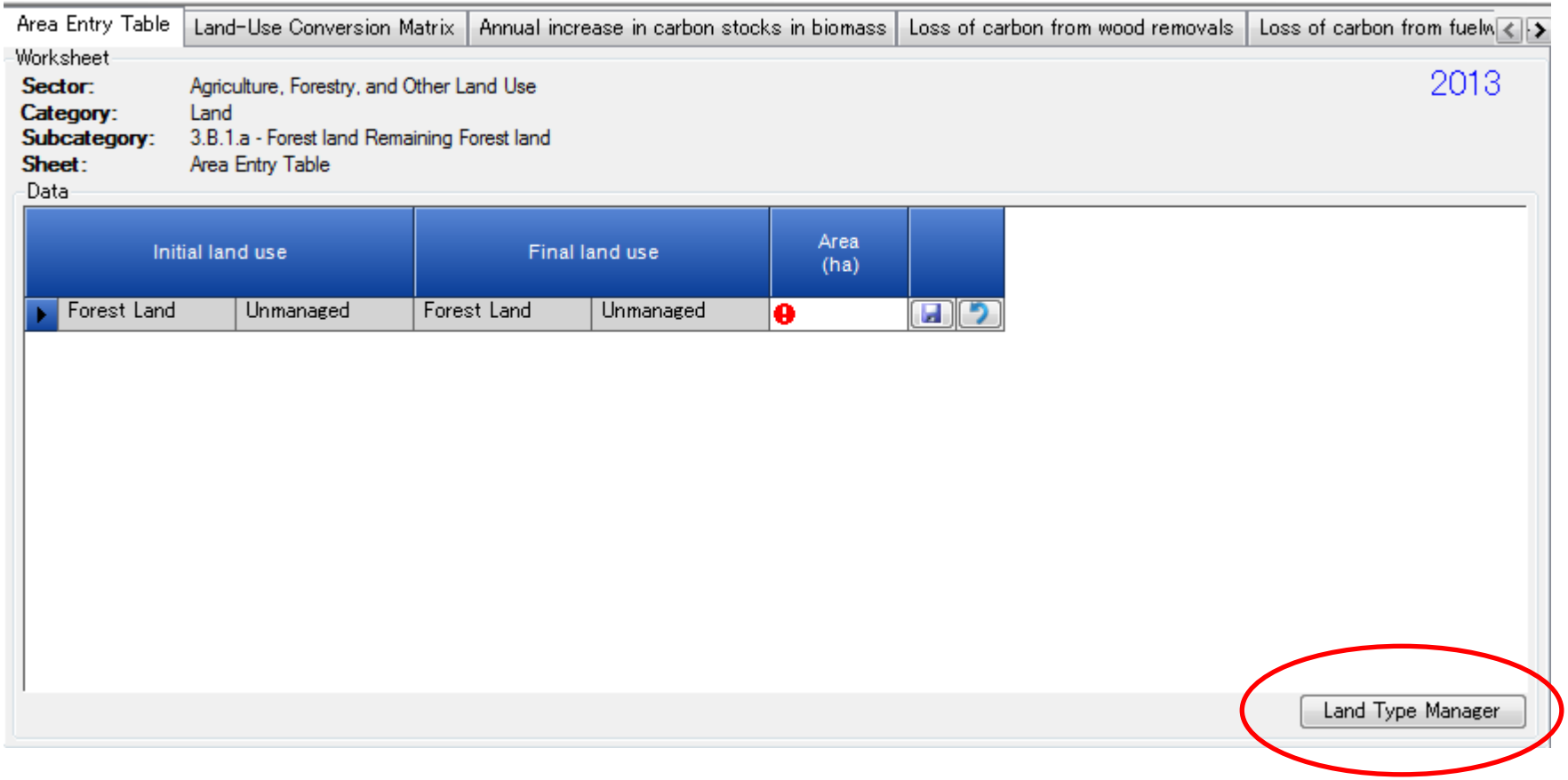
Quiz (managed land)

- What is the correct description of the treatment of unmanaged land when the 2006 IPCC guidelines is applied?

  - Area of unmanaged land should be reported. Emissions and removals occurred on unmanaged also should be estimated and reported.
  - Area of unmanaged land should be reported. Emissions and removals occurred on unmanaged are not necessary to be estimated and reported.
  - Area of unmanaged land as well as emissions and removals occurred on unmanaged are not necessary to be reported.

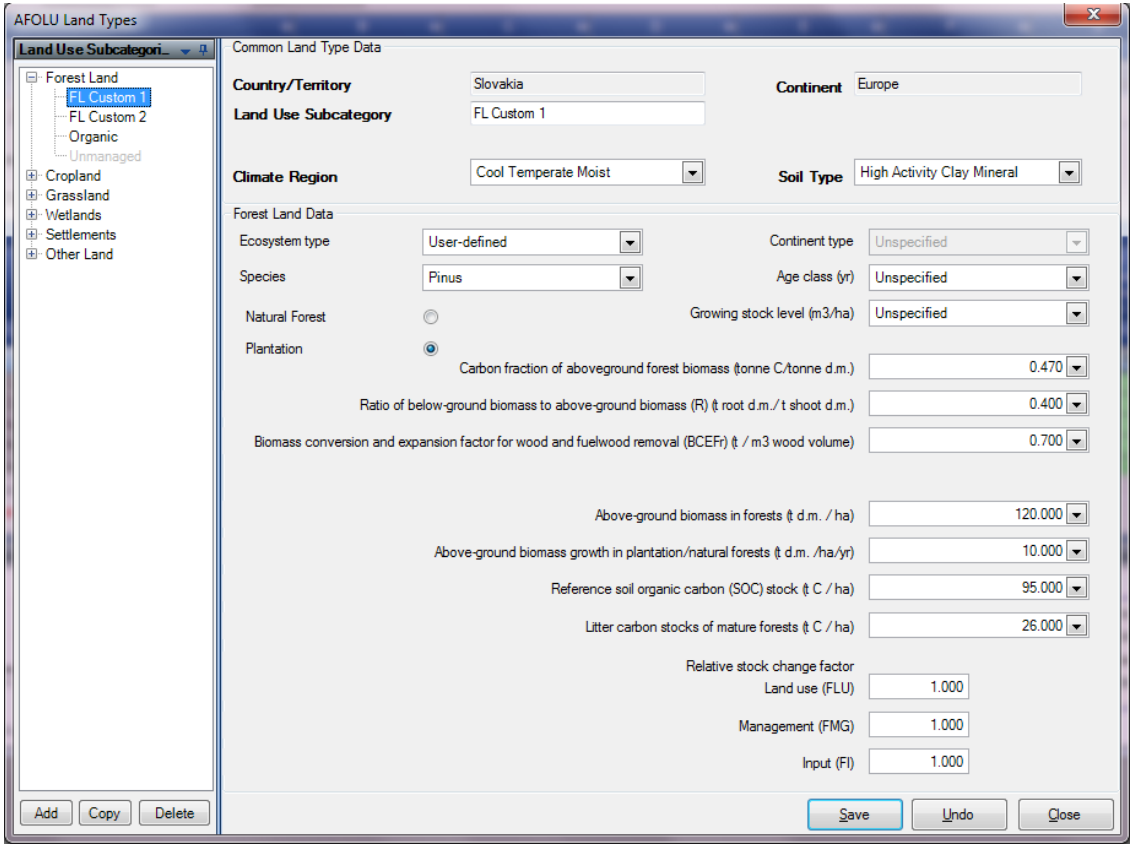
IPCC Inventory Software: Land Type Manager

- In the IPCC Inventory Software, all subcategories must be created by using the “Land Type Manager”
- If you click any of category which shown blue color, you can open “Land Type Manager”.



AFOLU Land Type Manager

- From the Manual, This menu item opens a dialog window which allows managing Land Use Subcategories for AFOLU category 3.B – Land. This window is also accessible from relevant worksheets under category 3.B – Land. Parameters defined here are used in all relevant worksheets.



AFOLU Land Type Manager

- Land Type Manager window consists of the following sections:
  - Navigation section – contains the list of Land Use Subcategories divided into corresponding main Land Type categories (Forest, Cropland, …). Activation of the particular Land Use Subcategory shows relevant details.
  - Common Land Type Data – contains data that is common for all Land Types (Country, Climate Region, …)
  - Particular Land Use Subcategory data – contains details of the particular Land Use Subcategory that is selected in the navigation section.

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AFOLU Land Type Manager

- Adding new Land Use Subcategory

  Take the following steps to define new Land Use Subcategory:

  1) Select one of the main Land Use Categories in the Navigation section.

  2) Click the Add button located at the bottom of the navigation section. New Land Use Subcategory will be created with the default name.

  3) Enter desired details of the new Land Use Subcategory

  4) Click the Save button to save new Land Use Subcategory into database

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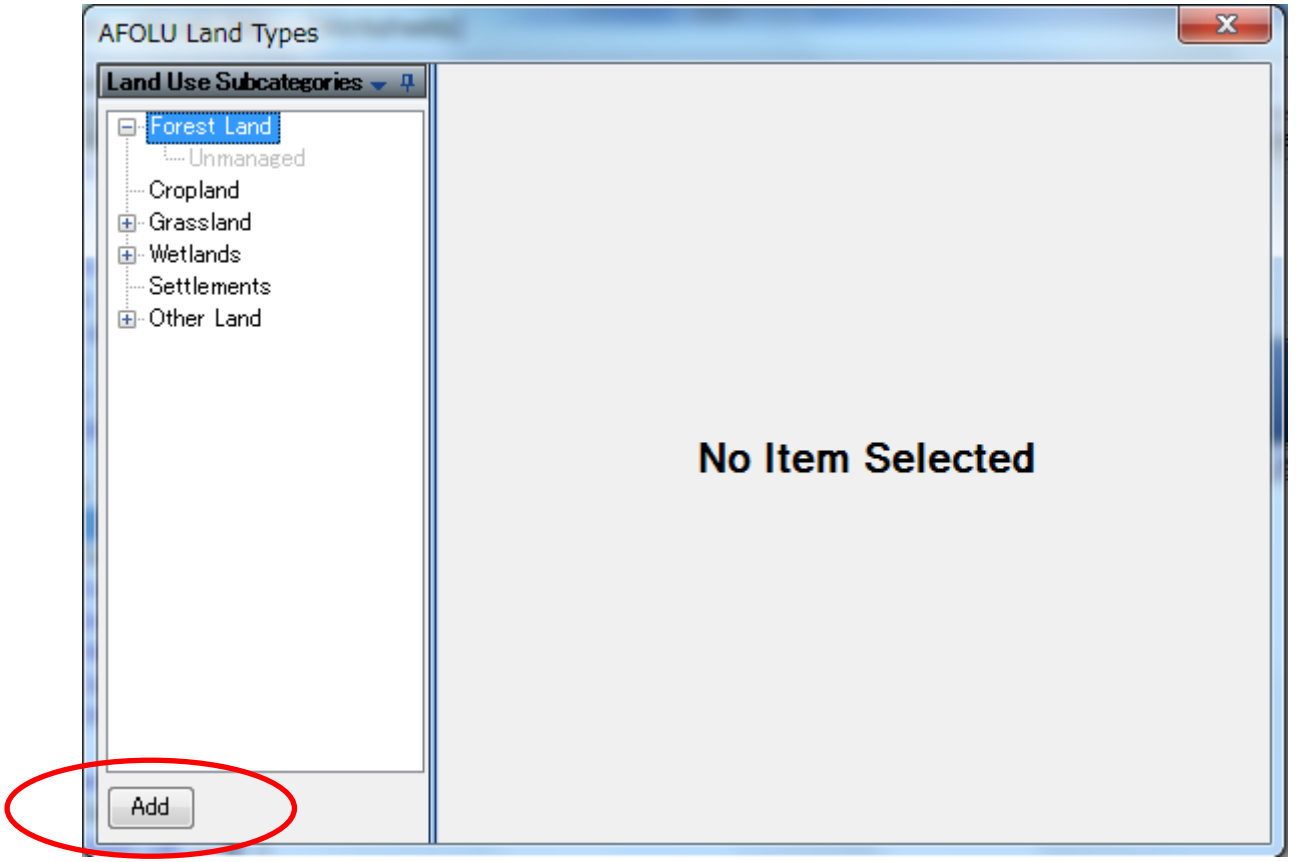
AFOLU Land Type Manager: Adding new sub category

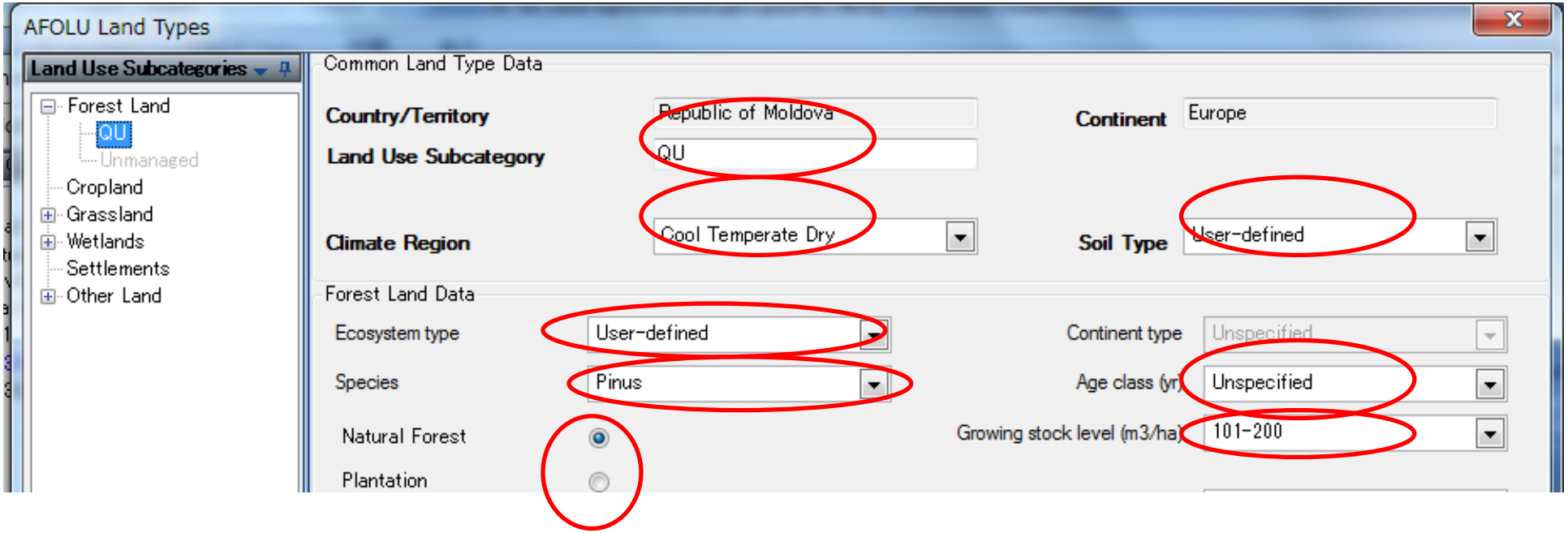
- Select the land category and click “Add” to create a new sub-category



- Moldova Identified 11 group of forest species in the 2015 NIR (p278). Let’s try to recreate it in the software!

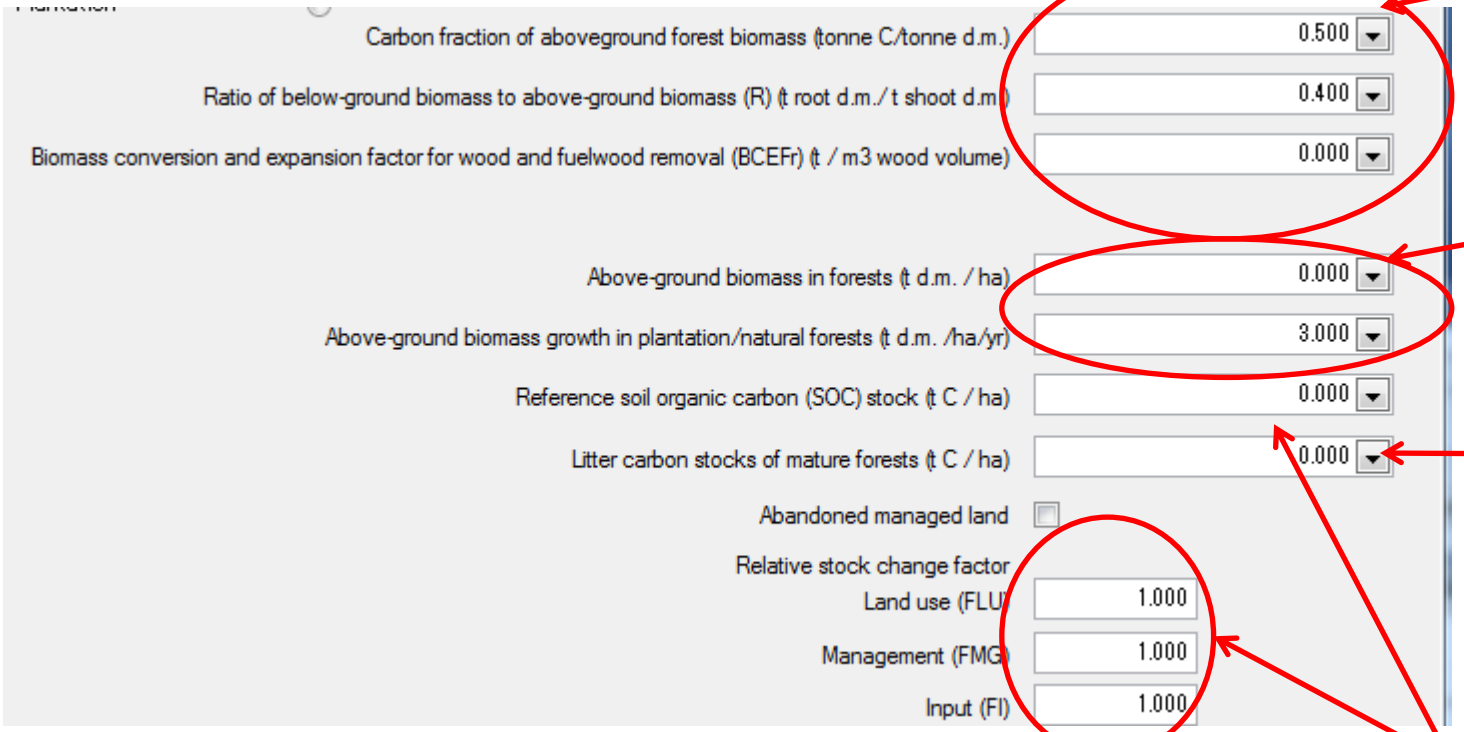
Adding new sub category: Forest land

- You should input a lot of conditions of sub-category.
  - Name, Climate region, Soil-type, Ecosystem type, Species, Age class, Growing stock level, plantation/natural forest



Adding new sub category: Forest land

- And, the parameters for estimation of carbon stock changes.



Estimation for Biomass

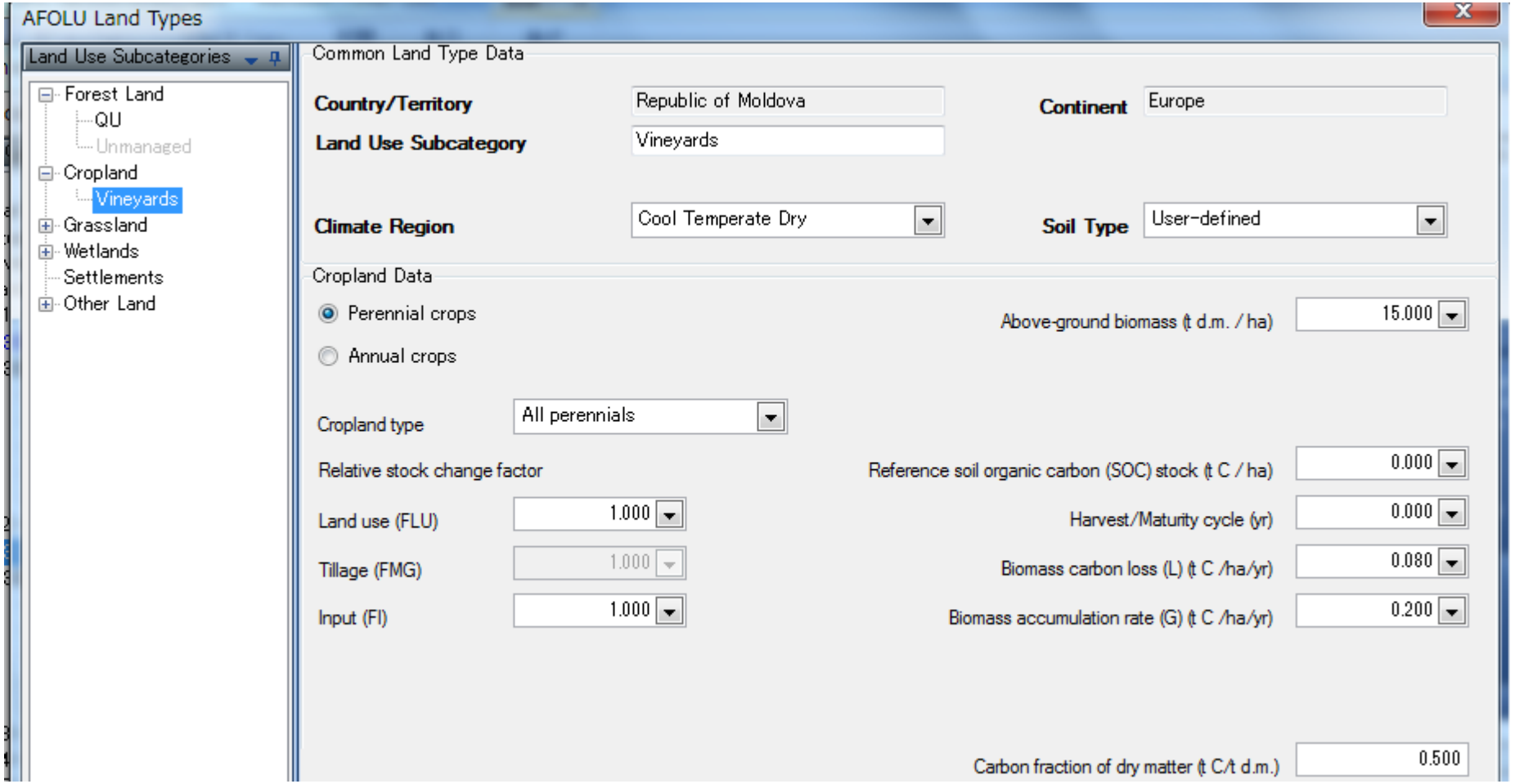
Estimation for Biomass gain

Estimation for litter stock change

Estimation for soil

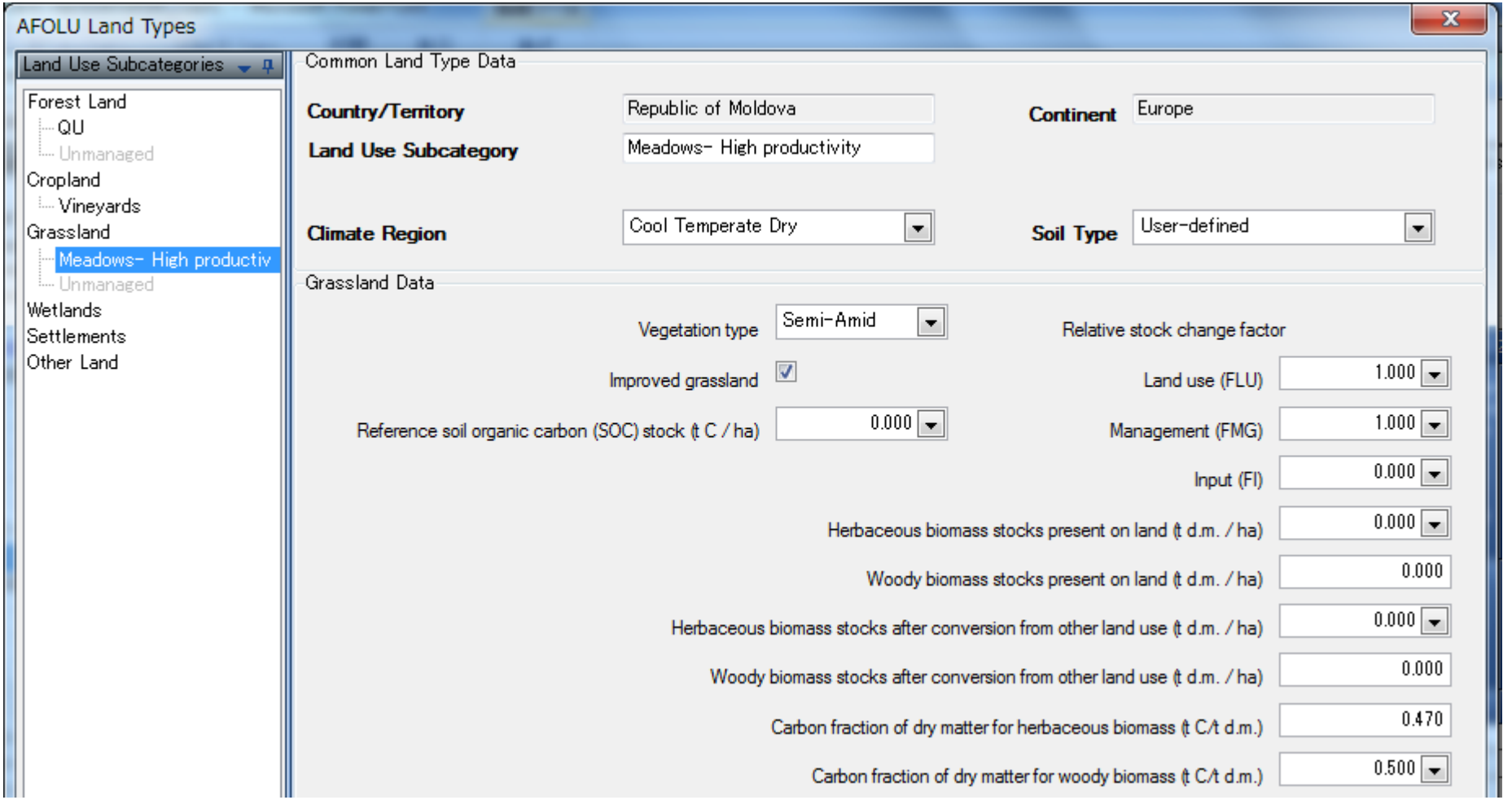
Adding new sub category: Cropland

- For cropland, different type of information required



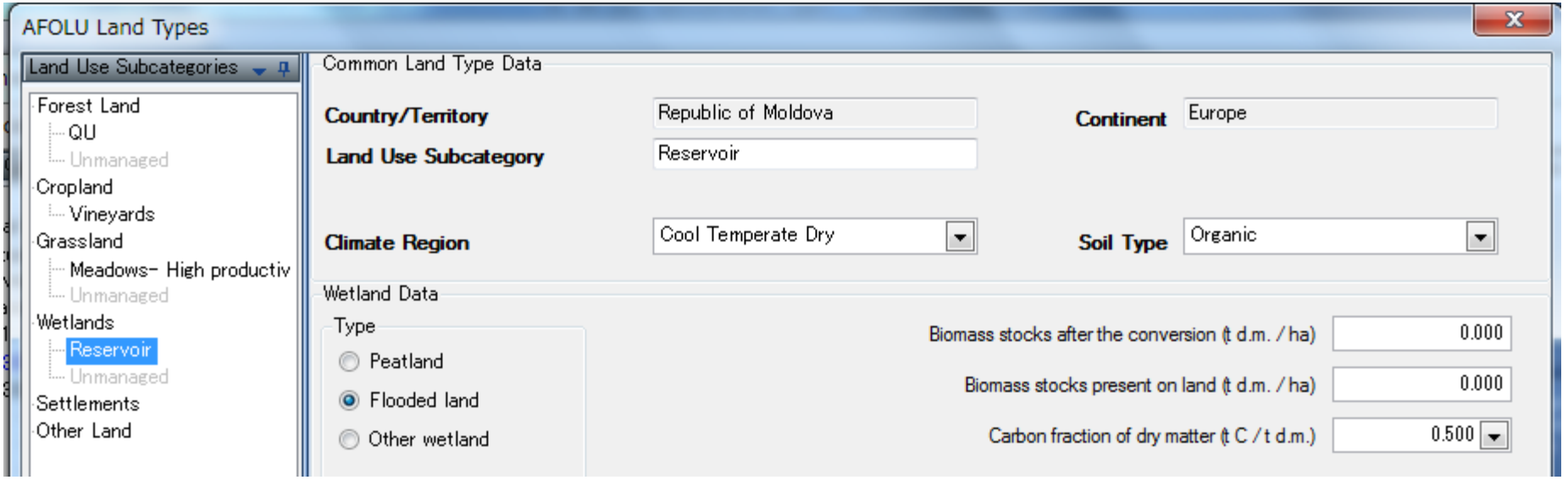
Adding new sub category: Grassland

- Only stock data for biomass and soil is required.



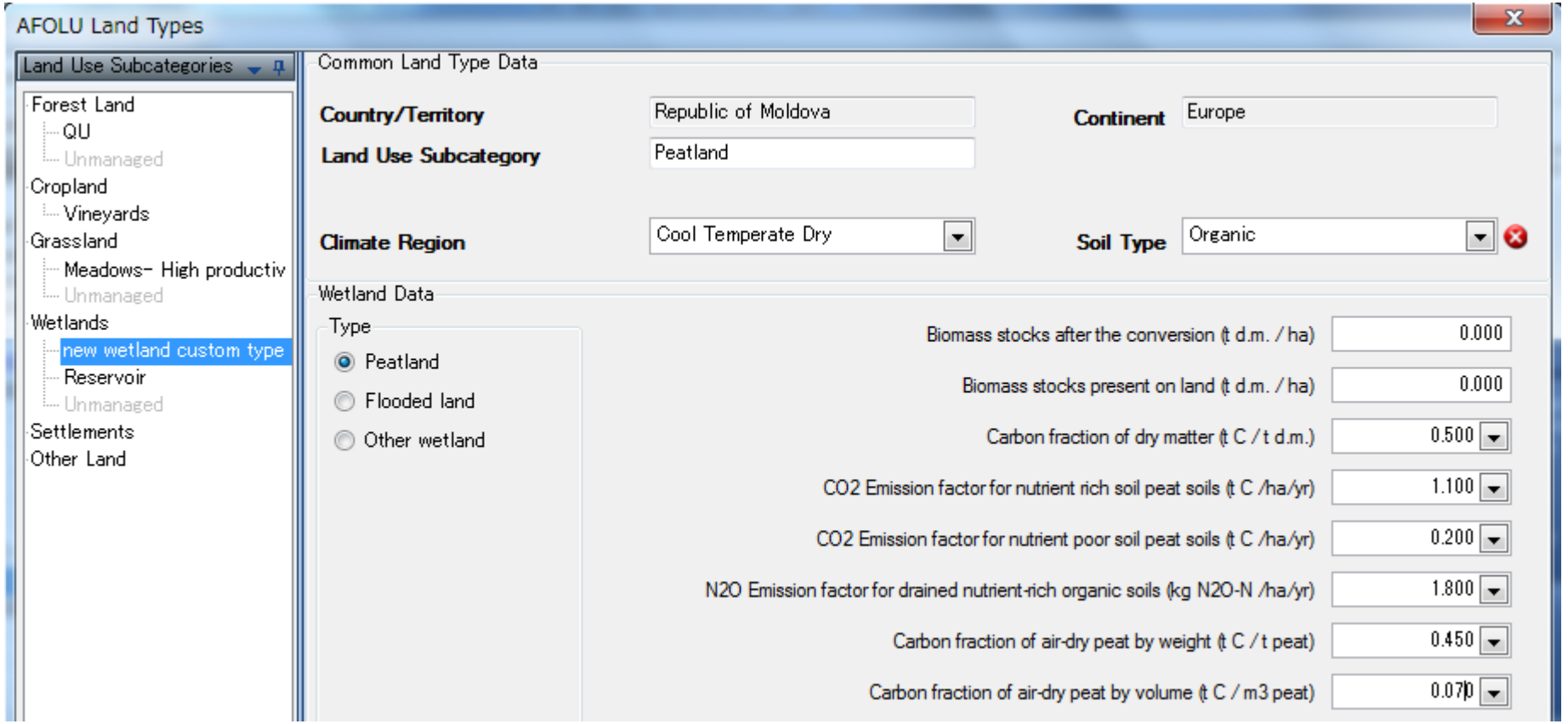
Adding new sub category: Wetlands

- Flooded land type sub-category is requested to enter only biomass stock exist at the land



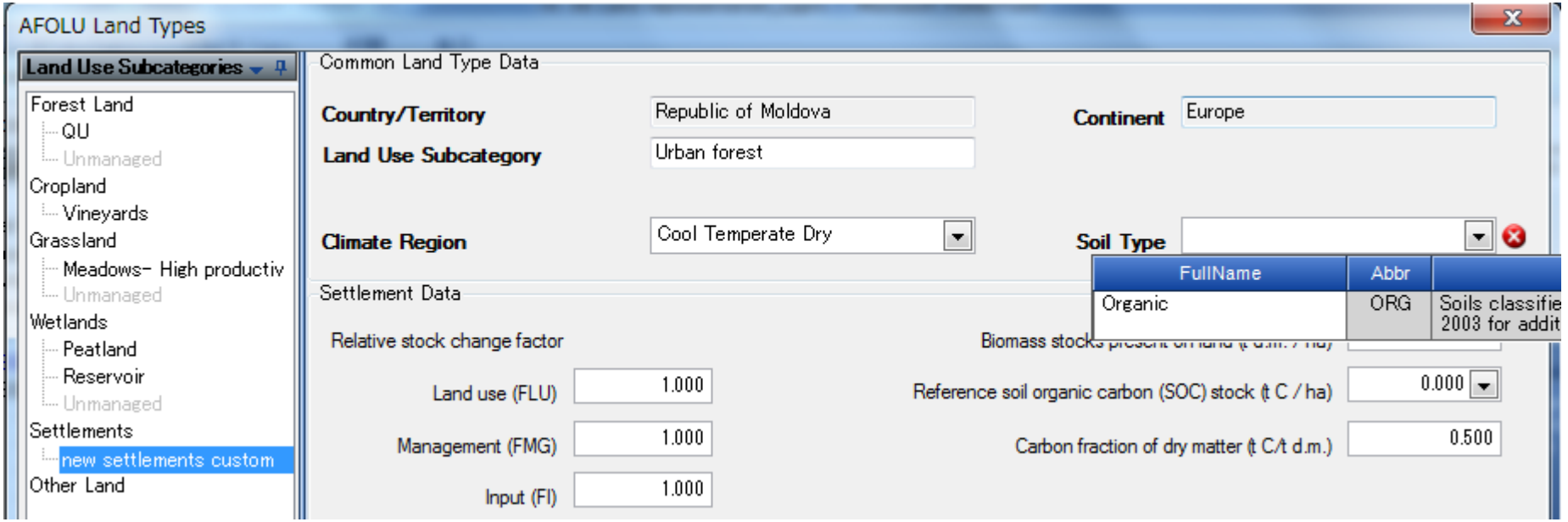
Adding new sub category: Wetlands

- Peatland type sub-category is requested to enter EF relevant information as well



Adding new sub category: Settlements, other land

- There seems error in selecting soil type in the version 2.17. (only organic soil is able to select)



AFOLU Land Type Manager

- Editing existing Land Use Subcategory

  Take the following steps to edit existing Land Use Subcategory:

  1) Select the Land Use Subcategory of interest in the navigation section

  2) Edit data as desired

  3) Click the Save button to save changes into database or click the Undo button to discard all changes.

- Making copy of existing Land Use Subcategory

  It is possible to make a copy of existing Land Use Subcategory. Follow the next steps:

  1) Select the Land Use Subcategory of interest in the navigation section

  2) Click the Copy button located at the bottom of the navigation section.

  3) New copy of selected Land Use Subcategory will be created with the new name

  4) Edit data as desired

  5) Click the Save button to save new Land Use Subcategory into database.

AFOLU Land Type Manager

- Deleting existing Land Use Subcategory

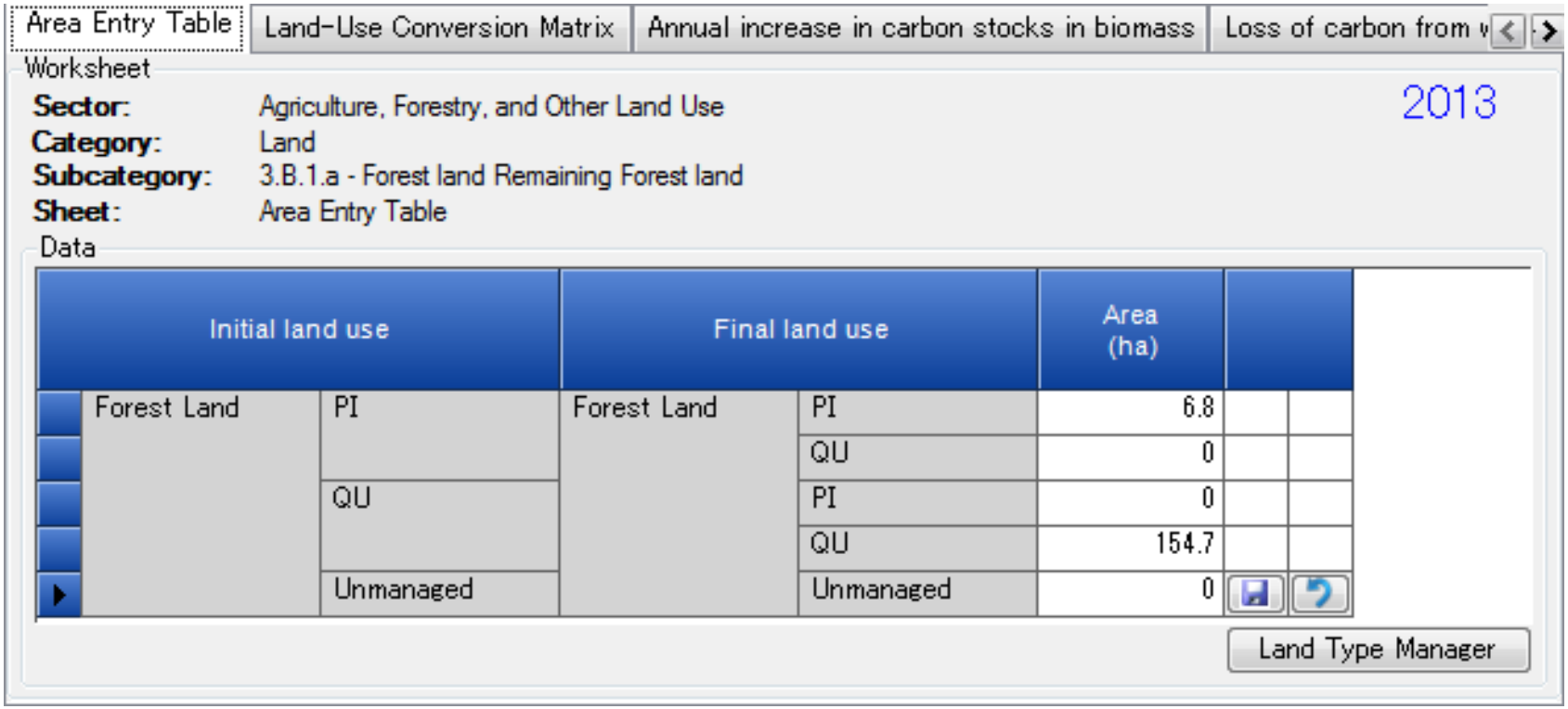
  1) Select the Land Use Subcategory of interest in the navigation section

  2) Click the Delete button located at the bottom of the navigation section

  3) Confirm or cancel deletion when prompted.

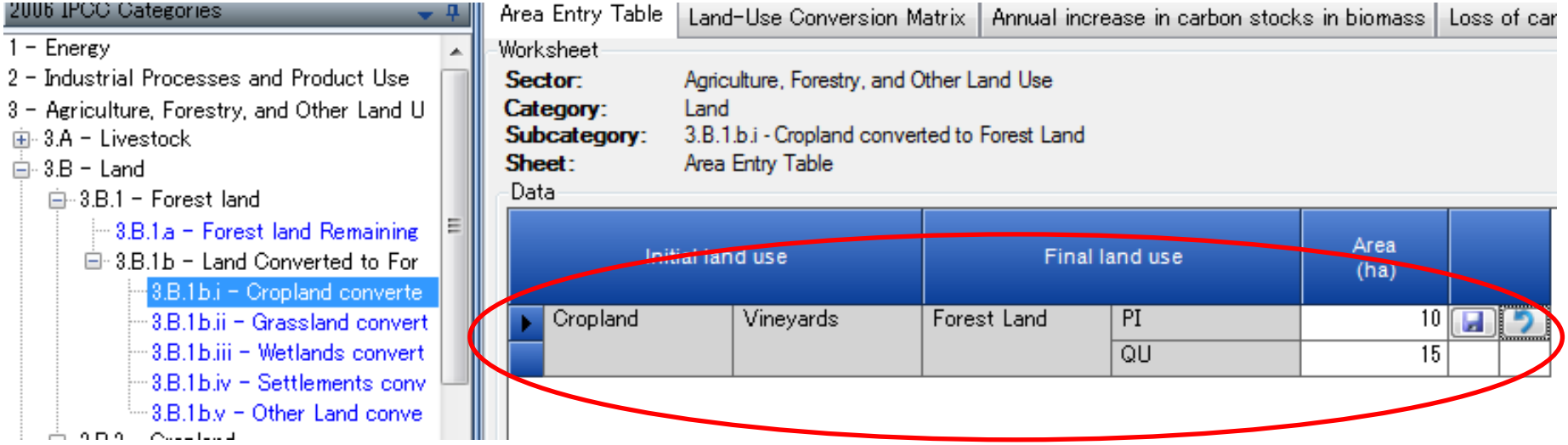
AFOLU Area Entry Table (for 20 year)

- This worksheet is available in all 3.B – Land categories. It is designated for defining 20-year Land Area Transitions between Land Use Subcategories defined in Land Type Manager
- The user needs to enter land areas for Land remaining in a Land-use category and for Land converted to other Land Use Subcategories (in the 20 year sense).



AFOLU Area Entry Table (for 20 year)

- Land converted to other Land Use Subcategories (in the 20 year sense).



Only created land use sub categories in “Land Type Manger” appear here.

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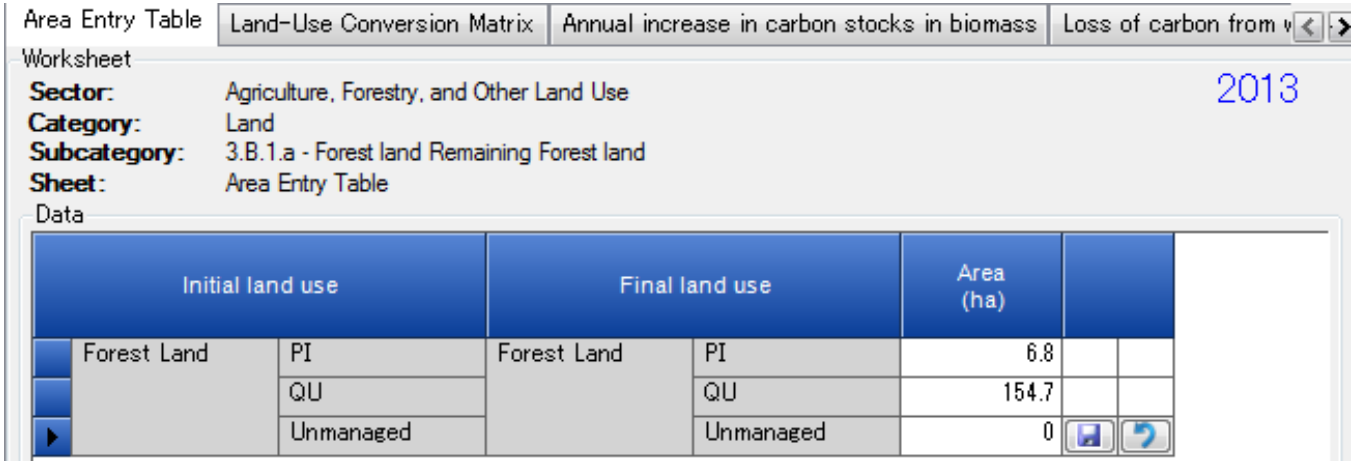
AFOLU Area Entry Table (for 20 year)

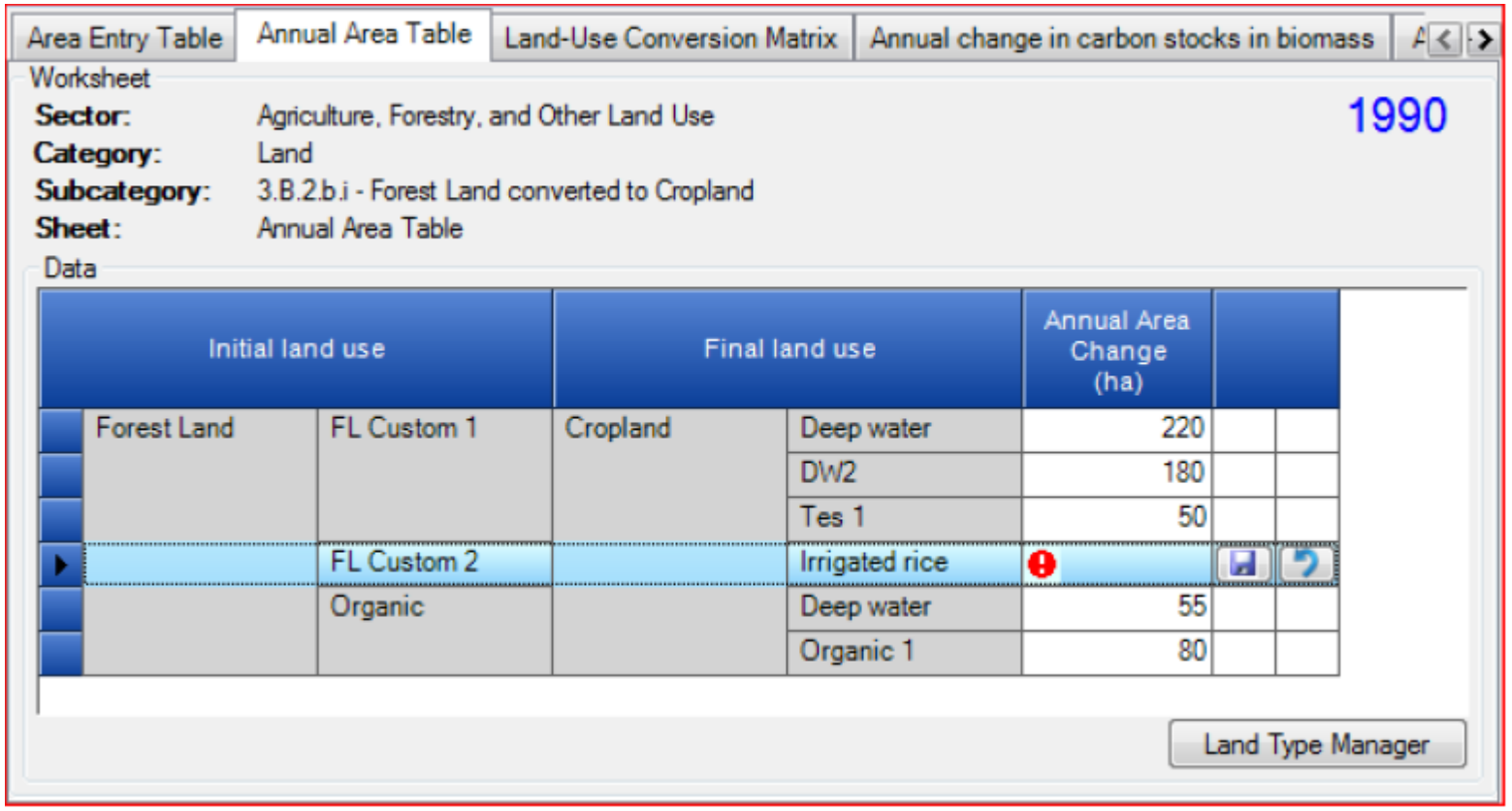
- The software applies some basic rules on the Land Use Subcategory combinations to restrict the number of “possible” transitions appearing in the table such as:
  - A Land Use Subcategory cannot change from one “climate-soil” combination to a different “climate-soil” combination. For example, a Land Use Subcategory defined in the Land Type Manager as “Boreal-Organic soil” cannot change to “Warm Temperate-Mineral Soil” no matter how the land use change occurs; its post-conversion land type will always be restricted to “Boreal-Organic soil”.



Example of Identifying the different soil type for PI and QU

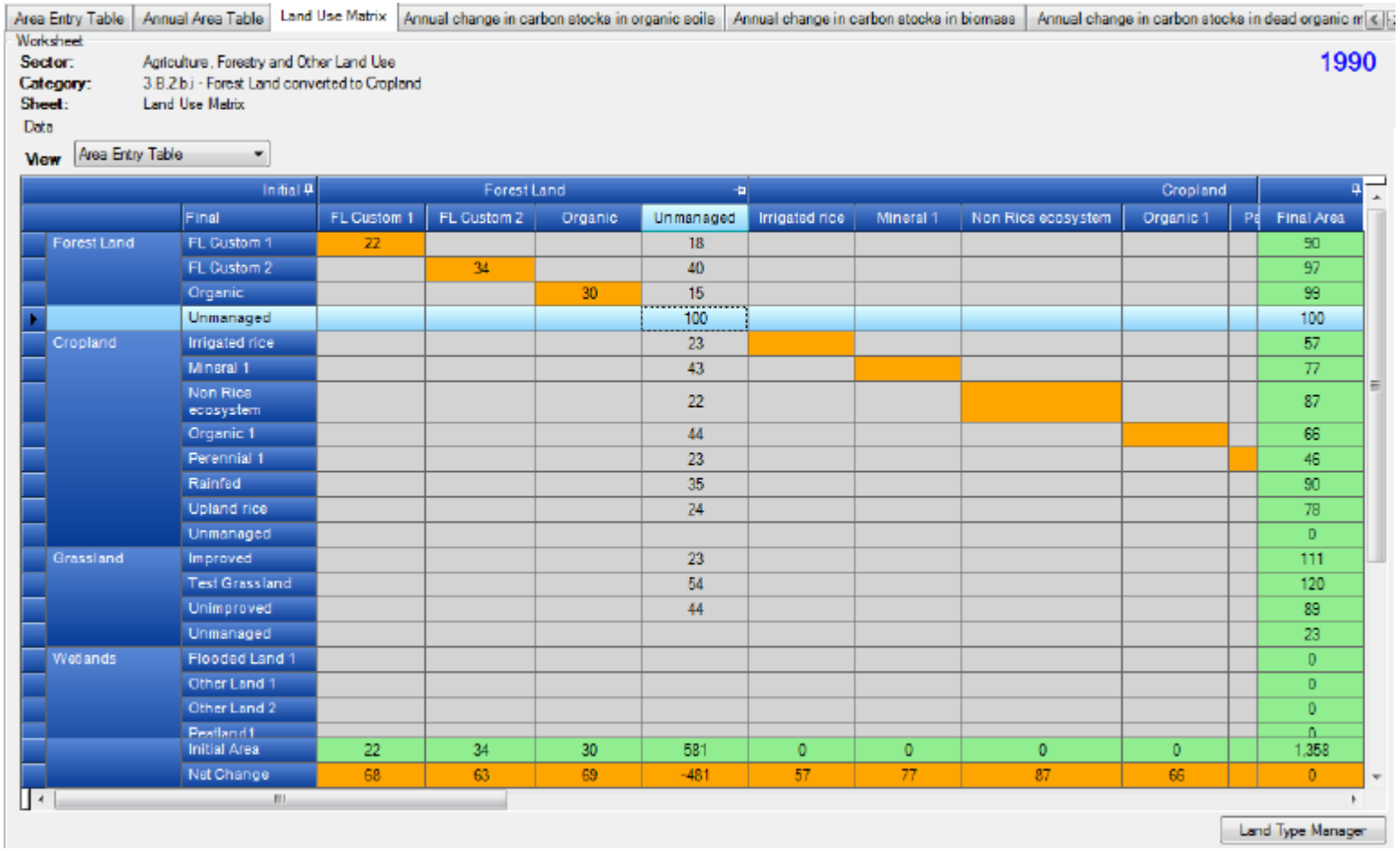
AFOLU Annual Area Table

- This worksheet is available in all 3.B – Land categories which contain worksheets based on “annual area change”. It is used for defining annual land area changes between Land Use Subcategories defined in Land Type Manager



Land Matrix

- Area information entered in Area Entry Table or Annual Area Entry Table is summarized and shown as a land use matrix



Area Entry Table | Annual Area Table | Land Use Matrix | Annual change in carbon stocks in organic soils | Annual change in carbon stocks in biomass | Annual change in carbon stocks in dead organic m

Worksheet

Sector: Agriculture, Forestry and Other Land Use
Category: 3.B.2.b.i - Forest Land converted to Cropland
Sheet: Land Use Matrix

1990

Data

View: Area Entry Table

Initial / Final		Forest Land				Cropland					
		FL Custom 1	FL Custom 2	Organic	Unmanaged	Irrigated rice	Mineral 1	Non Rice ecosystem	Organic 1	Pe	Final Area
Forest Land	FL Custom 1	22			18						90
	FL Custom 2		34		40						97
	Organic			30	15						99
	Unmanaged				100						100
Cropland	Irrigated rice				23						57
	Mineral 1				43						77
	Non Rice ecosystem				22						87
	Organic 1				44						66
	Perennial 1				23						46
	Rainfed				35						90
	Upland rice				24						78
	Unmanaged										0
Grassland	Improved				23						111
	Test Grassland				54						120
	Unimproved				44						89
	Unmanaged										23
Wetlands	Flooded Land 1										0
	Other Land 1										0
	Other Land 2										0
	Peatland 1										0
	Initial Area	22	34	30	581	0	0	0	0		1,358
	Net Change	68	63	69	-461	57	77	87	66		0

Land Type Manager