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

Romania

28 August 2025

European Environment Agency

Reference: No 3502/B2025/EEA.60384

Contents

List of tables

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 Romania.

The comprehensive review was carried 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 Romania for the years from 2026 to 2030, 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 Romania pursuant to Articles 26 (4) of the Governance Regulation.

The initial checks were carried out on the draft inventory submissions submitted pursuant to Article 26(3) of the Governance Regulation. The review builds on the initial checks performed by the EU inventory team (European Environment Agency (EEA) and the European Topic Centre on Climate Change Mitigation (ETC/CM)). 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 43 issues with Romania during the initial check and comprehensive review (see Table 1). The TERT provided recommendations for 30 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 exceeding the threshold of significance pursuant to Article 31 of Commission Implementing Regulation (EU) No 2020/1208.
3. Romania provided 3 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. The TERT agreed to all revised estimates.
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 Romania (see Table 3).
6. The TERT considers that it received a response from Romania that was sufficient in order to undertake the comprehensive review appropriately.

Table 1: Overview of issues raised with Romania

	Issues raised during the initial check	Issues raised during the comprehensive review	Recommendations	Revised estimates[1]	Technical corrections[2]
LULUCF	**9**	**34**	**30**	**3**	**-**

[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	ROU-CRT-2025-V1-8-DataEntry-20250227-141419	-50 511.841	-48 708.808	-46 770.438	-47 791.889	-45 686.116	-46 424.786
Difference between revised estimates and original estimates provided by Romania and accepted by the TERT[2]							
4C2b Cropland converted to Grassland, Multiple GHG (CO_2, N_2O), Mineral soil	RO-4-2025-0010	4 160.377	3 670.110	3 148.851	1 484.933	770.868	0
4B1 Cropland remaining cropland, CO_2, Mineral soil	RO-4B1-2025-0002	1 110.683	1 053.834	984.518	829.920	756.918	683.916
4C1 Grassland remaining grassland, CO_2, Mineral soil	RO-4C1-2025-0001	2 052.554	1 597.550	1 171.015	255.415	97.305	0
Total net greenhouse gas emissions for the LULUCF sector including revised estimates		-43 188.227	-42 387.314	-41 466.053	-45 221.621	-44 061.025	-45 740.871

[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 Romania on the conclusions presented by the TERT

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

Recommendations from the TERT, considering revised estimates 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)
RO-4-2025-0010	No	4 Land use, land-use change and forestry, CO_2, 1990-2023	For 4C2b Cropland Converted to Grassland the TERT observed an abrupt change in carbon stock change in mineral soils in 2013. The pool changed from a net source (~ 2,500 kt CO_2) to a net sink (~ -2,100 kt CO_2), Romania explained this shift as the result of a methodological upgrade introduced in 2021 - 2022. However, the TERT concluded that the introduction of the methodological update cannot determine an abrupt reclassification of land from a single year onward and, as an interim measure, suggested Romania to assume a gradual implementation by 10% of the reclassification of land area from cropland to grassland to be included every year over a 10-year period. Romania provided revised estimates for this category by 21st June for the years 2016-2018 and 2021-2023. They also included an explanation of the method used to calculate the revised estimates that included further disaggregated activity data and also an estimate of the impact on direct N_2O emissions. Romania also stated that the revised estimates will be included in the next submission. The TERT agreed with the revised estimate provided by Romania. The TERT recommends that Romania ensure time series consistency in activity data of its land representation and accordingly calculate associated GHG emissions and removals and include the revised estimates in its next submission.	RE
RO-4B1-2025-0002	Yes	4B1 Cropland remaining cropland, CO_2, 1990-2023	For 4B1 Cropland Remaining Cropland the TERT observed an abrupt change in carbon stock change in mineral soils in 2010. Romania explained that this was due the introduction of the APIA payment scheme. However, the TERT concluded that it is unlikely that the effect of the introduction of the incentive scheme immediately occurs on all cropland remaining cropland and suggested Romania to assume a gradual implementation by 10% of the land area to be included every year over a 10-year period. Romania provided revised estimates for this category by 21st June for the years 2016-2018 and 2021-2023. Further, Romania provided an explanation of the method used to calculate the revised estimates that included further observations related to the implementation of the incentive scheme, based on payment applications, and assumed an increase over five years to a total coverage of 70% which led to significantly lower net removals for the relevant years. Romania also stated that the revised estimates will be included in the next submission. The TERT agreed with the revised estimate provided by Romania. The TERT recommends that Romania include a complete time series of revised estimates in its next submission.	RE

EMRT-ID	Key category	Category, gas, year	Recommendation	Revised estimate or technical correction in 2025 (RE/TC/no)
RO-4C1-2025-0001	Yes	4C1 Grassland remaining grassland, CO_2, 1990-2023	For 4C1 Grassland Remaining Grassland the TERT observed an abrupt change in carbon stock change in mineral soils in 2013. Romania explained that this was due to the implementation of ordinance 34/2013 in 2013. However, the TERT concluded that it is unlikely that the effect of the introduction of the ordinance immediately occurs on all grassland remaining grassland and suggested Romania to assume a gradual implementation by 10% of the land area to be included every year over a 10-year period. Romania provided revised estimates for this category by 21st June for the years 2016-2018 and 2021-2022. Further, Romania provided an explanation of the method used for calculating the revised estimates that were in line with the suggestion by the TERT. Romania also stated that the revised estimates will be included in the next submission. The TERT agreed with the revised estimate provided by Romania. The TERT recommends that Romania include the revised estimates in its next submission.	RE
RO-4-2025-0004	No	4 Land use, land-use change and forestry, CH_4, CO_2, N_2O, 1990-2023	The TERT noted that the recommendation from ARR2022 (L.15) has not yet been fully addressed because Romania has not yet provided example images in the NID which demonstrate the land-use identification process. During the review, Romania provided the requested information. The TERT notes that this issue does not relate to an over- or under-estimate of emissions. The TERT recommends that Romania include the information provided to the TERT during the review in its next submission.	No
RO-4-2025-0014	No	4 Land use, land-use change and forestry, CH_4, CO_2, N_2O, 1990-2023	The TERT could not find appropriate information on how the organic soil map was developed or when it was developed considering that the decomposition of the peat may lead to a natural decrease in organic soil area over time. The TERT also observed that emissions from organic soils are only reported for remaining land categories. In response to a question raised during the review, Romania provided information about how the organic soil map was developed, and evidence supporting the assumptions that only remaining land categories cover organic soils and that all soils are drained. The TERT notes that this issue does not clearly relate to an over- or under-estimate of emissions. The TERT recommends that Romania improve the information on the development of the organic soil map and include the assumptions used to estimate the emissions from drained organic soils in remaining land categories only in its next submission.	No
RO-4-2025-0006	No	4 Land use, land-use change and forestry, CH_4,	The TERT noted that information on which pools for which carbon stock changes are reported, and which pools are reported using notation keys, contained in table 6.11 on page 539 of the NID is inconsistent with the actual reporting. For instance, the category E (Equilibrium) is assigned even for carbon pools for which carbon stock changes are reported. The TERT notes that this issue does not relate to an over- or under-estimate of emissions. In response to a question raised during the review,	No

EMRT-ID	Key category	Category, gas, year	Recommendation	Revised estimate or technical correction in 2025 (RE/TC/no)
		CO_2, N_2O, 1990-2023	Romania provided an updated table which appeared to still include some inconsistencies. The TERT recommends that Romania report an updated table 6.11 in its next NID taking into account the need to correct all observed inconsistencies related to the reporting of carbon pools.	
RO-4-2024-0002	No	4 Land use, land-use change and forestry, CO_2, 1990-2022	The TERT noted that in category 4B1. Cropland Remaining Cropland and 4C1 Grassland Remaining Grassland several pools that contribute more than 30% to the source sink category are still reported using Tier 1 methods. This includes Living biomass, Mineral soils and Organic soils for 4B1 Cropland remaining Cropland and Living biomass and Mineral soils for 4C1 Grassland Remaining Grassland. In response to a question raised during the review, Romania explained that their next submissions will progressively incorporate planned improvements, i.e. the outcome of the ADER 2026 project, which runs in 2023–2026, with the aim to improve the estimation of GHG emissions and removals in croplands and grasslands through a more refined evaluation of SOC dynamics. The TERT agreed with the explanation provided by the Romania and recommends that Romania include revised estimates using higher tiers in its next submissions.	No
RO-4-2025-0016	No	4 Land use, land-use change and forestry, CO_2, 1990-2023	The TERT noted that the land categories Settlements and Other Land are assumed to not contain any living biomass carbon stocks (page 595 and page 599 in the NID). During the review, Romania clarified that the assumption relates to the fact there is no gain in living biomass on these land use categories. The TERT notes that this issue does not relate to an over- or under-estimate of emissions. The TERT recommends that Romania clarify the reporting of biomass carbon stock changes in settlement and other land as well as on land in conversion from and to settlement and other land in its next submission.	No
RO-4-2025-0012	No	4 Land use, land-use change and forestry, CO_2, 1990-2023	On page 576-577 of the NID, Romania presents information on a soil survey. However, the TERT could not find information on how the soil carbon stocks for Other Land and Settlements were estimated. In response to a question raised during the review, Romania explained that the soil carbon stock values for Other Land and Settlements are derived from field and laboratory data collected under Romania's National Soil Monitoring System, initiated in 1992. The TERT notes that this issue does not relate to an over- or under-estimate of emissions. The TERT recommends that Romania include the information provided to the TERT during the review in its next submission.	No
RO-4-2025-0003	No	4 Land use, land-use change and forestry, CO_2, 1990-2023	The TERT could not find transparent and consistent definition of forest land with respect to 'Pinus mugo' and 'Alnus viridis' as also pointed out in the recommendation from ARR2022 (L.2). In response to a question raised during the review, Romania informed about these definitions and provided additional information to the TERT. The TERT notes that this issue does not clearly relate to an over- or under-estimate of emissions. The TERT recommends that Romania improve the information on the	No

EMRT-ID	Key category	Category, gas, year	Recommendation	Revised estimate or technical correction in 2025 (RE/TC/no)
			definition of forest land and include the definition of ‘Pinus mugo’ and ‘Alnus viridis’ forests in future submissions.	
RO-4-2025-0008	No	4 Land use, land-use change and forestry, CO_2, 1990-2023	For several carbon pools the TERT observed that carbon stock changes are reported using Tier 1 although they are both key categories in the Romania inventory as well as significant pools contributing to more than 25% of the respectively category. The carbon pools concerned are: (i) Living biomass and organic soils in 4B1, (ii) Living biomass in 4B2b, (iii) Living biomass in 4C1, (iv) Living biomass in 4C2 (v) Mineral soils in 4C2d, and (vi) Living biomass and mineral soils in 4E2b During the review, Romania informed about planned and ongoing work aimed at implementing higher tiers including living biomass in annual and perennial croplands and soil carbon dynamics in mineral soils for cropland remaining cropland and grassland remaining grassland. The TERT notes that this issue does not relate to an over- or under-estimate of emissions. The TERT recommends that Romania include the information provided to the TERT during the review related to planned improvements for carbon pools currently reported using Tier 1 in its next submission.	No
RO-4-2025-0013	No	4 Land use, land-use change and forestry, CO_2, 1990-2023	For carbon stock in below ground living biomass, Romania use country-specific root-to-shoot ratios as presented in the table 6.16 on page 552 of the NID. The TERT noted that the ratios are at the lower end of the range presented in the IPCC 2006 Guidelines (table 4.4 in volume 4). In response to a question raised during the review, Romania explained that the root-to-shoot ratios are based on Giurgiu et al. (2004), as presented in Table 6.16, and that those may represent higher productivity forest types, which typically exhibit lower root-to-shoot ratios due to greater aboveground biomass accumulation relative to root development. Romania further explained that the stump portion of a tree is captured within the allometric equations used to estimate total aboveground tree volume and that the root-to-shoot ratios are only used in some estimations of below ground biomass. The TERT notes that this issue does not clearly relate to an over- or under-estimate of emissions. The TERT recommends Romania to improve the root-to-shoot ratios with relevant studies and explain in the NID how root-to-shoot ratios are used in the estimation of carbon stock change in living biomass in all land categories with woody biomass vegetation.	No
RO-4-2025-0009	No	4 Land use, land-use change and forestry, CO_2, 1990-2023	The TERT could not find a list of abbreviations for the subcategories of different land use categories as presented in tables 6.6, 6.7 and 6.8 on page 532-534 of the NID. Romania provided this information during the review. The TERT notes that this issue does not clearly relate to an over- or under-estimate of emissions. The TERT recommends that Romania include the list of abbreviations in its next annual submission.	No

EMRT-ID	Key category	Category, gas, year	Recommendation	Revised estimate or technical correction in 2025 (RE/TC/no)
RO-4-2025-0005	No	4 Land use, land-use change and forestry, N_2O, 1990-2023	For indirect emissions of N_2O, the TERT noted that no emissions were presented in the CRT table 4(I) and that the information provided in the NID was not sufficient to clarify whether these emissions are included or not. However, the TERT concluded that this issue does not constitute a significant potential over- or under-estimate above the significance threshold. Nevertheless, the TERT recommends that Romania explain in its next submission if and where these emissions are reported and/or use appropriate notation keys.	No
RO-4-2025-0007	No	4 Land use, land-use change and forestry, N_2O, 1990-2023	For indirect N_2O emissions from managed soils the TERT noted that Romania states that no emissions are reported (NID section 6.12.4 on page 607). However, N_2O emissions from mineralisation are reported for several Land Use Change categories in table 4(III). This implies that also indirect emissions of N_2O shall be reported under 4(III). During the review, Romania committed to develop and to include an estimation of indirect N_2O emissions in future submissions. The TERT noted that this issue does not relate to a significant under-estimate of emissions. The TERT recommends that Romania include the information provided to the TERT during the review and include estimates of any indirect emission of N_2O in its next submission.	No
RO-4A-2025-0001	No	4A Forest land, CH_4, CO_2, N_2O, 1990-2023	For emissions from biomass burning (CRT Table 4(IV)), information is provided in section 6.12.5 on page 749 of the NID. However, the TERT could not find information on how the available fuel in living biomass in forest land is estimated. During the review, Romania provided information on the amount of fuel burned from living biomass and dead organic matter as well as data on the volume of wood and area affected by wildfires. The TERT notes that this issue does not clearly relate to an over- or under-estimate of emissions. The TERT recommends that Romania report complete information in the NID for emissions reported in CRT 4(IV), also including the information provided to the TERT during the review, in its next submission.	No
RO-4A-2025-0005	No	4 land use, land-use change and forestry, CO_2, 1990-2023	For carbon stock losses in living biomass for land-use changes from forest land, Romania present values in table 6.6 on page 532 of the NID. However, the TERT found no information on how the losses (96.3 t C/ha) have been estimated. During the review, Romania explained that the carbon stock loss was based on data of mean standing volume over forest land as compiled from the second NFI. The TERT notes that this issue does not clearly relate to an over- or under-estimate of emissions. Considering that the carbon stock for deforested land may vary significantly in space and time, the TERT recommends that Romania evaluate the possibilities to refine the estimates of carbon stock losses in living biomass for land-use changes from forest land considering that the carbon stock may vary significantly, both in relation to the resident carbon stock per hectare, given the spatial and	No

EMRT-ID	Key category	Category, gas, year	Recommendation	Revised estimate or technical correction in 2025 (RE/TC/no)
			temporal variability, and in relation to how much of the standing trees are affected by the change in land use.	
RO-4A-2025-0002	No	4A Forest land, CO_2, 1990-2023	For carbon stock change in dead wood, the TERT observed that the implied carbon stock change factor varies substantially over time for land converted to forest land. The TERT also noted that the time series used for the 20-year transition period presented in table 6.25 on page 563 of the NID shows an increase for the first 9 years and thereafter a decline in annual carbon stock change. In response to the observation, Romania explained that they use a growth curve approach based on successive measurements from afforestation plots. This partly explains the development of dead wood as silvicultural practices commonly implemented in young plantations (such as thinning, cleaning, and pre-commercial operations) remove both living biomass and dead wood. The TERT notes that this issue does not clearly relate to an over- or under-estimate of emissions. The TERT recommends that Romania continue to monitor and incorporate new data and research related to afforestation and explore alternate scientific methods to better represent the dynamics in dead organic material over the full 20-year transition period and address this in future reporting.	No
RO-4A-2025-0004	No	4 land use, land-use change and forestry, CO_2, NO_2, 1990-2023	For carbon stock change in mineral soils in land-use change categories from and to forest land the TERT observed that the information provided in the NID (table 6.26 on page 564) did not include all information needed to assess the carbon stock change factor used in the calculations. During the review Romania provided an updated table including the reference carbon stocks as well as initial and final carbon stocks for the different land use categories. The TERT notes that this issue does not clearly relate to an over- or under-estimate of emissions. The TERT recommends that Romania improve the information in the next NID by updating the information on carbon stocks used to estimate carbon stock changes in mineral soils for land use changes from and to forest land.	No
RO-4A1-2025-0001	Yes	4A1 Forest land remaining forest land, CO_2, 1990-2023	For carbon stock gain in living biomass of the category 4A1 Forest Land Remaining Forest Land the TERT noted that the ICSCF for gain in living biomass are more or less constant over the reporting period 1990-2023 with only very modest variations over time. The TERT asked Romania whether the gain reported across the time series has been confirmed by the NFIs and whether there is any other evidence that confirms the more or less constant growth over time. In response, during the review, Romania explained that the NFI has not published values for growth and drain (harvest and mortality). Therefore, to maintain consistency, Romania has continued to rely on data reported by forest districts and the National Institute of Statistics. Yet, the reported carbon stock change has been balanced by the observed carbon stock change between the two finalised NFIs. Romania also reported on the plan to apply the stock-difference method using data from the third NFI cycle (fieldwork completed in 2024) to verify and, if necessary, update the growth estimates. The TERT notes that this issue does not	No

EMRT-ID	Key category	Category, gas, year	Recommendation	Revised estimate or technical correction in 2025 (RE/TC/no)
			clearly relate to an over- or under-estimate of emissions. The TERT recommends that Romania utilise data from the third NFI cycle to verify and, if necessary, update the growth estimates in the next submission.	
RO-4A1-2025-0002	Yes	4A1 Forest land remaining forest land, CO_2, 1990-2023	For the category 4A1 Forest Land Remaining Forest Land the TERT could not find information on the rate of natural mortality (which is not harvested) and whether these losses are included in the carbon stock losses as explained on page 552-554 of the NID. In response to a question raised during the review, Romania informed that for several reasons no explicit rate of natural mortality is reported in the GHG inventory. Mainly because the growth data used in the GHG inventory is based on net woody increment which means that natural mortality is already included. Also, any inconsistencies that may arise from calculations in the living biomass pool are nonetheless calibrated using stock-difference results from the two finalised NFIs. The TERT notes that this issue does not clearly relate to an over- or under-estimate of emissions. The TERT recommends that Romania improve the information on how natural mortality is incorporated in the net carbon stock change in living biomass in the next submission.	No
RO-4A1-2025-0003	Yes	4A1 Forest land remaining forest land, CO2, 1990-2023	For carbon stock changes in DOM and SOC of the category 4A1 Forest Land Remaining Forest Land Romania uses the Yasso model as implemented in the EFISCEN model. In its NID (page 559) Romania explained that “the simulation was run from the second inventory year, 2017, onwards”. The TERT could not find any information on how the time series of carbon stock changes in DOM and SOC for 1990-2017 were estimated and no information was found in the NID related to whether the simulated rate of annual carbon stock change in DOM and SOC in the years 2017-2023 have been verified. During the review, Romania explained that the 2017 carbon stocks in litter and SOC, simulated using the Yasso model, were back casted to 1990 using an average ratio of litter and SOC carbon stock per tonne of carbon in aboveground biomass and that annual changes in AGB for the period 1990–2016 were multiplied by this ratio to estimate the annual changes in DOM and SOC for the period 1990–2016. Romania also informed the TERT that no direct NFI measurements of litter or soil carbon are currently available to verify the simulated rates of carbon stock change but that efforts are underway to improve verification including data from ICP Forests monitoring sites and other small-scale studies conducted by national research teams. After completion and publication of the third NFI cycle, expected during 2025, Romania plans to recalibrate the Yasso model and update the estimates in the next submission. The TERT notes that this issue does not clearly relate to an over- or under-estimate of emissions. The TERT recommends that Romania recalibrate and validate the Yasso model as soon as data on DOM from the third NFI cycle become available as well as by using data from ICP forest and other available studies on SOC and present it in its next submission.	No

EMRT-ID	Key category	Category, gas, year	Recommendation	Revised estimate or technical correction in 2025 (RE/TC/no)
RO-4A2-2025-0002	Yes	4A2 Land converted to forest land, CO_2, 1990-2023	For carbon stock gain in living biomass of the category 4A2d, Settlements Converted to Forest Land the TERT noted that the implied carbon stock change factor was high in relation to the average of the corresponding ICSCF among Member States. In response to a question raised during the review, Romania explained that the afforestation projects referenced in the NID (pp. 561–562) primarily represents conversions from abandoned or unproductive agricultural land to forest, under national and international afforestation programs. Romania assumed that all conversions under 4A2d are the result of afforestation activities, although natural forest expansion on settlement land is highly unlikely. While Romania acknowledge that the carbon stock gains reported for this category appear high, as it is largely based on the results of JI afforestation projects, which have shown significant carbon sequestration potential, alternative national data specific to carbon stock changes on former settlement areas are not available and Romania acknowledge that there is a need to improve the representativeness of the assumptions used in the current NID. The TERT notes that this issue does not clearly relate to an over- or under-estimate of emissions. The TERT recommends that Romania reassess assumptions applied to estimate biomass carbon stock change in land converted to forest land and that continue to monitor and incorporate new data and research related to afforestation, especially on former settlement land, in the next NID and in future submissions.	No
RO-4C-2024-0001	No	4C Grassland, CH_4, CO_2, N_2O, 1990-2022	For drained organic soils under categories 4B1 Cropland Remaining Cropland and 4C1 Grassland Remaining Grassland, the TERT noted that Romania uses the emission factors according to the classification under the warm temperate climate zone while according to the IPCC Climate zone classification about half of the Romanian's territory is classified as cold temperate. In response to a question raised during the review, Romania informed that an explicit geospatial map for Cropland (CL) and Grassland (GL), based on LPIS+CLC+LiDAR datasets has been developed. This analysis indicates that areas classified as Cold Temperate represent less than one-third of the total extent of these land use categories. Based on this assessment and in the absence of country-specific emission factors, default IPCC 2006 Warm Temperate values have been retained for the inventory. The TERT notes that this issue does not relate to an over- or under-estimate exceeding the threshold of significant. The TERT recommends that Romania include the information provided to the TERT during the review on the assumptions for the application of emission factors for drained organic soils in its next submission.	No
RO-4C-2025-0001	No	4C Grassland, CO_2, 1990-2023	For 4C Grassland the TERT noted that Romania states that information has been collected for 10 years which allows for estimates of carbon stock change in SOC in Grassland categories (NID section 6.6.2.1.3). However, the TERT could not find any further information on how this data was collected and analysed to derive the SOC change values. During the review Romania provided information on a "Soil quality monitoring system" as well as an "Integrated Soil Quality Monitoring System in Romania"	No

EMRT-ID	Key category	Category, gas, year	Recommendation	Revised estimate or technical correction in 2025 (RE/TC/no)
			including two references (Răuţă C et.al. 1998 and Dumitru M. et al. 2011). The TERT notes that this issue does not relate to an over- or under-estimate of emissions. The TERT recommends that Romania include the information provided to the TERT during the review on how the carbon stock changes for grassland categories were estimated, including necessary references, in its next submission.	
RO-4D1-2024-0002	No	4D1 Wetlands remaining wetlands, CO_2, 1990-2022	For category 4D1 Wetlands Remaining Wetlands the TERT noted that Romania has not updated the time series for Wetlands Remaining Wetlands although in previous responses to the TERT Romania informed about planned updates, for instance using remote sensing products. In a response during the current review, Romania stated that data sources and methodologies are still explored to better identify wetlands, including assessing the feasibility to use remote sensing products and other geospatial tools that could enhance land use categorization. Romania also indicated that there is an aim to refine its approach by integrating more robust datasets to address recommendations, particularly concerning the classification of wetlands remaining wetlands and associated GHG fluxes. Romania stated that these efforts will be progressively implemented, depending on data availability, institutional capacity, and technical feasibility and an update on these planned improvements will be provided in the 2026 submission of the NID. The TERT recommends that Romania include revised estimates and information on the implementation progress of new data and methods in its next submission.	No
RO-4D1-2024-0001	No	4D1 Wetlands remaining wetlands, CO_2, 1990-2022	For category flooded land under 4D Wetlands, Romania does not report any area. During the review, Romania stated that the national land-use database does not explicitly define "flooded land" under the 4.D Wetlands category, as wetland subcategories are identified based on dominant vegetation type and hydrological characteristics. Therefore, the national geospatial mapping system (EGM) does not distinguish permanently flooded areas as a separate category. Romania also stated that they continuously work on improving the land classification and that they may refine the methodology in future submissions. The TERT recommends that Romania include revised areas for flooded land under category 4D as soon as improved datasets are available.	No
RO-4D2-2024-0001	No	4D2 Land converted to wetlands, CO_2, 1990-2022	For category 4D2 Land Converted to Wetlands, the TERT noted that Romania reports managed land (Forest land, Cropland, Grassland and Settlements) converted to other wetlands and the associated emissions in table 4.D, while in CRT table 4.1 those conversions are included under land converted to unmanaged wetlands. As there are some carbon stock changes to be reported when converting land to wetlands including the biomass loss, it is good practice to report the area of these conversions under managed wetlands in CRT table 4.1. In a response during the review, Romania stated that progress has been made in improving the methodology and data availability. However, the lack of specific institutional arrangements has delayed technical actions to improve the reporting. These	No

EMRT-ID	Key category	Category, gas, year	Recommendation	Revised estimate or technical correction in 2025 (RE/TC/no)
			actions include assessing the need to reclassify converted areas as managed wetlands and assessing CH_4 emissions from flooded lands, if significant. The TERT recommends that Romania reallocate the areas of land use change to wetlands in CRT table 4.1 under managed wetlands in the next submission, and that revise estimates as soon improved datasets are available.	
RO-4E2-2025-0001	Yes	4E2 Land converted to settlements, CO_2, N_2O, 1990-2023	For 4E2 Land Converted to Settlements the TERT noted that final soil carbon stock after conversion to Settlements was estimated to be 32 t C/ha assuming that the top 10 cm of the mineral soil of cropland is removed (see page 595 the NID). A comparison made by the TERT using the IPCC 2006 Guidelines method (Vol.4, Ch.8, section 8.3.3.2), which estimates Settlement SOC on the basis of the SOC of the initial land use as well as on the land cover type within Settlements resulted in only minor differences compared to the method used by Romania. In response to a question raised during the review, Romania explained the rationale for the SOC value under settlement and that there is currently no information available on the proportion of land cover types within the settlements category (e.g., paved, turfgrass, cultivated, wooded areas). The TERT recommends that Romania consider estimating carbon stock change for Land Converted to Settlements using the relevant carbon stocks for the initial land use and differentiate the land cover types under Settlements, using as an interim measure data from a European country with similar conditions while planning for the collection of country data.	No
RO-4F2-2025-0001	No	4F2 Land converted to other land, CO_2, N_2O, 1990-2023	For carbon stock changes in mineral soils in category 4F2 Land Converted to Other Land the TERT noted that a recommendation from ARR2022 (L.20) was not resolved. In ARR2022 (L.20), Romania was recommended to improve the explanation of the SOC change estimation for other land, for example by showing the formula for calculating the average SOC value and including a description of how the characteristics of the Danube floodplain impact this value in the NID. The TERT also noted that the average calculated and presented in the NID is still 41 t C/ha which does not reflect the three soil characteristics presented in the NID which leads to an average of 25 t C/ha. During the review, Romania provided information that clarified that the value of 41 t C/ha represents the result of a national research study, Monitoring Soil Quality in Romania (2006), conducted over a period of 10 years and that this is the value used in in the estimations. The TERT notes that this issue does not relate to an over- or under-estimate of emissions. The TERT recommends that Romania include the information provided to the TERT during the review on the data for carbon stock in mineral soils for other land as well as it elaborates on consistency of such value with the IPCC definition of Other land (see page 3.7, Volume 4 of the 2006 IPCC Guidelines) in its next submission.	No

Revised estimates provided by Romania and accepted by the TERT[1]

1	EMRT ID:	RO-4-2025-0010
	EMRT URL:	https://emrt-esd.eionet.europa.eu/2025/RO-4-2025-0010
	Country:	Romania
	Land use category:	4C2b Cropland converted to Grassland
	Gases:	CO_2
	Pool:	Mineral soil
	Completed by LULUCF Expert:	Mattias Lundblad
	Reviewed by Thematic Counterpart Expert:	
	Reviewed by Lead Reviewer:	Sandro Federici
	Reviewed by Quality Controller:	Bernd Gugele
	The underlying problem:	For 4C2b Cropland converted to Grassland the TERT observed an abrupt change in carbon stock change in mineral soils 2013. From 2014 the assumption made by Romania of an "instantaneous" application of a new set of policies (e.g. Government Decision 34/2013) change the category from a source (2538 kt CO_2) in 2013 to a sink (-2131 kt CO_2) in 2014. The TERT sees it impossible that those new measures take place instantaneously and sees instead that their implementation is distributed over a period of time.
	Summarise the methodology used:	Romania provided revised estimates for this category by 21st June for the years 2016-2018 and 2021-2023. They also included an explanation of the method used to calculate the revised estimates that included further disaggregated activity data and also an estimate of the impact on direct N_2O emissions. The TERT agreed with the revised estimate provided by Romania.

2

	Original estimate (kt CO_2e)				Notes
Year	CO_2	CH_4	N_2O	Total GHG	
2016	-2 409.985		22.986	-2 386.999	
2017	-2 502.275		23.647	-2 478.628	
2018	-2 611.915		24.449	-2 587.466	
2021	-3 115.396		26.183	-3 089.213	
2022	-3 233.292		26.848	-3 206.444	
2023	-3 351.187		27.513	-3 323.675	

	Revised Estimate received from country (kt CO_2e)				Notes
Year	CO_2	CH_4	N_2O	Total GHG	
2016	1 580.745		192.633	1 773.378	
2017	1 058.820		132.662	1 191.482	
2018	493.594		67.791	561.385	
2021	-1 638.118		33.838	-1 604.280	
2022	-2 466.348		30.772	-2 435.576	
2023	-3 351.187		27.513	-3 323.675	

	Difference between RE and OE (kt CO_2e)			
Year	CO_2	CH_4	N_2O	Total GHG
2016	3 990.730		169.647	4 160.377
2017	3 561.095		109.016	3 670.110
2018	3 105.509		43.342	3 148.851
2021	1 477.278		7.655	1 484.933
2022	766.944		3.924	770.868
2023	0		0	

EMRT ID:	RO-4B1-2025-0002
EMRT URL:	https://emrt-esd.eionet.europa.eu/2025/RO-4B1-2025-0002
Country:	Romania
Land use category:	4B1 Cropland remaining cropland
Gases:	CO_2
Pool:	Mineral soil
Completed by LULUCF Expert:	Mattias Lundblad
Reviewed by Thematic Counterpart Expert:	
Reviewed by Lead Reviewer:	Sandro Federici
Reviewed by Quality Controller:	Bernd Gugele

1

The underlying problem:	The TERT noted a sudden change in the carbon stock change in mineral soils in 2010 for the subcategory AG rem AG of 4B1 Cropland remaining cropland. Although the TERT notes that there is an explanation in NID explaining that there is a change in management due to the APIA payment measure for farmers it does not seem to be appropriate to include the entire area to change management instantaneously. The TERT therefore proposes that the effect of the change in management is assumed to take effect over a 10-year period.
Summarise the methodology used:	Romania provided revised estimates for this category by 21st June for the years 2016-2018 and 2021-2023. They also included an explanation of the method used to calculate the revised estimates that included further observations related to the implementation of the payment scheme based on payment applications and assumed an increase over five years to a total coverage of 70% which led to significantly lower net removals for the relevant years. The TERT agreed with the revised estimate provided by Romania.

2

	Original estimate (kt CO_2e)				Notes
Year	CO_2	CH_4	N_2O	Total GHG	
2016	-4 697.856			-4 697.856	
2017	-4 460.029			-4 460.029	
2018	-4 220.103			-4 220.103	
2021	-3 742.224			-3 742.224	
2022	-3 487.798			-3 487.798	
2023	-3 233.375			-3 233.375	

	Revised Estimate received from country (kt CO_2e)				Notes
Year	CO_2	CH_4	N_2O	Total GHG	
2016	-3 587.173			-3 587.173	
2017	-3 406.195			-3 406.195	
2018	-3 235.585			-3 235.585	
2021	-2 912.304			-2 912.304	
2022	-2 730.881			-2 730.881	
2023	-2 549.459			-2 549.459	

	Difference between RE and OE (kt CO_2e)			
Year	CO_2	CH_4	N_2O	Total GHG
2016	1 110.683			1 110.683
2017	1 053.834			1 053.834
2018	984.518			984.518
2021	829.920			829.920
2022	756.918			756.918
2023	683.916			683.916

EMRT ID:	RO-4C1-2025-0001
EMRT URL:	https://emrt-esd.eionet.europa.eu/2025/RO-4C1-2025-0001
Country:	Romania
Land use category:	4C1 Grassland remaining grassland
Gases:	CO_2
Pool:	Mineral soil
Completed by LULUCF Expert:	Mattias Lundblad
Reviewed by Thematic Counterpart Expert:	
Reviewed by Lead Reviewer:	Sandro Federici
1 Reviewed by Quality Controller:	Bernd Gugele
The underlying problem:	The TERT noted a sudden change in the carbon stock change in mineral soils in 2014 for 4C1 Grassland remaining Grassland. Although the TERT notes that there is an explanation in NID explaining that there is a change in management due to the 2013 of ordinance 34/2013 on the implementation of pastoral improvement management practice plans for increasing grassland quality, it does not seem to be appropriate to include the entire area to change management instantaneously. The TERT therefore propose that the effect of the change in management are assumed to take effect over a 10-year period.
Summarise the methodology used:	Romania provided revised estimates for this category by 21st June for the years 2016-2018 and 2021-2022. They also included an explanation of the method used for calculating the revised estimates that were in line with the suggestion by the TERT.

2

	Original estimate (kt CO_2e)				**Notes**
Year	CO_2	CH_4	N_2O	Total GHG	
2016	-3 115.009			-3 115.009	
2017	-2 830.010			-2 830.010	
2018	-2 493.389			-2 493.389	
2021	-1 381.053			-1 381.053	
2022	-1 061.476			-1 061.476	
2023	-741.898			-741.898	

	Revised Estimate received from country (kt CO_2e)				**Notes**
Year	CO_2	CH_4	N_2O	Total GHG	
2016	-1 062.455			-1 062.455	
2017	-1 232.460			-1 232.460	
2018	-1 322.374			-1 322.374	
2021	-1 125.638			-1 125.638	
2022	-964.171			-964.171	
2023	-741.898			-741.898	

	Difference between RE and OE (kt CO_2e)			
Year	CO_2	CH_4	N_2O	Total GHG
2016	2 052.554			2 052.554
2017	1 597.550			1 597.550
2018	1 171.015			1 171.015
2021	255.415			255.415
2022	97.305			97.305
2023	0			

[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) 2018/1999in 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) According to 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.