

2013 JRC TECHNICAL WORKSHOP ON KP-LULUCF

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1. UK in-country review and ongoing improvements

Issues raised:

The C-flow model, which estimates carbon stock changes in each pool, shows some inaccuracies in estimating:

- Harvested quantities (e.g. Does not estimate fuelwood, likely overestimates HWP). Furthermore, no verification of estimates by comparison with harvesting/timber production data has been performed
- Soil emissions from mineral soils (overestimated)
- Soil emissions following replanting (underestimated)
- **UK is going to replace C-FLOW with CARBINE model in its 1990-2012 inventory.** CARBINE is expected to address all issues raised found in C-Flow.
- ‘Spatial assessment unit’ is minimum forest area that can be reported, i.e. 0.1 ha as per our forest definition rather than the reporting area, e.g. E/S/W/NI – this has been resolved in the NIR

1. UK in-country review and ongoing improvements

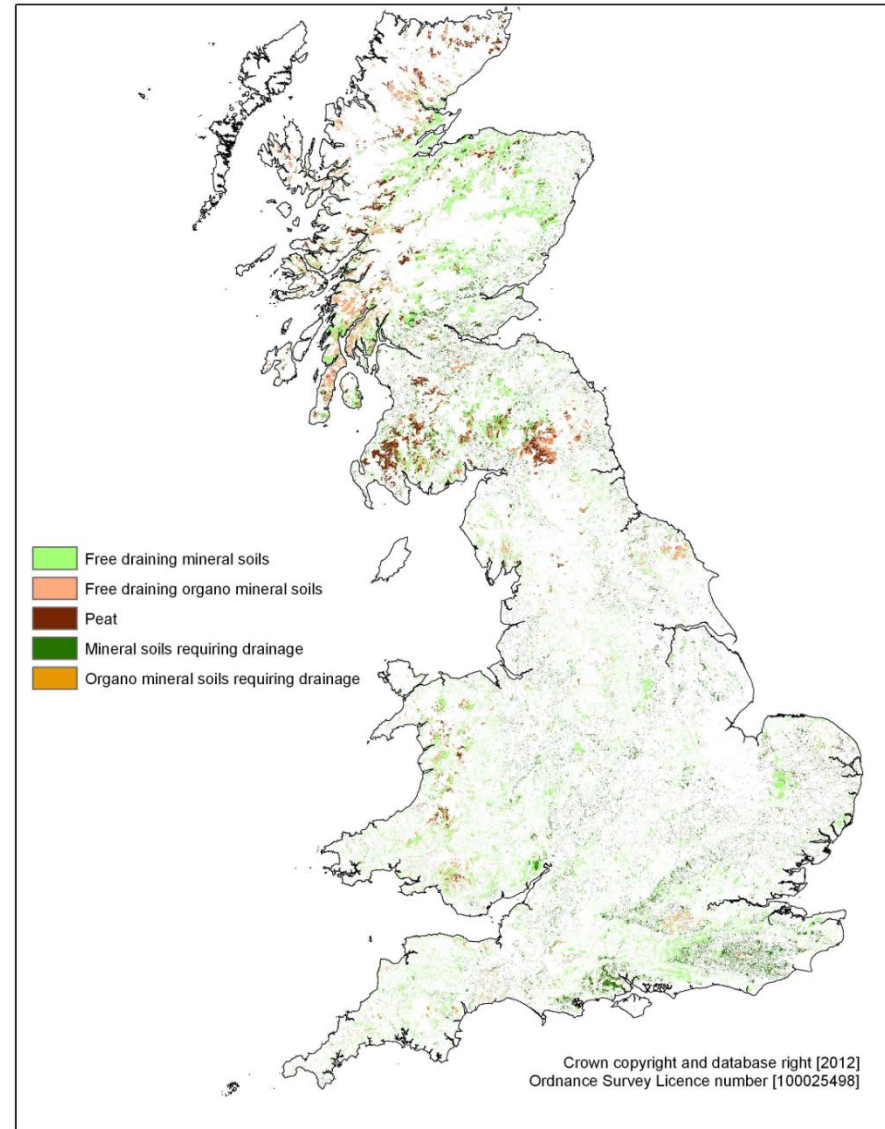
- UK does not report in table 5(KP-I)A.1.3 information on “Units of land subject to activities under Article 3.3, which would otherwise be included in land subject to elected activities under Article 3.4”. However, the whole area reported under afforestation and reforestation would otherwise be included under forest management. **The ERT recommend UK to report information in table 5(KP-I) A.1.3 in its next submission.** This has now been implemented (1990-2011 inventory)
- 3.3 Deforestation: It is recommended to separate organic and mineral soils (e.g. In proportion to the forest area with organic soils) - not yet done.
- 3.3 Deforestation: A single stock change factor is applied (240 t C) to estimate losses from biomass and dead organic matter pools. UK is encouraged to use for each pool average values of carbon stocks per Devolved Authority. This has been done.



2. Improvements, 1990-2011 Inventory: 5A/5(II) Non-CO₂ emissions from drainage of forest soils

- Gap in reporting – UNFCCC recommendation
- Work by Sirwan Yamulki, Forestry Commission
- Provides new estimates of:
 - The geographical extent of forest on organic soils
 - The N₂O emissions associated with forest drainage on organic and mineral soils
- Estimates direct N₂O emissions from drainage on :
 - Artificially drained mineral soils
 - Drained organic nutrient-rich soils
 - Drained organic nutrient-poor soils
- Estimated emission of 0.195 Gg N₂O/yr for GB
- IEF of 0.156 kg N₂O-N/ha

Extent of forest drainage



2. Improvements in the 1990-2011 inventory

- New estimates have been made of the geographical extent of forest on organic soils
- Revision of forest wildfires (5A/5(V) and FM,AR,D - Art 3.3&3.4)
- New activity data for non-forest wildfires has been included



3. Improvements for 1990-2012 inventory

- Revision of total area reported in 5A (Forest Land) and under FM (Art 3.4) when National Forest Inventory data is completed (awaiting statistics on woodland loss)
- Assessment of carbon stock changes in pre-1921 woodland (5A1 and FM - Art 3.4)
- Replacement of C-Flow carbon accounting model with FC CARBINE model (5A and FM,AR - Art 3.3&3.4)



4. Technical developments

- Redesigned data management process by building a database (MS Access) for storing and reporting inventory data. This supersedes an Excel spreadsheet table which had 'difficult to maintain' links to source data.
- Standardised upload of new data (corresponding inventory year) to the database;
- Archival of multiple versions of the database (the whole inventory is updated annually and previous years' versions need to be retained);
- Audit trail of database revisions and additions;
- Enables QA/QC procedures to be more easily and efficiently carried out;
- Facilitates accurate production of standard inventory deliverables (database exchange files, spreadsheets, XML files);
- Allows non-standard outputs to be produced and reproduced if necessary (e.g. by storing database query scripts).
- Stage two: transfer of the remaining spreadsheet models to integrated Matlab model scripts, and the transfer of data directly from the model to the database [ongoing].

5. Ongoing improvements 2012-2015 LULUCF project

- Work in 2012-2015 LULUCF project
 - Resolve issue of over-reporting of areas in the Cropland and Grassland categories due to crop rotation management.
 - fruit orchards
 - Revision of deforestation data once finalized estimates of woodland loss from the National Forest Inventory become available.
 - New activity data for non-forest wildfires will be included for the first time
- Data assimilation to improve land use change matrices/vectors
- Project to include cropland and grassland management impacts on soil carbon in LULUCF inventory – will produce Tier 2 activity data and EFs
 - Starts October 2012-March 2014

Land use vectors approach

• Time series of areas

Time	Area		
	Grass	Forest	Crop
1	100	0	0
2	90	10	0
3	70	20	10
4	60	20	20

• Matrix

		From		
		Grass	Forest	Crop
To	Grass	60	0	0
	Forest	20	0	0
	Crop	20	0	0

• Vectors

Time	Land use vector				
	1	2	3	4	5
1	g	g	g	g	g
2	g	f	g	g	g
3	g	f	f	c	g
4	g	f	f	c	c
Area	60	10	10	10	10