

Session IV: Filling the Gaps in LULUCF Reporting in the Transition to the ETF

The Status of Reporting on LULUCF sector in Asia:
Requirements and Gaps

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Requirements from MPGs

Related Paragraphs of Annex to 18/CMA.1

- 47. Each Party shall report estimates of emissions and removals for all categories, gases and carbon pools considered in the GHG inventory throughout the reported period on a gas-by-gas basis in units of mass **at the most disaggregated level**, ..., using the **common reporting tables**
- 50. Each Party shall report the following sectors: energy, industrial processes and product use, **agriculture, LULUCF** and waste, ...
- 56., that Party shall also provide supplementary information on emissions and removals from **harvested wood products** estimated using the **production approach**.



From these paragraphs, it should be said that...

Requirements from MPGs

- AFOLU report should be divided into LULUCF and Agriculture (paragraph 50, MPGs)
- Estimation should be disaggregated by carbon pool and non-CSC source, and by sub land-use category (paragraph 47,50 MPGs)

■ Carbon pool

- Above-ground biomass
- Below-ground biomass
- Dead wood
- Litter
- Mineral soil
- Organic soil

■ Emissions due to the use and change in use of lands (Non-CSC source)

- 4(I) Fertilization
- 4(II) Drainage
- 4(III) N mineralization
- 4(IV) Biomass Burning



★ Sub land-use category

- Forest land remaining Forest land (FL-FL)
- Land converted to Forest land (L-FL)
- Cropland remaining Cropland (CL-CL)
- Land converted to Cropland (L-CL)
- Grassland remaining Grassland (GL-GL)
- Land converted to Grassland (L-GL)
- Wetlands remaining Wetlands (WL-WL)
- Land converted to Wetlands (L-WL)
- Settlements remaining Settlements (SL-SL)
- Land converted to Settlements (L-SL)
- Land converted to Other land (L-OL)
- Other

- Emissions and removals from HWPs are required to be estimated using the production approach (paragraph 56, MPGs)
- Land transition matrix is required in CRT reporting (paragraph 47, MPGs)

Reporting Allocation between LULUCF and Agriculture Sector

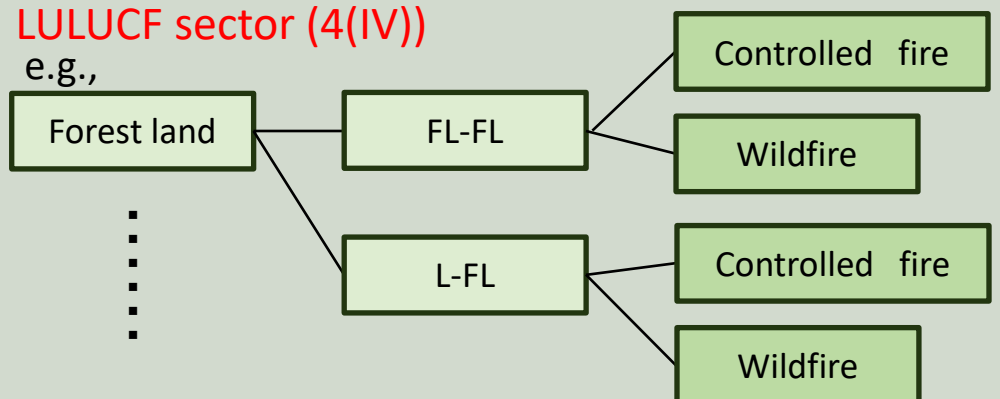
- “Categories mapping CRT and 2006 IPCC Guidelines” is provided by the UNFCCC secretariat (<https://unfccc.int/documents/634242>)

Category in 2006 IPCC GLs	Allocation in CRT
3.A. Livestock	Agriculture sector
3.B. Land	LULUCF sector (4.A to 4.F and 4.H)
3.C. Aggregate sources and non-CO ₂ emissions on land	
3.C.1 Emissions from Biomass Burning	Agriculture sector, LULUCF sector (4(IV))
3.C.2 Liming	Agriculture sector
3.C.3 Urea application	Agriculture sector
3.C.4/5 Direct/indirect N ₂ O emissions from managed soils	Agriculture sector, LULUCF sector (4(I), 4(II), 4(III))
3.C.6 Indirect N ₂ O emission from Manure Management	Agriculture sector
3.C.7 Rice Cultivation	Agriculture sector
3.D. Other (e.g., HWP)	LULUCF sector (4G : HWP)

Reporting Allocation between LULUCF and Agriculture sector

- Reporting in Biomass Burning

3.C.1 Emissions from Biomass Burning → Agriculture sector, LULUCF sector (4(IV))

Activity	Allocation in CRT
Agriculture residue burning	Agriculture sector
Prescribed burning on savannah	
Biomass Burning in Forest Land	LULUCF sector (4(IV)) e.g., 
Biomass Burning in Cropland	
Biomass Burning in Grassland	
Biomass Burning in Wetland	
Peatland fire	

Note) Emissions from biomass burning in other land-use other than listed above (i.e., Settlements, Other land) should also be reported in LULUCF sector (4(IV))

Reporting Allocation between LULUCF and Agriculture sector

- Related to N₂O emissions from managed soils

3.C.4/5 Direct/indirect N₂O emissions from managed soils → Agriculture sector, LULUCF sector (4(I), 4(II), 4(III))

Source under 3C4/5	Allocation in CRT	FL-FL	L-FL	CL-CL	L-CL	GL-GL	L-GL	WL-WL	L-WL	SL-SL	L-SL	OL-OL	L-OL
Fertilizer application	4(I) Fertilization	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Drained Organic Soils	4(II) Drainage	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
N mineralization	4(III) N mineralization	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
Crop residues	Agriculture sector												
Manure left on pasture	Agriculture sector												

- Under the ETF, reporting is required by each land use
- Emissions from drainage of organic soils in agricultural land (i.e., CL, GL) are all reported under Agriculture sector (the rest is reported under LULUCF)
- Emissions from N mineralization of soil associated with land-use conversion are reported under LULUCF

LULUCF Reporting Status from WGIA countries

- Based on Information from the Most Recent BUR Reports

Mandatory for Tier 2		4.A Forest land		4.B Cropland		4.C Grassland		4.D Wetlands				4.E Settlements		4.F Other land		other	aggregated value/L- non-FL
Mandatory for Tier 1+								WL-WL		L-WL							
Carbon pool		FL-FL	L-FL	CL-CL	L-CL	GL-GL	L-GL	PL	FIL	PL	FIL	SL-SL	L-SL	OL-OL	L-OL		
Living biomass	Above-ground	12	10	7	7	4	6	3	No methodologies in 2006 GL	5	5	3	6		8	1	1
	Below-ground	10	9	4	5	2	4	3		3	3	2	4		6	1	1
Deadwood		6	3	2	3	2	3	3		2	2	2	2		3	1	1
Litter		7	3	2	3	2	3	3		2	2	2	2		3	1	1
Soil	Mineral	4	3	4	2	4	4	NO				2	2	2		2	1
	Organic	3-4	2-3	3-5	3-5	2-4	3-5	1-3	3-4	2-3	1-2	3-4				1	1
HWP		5															
Non-CSC source		FL-FL	L-FL	CL-CL	L-CL	GL-GL	L-GL	WL-WL		L-WL		SL-SL	L-SL	OL-OL	L-OL	other	
4(I) Fertilization N ₂ O		1	1	Reported in Agriculture sector				0		0		0	0				
4(II) Drainage	N ₂ O	2	1	Reported in Agriculture sector				1	0	2	0	1	2				1
	CH ₄	1	1	1	1	1	1	2-3	0	1	0	1	1				
4(III) N mineralization		N ₂ O	0-1	0-1		1-2		0-1			0-1		1		1		
4(IV) Biomass Burning	N ₂ O	9	1	4	2	5	2	1		2		1	1		2		
	CH ₄	10	1	5	2	6	2	1		2		1	1		2	1	

Note)

- Cell in gray: NO
- In the case that report is not clear enough to be counted, e.g., 3-4 is used.
- Number counted includes report using notation keys of "NO" and "IE".

Observation

Estimation status in:

[Land-use Category]

- More countries conducted estimation in **Forest land** than in other land-use categories

[Carbon pool]

- Estimations in **Above-ground biomass** pools have been carried out in many countries. However, estimations in **dead wood, litter and soil pools** have not been carried out much.
- Few countries reported both **mineral** and **organic soil** pools within soil carbon pools.

[Non-CSC source]

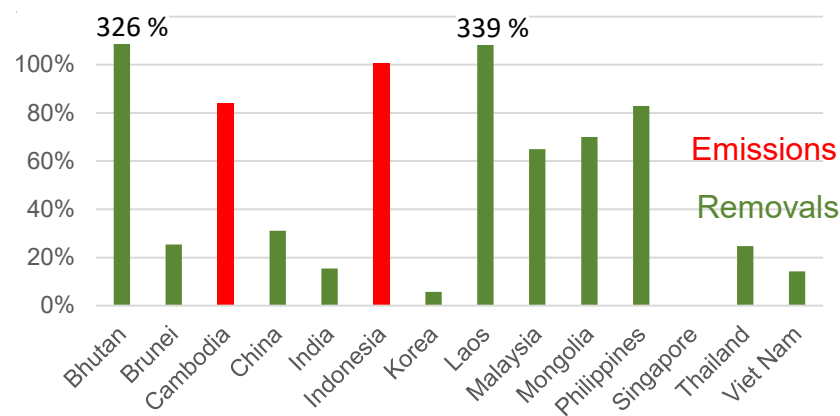
- Of non-CSC sources, **Biomass burning** is the category which was estimated by many countries

From their BUR, difficulties in estimation seem to be related to:

- Lack of activity data, historical information on land-use conversions
- Lack of data in soil organic carbon and dead organic matters

Categories / Pools in which Estimations should be Prioritized

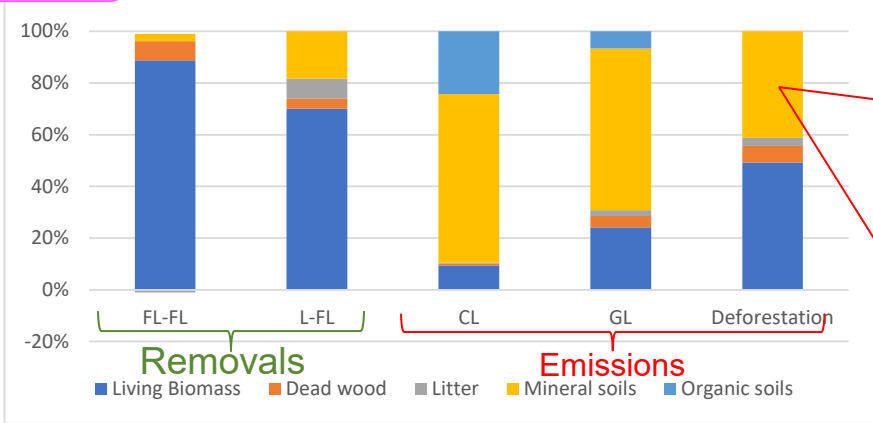
Ratio of FOLU/LULUCF to the national total emissions (without FOLU/LULUCF)



Might be your country's

Significant C pools

Share of CSC by C pool from Japan's GHG inventory in 2022



- Living Biomass pools and Mineral soil pools in the Forest land converted to Other land use (= Deforestation)
- Mineral soil pools in Key categories (e.g., Cropland, Grassland, Land converted to Forestland)

Check Item

- ✓ Any management changed?
- ✓ Any big change in areas?
- ✓ Any big disturbances ?

Key Category

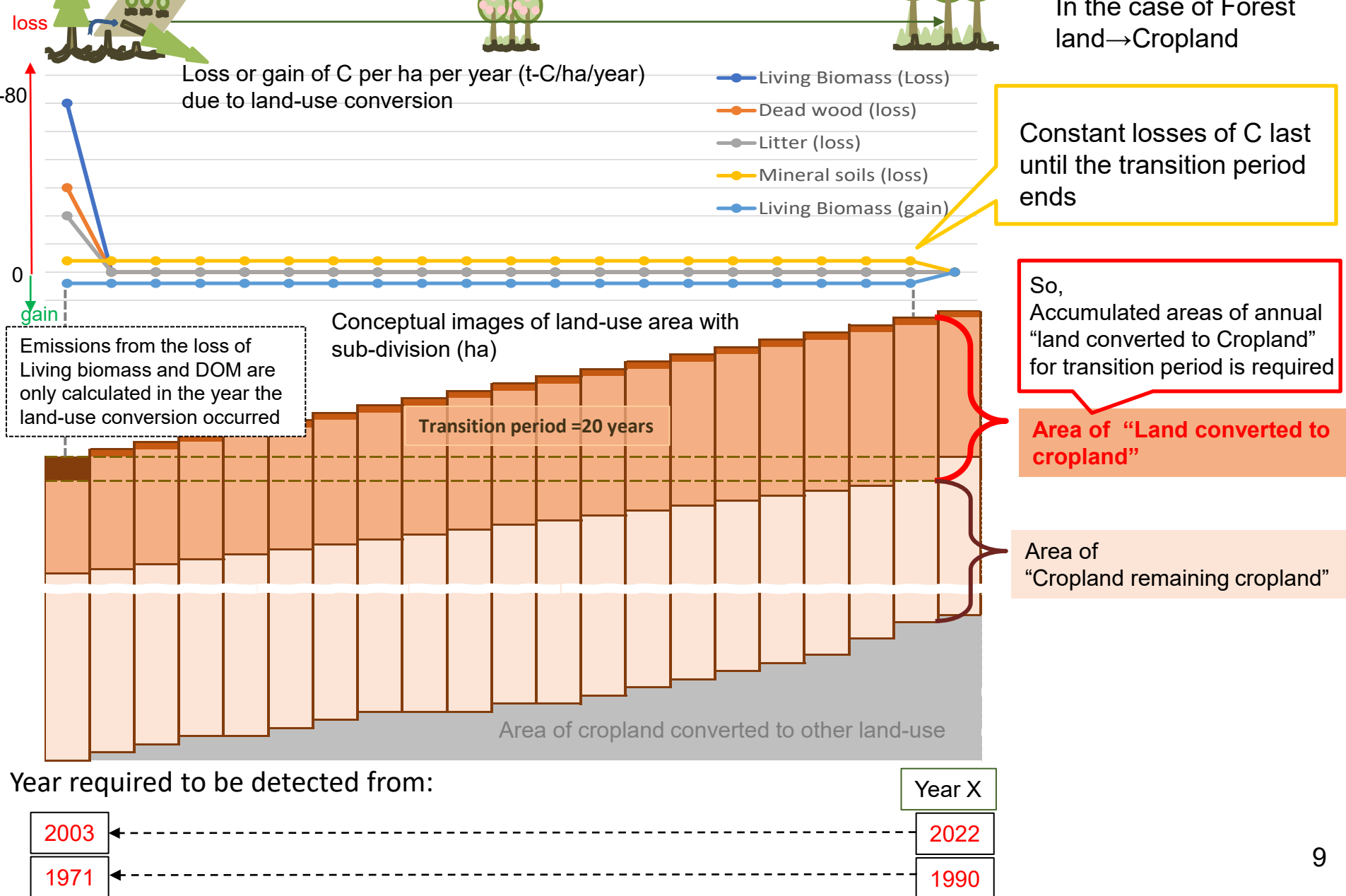
(paragraph 23 MPGs)

Category analyzed as a Key Category

key category	number of country
FLFL(FL)	11
Biomass burning	6
CL(CLCL)	4
L-OL	4
SL,L-SL	3
L-CL	2
GL	2
L-FL	1
L-GL	1
peat decomposition	1

4(III) N mineralization

Activity data for estimating CSC in mineral soils resulting from land-use conversion in the year X



To Fill the Gaps -Speakers in Session IV

➤ To learn dividing AFOLU reporting into LULUCF and Agriculture

- **“Update on IPCC Inventory Software/ Task Force on National Greenhouse Gas Inventories”
by Dr. Baasansuren Jamsranjav/ Lucy Garland (IPCC/TFI)**

➤ To learn how to estimate CSC from soil carbon pools

- **“Challenges and strategies for nationwide soil organic carbon monitoring and modelling”
by Dr. Shoji Hashimoto (FFPRI)**

➤ To learn how to collect area data with historical change information for TCCCA estimation

- **“Developing a Consistent, Accurate and Complete Land Representation for the Land Use, Land-Use Change and Forestry National Greenhouse Gas Inventory using FAO Tools”
by Mr. Iordanis Tzamtzis (FAO)**

➤ To learn from the WGIA colleague's experience for detecting land-use conversions and disturbances

- **“Providing Activity Data and Emission Factor: Indonesia's National Forest Monitoring System to Support National GHG Inventory for the 1st BTR”
by Ms. Endah Riana Oktavia/ Ms. Anna Tosiani (Indonesia)** ¹⁰