



Consistent reporting and accounting of N₂O emissions from organic soils, liming and fires

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Climate
Action



Reporting N₂O emissions from organic soils - considerations

CO₂ is reported under LULUCF, how N₂O is reported?

How avoiding double or missing it from accounting? Can it be harmonized?

When assessing it has to be taken into consideration:

- *direct N₂O emissions from agr soils* is listed on Annex A of KP (to be reported under Agriculture) (see also Assigned amount)
- *different accounting rules* apply for different KP land activities
- *consistency* in applying accounting rules for all sources of emissions (e.g. across all Tables 5)
- *CRF tables do not have slots* for all N₂O emissions
- *KP tables are activity explicit and more detailed* than UNFCCC tables



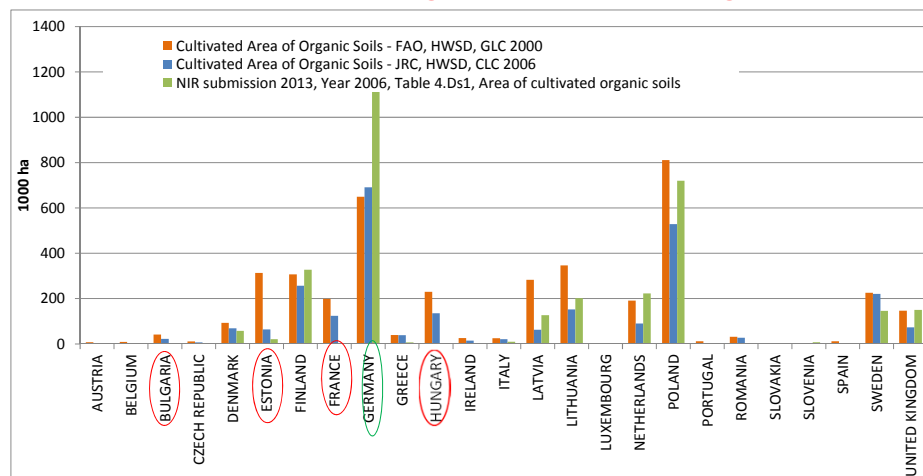
Non-forest lands: reporting N2O emissions from organic soils

Key question is **what is 'cultivation'**this **determines which land categories** are included for estimation in Ch.4, Ch.5 and KP-LULUCF

1. GPG does not define it, but associates it with 'management disturbance' and uses the term under both CL and GL
2. 'Cultivated organic soils' ~ 'drainage' area (for non-forest)
3. 'Organic soils' area \neq 'drainage' area (use any as proxy for the other may result in under/over estimation emissions)
4. Drainage occur **ONLY** on organic soils? NOT necessarily (i.e. flooding caused by recent construction/infrastructure on mineral soils or areas under short term flooding...)
5. Drainage land is not explicit in current CRF reporting of CL, GL under convention
6. Our previous understanding was that **ONLY** 'organic arable soils' from CL are subject to cultivation



Non-forest lands: reporting emissions from organic soils



Cultivated area = Arable (Cropland) + Temporary Grassland



N₂O emissions to be reported under Table 4.Ds1 (EU15 ~2148Kha in CRF 2013)

Assuming that 'cultivation' refers to 'agricultural area' it should cover organic soils area under both **CL and GL**

Area to estimate N₂O emissions from organic soils in reporting year, includes:

- + CL: arable and set aside
- + GL: only managed land as drained and under other management perturbations (excluding unmanaged GL and peat extraction (under WL)
- + Conversions to CL and to GL, including deforested* area

* In EU15 area of deforestation on organic soils is 116kha or 5% in total D area reported over 1990-2011. General understanding is that N₂O emissions are to be reported under 4Ds1 and not under 5(KP-II)3 (when LULUCF accounting rules apply). Further look into this issue by next Lead Reviewer meeting is possible.

Checks:

- 1) Area of 'cultivated organic soils' in 4Ds1 should be sum of 'organic soils areas' in 5B1+ 5B2.1/2/3/4 + mngd5C1 + 5C2.1/2/3/4



Consistency across tables

Table 5(KP-II)3

TABLE 5(KP-II)3. SUPPLEMENTARY BACKGROUND DATA FOR LAND USE, LAND-USE CHANGE AND FORESTRY			
ACTIVITIES UNDER THE KYOTO PROTOCOL			
N ₂ O emissions from disturbance associated with land-use conversion to cropland ^{(1), (2)}			
Identification code of geographical location	ACTIVITY DATA	IMPLIED EMISSION FACTOR	EMISSIONS
	Land area converted	N ₂ O-N per area converted ⁽²⁾	N ₂ O
	(kha)	(kg N ₂ O-N/ha)	(Gg)
A.2. Deforestation ^{(3), (4)}			
Total organic soils	Area(kha)	IE	IE
Total mineral soils			
Organic soils ^{(5), (10)}	Area (kha)	IE	IE
Mineral soils ⁽⁷⁾			

FL conversions to CL on organic soils:
activity data to be reported explicitly in 5(III)/(KP-II)3 (matching organic soils area under 5B2 subdivisions), and N₂O emissions to be reported as 'IE' in 4Ds1



N₂O from FM&AR lands

Forest management according EU15's 2013 CRF: organic soils area is 10600kha or ~10% of FM area and drained area is 1200kha or ~11 % of organic soils area

Land	4Ds1 Cultivation of histosols	5(III) and 5(KP-II)3 N ₂ O from disturbance	5(II) and 5(KP-II)2 N ₂ O from drainage
5A1/FM	-	-	Drained in 5(II) and 5(KP-II)2

Issues:

- Under low tier CO₂ and N₂O emissions from *managed land but un-drained soils*, are considered *natural*, therefore not accounted for
- Reporting N₂O emissions from drained soils under FM seems *mandatory under D16/CMP1* while *GPG assumes it is voluntary* by presenting a method in Appendix3a.2 of GPG. *Further look into this issue by next Lead Reviewer meeting is possible.* Updated methodological guidance is available in GL 2006 and 2013 Wetland supplement provide guidance.
- In *drained areas subject to rewetting*, N₂O emissions assumed negligible, how to report/demonstrate/document this



Afforestation - Reporting N₂O emissions from organic soils (EU15=330kha or 4% in AR area)

Land	4Ds1 Cultivation of histosols	5(III) and 5(KP-II)3 N ₂ O from disturbance	5(II) and 5(KP-II)2 N ₂ O from drainage
5A2/AR	-	-	? within FM (if drained)

Issues:

- If expansion of forest occur on organic soils, emissions are **ONLY** estimated for drained area, for rest 'NO' is consistent with GPG
- N₂O emissions to be estimated (see bullet 2 of previous slide on FM)
- No slot for N₂O emissions from drained AR (although estimates are required): to be included with FM, where for transparency reason to create subdivisions for FM and AR
- EU's KP-list 2013 requires "additional documentation when reporting 'NO' for AR on organic soils" (see first bullet above)



Checks against international datasets

Cultivated organic soils (FAOSTAT):

- GPG always suggests "data from FAO can be used"
- Check the definition behind data submitted by your country (e.g. definition of item reported, reference year)
- Justify/document the difference UNFCCC-Faostat



Recommendations on reporting N₂O emissions

- Harmonized understanding of 'cultivation' or, in any case, each MS to provide its definition in NIR and explain how area subject to cultivation is linked to CL and GL areas, and what includes (e.g. soil management, drainage)
- Areas of 'cultivated', 'drained' and 'organic soils' are different (explicit tables with activity data in NIR may help)
- For methods and factors check the IPCC 2006 and 2013 wetlands supplement
- It is a good practice to split on GL and CL because of diff. EF
- Strong documentation on 'rewetting area' is necessary

Reporting Liming



Circumstances: since pH is lower in forest soils, for immediate agricultural use soil acidity is usually corrected

Use of notation keys:

- dolomite can be 'IE' in lime amount
- Liming 5A1 and 5A2 to be reported under 'Other' of 5(IV) and ARDFM of (KP-II)4

Possible methods to report this:

Step 1: Estimate ratio of 'D' to 'total agricultural area' (*Note:* D is area of newly deforested in current or previous year, not time cumulated)

Step 2: apply that ratio to 'lime amount applied annually' in the country, from statistics

or,

Average amount to be applied x Darea

Reporting GHG emissions from wildfires



Aggregated activity data for fires on forestland is available from various statistics. How to split it between AR and FM

Possible method to estimate activity data:

Step 1: Estimate ratio AR*/FM

(Note*: AR area cumulated since 1990)

Step 2: apply the ratio to wildfire area reported by forest statistics

or,

for incomplete time series of statistical data, assume an annual area equal to average area for existing span

or,

check and use international datasets (e.g. EFFIS – European Forest fire information platform)