

Enhancing the user uptake of Land Cover / Land Use information derived
from the integration of Copernicus services and national databases
„InCoNaDa”

Enriching LULUC data application with CLMS products

Marcin Żaczek & Sylwia Waśniewska
Institute of Environment Protection – National Research Institute

Background for geospatial aid application in the context of LULUCF reporting framework

Regulation (EU) 525/2013 (Decision No 529/2013/EU)

Regulation (EU) 1999/2018 (Regulation (EU) 842/2018)

Scope of assistance

Activity data scope

Scope of assessment of land management changes in LULUC(F)

Conclusions

Framework for pre 2020 obligations

Regulation MMR (EU) 525/2013 on a mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change

Commission Implementing Regulation (EU) No 749/2014 – provides structure, format, submission processes and review of information reported by Member States pursuant to Regulation (EU) No 525/2013

The national inventory report shall be drafted based on the structure set out in the [Appendix to the UNFCCC reporting guidelines on annual greenhouse gas inventories](#) as included in Annex I to Decision 24/CP.19 (Com Reg. 749/2014 art. 3.2).

Framework for post 2020 obligations

Regulation (EU) 1999/2018 on the Governance of the Energy Union and Climate Action up-to-date mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change

Commission Implementing Regulation (EU) 2020/1208 on structure, format, submission processes and review of information reported by Member States pursuant to Regulation (EU) 2018/1999 of the European Parliament and of the Council and repealing Commission Implementing Regulation (EU) No 749/2014

Reporting on GHG inventories, P&M, projections, etc. in accordance with MPG's (Dec. 18/CMA.1), at the latest by 31 December 2024. Reporting shall follow guidance operationalizing the MPG's for the enhanced transparency framework referred to in Article 13 of the Paris Agreement (Dec. -/CMA.3*)

By derogation national inventory reports drafted based on the structure set out in the Appendix to the UNFCCC reporting guidelines on annual greenhouse gas inventories as included in Annex I to Decision 24/CP.19 (Com Reg. 749/2014 art. 3.2 containing the data for the years 2018, 2019 and 2020 are required).

* Outcome of the Glasgow Climate Change Conference: <https://unfccc.int/documents/310499>

Guidelines for annual greenhouse gas inventories

Conference of the Parties (COP), by decision 24/CP.19, adopted the “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories” (UNFCCC Annex I inventory reporting guidelines) and tables of the common reporting format to implement the use of the *2006 IPCC Guidelines for National Greenhouse Gas inventories* (2006 IPCC Guidelines).

The *2006 IPCC Guidelines* assists countries in producing inventories for the land use, land-use change and forestry sector that are neither over- nor underestimates so far as can be judged, and in which uncertainties are reduced as far as practicable. It supports the development of inventories that are transparent, documented, consistent over time, complete, comparable, assessed for uncertainties, subject to quality control and quality assurance, and efficient in the use of resources.

To:

Reporting of land use concept

GREENHOUSE GAS SOURCE AND SINK CATEGORIES		ACTIVITY DATA		
Land-use category	Subdivision	Total area	Area of mineral soil	Area of organic soil
		(kha)		
4.A. Total forest land				
4.A.1. Forest land remaining forest land				
4.A.2. Land converted to forest land				
4.A.2.a. Cropland converted to forest land				
4.A.2.b. Grassland converted to forest land				
4.A.2.c. Wetlands converted to forest land				
4.A.2.d. Settlements converted to forest land				
4.A.2.e. Other land converted to forest land				
	B. Total cropland			
	1. Cropland remaining cropland			
	2. Land converted to cropland			
	2.1 Forest land converted to cropland			
	2.2 Grassland converted to cropland			
	2.3 Wetlands converted to cropland			
	2.4 Settlements converted to cropland			
	2.5 Other land converted to cropland			
	C. Total grassland			
	1. Grassland remaining grassland			
	2. Land converted to grassland			
	2.1 Forest land converted to grassland			
	2.2 Cropland converted to grassland			
	2.3 Wetlands converted to grassland			
	2.4 Settlements converted to grassland			
	2.5 Other land converted to grassland			
	E. Total settlements			
	1. Settlements remaining settlements			
	2. Land converted to settlements			
	2.1 Forest land converted to settlements			
	2.2 Cropland converted to settlements			
	2.3 Grassland converted to settlements			
	2.4 Wetlands converted to settlements			
	2.5 Other Land converted to settlements			
	F. Total other land			
	1. Other land remaining other land			
	2. Land converted to other land			
	2.1 Forest land converted to other land			
	2.2 Cropland converted to other land			
	2.3 Grassland converted to other land			
	2.4 Wetlands converted to other land			
	2.5 Settlements converted to other land			

Land use approaches in GHG inventory

Requirement level	2013-2020	2021 - onward
UNFCCC	Flexibility in applying any approach* available	Flexibility in applying any approach* available
EU	Flexibility in applying any approach* available	Formal requirement for approach* 3 application**

* Approaches are provided in *Chapter 3 of the vol 4 of the IPCC 2006 Guidelines* (Consistent Representation of Lands), singly or in combination, to estimate land areas for each land-use category relevant to the country.

** Part 3 of the Annex V to the Reg 2018/1999 [*...Methodologies for monitoring and reporting in the LULUCF Sector: Geographically explicit land-use conversion data in accordance with the 2006 IPCC Guidelines for national GHG inventories...*]
Consistent and robust land use change time series (1988-onward) in line with Approach 3 are required for the 2023 submission .

Land use concept

The discussion is in terms of six broad categories of land use: forest land, cropland, grassland, wetlands, settlements, and other land that provide the basis for more detailed discussion.

Unmanaged as well as managed areas are considered to help ensure consistency of area estimates, although emissions and removals are only estimated in respect of managed areas, as required by the IPCC Guidelines.

Land may remain in any of these categories (e.g., grassland) or its use may change to another category (e.g., from forest to cropland).

Forests in LULUCF with CLMS

IPCC concept category	CLMS products	BDOT10 k identification code	Additional description/ finding
Forests	TCD	BDOT PTLZ BDOT PTUT 04	Status layers showing the level of tree cover density in a range from 0-100%, however forest land with TCD<10% with temporary loss of tree cover - still forming part of area under sustainable forest management (such as clear cuts)
Settlements	TCD	BDOT PTZB (01, 02, 03, 04, 05) BDOT KUSK 04	Status layers showing the level of tree cover density in a range from 0-100% identified with the BDOT PTZB (01, 02, 03, 04, 05) BDOT KUSK 04 masks to be considered as settlements
Forests	SWF >0,1 ha	BDOT PTLZ BDOT PTUT 04	Patchy small woody features (SWF): defined by a compactness criterion greater than 0.75, at least 10m width and with an area greater than 1000m ² to be considered forests Additional woody features (AWF) which present an area above 1,000m ² (linear features wider than 30m, and out-of-specifications patches) to be considered forests

Grasslands in LULUCF with CLMS

IPCC concept category	CLMS products	BDOT10 k identification code	Additional description/ finding
Grassland	GRA	BDOT PTTR 01	Grassland binary status layer identified with the BDOT PTTR 01 mask to be considered as grassland
Grassland	SWF<0,1 ha	BDOT PTRK01 BDOT PTRK 02	<p>Linear SWF defined by a compactness criterion less or equal to 0.75, up to 30m width and at least 50m length. They are only distinguished as separate attributes in the vector layer identified with the BDOT PTRK01+ BOT PTRK 02 masks to be considered as grassland</p> <p>Patchy SWF defined by a compactness criterion greater than 0.75, at least 10m width and with an area greater than 200m² and less than 1,000m². identified with the BDOT PTRK01 BDOT PTRK 02 masks to be considered as grassland</p> <p>Additional woody features which present an area below 1,000m² (linear features wider than 30m, and out-of-specifications patches) identified with the BDOT PTRK01+ BOT PTRK 02 masks to be considered as grassland</p>
Settlements	GRA	BDOT PTUT 01 BDOT KUSK	Grassland binary status layer identified with the BDOT PTUT 01 BDOT KUSK masks to be considered as settlements (Municipal lawns)
Settlements	GRA	BDOT PTKM	Grassland binary status layer identified with the BDOT PTKM mask to be considered as settlements (Out-road lawns)

Wetland in LULUCF reporting (data feasibility)

- ✓ According to IPCC, wetland refers to any land that is covered or saturated by water for all or part of the year, and that does not fall into the Forest Land, Cropland, Grassland, Settlements and Other land categories.
- ✓ At the same time land categories may be further divided according to climate zone, management system, soil type (including according to whether the soil is drained, rewetted or categorized as other), vegetation type, tree species, ecological zone or national land classification
- ✓ Under each subcategory assessment of organic soils (peatlands) - at least in minimum with location and area

GIS Mokradła Polski

Peatland, gytia bogs <10ha

ID code	Name (Ros i Mok_ros)
1	Water rushes and water-land rushes
2	Large-size rushes
3	Low-sediment hammers of low peat bogs
4	Transitional mires
5	Raised bogs
6	Communities of wet meadows
	Communities of fresh grasslands and sandy grasslands
7	Forest and shrubs
8	No data

Peatland, gytia bogs
an other wetlands >10ha

ID code	Name(Typ i Mok_typ)
1	Low bogs
2	Transitional bogs
3	Raised bogs
4	Gytia bogs
9	Mule habitats, silts and marshes
7	Islands with undefined habitats
99	Surface waters and wetlands

Changes in land management

Within-year IPCC requirements for the cropland management or input factors relies on the observed: practices of residue removal, annual crop (in combination with residue management) or rotation with bare fallow, (complementary) manuring, carbon input increasing practice (e.g., irrigation, cover crops or green manures, vegetated fallows, high residue yielding crops, and mixed crop/grass systems), fertiliser application (mineral fertiliser, N-fixing crops, organic amendments)

Within-year IPCC requirements for grazing land management refer to four states, depending on the observed: grassland improvement activities, sustainability of management, productivity levels, evidence of soil degradation and erosion



IACS
(LPIS)
(*limited
accessibility so far)

Changes in cropland management

IPCC categories		IPCC Description	Spatial data availability
Long-term cultivated cropland management	Full tillage	Substantial soil disturbance with full inversion and/or frequent (within year) tillage operations. At planting time, little (e.g., <30%) of the surface is covered by residues.	Not available for the authority responsible for the GHG inventory without requesting for targeted processing
	Reduced tillage	Primary and/or secondary tillage but with reduced soil disturbance (usually shallow and without full soil inversion). Normally leaves surface with >30% coverage by residues at planting.	Not available for the authority responsible for the GHG inventory without requesting for targeted processing
	No tillage	Direct seeding without primary tillage, with only minimal soil disturbance in the seeding zone. Herbicides are typically used for weed control.	Not available for the authority responsible for the GHG inventory without requesting for targeted processing

Changes in cropland management

IPCC categories		IPCC Description	Spatial data availability
Long-term cultivated cropland input	Low	Low residue return occurs when there is due to removal of residues (via collection or burning), frequent bare fallowing, production of crops yielding low residues (e.g., vegetables, tobacco, cotton), no mineral fertilisation or N-fixing crops.	Not available for the authority responsible for the GHG inventory without requesting for targeted processing
	Medium	Representative for annual cropping with cereals where all crop residues are returned to the field. If residues are removed then supplemental organic matter (e.g., manure) is added. Also requires mineral fertilisation or N-fixing crop in rotation.	Not available for the authority responsible for the GHG inventory without requesting for targeted processing
	High, without manure	Represents significantly greater crop residue inputs over medium C input cropping systems due to additional practices, such as production of high residue yielding crops, use of green manures, cover crops, improved vegetated fallows, irrigation, frequent use of perennial grasses in annual crop rotations, but without manure applied.	Not available for the authority responsible for the GHG inventory without requesting for targeted processing
	High, with manure	Represents significantly higher C input over medium C input cropping systems due to an additional practice of regular addition of animal manure.	Not available for the authority responsible for the GHG inventory without requesting for targeted processing

Changes in grazing land management

IPCC categories		IPCC Description	Spatial data availability
Grazing land management	Nominal, non-degraded	Represents non-degraded and sustainably managed grassland, but without significant management improvements.	Not available for the authority responsible for the GHG inventory without requesting for targeted processing
	Improved	Represents grassland which is sustainably managed with moderate grazing pressure and that receive at least one improvement (e.g., fertilisation, species improvement, irrigation).	Not available for the authority responsible for the GHG inventory without requesting for targeted processing
	Moderately degraded	Represents overgrazed or moderately degraded grassland, with somewhat reduced productivity (relative to the native or nominally managed grassland) and receiving no management inputs.	Not available for the authority responsible for the GHG inventory without requesting for targeted processing
	Severely degraded	Implies major long-term loss of productivity and vegetation cover, due to severe mechanical damage to the vegetation and/or severe soil erosion.	Not available for the authority responsible for the GHG inventory without requesting for targeted processing

Conclusions

- ✓ Growing needs in LULUCF sector - both in terms of land use data assessment and changes in management (potential substitution of domestic statistics on land use and land management and its changes)
- ✓ Wetland complexity is becoming a big challenge in terms of LULUCF reporting (triggering potential recalculation in future reporting)
- ✓ Inconada deliverables addresses important part of incoming reporting requirements, further complementation with auxiliary data is still essential

Thank you

Marcin Żaczek

Institute of Environmental Protection –
National Research Institute
National Centre for Emissions Management

Marcin.Zaczek@kobize.pl

tel. +48 22 569-65-13

fax +48 22 569-65-00

Chmielna 132/134

00-805 Warszawa

POLAND

Sylvia Waśniewska

Institute of Environmental Protection –
National Research Institute
National Centre for Emissions Management

Sylvia.Wasniewska@kobize.pl

tel. +48 22 569-65-19

fax +48 22 569-65-00

Chmielna 132/134

00-805 Warszawa

POLAND

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