Final Review Report

2025 Comprehensive Review of National Greenhouse Gas Inventory Data

pursuant to Article 38(1a) of Regulation (EU) No 2018/1999 and Article 4(4) of Regulation (EU) No 2018/841

Hungary

28 August 2025

Reference: No 3502/B2025/EEA.60384

European Environment Agency

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Introduction and conclusions from the 2025 comprehensive review

This Final Review Report presents the findings from the 2025 review of the greenhouse gas (GHG) emission inventory of Hungary.

The comprehensive review was carried out in accordance with Article 38(1a) of Regulation (EU) 2018/1999 ('Governance Regulation'). The purpose of the comprehensive review is to enable the Commission to set out the annual limit values of Hungary for the years from 2026 to 2029, in terms of tonnes of CO_2 equivalent, as required by Article 4(4) of Regulation (EU) No 2018/841 (the 'LULUCF Regulation').

The reviewers carried out checks to verify the transparency, accuracy, consistency, comparability and completeness of the national GHG inventory for the years 2016, 2017 and 2018 as well as 2021, 2022 and 2023 submitted in 2025 by Hungary pursuant to Articles 26 (4) of the Governance Regulation.

The review consisted of two steps. The initial checks were performed by the EU inventory team (European Environment Agency (EEA)). The comprehensive review was performed by a Technical Expert Review Team (TERT).

More information on the procedures for the 2025 comprehensive review is presented in the annexes of this review report.

Initial check and comprehensive review conclusions

1. The reviewers raised 29 issues with Hungary during the initial check and comprehensive review (see Table 1). The TERT provided recommendations for 15 of these issues. Other issues raised during the comprehensive review were clarified and are considered resolved.

2. The TERT identified cases where inventory data were prepared in a manner which is inconsistent with UNFCCC guidance documentation or Union rules. In particular, the TERT identified a number of under-estimates or over-estimates exceeding the threshold of significance pursuant to Article 31 of Commission Implementing Regulation (EU) No 2020/1208.

3. Hungary provided 2 revised estimates to which the TERT agreed. Table 2 below summarises the revised estimates and further information is provided in the respective chapter of this report.

4. The TERT did not deem necessary any technical corrections in the meaning of Article 38(2)(d) of Regulation (EU) No 2018/1999.

5. The TERT identified recommendations in order to improve the national inventory data of Hungary (see Table 3).

6. Following an in-country visit on the 8th of August 2025, the TERT considers that it received sufficiently clear explanation of the inventory and its compilation and QAQC processes and has provided recommendations associated with the compilation process and its QAQC and documentation.

7. The TERT considers that it received a response from Hungary that was sufficient in order to undertake the comprehensive review appropriately.

Table 1: Overview of issues raised with Hungary

	Issues raised during the initial check	Issues raised during the comprehensive review	Recommendations	Revised estimates[1]	Technical corrections[2]
LULUCF	**6**	**23**	**15**	**2**	**-**

[1] Revised estimates: changes in inventory estimates triggered by the review and provided by the country.

[2] Technical corrections: changes in inventory estimates triggered by the review and provided by the TERT.

National totals for the purpose of Article 4(4) of Regulation (EU) 2018/841 (LULUCF)

Table 2 Totals net LULUCF emissions for the purpose of Article 4(4) of Regulation (EU) No 2018/841

Emission source category	Reference	Emission estimates (kt CO_2 equivalent)[1]					
		2016	**2017**	**2018**	**2021**	**2022**	**2023**
Total net greenhouse gas emissions for the LULUCF sector, pursuant to Article 26(4) of Regulation (EU) No 2018/1999	HUN-CRT-2025-V0-2-DataEntry-20250319-220252	-4 534.121	-5 313.719	-4 783.828	-7 171.244	-6 773.151	-5 810.834
Difference between revised estimates and original estimates submitted by the Party[2]							
4A Forest land (CRT 4A1; 4A2; 4B2a; 4C2a; 4E2a), CO_2, Multiple pools	HU-4A1-2025-0003	-242.807	-546.908	-327.603	-175.076	1 539.634	333.214
4D1a Peat extraction remaining peat extraction, Multiple GHG (CO_2, CH_4, N_2O), Organic soil	HU-4D1-2025-0001	58.400	57.783	55.316	57.202	59.793	57.510
Total net greenhouse gas emissions for the LULUCF sector including revised estimates		-4 718.528	-5 802.843	-5 056.114	-7 289.118	-5 173.725	-5 420.109

[1] The tables presented in this report show numbers rounded to three decimal places, although most numbers are available with greater precision. For all calculations all available decimal places were used. Therefore, the totals shown may slightly differ from calculation results where only three decimals are taken into account.

[2] A positive difference indicates an increase compared to reported emissions or decrease in reported removals. A negative difference indicates a decrease compared to reported emissions or increase in reported removals. For more information on revised estimates and/or technical corrections, see Annex 1.

Statement from Hungary on the conclusions presented by the TERT

Hungary agrees with the aggregated GHG emission inventory estimates presented in Table 2.

Recommendations from the TERT, considering revised estimates and technical corrections deemed necessary by the TERT

Table 3: Recommendations from TERT (RE = Revised estimate; TC = Technical correction)

EMRT-ID	Key category	Category, gas, year	Recommendation	Revised estimate or technical correction in 2025 (RE/TC/no)
HU-4A1-2025-0003	Yes	4A1 Forest land remaining forest land, CO_2, 1985-2023	Hungary applies the stock-difference method in the living biomass and dead wood pools in 4A1 Forest land remaining forest land, using NFD data for the living biomass and NFI data for the dead wood. Furthermore, Hungary explains in the NID (p.363) the reasons for the use of these data sources for each of the pools, together with the limitations associated with them (e.g. in the case of NFD, trees to measure in 'sampling' by forest planners during surveys are subjectively selected). The TERT notes that specific information is missing in relation to the NFI (e.g., sampling method, representativeness, etc.). The TERT notes that Hungary reports carbon stock changes for the whole living biomass and dead wood pools at aggregated level (forest sub-compartments), although the estimation is done at a stand level, and that no detailed information is reported demonstrating that the stock-difference method is correctly applied on the same area between points in time that the carbon stocks are compared. Furthermore, the TERT notes that some statistically defined outliers are identified in several forest-related subcategories and carbon pools, for example, in living biomass in the years 2010, 2019, 2023 and net carbon stock changes in DOM pool in the years 2014, 2019, 2023 in forest land converted to settlements. During the review, Hungary acknowledged some errors in the estimation of carbon stock changes in forest-related subcategories (forest land, and forest land converted to other land-use categories) and the need to cross-check again the estimates. Hungary also informed the TERT of a significant magnitude of error (appr. 0.75 $MtCO_2$/yr on average) affecting the years 2020-2023 in forest land. Following several unresolved exchanges between the TERT and Hungary on different versions of revised estimates and potential technical corrections, the TERT noted that during that Hungary was not able to provide sufficiently transparent information and provided data that was inconsistent in its revised estimates. For this reason, an in-country visit was undertaken on the 8th August. During the in-country visit Hungary presented its data flows, calculation and QAQC systems and confirmed to the TERT several errors and shortcomings in its estimates. These included the use of the wrong yield tables since 2020 in the NFD and the need for adjustments of areas of LUC lands related to Land converted to Forest land and incorrect queries in the LULUCF database resulted in errors in the 2025 submission and the first revised estimates. In addition, Hungary informed the TERT that the growing stocks of 2022 and 2023 representing the basis for the 2025 submission were not adjusted with a correction factor required for delayed forest management measurement results.	RE

EMRT-ID	Key category	Category, gas, year	Recommendation	Revised estimate or technical correction in 2025 (RE/TC/no)
			Hungary acknowledged to the TERT that these issues were not picked up by Hungary's quality control processes. During the in-country visit, Hungary confirmed that the estimate submitted on 10th of July 2025 represented its final Revised Estimate. The TERT decided to accept the revised estimate submitted by Hungary following the clarifications provided during the in-country visit on the 8th August and receipt of further additional explanations on 13th of August. However, based on the experiences during the review cycle the TERT recommends the following to further strengthen the inventory team, data flows and processes: 1) A strengthening of the QC procedures at the National Forest Database for an earlier identification or avoidance of shortcomings at these basic input data for the LULUCF estimates. 2) The establishment of a closer interaction and QC procedures between the LULUCF team and the data providers for the LULUCF estimates (e.g. National Forest data base) ensured by contractual or other binding arrangements. 3) A strengthening of the QC procedures at the LULUCF team (e.g. rigorous realisation of the four eyes QC principle for any data input, estimates and result queries). 4) A strengthening of the LULUCF team by employment of at least one further expert and by a broader involvement of all LULUCF experts in all LULUCF estimates. 5) Contractual or legal arrangements, which ensure the timely functioning of the National System for compilation and review processes. 6) An increase of the transparency through better documentation of submitted estimates. The TERT recommends that Hungary include the revised estimate in its next submission as well as an explanation of the reasons for the related changes of relevant input data and results and a plan for implementing the longer term improvements to its national system as identified above. The TERT noted that although Hungary provided revised estimates for SOM mineral carbon stock changes in forest land converted to other land uses, it did not include associated N_2O emissions from N mineralisation associated with the loss of carbon. The TERT notes that this issue is below the threshold of significance for a technical correction. The TERT recommends that Hungary include a revised estimate for N_2O emissions (direct, indirect) from N mineralisation associated with loss of carbon due to forest land conversions to other land uses in its next submission.	
HU-4D1-2025-0001	No	4D1 Wetlands remaining wetlands, CH_4, CO_2, N_2O, 1985-2023	Hungary applies the 2013 IPCC Wetlands Supplement (IPCC WS) in the LULUCF inventory (NID p. 337, 381) to report CO_2 and non-CO_2 emissions. However, it does not do it consistently throughout all sectors and reports CO_2 and non-CO_2 emissions in CRT4.D and CRT4(II) from peat extraction using the 2006 IPCC Guidelines. At the same time Hungary does not provide evidence that the 2006 IPCC Guidelines emission factor would be more appropriate in the case of peat extraction. In a question raised during the review Hungary provided indicative estimate from peat extraction applying the IPCC Wetlands Supplement for the entire time series. The indicative estimates have been checked by the TERT and, unfortunately, could not be accepted due to the following reason: i. the TERT could not	RE

EMRT-ID	Key category	Category, gas, year	Recommendation	Revised estimate or technical correction in 2025 (RE/TC/no)
			verify the suggested indicative CH_4 emissions associated with peat extraction, when applying equation 2.6 from the IPCC WS and the default emission factors therein and more specifically EfCH$_4$_ditch = 542 kgCH$_4$/ha*yr, EfCH$_4$_land = 6.1 kgCH$_4$/ha*yr; Frac_ditch=0.05 (Tables 2.3 and 2.4) which Hungary noted that it used as well. It is noted that the rest of the suggested indicative estimates, namely on-site and off-site CO_2 emissions using IPCC WS and 2006 IPCC Guidelines, N_2O emissions using IPCC WS were verified by the TERT, thus were accepted. Hungary provided revised estimate for CH_4 emissions associated with peat extraction, by applying equation 2.6 from the IPCC WS and the default emission factors. The TERT agreed with the revised estimate provided by Hungary which equal the TERT's associated estimate in the draft technical correction. The TERT recommends that Hungary include the revised estimate in its next submission.	
HU-4-2025-0010		4 Land use, land-use change and forestry, CH_4, CO_2, N_2O, 1985-2023	The total area affected by wildfires for other than forest land use categories (i.e. cropland + grassland) equals 1.54 and 8.19 ha for 2016 and 2017, respectively, as reported in CRT4(IV), while the total area of 'non-forest' affected by fires in 2016 and 2017 as reported in the FRA 2020 report of Hungary, p.44 (https://openknowledge.fao.org/server/api/core/bitstreams/c7cd2ac8-2164-41d4-99ae-4050178209dc/content) is 3,200 ha and 12,520 ha in 2016 and 2017 respectively. During the review Hungary explained that there are some other burnt areas for which area data is collected but, due to the small amount of biomass burnt, biomass data is not collected, and thus these areas are not included in the emission estimation. The TERT concluded that this issue does not constitute a potential over- or under-estimate above the significance threshold requiring a revised estimate or technical correction because it below the significance threshold. Nevertheless, the TERT recommends that Hungary collect biomass burnt data and report associated emissions from wildfires on these land areas.	No
HU-4-2025-0003		4 Land use, land-use change and forestry, CH_4, CO_2, N_2O, 1985-2023	The TERT notes with reference to land representation that the requirement related to the use of Approach 3 for land use changes according to the Governance Regulation, Annex V, Part III is not fulfilled. According to Governance Regulation, Annex V, Part III, for monitoring and reporting in the LULUCF sector, Member States shall use geographically explicit land-use conversion data in accordance with the 2006 IPCC Guidelines for national GHG inventories. Hungary currently applies a hybrid land-monitoring system which provides information based on all three approaches. According to (NID section 6.3.1, p.339) Hungary is developing a monitoring system to allow for approach 3 land representation for the entire inventory in the future. In its response to a preliminary question, Hungary noted that the new land representation system is expected to be ready by 2028 and that the current system equals an Approach 3 system, at least as far as the land use conversions are concerned, because both the land converted to forest land and forest land converted to other land-	No

EMRT-ID	Key category	Category, gas, year	Recommendation	Revised estimate or technical correction in 2025 (RE/TC/no)
			use categories as well as the Corine Land Cover system are Approach 3 systems. Thus, it considers that the current system meets the minimum requirements of the relevant Regulations. To ensure that the reporting of LULUCF is compliant with the requirements in the LULUCF regulation, the TERT recommends that Hungary use activity data that meets the requirements of Approach 3 according to the 2006 IPCC Guidelines (e.g. repeated sampling approach with a spatially defined grid and/or repeated wall to wall mapping sufficiently comprehensive to detect land use changes) in future submissions.	
HU-4-2025-0002		4 Land use, land-use change and forestry, CO_2, N_2O, 1985-2023	From the analysis of the areas reported in CRT4.1 and CRT4A-4F several inconsistencies were identified such as: i. The total final country area reported in CRT4.1 does not match the sum of the total areas reported in CRTs4.A-4.F for the entire time series (larger area is reported in CRT4.1). This is mainly attributed to the inconsistency identified also in CRT4.D (point (iii) below). ii. The cropland remaining cropland area reported in CRT4.B.1 is inconsistent with the land-use conversions from/to cropland reported in CRT4.1. Inconsistencies were identified in years 2015-2023. iii. The wetlands remaining wetlands area reported in CRT4.D.1 is inconsistent with the land-use conversions from/to wetlands reported in CRT4.1 for the entire time series. iv. The land converted to wetlands area reported in CRT4.D.2 is inconsistent with the land-use conversions to wetlands reported in CRT4.1. Inconsistencies were identified in years 2015-2023. During the review Hungary acknowledged the above inconsistencies and explained that these were due to some errors in functions to reproduce areas in the background tables and that the correct areas are the ones reported in CRT4.1. Furthermore, Hungary clarified that the calculations of GHG emissions/removals were not affected by these errors for either Cropland or Wetland. The TERT concluded that this issue does not constitute a potential over- or under-estimate above the significance threshold requiring a revised estimate or technical correction. Nevertheless, the TERT recommends that Hungary correct the above inconsistencies identified in land representation areas reported in CRTs4A-4F in the next submission.	No
HU-4-2025-0004		4 Land use, land-use change and forestry, CO_2, N_2O, 1985-2023	For estimating carbon stock changes in SOM mineral pool Hungary applies national SOC mineral values derived as part of the TIM project. For some land-use change/management categories solely national information is applied, while in some other cases 2006 IPCC default parameters are used as well. No information is reported in the NID on any verification of carbon stock change estimates that were based on national data, for example by comparing with IPCC Tier 1. During the review Hungary explained that no verification against IPCC default factors has been attempted so far, arguing that the reason is that the IPCC default values are for too wide ecological categories. The TERT concluded that this issue does not constitute a potential over- or under-estimate above the significance threshold requiring a revised estimate or technical correction. Nevertheless, the TERT recommends that	No

EMRT-ID	Key category	Category, gas, year	Recommendation	Revised estimate or technical correction in 2025 (RE/TC/no)
			Hungary perform a verification of carbon stock change estimates in SOM mineral using national-derived data and report the results of the verification in the next NID. For such verification Hungary may apply 2006 IPCC Guidelines Tier 1.	
HU-4A1-2025-0001	Yes	4A1 Forest land remaining forest land, CH_4, CO_2, N_2O, 1985-2023	Hungary applies the 2013 IPCC Wetlands Supplement (IPCC WS) in the LULUCF inventory (NID p. 337, 381) to report CO_2 and non-CO_2 emissions. However, it does not do it consistently throughout all categories and reports CO_2 and N_2O emissions in CRT4.A and CRT4(II) for forest land remaining forest land using the 2006 IPCC guidelines. At the same time Hungary does not provide evidence that the 2006 IPCC Guideline emission factors would be more appropriate in the case of forest land remaining forest land. In a question raised during the review Hungary explained that the application of the IPCC WS is not compulsory and that although some off-site emissions might also occur from drained areas (in addition to the on-site emissions), these emissions are considered small and rather uncertain, because most, if not all, of drained areas are on flat areas where the horizontal movement of the water is rather insignificant, and so are the associated emissions from the water that leaves the drained areas. The TERT concluded that this issue does not constitute a potential over- or under-estimate above the significance threshold requiring a revised estimate or technical correction. Nevertheless, the TERT recommends that Hungary either provide evidence that the IPCC 2006 guidelines emission factors are more appropriate in the case of forest land remaining forest land drained organic soils or apply methods and emission factors from IPCC WS to report CO_2 (on-site, off-site), N_2O and CH_4 emissions.	No
HU-4A1-2025-0002	Yes	4A1 Forest land remaining forest land, CH_4, N_2O, 1985-2023	For 4A1 Forest land remaining forest land, biomass burning, the NID (table 6.5.12) presents information regarding non-CO_2 emissions from burning for selected years only, however no information is reported on the mass of fuel available for burning for the entire time series, on the annual areas of forest land remaining forest land and land converted to forest land affected by wildfires, on the combustion factor applied, on whether below-ground biomass and dead wood pools are included in the 'growing stock' values applied for estimating non-CO_2 emissions from wildfires. During the review Hungary explained that the actual activity data used for non-CO_2 emission estimation is the amount of volume burned by species type and that due to the lack of reliable data on the C stocks of dead wood and below-ground biomass pools, and applying the assumption that their contribution to emissions, is negligible compared to the reported emissions from the burned volume of above-ground living biomass, these pools were not included in the non-CO_2 emission estimates. Hungary also shared an xlsx file with the amount of volume loss due to wildfires for the different species. The TERT concluded that this issue does not constitute a potential over- or under-estimate above the significance threshold requiring a revised estimate or technical correction.	No

EMRT-ID	Key category	Category, gas, year	Recommendation	Revised estimate or technical correction in 2025 (RE/TC/no)
			Nevertheless, the TERT recommends that Hungary report in the NID the amount of volume applied to estimate emissions from biomass burning for the different species for the entire time series, the annual areas of forest land remaining forest land and land converted to forest land affected by wildfires. The TERT recommends that Hungary include in the emissions from biomass burning the below-ground biomass and DOM pools.	
HU-4A2-2025-0004	Yes	4A2 Land converted to forest land, CH_4, CO_2, N_2O, 1985-2023	For 4A2 Land converted to forest land, wildfires, Hungary does not provide detailed information in the NID on whether CO_2 and non-CO_2 emissions from the dead wood and litter pools are reported and on the parameters used in estimating such emissions. During the review, Hungary explained that CO_2 emissions from deadwood and litter in land converted to forest land are reported as carbon losses in CRT4.A however, non-CO_2 emissions are not reported. Regarding the litter stocks Hungary informed that the value of 8.78 t C/ha was applied. The TERT concluded that this issue does not constitute a potential over- or under-estimate above the significance threshold requiring a revised estimate or technical correction. Nevertheless, the TERT recommends that Hungary report in the NID the DOM stock values used in estimating GHG emissions from wildfires. The TERT recommends that Hungary report non-CO_2 emissions from wildfires for these cases.	No
HU-4A2-2025-0005	Yes	4A2 Land converted to forest land, CH_4, CO_2, N_2O, 1985-2023	For grassland, wetlands and settlements converted to forest land living biomass pool no information is reported in the dedicated sections in the NID on the methodology and parameters applied, although associated carbon stock changes are reported in CRT4.A. During the review Hungary explained that the general methodology to estimate carbon stock changes, applicable to all conversion types, is the one reported in section 6.4.4. For annual cropland Bbefore equals 10tdm/ha, for grassland Bbefore equals 6.26 tdm/ha, whereas for wetlands and settlements, Bbefore is assumed to be equal to that for grassland. The TERT concluded that this issue does not constitute a potential over- or under-estimate above the significance threshold requiring a revised estimate or technical correction because it is related to a transparency issue. Nevertheless, the TERT recommends that Hungary report in the NID the methodology and parameters applied for grassland, wetlands and settlements converted to forest land living biomass as provided during the review.	No
HU-4A2-2025-0002	Yes	4A2 Land converted to forest land, CO_2, 1985-2023	For cropland converted to forest land, living biomass, Hungary does not apply the carbon stock of perennial crops at 'maturity'/end or rotation period, rather the carbon stocks they have at the half of the length of the rotation period (NID, p.388), based on a national study (Juhos and Tőkei,2013). However, evidence on the representativeness of the application of this specific carbon stock amount in estimating biomass losses when perennial crops are converted to forest land is not provided. In addition, according to the NID p.388 in the case of annual crops, the value of 4.7 t C/ha is applied. Furthermore, the annual areas of the different cropland types converted to forest land for the entire	No

EMRT-ID	Key category	Category, gas, year	Recommendation	Revised estimate or technical correction in 2025 (RE/TC/no)
			time series is neither reported in the NID nor in CRT4.A. During the review Hungary justified the application of the stocks at half of the length of the rotation period on the basis that when estimating biomass loss apart from the areas, the age of the crops at conversion needs to be considered as well, and assumed that conversion might happen at any age. Regarding the annual cropland stock value, Hungary informed that the 2006 IPCC Guidelines 10 t d.m./ha (table 5.9) was applied and not the 4.7 t C/ha which was erroneously reported in the NID. Finally, Hungary provided in an xlsx file the annual areas of the different cropland types converted to forest land for the entire time series. The TERT concluded that this issue does not constitute a potential over- or under-estimate above the significance threshold requiring a revised estimate or technical correction. Nevertheless, the TERT recommends that Hungary: i. either provide evidence that the current approach applied for estimating biomass carbon losses from the abrupt change using the perennial stocks at half of the length of the rotation period ensures that carbon losses are neither over- nor under-estimated as far as can be judged or otherwise apply the perennial stocks at maturity; ii. report in the NID the correct biomass stock value applied for annual croplands; iii. report in either the NID or in CRT4.A the areas of the different cropland types converted to forest land for the entire time series.	
HU-4A2-2025-0001	Yes	4A2 Land converted to forest land, CO_2, 1985-2023	For land converted to forest land living biomass pool, Hungary reports in the NID (p.388) that conversion factors are applied to convert volume to carbon, however no further information is provided on what the 'volume' represents and whether any biomass conversion factors are applied. During the review Hungary explained that the functions used in estimating carbon stock changes and reported in NID section 6.5.3 are volume functions which directly provide total aboveground volume, including stem volume, all branches, twigs and bark (i.e., all above-ground parts) and that no separate biomass expansion factors are applied. Volume stock is then converted to biomass using basic wood density values. Hungary provided also the basic wood density values used in the inventory which differ from the ones reported in NID table 6.5.7. The TERT concluded that this issue does not constitute a potential over- or under-estimate above the significance threshold requiring a revised estimate or technical correction because it is related to a transparency issue. Nevertheless, the TERT recommends that Hungary report in the NID the above information and the basic density values used in the inventory.	No
HU-4C1-2025-0001	No	4C1 Grassland remaining grassland, CH_4, CO_2, N_2O, 1985-2023	In 4C1 Grassland remaining grassland, Hungary defines as unmanaged grassland the ‘set-aside’ grasslands (NID section 6.2, p.338) and the only ‘conversion to unmanaged grassland’ subcategory that reports areas for in CRT4.1 is that from managed grassland. No information is reported on the reason for classifying such change (managed grassland to set-aside grassland) under a conversion to another subcategory instead of under ‘managed grassland’ with a change in management practices,	No

EMRT-ID	Key category	Category, gas, year	Recommendation	Revised estimate or technical correction in 2025 (RE/TC/no)
			and on whether all emissions/removals from managed grassland converted to unmanaged grassland are estimated and reported for the entire transition period after the change. During the review Hungary explained that the reason for this classification is the availability of data by the Central Statistical Office (CSO). In the official statistics, only the total set-aside area is available from which, using other pieces of land-use information and expert judgment, disaggregation into set-aside cropland and unmanaged grassland can be made within limits. Hungary also stated that it considers the change of a sub-category equivalent to representing a change in respective management practices (e.g., setting aside areas is equivalent to moving from (some kind of) management in a category to no management in the same category). Furthermore, Hungary confirmed that all emissions/removals from managed grassland converted to unmanaged grassland are estimated and reported for the entire transition period (i.e., 20 years) after the change. The TERT concluded that this issue does not constitute a potential over- or under-estimate above the significance threshold requiring a revised estimate or technical correction because there is no impact on the associated emissions/removals estimates. Nevertheless, the TERT recommends that Hungary track and report these conversions (and associated emissions/removals) as managed grassland converted to a subcategory "set aside" grasslands under managed grassland category.	
HU-4C2-2025-0003	No	4C2 Land converted to grassland, CO_2, 1985-2023	For cropland converted to grassland no area information is reported in the NID or in CRT4.C at the disaggregation level used in estimating carbon stock changes. During the review Hungary provided in an xlsx file the annual areas of cropland converted to grassland separately for the different cropland types (i.e. vineyards, orchards, annual). The TERT concluded that this issue does not constitute a potential over- or under-estimate above the significance threshold requiring a revised estimate or technical correction because it is related to a transparency issue. Nevertheless, the TERT recommends that Hungary report in the NID or in CRT4.C the area for the different cropland types converted to grassland, reflecting the disaggregation level used in the estimation of carbon stock changes.	No
HU-4G-2025-0001	Yes	4G Harvested wood products, CO_2, 1985-2023	For harvested wood products, Hungary reports in NID table 6.5.11 activity data for the different wood-product categories only for specific years starting from 1990 and in CRT4.Gs2 activity data (imports, exports, production) for the aggregated HWP semi-finished categories from 1985 onward. No information is reported on the wood-products before 1990 nor on the parameters and conversion factors used in the inventory. In a question raised during the review, Hungary shared an xlsx file with information on annual imports, exports, production quantities for all wood products from 1964 onward as well as on the conversion factors and half-life values used. The TERT concluded that this issue does not constitute a potential over- or under-estimate above the significance threshold requiring a revised estimate or technical correction. Nevertheless, the TERT recommends that	No

EMRT-ID	Key category	Category, gas, year	Recommendation	Revised estimate or technical correction in 2025 (RE/TC/no)
			Hungary report in the NID the annual imports, exports, production quantities separately for the wood products considered in the inventory for the entire time series as well as the conversion factors and half-life values applied.	

Revised estimates provided by Hungary[1]

EMRT ID:	HU-4A1-2025-0003
EMRT URL:	https://emrt-esd.eionet.europa.eu/2025/HU-4A1-2025-0003
Country:	Hungary
Land use category:	4A Forest land (The following subcategories are affected by the technical correction: CRT 4A1; 4A2; 4B2a; 4C2a; 4E2a)
Gases:	CO_2
Pool:	Multiple pools
Completed by LULUCF Expert:	Iordanis Tzamtzis
Reviewed by Thematic Counterpart Expert:	
Reviewed by Lead Reviewer:	Peter Weiss
Reviewed by Quality Controller:	Bernd Gugele

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The underlying problem:	Hungary applies the stock-difference method in the living biomass and dead wood pools in 4A1 Forest land remaining forest land, using NFD data for the living biomass and NFI data for the dead wood. Furthermore, Hungary explains in the NID (p.363) the reasons for the use of these data sources for each of the pools, together with the limitations associated with them (e.g. in the case of NFD, trees to measure in 'sampling' by forest planners during surveys are subjectively selected). The TERT notes that specific information is missing in relation to the NFI (e.g., sampling method, representativeness, etc.). The TERT notes that Hungary reports carbon stock changes for the whole living biomass and dead wood pools at aggregated level (forest sub-compartments), although the estimation is done at a stand level, and that no detailed information is reported demonstrating that the stock-difference method is correctly applied on the same area between points in time that the carbon stocks are compared. Furthermore, the TERT notes that some statistically defined outliers are identified in several forest-related subcategories and carbon pools, for example, in living biomass in the years 2010, 2019, 2023 and net carbon stock changes in DOM pool in the years 2014, 2019, 2023 in forest land converted to settlements. During the review, Hungary acknowledged some errors in the estimation of carbon stock changes in forest-related subcategories (forest land, and forest land converted to other land-use categories) and the need to cross-check again the estimates. Hungary also informed the TERT of a significant magnitude of error (appr. 0.75 $MtCO_2$/yr on average) affecting the years 2020-2023 in forest land. Following several unresolved exchanges between the TERT and Hungary on different versions of revised estimates and potential technical corrections, an in-country visit was undertaken on the 8th August. During the in-country visit Hungary presented its data flows, calculation and QAQC systems and confirmed to the TERT several errors and shortcomings in its estimates. These included the use of the wrong yield tables since 2020 and the need for adjustments of areas of LUC lands related to Forest land and incorrect queries in the LULUCF database resulted in errors in the revised values and the growing stocks of 2022 and 2023 representing the basis for the 2025 submission for these two years were not adjusted with a correction factor required for delayed forest management measurement results. Hungary acknowledged to the TERT that these issues were not picked up by Hungary's quality control processes. The TERT noted that during the review exchanges prior to the in-country visit that Hungary was not able to provide sufficiently transparent information and provided data that was inconsistent in its revised estimates.
Summarise the methodology used:	The TERT decided to accept the revised estimate submitted by Hungary on 10th of July after the country visit and the additional information provided by Hungary on 13th of August.

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	Original estimate (kt CO_2e)				Notes
Year	CO_2	CH_4	N_2O	Total GHG	
2016	-4 323.886			-4 323.886	
2017	-4 651.866			-4 651.866	
2018	-3 950.807			-3 950.807	
2021	-6 304.513			-6 304.513	
2022	-6 070.843			-6 070.843	
2023	-5 446.533			-5 446.533	

	Revised Estimate received from country (kt CO_2e)				Notes
Year	CO_2	CH_4	N_2O	Total GHG	
2016	-4 566.693			-4 566.693	
2017	-5 198.774			-5 198.774	
2018	-4 278.410			-4 278.410	

2021	-6 479.590			-6 479.590	
2022	-4 531.210			-4 531.210	
2023	-5 113.319			-5 113.319	

	Difference between RE and OE (kt CO_2e)			
Year	CO_2	CH_4	N_2O	Total GHG
2016	-242.807			-242.807
2017	-546.908			-546.908
2018	-327.603			-327.603
2021	-175.076			-175.076
2022	1 539.634			1 539.634
2023	333.214			333.214

EMRT ID:	HU-4D1-2025-0001
EMRT URL:	https://emrt-esd.eionet.europa.eu/2025/HU-4D1-2025-0001
Country:	Hungary
Land use category:	4D1a Peat extraction remaining peat extraction
Gases:	Multiple GHGs (CO_2, N_2O, CH_4)
Pool:	Organic soil
Completed by LULUCF Expert:	Iordanis Tzamtzis
Reviewed by Thematic Counterpart Expert:	
Reviewed by Lead Reviewer:	Peter Weiss
Reviewed by Quality Controller:	Justin Goodwin

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The underlying problem:	Hungary applies the IPCC Wetlands Supplement (IPCC WS) in the LULUCF inventory (NID p. 337, 381) to report CO_2 and non-CO_2 emissions. However, it does not do it consistently throughout all sectors and reports CO_2 and non-CO_2 emissions in CRT4.D and CRT4(II) from peat extraction using the 2006 IPCC guidelines. At the same time Hungary does not provide evidence that the IPCC 2006 GL emission factor would be more appropriate in the case of peat extraction. In a question raised during the review Hungary provided indicative estimates from peat extraction applying the IPCC Wetlands Supplement for the entire time series. The TERT thanks Hungary for providing the indicative estimates for peat extraction. The indicative estimates have been checked by the TERT and, unfortunately, cannot be accepted due to the following reason: i. the TERT could not verify the suggested indicative CH_4 emissions associated with peat extraction, when applying equation 2.6 from the IPCC WS and the default emission factors therein and more specifically $EfCH_4$_ditch = 542 $kgCH_4$/ha*yr, $EfCH_4$_land = 6.1 $kgCH_4$/ha*yr; Frac_ditch=0.05 (Tables 2.3 and 2.4) which Hungary noted that it used as well. It is noted that the rest of the suggested indicative estimates, namely on-site and off-site CO_2 emissions using IPCC WS and 2006 IPCC Guidelines, N_2O emissions using IPCC WS were verified by the TERT, thus are accepted. Hungary provided in its response on 20 June 2025 an xls file with revised final CH_4 results, which equal the estimates of the previous Potential Technical Correction by the TERT.
Summarise the methodology used:	The final figures of the revised estimate equals the previous technical correction by the TERT, which was estimated by applying equation 2.6 form the IPCC WS and the default emission factors therein and more specifically $EfCH_4$_ditch = 542 $kgCH_4$/ha*yr, $EfCH_4$_land = 6.1 $kgCH_4$/ha*yr; Frac_ditch=0.05 (Tables 2.3 and 2.4). The TERT agreed with the revised estimate provided by Hungary.

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	Original estimate (kt CO_2e)				Notes
Year	CO_2	CH_4	N_2O	Total GHG	
2016	78.722	NO	1.853	80.575	
2017	96.178	NO	1.853	98.030	
2018	54.236	NO	1.853	56.089	
2021	75.352	NO	1.853	77.204	
2022	88.181	NO	1.853	90.033	
2023	61.166	NO	1.853	63.018	

	Revised Estimate received from country (kt CO_2e)				Notes
Year	CO_2	CH_4	N_2O	Total GHG	
2016	133.776	4.578	0.621	138.975	
2017	150.615	4.578	0.621	155.813	
2018	106.206	4.578	0.621	111.405	
2021	129.177	4.605	0.625	134.406	
2022	144.596	4.605	0.625	149.826	
2023	115.299	4.605	0.625	120.529	

	Difference between TC and OE (kt CO_2e)			
Year	CO_2	CH_4	N_2O	Total GHG
2016	55.054	4.578	-1.232	58.400
2017	54.437	4.578	-1.232	57.783
2018	51.970	4.578	-1.232	55.316
2021	53.825	4.605	-1.228	57.202
2022	56.416	4.605	-1.228	59.793
2023	54.133	4.605	-1.228	57.510

[1] Carbon stock changes (in kt C) from the CRT tables have been converted into kt CO_2 by multiplying by -44/12.

Annex I: Legal background and procedures of the 2025 comprehensive review

The LULUCF Regulation (EU) 2018/841 sets net emission removal targets for 2030 and net emission budgets in the period 2026 to 2029. In Article 4(5) of the LULUCF Regulation, the Commission is required to adopt decision setting out the annual limit values for net greenhouse gas removals for each year in the period from 2026 to 2029, for which it shall carry out a comprehensive review.

The Governance Regulation (EU) 2018/1999 lays down annual reporting obligations, compliance checks and a review process to ensure that the compliance with annual GHG emission limits is assessed in a credible, consistent, transparent and timely manner.

The requirements for the review of the national inventory data submitted by countries are set out in Article 38 of Regulation (EU) 2018/1999. The details concerning the review process, such as the timing and steps of conducting of the annual and comprehensive reviews are set out in Chapter V and Annex XXII of the Commission Implementing Regulation (EU) No 2020/1208.

The 2025 reviews were thus held as a comprehensive review in line with Article 38(1a) of Regulation (EU) 2018/1999 in concert with the reviews required by the LULUCF Regulation.

Objectives

The objectives of the comprehensive review of countries' GHG emission inventories in 2025 are:

a) to support the European Commission by ensuring it has accurate, reliable and verified information on annual GHG emissions for
   - determining the budget for the period 2026-2029 according to Article 4(4) of Regulation (EU) 2018/841.

b) to assist countries in improving the quality of their GHG inventories.

Procedures

The scope of the 2025 comprehensive review is presented in Table A-1. The checks carried out during the 2025 comprehensive review are presented in Annex II.

The initial checks were carried out by the EEA with support from the ETC/CM. All findings from the initial checks that were partly resolved or not resolved within the initial check phase were followed up in the comprehensive review.

The EEA LULUCF experts consisted of the following experts:

- Sector experts: Raul Abad-Viñas and Peter Iversen (EEA)
- Quality coordinator: Lucia Perugini (EEA)

The comprehensive review 2025 was performed by a Technical Expert Review Team (TERT) under service contract **No 3502/B2025/EEA.60384** implementing Framework service contract No EEA/CET/24/002of the European Environment Agency. The lead reviewers and sector review experts did not review emission inventories of countries where these individuals have themselves contributed to the compilation of that inventory, or presently are or have been any part of the decision-making process related to the compilation of that inventory.

The TERT consisted of the following experts:

- Iordanis Tzamtzis, Lora Stoeva, Rosie Brook, Carmen Schmid, Boštjan Mali, Andis Lazdiņš, Sven van Baren, Bradley Matthews, Valentin Bellassen, Aldis Butlers, Mattias Lundblad, Juan José Rincón Cristóbal, Etienne Mathias, Erwin Moldaschl and Mélanie Juillard;
- Lead reviewers: Peter Weiss, Kevin Black, Sandro Federici and Marina Vitullo.

The comprehensive review was coordinated by Bernd Gugele and Justin Goodwin.

The EEA review secretariat consisting of Claire Qoul, Lærke Callisen, Peter Iversen and Roxy Cottey prepared and coordinated the comprehensive review as foreseen in Article 30 of Commission Implementing regulation (EU) No 2020/1208 and Article 42 of the Governance Regulation (EU) 2018/1999.

The comprehensive review was performed on the basis 15 April submissions of GHG emission data and the national inventory document (NID) under the Governance Regulation.

Where relevant, the TERT calculated technical corrections for over- or under-estimates identified in a mandatory category in the countries' GHG inventories that exceed the threshold of significance. Technical corrections have been calculated only for the years 2016-2018 and 2021-2023. If the technical correction exceeds the threshold of significance for at least one year of the inventory under review (2021-2023) but not for all the years, the technical correction was calculated only for those years where the technical correction exceeds the threshold of significance.

Table A-1: Scope of the comprehensive review 2025

Element	Scope	Further information
Countries	EU geographical coverage of the Member States, Norway and Iceland	
Years	2016, 2017, 2018, 2021, 2022 and 2023	According to GovReg Article 38(1a) and LULUCF Article 4(4)
Gases	CO_2, CH_4 and N_2O	
Sectors	LULUCF	

Annex II: Checks carried out during the 2025 initial checks and review

The checks carried out during the 2025 initial checks are pursuant to Article 37(4) of Regulation (EU) 2018/1999 and Article 6 of Commission Delegated Regulation (EU) 2020/1044 and the comprehensive review following Article 38(1a) of Regulation (EU) 2018/1999 and Article 30 of the Commission Implementing Regulation (EU) No 2020/1208

Initial checks may include:

1. Assessment whether all emission source categories and gases required under Regulation (EU) No 2018/841 are reported;
2. Assessment whether emissions data time series are consistent;
3. Assessment whether implied emission factors across Member States/countries are comparable taking the IPCC default emission factors for different national circumstances into account;
4. Assessment of the use of 'Not Estimated' notation keys where IPCC Tier 1 methodologies exist and where the use of the notation key is not justified in accordance with point 32 of the Annex to Decision 18/CMA.1;
5. Analysis of recalculations performed for the inventory submission, including whether the recalculations are based on methodological changes;
6. Assessment whether issues from earlier Union initial checks and reviews as well as recommendations from UNFCCC reviews have been implemented by the Member State;
7. Assessment of the accuracy of Member States' emissions by sources and removals by sinks estimates in relation to Union key categories;
8. Assessment of the transparency and completeness of the methodological descriptions reported by Member States for the Union key categories;
9. Assessment of monitoring and reporting of emissions by sources and removals by sinks in the land use, land use change and forestry (LULUCF) sector pursuant to Part 3 of Annex V to Regulation (EU) 2018/1999, including the assignment of key categories, Tier methodology applied, and a comparison of reported land use and land use change activity data with information derived from the Union and Member State programmes and surveys.

Comprehensive review checks:

1. Detailed examination of the inventory estimates including methodologies used by the Member State in the preparation of inventories;
2. Detailed analysis of the Member State's implementation of recommendations related to improving inventory estimates as listed in its most recent UNFCCC annual review report made available to that Member State before the submission under review where recommendations have not been implemented;
3. Detailed analysis of the justification provided by the Member State for not implementing them;
4. Detailed assessment of the time series consistency of the greenhouse gas emissions estimates;
5. Detailed assessment whether the recalculations made by a Member State in the given inventory submission as compared to the previous one are transparently reported and made in accordance with the greenhouse gas inventory guidelines;
6. Follow-up on the results of the initial checks and on any additional information submitted by the Member State under review in response to questions from the technical experts review team and other relevant checks;
7. Other relevant checks complementing the initial checks;
8. Check that all gases and pools are reported under LULUCF.