United Nations

FCCC/ARR/2023/AUT

Framework Convention on Climate Change

Distr.: General
9 January 2024

English only

Report on the individual review of the inventory submission of Austria submitted in 2023*

Note by the expert review team

Summary

Each Party included in Annex I to the Convention must submit an annual inventory of emissions and removals of greenhouse gases for all years from the base year (or period) to two years before the inventory due date (decision 24/CP.19). Parties included in Annex I to the Convention that are Parties to the Kyoto Protocol also report supplementary information under Article 7, paragraph 1, of the Kyoto Protocol with the inventory submission due under the Convention. This report presents the results of the individual review of the 2023 inventory submission of Austria, conducted by an expert review team in accordance with the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories" and the "Guidelines for review under Article 8 of the Kyoto Protocol", as appropriate. The review took place from 18 to 22 September 2023 in Bonn.

* In the symbol for this document, 2023 refers to the year in which the inventory was submitted, not to the year of publication.

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Contents

Abbreviations and acronyms

2006 IPCC Guidelines	*2006 IPCC Guidelines for National Greenhouse Gas Inventories*
AD	activity data
Article 8 review guidelines	"Guidelines for review under Article 8 of the Kyoto Protocol"
C	carbon
CH_4	methane
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
Convention reporting adherence	adherence to the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories"
CPR	commitment period reserve
CRF	common reporting format
EF	emission factor
ERT	expert review team
EU	European Union
EU ETS	European Union Emissions Trading System
FAME	fatty acid methyl esters
F-gas	fluorinated gas
GHG	greenhouse gas
GWP-100	100-year time-horizon global warming potential values
HFC	hydrofluorocarbon
HWP	harvested wood products
IE	included elsewhere
IEA	International Energy Agency
IEF	implied emission factor
IPCC	Intergovernmental Panel on Climate Change
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
MCF	methane conversion factor
MMS	manure management system(s)
MSW	municipal solid waste
N	nitrogen
N_2O	nitrous oxide
NA	not applicable
NE	not estimated
NEU	non-energy use
NF_3	nitrogen trifluoride
NFI	national forest inventory
NIR	national inventory report
NO	not occurring
NO_X	nitrogen oxides
PFC	perfluorocarbon
QA/QC	quality assurance/quality control
SF_6	sulfur hexafluoride
SOC	soil organic carbon
SWDS	solid waste disposal site(s)

UNFCCC Annex I inventory reporting guidelines	"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories"
UNFCCC review guidelines	"Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention"
Wetlands Supplement	*2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*

I. Introduction

1. This report covers the review of the 2023 inventory submission of Austria, organized by the secretariat in accordance with the UNFCCC review guidelines, particularly part III thereof, namely the "UNFCCC guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention" (annex to decision 13/CP.20), and the Article 8 review guidelines (adopted by decision 22/CMP.1 and revised by decision 4/CMP.11). The review took place from 18 to 22 September 2023 in Bonn and was coordinated by Lisa Hanle, Javier Hanna and Anil Raut (secretariat). Table 1 provides information on the composition of the ERT that conducted the review for Austria.

Table 1
Composition of the expert review team that conducted the review for Austria

Area of expertise	*Name (Party)*
Generalist	Sorin Deaconu (Romania), Veronica Eklund (Sweden), Marina Vitullo (Italy)
Energy	Maria Sol Aliano (Argentina), Laura Aranguren (Colombia), Christian Boettcher (Germany), Dawa Chhoedron (Bhutan), Valentina Coccetti (Australia), Ulrich Elsenberger (Germany), Brandon Greenlaw (Canada), Benise Nissa Joseph (Saint Lucia), Alastair Lane (Australia), Lawrence Mashungu (Zimbabwe), Malik Mechhoud (Algeria), Gherghita Nicodim (Romania), Angie Lorena Sanchez Pina (United Arab Emirates), Mamahloko Senatla Jaane (South Africa), Stanislav Stokov (Estonia), Shawn Tobin (Canada), Jongikhaya Witi (South Africa), Shevon Wood (Guyana)
IPPU	Oumar Bakayoko (Côte d'Ivoire), Kathrine Loe Bjønness (Norway), Tommi Valtteri Forsberg (Finland), Eriko Hirata (Japan), Valentina Idrissova (Canada), Mauro Meirelles de Oliveira Santos (Brazil), Jacek Skoskiewicz (Poland), Mark Straton (Australia), Caroline Tagwireyi (Zimbabwe)
Agriculture	Kent Buchanan (South Africa), Sorin Deaconu (Romania), Arthur Ha (Australia), Chang Liang (Canada), Andres Said (Argentina), John Steller (United States), Dan Zwartz (Australia)
LULUCF	Kwame Agyei (Ghana), Rosie Brook (United Kingdom), Markus Didion (Switzerland), Oliver Fitzpatrick (Australia), Sini Maaria Niinistö (Finland), Beatriz Sánchez Jiménez (Spain), Amanda Thomson (United Kingdom)
Waste	Elena Oana Badele (Romania), Juliana Boateng Bempah (Ghana), Daniela Carolina Da Costa Duarte (Sao Tome and Principe), Ryan Deosaran (Trinidad and Tobago), Sandra Boitumelo Motshwanedi (South Africa), Alex Murray (Australia), Takefumi Oda (Japan), Igor Ristovski (North Macedonia)
Lead reviewers	Marina Vitullo and Jongikhaya Witi

2. The basis of the findings in this report is the assessment by the ERT of the Party's 2023 inventory submission in accordance with the UNFCCC review guidelines and the Article 8 review guidelines.

3. The ERT has made recommendations that Austria resolve identified findings, including issues[1] designated as problems.[2] Other findings, and, if applicable, the encouragements of the ERT to Austria to resolve related issues, are also included in this report.

[1] Issues are defined in decision 13/CP.20, annex, para. 81.

[2] Problems are defined in decision 22/CMP.1, annex, paras. 68–69, as revised by decision 4/CMP.11.

4. A draft version of this report was communicated to the Government of Austria, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

5. Annex I presents the annual GHG emissions of Austria, including totals excluding and including LULUCF, indirect CO_2 emissions, and emissions by gas and by sector.

II. Summary and general assessment of the Party's 2023 inventory submission

6. Table 2 provides the assessment by the ERT of the Party's 2023 inventory submission with respect to the tasks undertaken during the review. Further information on the issues identified, as well as additional findings, may be found in tables 3 and 5.

Table 2
Summary of review results and general assessment of the 2023 inventory submission of Austria

Assessment			*Issue/problem ID#(s) in table 3 or 5*[a]
Date of submission	Original submission: NIR, 13 April 2023; CRF tables (version 2), 13 April 2023		
Review format	Centralized		
Source of GWP-100	IPCC Fifth Assessment Report		
Application of the requirements of the UNFCCC Annex I inventory reporting guidelines and the Wetlands Supplement (if applicable)	Have any issues been identified in the following areas:		
	(a) Identification of key categories?	No	
	(b) Selection and use of methodologies and assumptions?	No	
	(c) Development and selection of EFs?	Yes	E.6
	(d) Collection and selection of AD?	Yes	I.11, A.2, W.4
	(e) Reporting of recalculations?	Yes	E.10, E.11
	(f) Reporting of a consistent time series?	Yes	E.1
	(g) Reporting of uncertainties, including methodologies?	No	
	(h) QA/QC?	QA/QC procedures were assessed in the context of the national system (see supplementary information under the Kyoto Protocol below)	
	(i) Missing categories, or completeness?[b]	No	
	(j) Application of corrections to the inventory?	No	
Significance threshold	For categories reported as insignificant, has the Party provided sufficient information showing that the likely level of emissions meets the criteria in paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines?	NA	The Party did not report any insignificant categories as "NE"
Description of trends	Did the ERT conclude that the description in the NIR of the trends for the different gases and sectors is reasonable?	Yes	
Supplementary information under the Kyoto Protocol	Have any issues been identified related to the following aspects of the national system:		
	(a) Overall organization of the national system, including the effectiveness and reliability of the institutional, procedural and legal arrangements?	No	
	(b) Performance of the national system functions?	No	
	Have any issues been identified related to the national registry:		
	(a) Overall functioning of the national registry?	No	

Assessment		*Issue/problem ID#(s) in table 3 or 5*[a]
	(b) Performance of the functions of the national registry and the adherence to technical standards for data exchange?	No
	Have any issues been identified related to the reporting of information on assigned amount units, certified emission reductions, emission reduction units and removal units and on discrepancies in accordance with decision 15/CMP.1, annex, chapter I.E, in conjunction with decision 3/CMP.11, taking into consideration any findings or recommendations contained in the standard independent assessment report?	No
CPR	Was the CPR reported in accordance with decision 18/CP.7, annex; decision 11/CMP.1, annex; and decision 1/CMP.8, paragraph 18?	Yes
Response from the Party during the review	Has the Party provided the ERT with responses to the questions raised, including the data and information necessary for assessing conformity with the UNFCCC Annex I inventory reporting guidelines and any further guidance adopted by the Conference of the Parties?	Yes
Recommendation for an exceptional in-country review	On the basis of the issues identified, does the ERT recommend that the next review be conducted as an in-country review?	No
Questions of implementation	Did the ERT list any questions of implementation?	No

[a] Further information on the issues identified, as well as additional findings, may be found in tables 3 and 5.
[b] Missing categories for which methods are provided in the 2006 IPCC Guidelines may affect completeness and are listed in annex II.

III. Status of implementation of recommendations included in the previous review report

7. Table 3 compiles the recommendations from previous review reports that were included in the most recent previous review report, published on 4 April 2023,[3] and had not been resolved by the time of publication of the report on the review of the Party's 2023 annual submission. The ERT has specified whether it believes the Party had resolved, was addressing or had not resolved each issue or problem by the time of publication of this review report and has provided the rationale for its determination, which takes into consideration the publication date of the most recent previous review report and national circumstances.

Table 3
Status of implementation of recommendations included in the previous review report for Austria

ID#	*Issue/problem classification*[a, b]	*Recommendation from previous review report*	*ERT assessment and rationale*
General			
G.1	Other (G.2, 2022) (G.4, 2020) Comparability	Update the information about indirect CO_2 emissions from the energy sector in the NIR (chap. 9), including by revising the statement that only indirect CO_2 emissions from solvents (IPPU sector) were reported in the inventory.	Resolved. The Party reported in its NIR (chap. 9, p.575) information on indirect CO_2 emissions from the energy sector, explaining the reporting of the notation keys "NE" and "IE" for the energy sector and "IE" for the IPPU sector. The notation keys and explanations in the NIR are consistent with the information reported in CRF table 6. Austria also revised its statement that only indirect CO_2 emissions from solvents (IPPU sector) were reported in the inventory.
G.2	Other (G.3, 2022) (G.4, 2020) Comparability	Present the national totals with and without indirect CO_2 in the CRF tables and in the NIR, in accordance with paragraph 29 of the UNFCCC Annex I inventory reporting guidelines.	Not resolved. The Party reported indirect CO_2 emissions as "NO, NE, IE, NA" in CRF table 6. As a result, in CRF table summary 2, totals are reported only without indirect CO_2 (totals with indirect CO_2 emissions were reported as "NA" in that table). Furthermore, the Party reported in its NIR (p.575) that it does not separately report any indirect CO_2 emissions from the atmospheric oxidation of CH_4, carbon monoxide and non-methane volatile organic compounds in CRF table 6, but partly included those emissions under categories 1.A (fuel combustion) and 2.D.3 (other (non-energy products from fuels and solvent use)). During the review, the Party clarified that it has been reporting indirect CO_2 emissions and including them in the national totals since its first GHG inventory submission because it considers them relevant in terms of anthropogenic GHG emissions. In addition, the Party stated that indirect CO_2 emissions from solvent use are reported under category 2.D.3 because they arise from fossil carbon. As described in NIR chapter 9, CO_2 emissions reported under category 1.A also take into consideration the total carbon of fossil fuels. According to the Party, all indirect CO_2 emissions from fossil fuels are therefore already included in the national totals and "IE" was reported for indirect emissions for those two categories (2.D.3 and 1.A) in CRF table 6. The ERT considers that the recommendation has not yet been addressed because Austria, having decided to report indirect CO_2 emissions together with direct emissions under category 2.D.3, did not report national totals separately with and without indirect

[3] FCCC/ARR/2022/AUT.

ID#	*Issue/problem classification*[a, b]	*Recommendation from previous review report*	*ERT assessment and rationale*
			CO_2 in accordance with paragraph 29 of the UNFCCC Annex I inventory reporting guidelines. The indirect CO_2 emissions reported under category 2.D.3 must be reported in CRF table 6 in order to report the totals separately.
Energy			
E.1	1.A.5.b Mobile – liquid fuels – CO_2, CH_4 and N_2O (E.3, 2022) (E.7, 2020) Accuracy	Make efforts to improve the accuracy of the estimates by developing more efficient cooperation with the Austrian Ministry of Defence to resolve confidentiality issues. If linear extrapolation continues to be used for the estimates, demonstrate the validity of the trend in the NIR.	Addressing. The Party reported in its NIR (section 3.2.15, p.200) that it continued to apply linear extrapolation to estimating fuel combustion for military aviation activities for 1999–2008. From 1990 to 1998, fuel consumption was estimated using a method that considered the number of hours each aircraft was used annually and the amount of fuel it consumed per hour. The Party used online data (https://en.wikipedia.org/wiki/Austrian_Air_Force) on the number of military aircraft for 2008 and 2020 to review AD from 2009 to 2019, assuming the same flight hours as in 2008 and 2020 and applying linear interpolation. The Party clarified during the review that an attempt to establish cooperation at the interministerial level will be made in late 2023 with a view to obtaining military aviation data. The ERT considers that the recommendation has not yet been fully addressed because the Party has not acquired the relevant data from the Austrian Ministry of Defence, and linear extrapolation is still being used for some parts of the time series without demonstrating the validity of the extrapolation in the NIR.
E.2	1.B.2 Oil, natural gas and other emissions from energy production – oil and natural gas – CH_4 (E.4, 2022) (E.8, 2020) Transparency	Make efforts to report the emissions for category 1.B.2 disaggregated into categories 1.B.2.a.i and 1.B.2.b.i.	Addressing. The Party continued to report CH_4 emissions from oil exploration (category 1.B.2.a.1 (referred to as category 1.B.2.a.i in the recommendation from the previous review report)) and natural gas exploration (category 1.B.2.b.1 (referred to as category 1.B.2.b.i in the recommendation)) together under natural gas production (category 1.B.2.b.2). In its NIR (section 3.3.7, p.225), under planned improvements, the Party indicated that it plans to investigate the possibility of disaggregating CH_4 emissions under category 1.B.2.b.2 into emissions under subcategories 1.B.2.a.2 and 1.B.2.b.2. During the review, the Party clarified that disaggregation of CH_4 emissions was discussed with representatives from Austrian oil and gas industries in 2022. However, more time was needed to separate the AD. As a result, this recommendation could not be addressed for the 2023 inventory submission. The ERT considers that the recommendation has not yet been addressed because the Party has not yet disaggregated emissions for category 1.B.2 into emissions under subcategories 1.B.2.a.1, 1.B.2.b.1 and 1.B.2.b.2.
E.3	1.B.2.c Venting and flaring – natural gas – CO_2 (E.6, 2022) (E.9, 2020) Transparency	Provide in the NIR the specific basis, including the legal basis, for designating the information on CO_2 emissions from flaring as confidential.	Resolved. The Party reported in its NIR (section 3.3.3.2, p.216) information explaining the confidential nature of the data on CO_2 emissions from flaring (e.g. EF and calorific value of the flared gas based on EU ETS data) and conditions (e.g. only one refinery in Austria). The Party also listed in the NIR (p.217) a number of legal provisions relating to the protection of personal and company-related data.

ID#	*Issue/problem classification*[a, b]	*Recommendation from previous review report*	*ERT assessment and rationale*
IPPU			
I.1	2.A.2 Lime production – CO_2 (I.1, 2022) (I.6, 2020) Comparability	Report all lime production, whether the lime is produced as a marketed or non-marketed product, under category 2.A.2 (lime production).	Resolved. The Party reported in its NIR (section 4.2.2.1, p.245; and section 4.2.2.5, p.248) that it reported emissions from lime production previously reported under desulfurization (category 2.A.4.d) and carbide production (category 2.B.5), as well as from processes using or producing precipitated calcium carbonate, under lime production (category 2.A.2). The corresponding recalculations led to the following changes for 2020 in the 2023 inventory submission, as compared with the 2022 submission: an increase in CO_2 emissions for lime production of 5.1 per cent, a change from reporting of emissions for category 2.A.4.d to "NO" and a decline in CO_2 emissions for category 2.B.5 of 12.0 per cent.
I.2	2.B.1 Ammonia production – CO_2 (I.2, 2022) (I.7, 2020) Transparency	Describe in the NIR the methodology used to estimate CO_2 recovered by incorporating carbon into melamine.	Resolved. The Party reported in its NIR (section 4.3.1.2, pp.258–259) under a new, separate heading, the methodology, including the stoichiometric relationship, used to estimate CO_2 recovered by incorporating carbon in melamine. The ERT considers the approach to be consistent with the 2006 IPCC Guidelines.
I.3	2.B.1 Ammonia production – CO_2 (I.6, 2022) Transparency	Include in the NIR a detailed carbon balance for the life cycle of melamine produced from ammonia, which should indicate carbon bonded in melamine at production and any emissions that may occur during the lifespan of the melamine product or during its disposal, and a description of the inventory reporting arrangements for all relevant emissions sources.	Resolved. The Party reported in its NIR (section 4.3.1.2, p.259) a detailed description of the life cycle of the carbon bound in melamine and arrangements for inventory reporting of emissions from all relevant sources across the product lifetime.
I.4	2.B.5 Carbide production – CO_2 (I.7, 2022) Completeness	Estimate and report emissions from acetylene production and use arising from calcium carbide production.	Resolved. The Party reported in its NIR (section 4.3.3.2, p.266) that, following a recommendation from the previous review report, it reported emissions from acetylene production for the first time. The emissions were estimated by applying the default value of 1.10 t CO_2 /t carbide used obtained from the 2006 IPCC Guidelines (vol. 3, chap. 3, table 3.8, p.3.44). CO_2 emissions from carbide production were then recalculated for the time series, reflecting the additional reporting of emissions from acetylene production, as well as the reallocation of emissions from non-marketed lime production to category 2.A.2 (see ID# I.1 above), with the overall effect of a decrease in emissions of 5.44 kt CO_2 for 2020.
I.5	2.B.5 Carbide production – CO_2 (I.8, 2022) Accuracy	Review the accuracy of the country-specific EF used to estimate emissions for category 2.B.5 (carbide production), revise the EF, if necessary, taking into account emissions associated with the reduction of excess petroleum coke in the reduction process	Resolved. The Party reported in its NIR (section 4.3.3.2, p.266) that CO_2 emissions were reported directly by the producer. It provided additional information on the methodology applied by the producer. The country-specific EF was derived from a carbon balance of the process for 2020, accounting for the coke and electrodes as carbon inputs and carbon content in product and flue gas as outputs. The process-related EF was calculated as 0.589 t CO_2/t carbide, which is lower than the IPCC default referred to in ID# I.4 above. The Party explained in the NIR that this can be expected because the IPCC default value

ID#	*Issue/problem classification*[a, b]	*Recommendation from previous review report*	*ERT assessment and rationale*
		stage, and clearly document how the EF was derived.	assumes excess coke is used for the generation of heat needed for the process. However, in Austria an electric arc furnace is used for production, resulting in the lower EF, which the Party assumed could be used for the entire time series. The ERT considers the approach to be appropriate.
I.6	2.C.1 Iron and steel production – CO_2 and CH_4 (I.9, 2022) Convention reporting adherence	Report in the NIR (section 4.4.1.5) the effects of recalculations of CO_2 and CH_4 emissions from iron and steel production on national total GHG emissions, for the whole time series, in accordance with paragraphs 43–45 and 50(h) of the UNFCCC Annex I inventory reporting guidelines.	Resolved. In CRF table 2(I).A-H, Austria reported recalculations of CO_2 emissions owing to the incorrect reporting of the tar process stream and CH_4 emissions owing to the use of plant-specific data. The Party reported in its NIR (section 4.4.1.5, p.275) the drivers for the recalculations. Information on the impact of the recalculations on the national totals for the whole time series is contained in annex 8 to the NIR under the relevant category (estimated CO_2 emissions increased by 0.6 per cent and estimated CH_4 emissions increased by 0.1 per cent for 2020).
I.7	2.C.1 Iron and steel production – CO_2 (I.3, 2022) (I.9, 2020) Transparency	Review and, if necessary, revise the title of NIR table 138 (section 4.4.1.2, p.246) to make it consistent with the table's content.	Not resolved. The Party reported in its NIR (section 4.4.1.2, p.274) table 159 (formerly table 138) titled "Activity data, emissions and implied emission factors for CO_2 from steel production 1990–2021". However, besides AD, the table includes estimates of CH_4 emissions, in addition to CO_2 emissions, and does not include IEF information. During the review, Austria confirmed that it will fully implement the recommendation for the next submission, ensuring that the table title is consistent with the contents of the table.
I.8	2.C.1 Iron and steel production – CO_2 (I.10, 2022) Transparency	Provide accurate information and data (e.g. detailed carbon balances and carbon contents) in the NIR (section 4.4.1) to enhance the transparency of the reporting on carbon flows for iron and steel production activities related to the IPPU and energy sectors.	Addressing. The Party reported in its NIR (section 4.4.1.2, p.273) a description of the CO_2 emissions estimated from the carbon flows from the two integrated iron and steel plants in Austria. These plants have been included in the EU ETS since 2005, and therefore CO_2 emissions from both plants are independently verified. CO_2 emissions are calculated by the plants on the basis of an analysis of the carbon content and measurements of all relevant inputs such as coke, coal, natural gas, ore, limestone and scrap, as well as the corresponding outputs, pertaining to iron and steel products and the carbon contained in coal tar, slag and dust, etc. Total CO_2 emissions for all years were calculated by the plants following a detailed tier 3 method. In addition, NIR table 159 (p.274) provides AD and corresponding estimates of CO_2 emissions from iron and steel production for the entire time series (1990–2021). The ERT acknowledged that some information on carbon balances could be found in the NIR (section 3.2.11.1, p.111). The ERT further acknowledged that, during the review, the Party indicated that the carbon balances are confidential and that plant-specific data cannot be made publicly available in the NIR but can be made available for the ERT, as was done during the review of the 2022 submission. However, the ERT could not find any reference in the NIR that such information was confidential and had been provided to the previous ERT. This information would enhance transparency. The ERT considers that the recommendation has not yet been fully addressed because the Party did not provide in the NIR accurate information and data on the carbon content (average) of the major inputs and outputs or explain in the NIR that this information is confidential but can be provided to ERTs upon request.

ID#	*Issue/problem classification*[a, b]	*Recommendation from previous review report*	*ERT assessment and rationale*
I.9	2.C.1 Iron and steel production – CO_2 and CH_4 (I.11, 2022) Comparability	Either correct the reporting of CH_4 emissions from sintering in CRF table 2(I).A-Hs2, reallocating them from category 2.C.1.b (pig iron) to 2.C.1.d (sinter) or, if the Party decides to continue reporting them under category 2.C.1.b, change the notation key in category 2.C.1.d from "NO" to "IE" for both CH_4 and CO_2 emissions and improve the relevant explanatory text in the NIR.	Resolved. The Party continued reporting CH_4 emissions under category 2.C.1.b (pig iron) and reported in CRF table 2(I).A-H "IE" for both CO_2 and CH_4 emissions for category 2.C.1.d (sinter). In its NIR (section 4.4.1.2, p.273), Austria explained the integrated production cycle and clarified why further disaggregation of the reporting of emissions was not feasible (see ID# I.13 in table 5).
I.10	2.F Product uses as substitutes for ozone-depleting substances – HFCs (I.13, 2022) Transparency	Transparently document in the NIR how HFC recovery for categories 2.F.1 (refrigeration and air conditioning) and 2.F.3 (fire protection) is estimated, including by providing a clear explanation of any assumptions made and data sources used and a justification as to why the recovery efficiency applied as a country-specific EF is at the upper end of the range of default EFs provided for refrigeration sub-applications in the 2006 IPCC Guidelines (vol. 3, chap. 7, p.7.52).	Resolved. The Party provided additional information in its NIR (section 4.7.2.1, p.302) for category 2.F.1 (refrigeration and air conditioning), explaining that data on actual recovered amounts of F-gases were unavailable and that recovered gases were usually mixed and then destroyed. The recovered amounts of F-gases were calculated by subtracting the amount remaining at decommissioning from end-of-life emissions. The disposal loss factor of 30 per cent was based on a national study (Leisewitz and Schwartz, 2010) (see NIR table 171). During the review, Party confirmed that this disposal loss factor has been discussed with and confirmed by national industry representatives on several occasions. The Party reported in its NIR (section 4.7.2.3, p.308) that for category 2.F.3 (fire protection) data on F-gases recovered for disposal were annually obtained directly from the fire protection companies, which re-exported recovered F-gases for disposal to foreign traders and manufacturers. The ERT concludes that the reporting of HFC recovery under categories 2.F.1 and 2.F.3 is sufficiently transparent.
I.11	2.F.1 Refrigeration and air conditioning – HFC-134a (I.14, 2022) Accuracy	Revise the estimate of HFC-134a emissions from manufacturing, stocks and disposal for the bus and construction vehicle classes of category 2.F.1.e (mobile air conditioning), using appropriate default EFs provided in the 2006 IPCC Guidelines (vol. 3, chap. 7, p.7.52) for the estimations if more accurate EFs are not available.	Not resolved. The Party reported in its NIR (section 4.7.2.1, p.304) EFs for estimating HFC-134a emissions from stocks and disposal for category 2.F.1.e (mobile air conditioning) for buses (15 and 30 per cent respectively) and only a product manufacturing factor for estimating manufacturing emissions from vehicles used at construction sites (0.3 per cent), which is the same as the information reported in the previous NIR. The Party continued not to report stocks and disposal EFs for vehicles used at construction sites. The Party did not report in the NIR (section 4.7.2.1) the use of appropriate default EFs provided in the 2006 IPCC Guidelines (vol. 3, chap. 7, p.7.52) to revise the estimate of HFC-134a emissions from manufacturing, stocks and disposal for vehicles used at construction sites. During the review, the Party clarified that, since no buses are produced in Austria, no emissions from manufacturing of buses were calculated and reported. Regarding construction vehicles, Austria confirmed that emissions were not estimated owing to a lack of AD on stocks of the construction site vehicle class (see ID# I.12 below) rather than a lack of EFs. The Party further confirmed

ID#	Issue/problem classification[a, b]	Recommendation from previous review report	ERT assessment and rationale
			that there are ongoing investigations and the issue will be resolved for future submissions. The ERT considers that the recommendation has not yet been addressed because no estimate of HFC-134a emissions for stocks and disposal from construction vehicles was included in the NIR owing to a lack of AD.
I.12	2.F.1 Refrigeration and air conditioning – HFC-134a (I.14, 2022) Transparency	Transparently document any assumptions about vehicle AD.	Not resolved. The ERT noted that no additional information was provided in the NIR (section 4.7.2.1, p.304) compared with in the 2022 NIR, and the Party did not transparently document its assumptions about vehicle AD as recommended by the previous ERT. During the review, the Party clarified that its estimates of HFC-134a for subcategory 2.F.1.e (mobile air conditioning) are based on AD reported as new fillings in CRF table 2(II)B-H, assuming that exports and imports are balanced, and applying a lifetime of 12 years and a leakage rate of 20 per cent. This results in estimated emissions amounting to 12.8 t HFC-134a for 2021, which corresponds to approximately 17 kt CO_2 eq. According to the Party, this value is at the upper limit of expected emissions. The Party explained that import and export statistics show that about twice as many construction vehicles are exported as imported, meaning that calculating stocks from amounts filled into new machinery would overestimate the stock. The Party highlighted that data on production of construction vehicles are confidential and statistics do not show information on the share of vehicles with air conditioning; thus stock can only be calculated on the basis of HFC-134a used and not actual vehicle stock. The Party explained that an assumption regarding the export rate of vehicles produced in Austria will be made for the next submission. The Party also explained that information provided during the review has not yet been included in the NIR because emissions from stocks have not yet been reported (see ID# I.11 above).
Agriculture		No issues were identified that remained unresolved at the time of publication of the previous review report.	
LULUCF			
L.1	4.A.1 Forest land remaining forest land – CO_2 (L.1, 2022) (L.2, 2020) (L.2, 2018) (L.2, 2016) (L.2, 2015) (57, 2014) (60, 2013) (73, 2012) Completeness	Provide estimates of the carbon stock changes in living biomass for forests not in yield when the new NFI data become available and use the correct notation key until then.	Resolved. The Party reported in its NIR (section 6.1.6, p.426) that, for forests not in yield, changes in the biomass and deadwood pools for 1990–2021 were estimated and reported on the basis of sampling in the 2007–2009 and 2016–2021 NFIs and model simulations over the whole time series. In CRF table 4.A, under the subdivision "Forest not in yield", the Party reported gains in living biomass of 150.87 kt C in 2021 and reported losses as "IE". Overall, the inclusion of NFI data for 2016–2021 led to substantial recalculations for forest land, resulting in an increase in the estimated net removals for forest land from 2,449.39 kt CO_2 for 2020 in the 2022 submission to 6,954.39 kt CO_2 for 2020 in the 2023 inventory submission (see also ID# L.7 in table 5).

ID#	*Issue/problem classification*[a, b]	*Recommendation from previous review report*	*ERT assessment and rationale*
L.2	4.A.1 Forest land remaining forest land – CO_2 (L.2, 2022) (L.3, 2020) (L.3, 2018) (L.3, 2016) (L.3, 2015) (58, 2014) Completeness	Provide estimates of the carbon stock changes in mineral soils for forests not in yield using the best available data. Alternatively, use the appropriate notation key and provide information justifying its use in the annual submission.	Resolved. The Party reported carbon stock changes in mineral soils for forests not in yield in CRF table 4.A as "NA". In its NIR (section 6.2.4.1.3, p.448), the Party reported that the methodology used for estimating carbon stock changes in mineral soils for forests in yield was applied for forests not in yield. However, because of the lack of soil carbon measurements and substantial temporal variations in the modelled annual soil carbon stock changes, which on average were considerably higher than the average for forests in yield (161 t C/ha compared with 120 t C/ha), the Party considered it more appropriate to assume that the soil carbon stocks are in equilibrium.
Waste			
W.1	5.B.1 Composting – CH_4 and N_2O (W.2, 2022) (W.2, 2020) Transparency	Describe in more detail in the NIR the mechanical-biological and composting treatment of waste and how the data and EFs presented in the NIR relate to the data and IEFs reported in CRF table 5.B.	Resolved. The Party reported in its NIR (section 7.3.2.4, pp.551–552) that EFs for composted waste (0.75 g/kg wet weight for CH_4 and 0.1 g/kg wet weight for N_2O) were taken from national studies (Amlinger, 2003; Amlinger et al., 2005) and within the IPCC default value ranges (0.03–8 g/kg wet weight for CH_4 and 0.06–0.6 g/kg for N_2O) (2006 IPCC Guidelines, vol. 5, chap. 4, table 4.1). The AD and sources for the CH_4 and N_2O EFs used in mechanical-biological treatment systems were also provided in the NIR (p.551). The CH_4 and N_2O EFs reported in CRF table 5.B are calculated for mechanical-biological treatment systems and composting together and are reported in dry weight, assuming a moisture content of 60 per cent for the input material, in line with the 2006 IPCC Guidelines (vol. 5, chap. 4, p.4.6). The Party further explained in the NIR (section 7.3.2.4, p.551) how the EFs for composting and mechanical-biological treatment systems were weighted to derive the IEF reported in CRF table 5.B, in dry weight (1.81 g/kg in 2021). The ERT considers that the Party reported complete and transparent information in its NIR, and that the information is consistent with the data and IEFs reported in CRF table 5.B.
W.2	5.D.1 Domestic wastewater – CH_4 (W.5, 2022) (W.5, 2020) Convention reporting adherence	Provide consistent information in CRF table 5.D and the NIR (either estimates or the correct notation key for the recovered and flared CH_4 from domestic wastewater).	Not resolved. The Party reported "NA" in CRF table 5.D for the amount of CH_4 recovered and flared at domestic wastewater plants and stated in its NIR (section 7.5.2.1, p.564) that the "NA" reported in CRF table 5.D refers only to the source cesspools, where no recovery or flaring takes place. However, the NIR also states (p.564) that CH_4 is produced during wastewater treatment and recovered for use in combined heat and power generation systems. During the review, the Party clarified that the notation key "NA" reported in the NIR and in CRF table 5.D for the amount of CH_4 for energy recovery is related to the wastewater treatment system septic tanks. The Party acknowledged that the notation key "IE" also must be added to reflect the domestic wastewater treatment plants where related emissions are covered under fuel combustion (category 1.A). The Party plans to add the notation key "IE" in the 2024 submission. The ERT considers that the recommendation has not yet been addressed because inconsistent information was reported in the NIR and CRF table 5.D regarding the reporting of energy recovery for combined heat and power.

[a] References in parentheses are to the paragraph(s) and the year(s) of the previous review report(s) in which the issue or problem was raised. Issues are identified in accordance with paras. 80–83 of the UNFCCC review guidelines and classified as per para. 81 of the same guidelines. Problems are identified and classified as problems of transparency, accuracy, consistency, completeness or comparability in accordance with para. 69 of the Article 8 review guidelines in conjunction with decision 4/CMP.11.

[b] Reports on the reviews of the 2017, 2019 and 2021 annual submissions of Austria were not available at the time of this review. Therefore, 2017, 2019 and 2021 are excluded from the list of review years in which issues could have been identified.

IV. Issues and problems identified in three or more successive reviews and not addressed by the Party

8. In accordance with paragraph 83 of the UNFCCC review guidelines, the ERT noted that the issues and/or problems included in table 4 have been identified in three or more successive reviews, including the review of the 2023 inventory submission of Austria, and had not been addressed by the Party by the time of publication of this review report.

Table 4
Issues and/or problems identified in three or more successive reviews and not addressed by Austria

ID#	*Previous recommendation for issue*	*Number of successive reviews issue not addressed*[a]
General		
G.2	Present the national totals with and without indirect CO_2 in the CRF tables and in the NIR, in accordance with paragraph 29 of the UNFCCC Annex I inventory reporting guidelines.	3 (2020–2023)
Energy		
E.1	Make efforts to improve the accuracy of the estimates by developing more efficient cooperation with the Austrian Ministry of Defence to resolve confidentiality issues. If linear extrapolation continues to be used for the estimates, demonstrate the validity of the trend in the NIR.	3 (2020–2023)
E.2	Make efforts to report the emissions for category 1.B.2 disaggregated into categories 1.B.2.a.i and 1.B.2.b.i.	3 (2020–2023)
IPPU		
I.7	Review and, if necessary, revise the title of NIR table 138 (section 4.4.1.2, p.246) to make it consistent with the table's content.	3 (2020–2023)
Agriculture	No issues identified.	
LULUCF	No issues identified.	
Waste		
W.2	Provide consistent information in CRF table 5.D and the NIR (either estimates or the correct notation key for the recovered and flared CH_4 from domestic wastewater).	3 (2020–2023)

[a] Reports on the reviews of the 2019 and 2021 annual submissions of Austria have not yet been published. Therefore, 2019 and 2021 were not included when counting the number of successive years for this table.

V. Additional findings made during the individual review of the Party's 2023 inventory submission

9. Table 5 presents findings made by the ERT during the individual review of the 2023 inventory submission of Austria that are additional to those identified in table 3.

Table 5
Additional findings made during the individual review of the 2023 inventory submission of Austria

ID#	*Finding classification*	*Description of finding with recommendation or encouragement*	*Is finding an issue/problem?*[a]
General			
G.3	CRF tables – N_2O	The Party reported only source emissions in CRF table 6. Indirect N_2O emissions were reported for the entire time series for the LULUCF sector (e.g. 0.04 kt for 2021) but NO_X emissions were reported as "NO". During the review, Austria clarified that the reporting of indirect N_2O emissions in CRF table 6 was an error, confirming that NO_X emissions for the LULUCF sector were correctly reported as "NO" in CRF table 6. The Party further clarified that, owing to an error in compiling the CRF tables, indirect N_2O emissions from managed soils (i.e. the loss of leached N in run-off that is later oxidized) were reported twice: once in CRF table 4(IV), correctly; and again in CRF table 6, in error. The Party stated that the error will be corrected for the next inventory submission. The ERT recommends that the Party correct the reporting of indirect N_2O emissions for the LULUCF sector in CRF table 6 (i.e. by reporting those emissions as "NO"), ensuring consistency with the reporting of NO_X emissions.	Yes. Convention reporting adherence
Energy			
E.4	Fuel combustion – reference approach – liquid fuels – CO_2	In CRF table 1.A(c) the value for total apparent consumption for NEU, reductants and feedstocks for liquid fuels does not correspond to the NEU value for liquid fuels in CRF table 1.A(d). The Party reported a fuel quantity for NEU of 72,722.32 TJ (72.72 PJ) in 2021 in CRF table 1.A(d) but only 24.62 PJ was subtracted from apparent consumption in CRF table 1.A(c) to estimate apparent consumption of liquid fuels, excluding NEU, reductants and feedstocks. During the review, the Party clarified that the value of 453.27 PJ for "Apparent energy consumption (excluding non-energy use, reductants and feedstocks)" for liquid fuels in CRF table 1.A(c) is incorrect because it includes the NEU value for naphtha, which was 48.68 PJ for 2021. The correct value, excluding naphtha, would be 404.59 PJ (rather than 453.27 PJ) and thus the calculated NEU should be 73.31 PJ (rather than 24.62 PJ), which is consistent with the value in CRF table 1.A(d). The Party also indicated that CRF table 1.A(c) will be updated accordingly in the next inventory submission. The ERT noted that, if the total apparent liquid fuels consumption in the reference approach is corrected in CRF table 1.A(c) by subtracting naphtha used for NEU, the difference in AD for liquid fuels between the reference and sectoral approaches would decrease to 0.4 per cent, and the difference in AD for total fuel consumption to –0.9 per cent. The ERT recommends that the Party update CRF table 1.A(c) with the recalculated value for total apparent consumption (excluding NEU, reductants and feedstocks) for liquid fuels by subtracting the NEU value for naphtha, and explain the reason for, and impact of, the recalculation in the NIR.	Yes. Convention reporting adherence
E.5	Comparison with international data –	In CRF table 1.A(b) the Party reported apparent liquid biomass consumption of 21,697.42 TJ for 2021. The ERT noted that Statistics Austria submitted to IEA Austria's total liquid biomass consumption as 20,083 TJ for the same	Not an issue/problem

ID#	*Finding classification*	*Description of finding with recommendation or encouragement*	*Is finding an issue/problem?*[a]
	liquid biomass – CO_2, CH_4 and N_2O	year. During the review, the Party clarified that it calculates apparent liquid biomass consumption by type of fuel and using the net calorific values from the national energy balance, and that the IEA structure differs from the national energy balance. The ERT noted that there is an inconsistency between the liquid biomass AD used by Statistics Austria in the national energy balance and the data it submits to IEA. The Party indicated during the review that it does not know the details of the IEA calculations. The ERT encourages the Party to follow up with Statistics Austria to explore the differences between the liquid biomass consumption data used for the national energy balance and the data submitted to IEA, and report any findings and recalculations in the NIR.	
E.6	1.A Fuel combustion – sectoral approach – liquid, solid, gaseous, biomass, other fossil fuels – CO_2	The Party reported in its NIR (section 3.2.10.1, p.102) that CO_2 emissions from plants having a total boiler capacity of ≥20 MW_{th} are taken from the reports of operators under the EU ETS for 2005 onward. The ERT noted that, pursuant to EU regulation 2018/2066, under the EU ETS, operators may use the conversion factor 3.664 t CO_2/t C. The ERT further noted that this is not in accordance with the 2006 IPCC Guidelines (vol. 2, chap. 1, table 1.4, p.23), which require the carbon EF to be converted to a CO_2 EF using a factor of 44/12 = 3.667 t CO_2/t C (equation kg CO_2/TJ = kg C/GJ x oxidation factor x 44/12 x 1000). The difference between conversion factors 44/12 and 3.664 is 0.01 per cent. During the review, the Party clarified that under the EU ETS operators may use default EFs (t CO_2/TJ), which are consistent with the default EFs used for the inventory. The ERT noted that this discrepancy applies only to the EU ETS operators that submit CO_2 values applying a carbon balance method and using the EU ETS conversion factor 3.664 t CO_2/t C and whose CO_2 data are used directly in the GHG inventory. The ERT further noted that the information reported by the Party does not allow the ERT to assess whether the Party applies CO_2 emissions from EU ETS reports accurately in the GHG inventory. The ERT recommends that the Party, for those EU ETS operators that do not report CO_2 emissions based on direct measurements, collect AD and subsequently apply default or country-specific EFs to the relevant fuel consumption, thereby mitigating potential discrepancies resulting from use of different carbon conversion factors under the EU ETS (3.664 t CO_2/t C) and the 2006 IPCC Guidelines (vol. 2, chap. 1, table 1.4, p.23), which require converting the carbon EF to a CO_2 EF using a factor of 44/12 = 3.667 t CO_2/t C).	Yes. Accuracy
E.7	1.A.1.a Public electricity and heat production – other fossil fuels – CO_2	In its NIR (section 3.2.9.2, p.98) the Party provided an overview of studies carried out to derive the EFs for MSW. The ERT noted that for 2021 the CO_2 IEF for other fossil fuels from public electricity and heat production (45.51 t CO_2/TJ) is the second lowest among all reporting Parties included in Annex I to the Convention in recent years (ranging from 6.90 to 189.65 t/TJ). The ERT further noted that under the information item for waste incineration with energy recovery in CRF table 1.A(a), the MSW fossil and non-fossil shares are reported as "NE". During the review, the Party clarified that the CO_2 IEF for other fossil fuels under public electricity and heat production is low because while the AD include the fossil and non-fossil share of MSW, the CO_2 emissions include only the fossil CO_2 part of the MSW. The Party further informed the ERT that it will update its reporting of the information items for waste incineration in CRF table 1.A(a) in its next inventory submission. The ERT noted that the Party is not allocating the AD of the non-fossil share of MSW in accordance with the UNFCCC Annex I inventory reporting guidelines, as the non-fossil share of AD should be reported under category 1.A.1.a biomass. The ERT recommends that the Party correctly allocate the non-fossil share of AD for MSW under public electricity and heat production (biomass) (category 1.A.1.a). The ERT encourages the Party to include additional	Yes. Comparability

ID#	*Finding classification*	*Description of finding with recommendation or encouragement*	*Is finding an issue/problem?*[a]
		information on waste incineration with energy recovery included as biomass and fossil fuels under the information item on MSW fossil and non-fossil shares in CRF table 1.A(a).	
E.8	1.A.1.a Public electricity and heat production – other fossil fuels – CO_2, CH_4 and N_2O	In its NIR (section 3.2.1.1, p.78) the Party explained the differences between the sectoral approach and the reference approach for other fossil fuels. The ERT noted that, according to the description in the NIR, for the reference approach the Party uses the MSW non-biomass fraction from the national energy balance, resulting in a composite CO_2 EF of 75 t CO_2/TJ, while for the sectoral approach a different MSW non-biomass fraction has been chosen on the basis of the non-fossil carbon content of the fuel. During the review, the Party clarified that the MSW non-biomass fraction used in the national energy balance comes from the waste incineration operators and is based on energy input data (TJ). The Party further clarified that the MSW non-biomass and biomass fractions used in its GHG inventory represent the fossil and non-fossil carbon content used for the CO_2 emissions calculation, referencing page 98 of the NIR. The ERT noted that on that page of the NIR the Party refers to the studies used to derive the CO_2 EF for MSW. The information provided in the NIR does not allow the ERT to assess the non-biomass and biomass fractions used for the inventory calculations. During the review, the Party provided data in an Excel table with an example calculation of the fossil carbon content of a specific waste composition, clarifying that the estimations were based on available waste composition data at the level of federal provinces, and the selected CO_2 EF for MSW of 43.45 t CO_2/TJ is used for 2005–2021. Furthermore, during the review the Party contacted Statistics Austria to collect additional information on determining the MSW non-biomass and biomass fractions used in the reference approach, which were 61.72 and 38.28 per cent respectively. The ERT noted that, on the basis of the data provided in the Excel table, the Party could use weighted averages for the MSW non-biomass and biomass fractions instead of using the average calorific and carbon content value. The ERT is unable to determine from the information provided by the Party which means of averaging (normal average or weighted average) the fraction of biomass and non-biomass enhances the accuracy of estimating CO_2 emissions for category 1.A.1.a. The ERT recommends that the Party provide a detailed explanation in the NIR regarding how calorific values for MSW non-biomass and biomass fractions are derived for the GHG inventory and specify which carbon EFs are used to calculate CO_2 emissions for each fraction. The ERT also recommends that the Party review the methodology for determining MSW non-biomass and biomass fractions to assess whether using a weighted or normal average could enhance the accuracy of estimates and, if revisions are deemed necessary, recalculate emissions accordingly and describe the recalculations in the NIR.	Yes. Transparency
E.9	1.A.1.a Public electricity and heat production – biomass – CO_2, CH_4 and N_2O	In CRF table 1.A(a) the Party reported under public electricity and heat production (category 1.A.1.a) IEFs for biomass of 111.06 t CO_2/TJ, 9.95 kg CH_4/TJ and 3.94 kg N_2O/TJ for 2004. For 2005, the corresponding IEFs were 101.94 t CO_2/TJ, 8.49 kg CH_4/TJ and 3.32 kg N_2O/TJ. The ERT noted that there is an 8–16 per cent decrease (depending on the IEF) in the reported IEFs for biomass under category 1.A.1.a between 2004 and 2005. The ERT further noted a clear difference in IEF trends before 2004 and after 2005 for this category and these gases. In NIR table 37 (section 3.2.10.1) the Party provided the EFs for the different types of biomass consumed under category 1.A.1.a, without any explanation of the trend of the biomass consumption mix. During the review, the Party clarified that the difference between the IEFs was due to the change in the biomass fuel mix (solid biomass, biogas ratio), as biogas consumption increased from 1.6 per cent in 2004 to 17.5 per cent of total biomass consumption	Yes. Transparency

ID#	Finding classification	Description of finding with recommendation or encouragement	Is finding an issue/problem?[a]
		under category 1.A.1.a in 2005. The biogas EFs that the Party applies are approximately 54.6 t CO_2/TJ, 1 kg CH_4/TJ and 0.1 kg N_2O/TJ while solid biomass EFs are 112 t CO_2/TJ, 10–12 kg CH_4/TJ and 4 kg N_2O/TJ. The ERT recommends that Austria include in the NIR a clear explanation of the biomass fuel mix (AD and CO_2, CH_4 and N_2O EFs for the different biomass types) in public electricity and heat production to allow a better understanding of the difference in trends before 2004 and after 2005.	
E.10	1.A.3.b.iii Heavy-duty trucks and buses – gaseous fuels – CO_2, CH_4 and N_2O	The Party reported in its NIR (section 10.1.1.12, pp.577–588) that fuel consumption and EFs for road transportation were updated in accordance with the *Handbook of Emission Factors for Road Transport* (version 4.2) (Infras, 2022). In addition, the hot EFs (i.e. the EFs that correspond to vehicle emissions when the engine and exhaust components have reached their nominal operating temperature) and characteristic motor curves for Euro VI passenger cars and heavy-duty trucks were updated, including an update for vehicle ageing. The Party reported that this update resulted in recalculations of –2.5 kt CO_2 eq for road transportation (category 1.A.3.b) in 2020. The ERT noted that this explanation did not adequately explain (1) the relatively significant differences in the recalculated values for gaseous fuel consumption in heavy-duty trucks for 2020 between the inventory submissions for 2022 (77.59 TJ) and 2023 (706.33 TJ), (2) the relatively significantly different recalculated CH_4 IEFs for 2020 between the 2022 (15.62 kg/TJ) and 2023 inventory submissions (13.68 kg/TJ) and (3) the increase in the N_2O IEF by 30.9 per cent (from 0.65 kg/TJ to 0.85kg/TJ) between the 2022 and 2023 inventory submissions. During the review, the Party clarified that the amount of compressed natural gas consumption for light-duty trucks and road trucks (trucks weighing less than 18 t) was reflected in the emissions calculations for the first time in accordance with the statistical stock data. Therefore, the number of diesel road trucks was reduced by the related number of compressed natural gas road trucks. The Party also clarified that the reduction in the CH_4 IEF can be attributed to the EU emission standards, which were reduced from 1.6 g/kWh for Euro III to 0.5 g/kWh for Euro VI. The ERT recommends that the Party provide in the NIR a detailed explanation for any recalculations performed for road transportation, including information on the impact of the recalculations on the trend in emissions at the category, sector and national total level, as appropriate.	Yes. Transparency
E.11	1.A.3.c Railways – liquid and other fossil fuels, biomass – CO_2, CH_4 and N_2O	The Party reported in its NIR (p.160) that no recalculations were performed for railways. However, the ERT noted from the information reported in CRF table 1.A(a) that the Party reported slightly different AD for biomass, liquid fuels and other fuels in the 2023 inventory submission compared with the 2022 submission for 2005–2020. For example, reported consumption of liquid fuels increased from 1,074.94 TJ to 1,075.24 TJ for 2020 between the 2022 and 2023 submissions, while reported consumption of other fossil fuels decreased from 3.62 TJ to 3.32 TJ and of biomass from 54.36 TJ to 54.13 TJ. The ERT noted that this is not in accordance with the UNFCCC Annex I inventory reporting guidelines because the Party is required to report recalculations in the NIR, with explanatory information and justifications for recalculations. During the review, the Party clarified that it has updated the share of FAME in diesel, resulting in a recalculation of AD for biomass (FAME), liquid fuels (diesel) and other fossil fuels (fossil fraction of FAME), and that this was done to correct an error identified in the previous submission. The Party acknowledged that this recalculation was not explained in the NIR. The ERT recommends that the Party report the reasons for any recalculations for CO_2, CH_4 and N_2O emissions from railways and the impact of these recalculations in the NIR, including on the trend in emissions at the category, sector and national total level, as appropriate.	Yes. Transparency

ID#	*Finding classification*	*Description of finding with recommendation or encouragement*	*Is finding an issue/problem?*[a]
IPPU			
I.13	2.C.1 Iron and steel production – CH_4	The Party reported in CRF table 2(I).A-H and NIR table 147 (p.239) that CH_4 emissions for sinter (category 2.C.1.d) are included elsewhere (under pig iron (category 2.C.1.b)). However, the use of "IE" is not explained in CRF table 9. During the review, the Party clarified that omitting the explanation in CRF table 9 was a mistake which will be corrected in the next inventory submission. The ERT recommends that the Party include in CRF table 9 the explanation for the use of "IE" for reporting of CH_4 emissions from sinter.	Yes. Comparability
I.14	2.F.3 Fire protection, 2.F.4 Aerosols – HFCs	The ERT noted that in NIR table 167 (p.296) all emissions from fire protection (category 2.F.3) and aerosols (category 2.F.4) are reported as "NO" for all years in the time series. However, in NIR table 169 (p.300) emissions for categories 2.F.3 and 2.F.4 are presented for most years. Emissions also are reported in CRF tables 2(II) and 2(II)B-H for both category 2.F.3 and category 2.F.4. During the review, Austria explained that the issue of inconsistent reporting arose from a transcription error in NIR table 167, in which columns were shifted and only the column for category 2.F.5 (solvents) was correct. The Party also noted that figure 28 in the NIR (p.297) presented the correct data and that the inconsistency will be resolved in the next inventory submission. The ERT recommends that Austria correct NIR table 167 to ensure that the emission data presented therein are consistent with the data reported in CRF table 2(II)B-H.	Yes. Convention reporting adherence
I.15	2.G.3 N_2O from product uses – N_2O	The Party reported in CRF table 2(I).A-H AD and corresponding estimated N_2O emissions for propellant for pressure and aerosol products at a constant level since 1990 (0.09 kt AD and the same value for N_2O emissions). The ERT noted that the NIR did not include an explicit explanation of the use of the constant value for AD and estimated emissions for the whole time series. During the review, the Party explained that the value of AD and corresponding estimated N_2O emissions referred to N_2O used for propelling cream and was based on responses to enquiries to manufacturers in 2020. The Party explained that, according to the main producers, Austria is a saturated market with only minor changes in use of propellant cream since the 1990s, and thus the same value of AD can be used for the whole time series. The ERT recommends that Austria include in the NIR the relevant explanations and justification regarding the use of a single value for AD and N_2O emissions for the whole time series.	Yes. Transparency
Agriculture			
A.1	3. General (agriculture) – CH_4 and N_2O	In its NIR (table 180, p.328; and section 5.3.2.1.2, p.370) the Party reported CH_4 and N_2O emissions associated with enteric fermentation for mules and asses as "IE", noting that they are reported under horses using the same default EFs. The Party further reported that mules and asses are not distinguished from horses in the national statistics and that mules and asses are of very little importance in Austria. The ERT noted that the Party did not include in the NIR a quantitative assessment of the population of mules and asses and did not adequately explain what was meant by "little importance". The ERT further noted that mules and asses are not listed in CRF tables 3.B(a) and 3.B(b). During the review, the Party communicated the expert opinion of the Austrian Donkey Association that there are an estimated 1,500 to 2,000 donkeys in Austria, which is about 1 per cent of the total population of horses, mules and asses (130,000) and far below the uncertainty of AD (+/–10 per cent).	Yes. Transparency

ID#	Finding classification	Description of finding with recommendation or encouragement	Is finding an issue/problem?[a]
		The ERT recommends that Austria increase transparency in the NIR by including additional information on mules and asses, including the data source references, the assumptions used and the related uncertainty of emissions estimated using the different data sources available.	
A.2	3. General (agriculture) – CH_4 and N_2O	The Party reported in NIR table 184 (p.337) that the horse population is assumed to have been constant since 2017 (130,000 heads/year), resulting in constant CH_4 emissions from enteric fermentation and CH_4 and N_2O emissions from manure management, as reported in CRF tables 3.A and 3.B(b). During the review, the Party clarified that the number of 130,000 heads/year was originally estimated by the Austrian Horse Breeding Association and annually published in the Ministry of Agriculture's Green Reports. The Party further stated that these are considered the best available data for recent years. The ERT noted that, while the horse population reported in the NIR for 2017–2022 is consistent with the population estimates reported in the Ministry of Agriculture's Green Reports, the most recent year of reference for the estimated horse population is 2019 as estimated by the Austrian Horse Breeding Association and stated in the 2022 Green Report.	Yes. Accuracy
		The ERT recommends that the Party collect data on its annual horse population since 2017 to improve the accuracy of the estimation of CH_4 emissions from enteric fermentation and CH_4 and N_2O emissions from manure management.	
A.3	3.B Manure management – CH_4	The Party reported in its NIR (section 5.3.2.1, p.363; and table 178, p.323) that for liquid manure management systems for cattle (category 3.B.1) and swine (category 3.B.3) the MCF is a country-specific value derived from two studies (Amon et al., 2006; Amon et al., 2007), taking into account the seasonal variation in temperature. In NIR table 205 (p.364), the Party also provided average MCF values for 1990 and 2021. The ERT noted that in CRF table 3.B(a)s2 a different MCF value is used for each year of the inventory time series, but the ERT was unable to determine whether the MCF value used is adjusted on the basis of the seasonal temperatures in that year. During the review, the Party clarified that the average MCFs of liquid systems have small inter-annual changes owing to the annual changes of MMS allocation between cold and warm conditions. Higher shares of liquid manure stored under warm conditions increase the average MCFs; increasing the shares of liquid manure stored under cold conditions leads to lower average MCFs. The ERT requested clarification on whether the annual average temperature for each year in the time series is considered in the calculations in the 2006 IPCC Guidelines (vol. 4, chap. 10, table 10.17).	Yes. Transparency
		During the review, the Party further clarified that the country-specific seasonal MCF values were developed from a three-year measurement campaign, explaining that the default values based on annual average temperature, as included in table 10.17 of the 2006 IPCC Guidelines, are not used. The ERT noted that using data for only one period may result in the use of inappropriate MCF values, considering the national circumstances, in estimating CH_4 emissions from MMS of dairy cattle and swine in years not included in the period considered for the assessment.	
		The ERT recommends that the Party provide in the NIR relevant information to demonstrate that the MCF values for liquid manure management for the full time series are not biased, taking into account the annual temperature variation and the trend from 1990 to the present.	
A.4	3.D.a.5 Mineralization/	The ERT noted that there was a significant inter-annual variation in the amount of N in mineral soils that is mineralized in association with loss of soil carbon between 2020 (336,620.65 kg N/year) and 2021 (789,585.23 kg	Yes. Transparency

ID#	*Finding classification*	*Description of finding with recommendation or encouragement*	*Is finding an issue/problem?*[a]
	immobilization associated with loss/gain of soil organic matter – N_2O	N/year). The 2021 value was 134.6 per cent higher than the 2020 value. The average inter-annual change over the time series was 1.0 per cent. The Party reported in its NIR (section 5.4.2.1.5, p.401) that the annual losses of soil carbon are taken as reported under perennial cropland converted to annual cropland (category 4.B.1). The ERT noted that although this was the case from 1990 to 2020, in 2021 the two subdivisions annual cropland remaining annual cropland and perennial cropland remaining perennial cropland both lost soil carbon, as explained by the Party. During the review, the Party clarified that after the initiation of cropland management measures in Austria in the 1990s, which increased the soil carbon stock, the soils are expected to reach a new soil carbon stock equilibrium after 20 years (the IPCC default value). At the same time, the cropland areas with soil carbon enhancing management measures started to decrease slightly in about 2005, as shown in NIR figure 40 (p.476), causing re-emission of soil carbon from those cropland areas where these measures were discontinued. Together, this has resulted in net soil carbon loss in cropland remaining cropland from 2021 onward (with carbon stock change in mineral soils decreasing from a gain in carbon of 19.50 kt C in 2020 to a loss of carbon of –3.79 kt C in 2021). These changes in soil carbon caused an increase in N_2O emissions under category 3.D.a.5 within the agriculture sector from 2020 to 2021 (from 0.005 kt N_2O in 2020 to 0.012 kt N_2O in 2021) (see also ID# L.5 below).	
		The ERT recommends that the Party include in the agriculture section of the NIR transparent documentation of the respective contribution of all subdivisions of cropland remaining cropland (category 4.B.1) (for example perennial converted to annual, annual remaining annual and perennial remaining perennial) that are losing soil carbon and hence contributing to the emissions under category 3.D.a.5.	
A.5	3.F.5 Other (field burning of agricultural residues) – CH_4 and NO_2	The Party reported in its NIR (section 5.1.6, p.326; section 5.5.4, p.408; section 6.3.4.1.7, p.482; section 7.4.2, p.559; section 10.1.5, p.584) that CH_4 and N_2O emissions from the burning of residual wood from viticulture on open fields that were previously reported under other (field burning of agricultural residues) (category 3.F.5) were reallocated to the waste sector under other (biogenic, open burning of waste) (category 5.C.2.1.b) after a recommendation following an internal EU review in 2022. The Party reported the emissions associated with burning of residual wood from viticulture under open burning of waste (category 5.C.2), reporting "NO" for category 3.F.5 and "IE" for category 4.B.1 and in CRF table 4(V). During the review, the Party explained that the allocation to open burning of waste seems to be appropriate according to the 2006 IPCC Guidelines (vol. 5, chap. 5), without providing further elaboration. The ERT noted that, according to the 2006 IPCC Guidelines, emissions from burning of agricultural waste should be reported under agriculture, forestry and other land use (category 3.C.1) (vol. 1, chap. 8, table 8.2; and vol. 5, chap. 5, p.5.5). On the basis of these references, the ERT concluded that the reallocation of emissions to the waste sector is not in accordance with the 2006 IPCC Guidelines.	Yes. Comparability
		The ERT recommends that the Party report CH_4 and N_2O emissions from burning of woody perennial crops, including biomass from viticulture, under burning of agricultural residues and provide in the NIR a detailed explanation for the recalculation, including information on the impact of the recalculations on the trend in emissions at the category, sector and national level, as appropriate.	
LULUCF			
L.3	4. General (LULUCF) – CO_2	The Party reported in NIR table 252 (p.423) the soil organic matter definition as "all organic matter in mineral and organic soils (including peat) to a soil depth of 50 cm (forests, LUC from and to forests) or to a soil depth of 30 cm (all other land uses and LUC)". The ERT noted that for subcategories such as forest land converted to cropland,	Yes. Transparency

ID#	*Finding classification*	*Description of finding with recommendation or encouragement*	*Is finding an issue/problem?*[a]
		cropland converted to settlements and cropland remaining cropland, the Party applies SOC values based on different soil depths (e.g. 0–50 cm soil depth for forest land remaining forest land and 0–30 cm soil depth for cropland converted to settlements and cropland remaining cropland). During the review, the Party clarified that SOC values based on the 0–50 cm soil depth are available for all land-use categories, but that cropland management factors are based on the 0–30 cm soil depth (see ID# L.5 below). Therefore, the Party plans to use 0–50 cm carbon stock changes for all land-use conversions, but potentially continue using 0–30 cm stock depths for cropland remaining cropland and grassland remaining grassland because land use, input and management factors relate to the 0–30 cm depth. The ERT recommends that the Party explain in the NIR how consistency is ensured in estimates for all land-use categories when applying SOC values from different soil depths (e.g. 0–50 cm carbon stock changes for all land-use conversions but 0–30 cm stock depths for cropland remaining cropland and grassland remaining grassland).	
L.4	4. General (LULUCF) – CO_2	The Party reported in its NIR (section 6.3.4.1.4, p.474) that, according to national soil inventories, organic soils do not occur in cropland in Austria (section 6.3.1, p.458), clarifying that organic soils occur only in the grassland category in Austria. The ERT noted that the information included in the NIR is not sufficient to justify the assumption that organic soils occur only on grassland. During the review, the Party clarified that the Austrian soil inventories cover the complete agricultural land of the country in a 4 x 4 km or 2 x 2 km grid. A survey was carried out to identify all grid points with soils with more than 17 per cent organic carbon content, which represent organic soils according to the national definition. This survey resulted in the identification of grassland grid points with organic soils, which represent an area of 12.95 kha organic soils (NIR section 6.4.4.1.3, p.495). No grid points with cropland exceeded the threshold for organic soils, and therefore it is assumed that there is no cropland with organic soils in Austria. A similar result from the forest soil inventory demonstrated that there is no forest land with organic soils. The Party indicated that it will provide a detailed assessment in the NIR in the next inventory submission. The Party clarified that, as mentioned in the NIR (section 6.1.8, p.431), there is an active project to improve the assessment of areas of drained and managed organic soils. The ERT recommends that the Party include in the NIR a description of the methodology used to identify organic soils.	Yes. Transparency
L.5	4. General (LULUCF) – CO_2	The Party reported in CRF tables 4.B and 4.C a change in SOC in the cropland remaining cropland subcategories (e.g. annual cropland remaining annual cropland) and for grassland remaining grassland (see ID# A.5 above). The Party reported in its NIR (section 6.3.4.1.4, p.480) that the SOC values for cropland and grassland change over the time series, and therefore the year in which the conversion takes place influences the carbon stock change values. The ERT noted that sufficient information was not available in the NIR to understand the applied approach. During the review, the Party confirmed that constant values are applied to estimate soil carbon stock changes for land-use conversions involving cropland and grassland, and that the average soil carbon stocks of cropland remaining cropland and grassland remaining grassland vary over time owing to changes in management practices. The Party also clarified that SOC gains and losses due to improved management practices on cropland and grassland are accounted for under the land remaining in the same land-use categories. Therefore, when land is converted from annual cropland remaining annual cropland, the loss of SOC previously gained through improved management practices is accounted for in the land remaining in the same land-use category, rather than the land conversion	Yes. Transparency

ID#	*Finding classification*	*Description of finding with recommendation or encouragement*	*Is finding an issue/problem?*[a]
		category. The Party acknowledged that there is a minor misallocation of emissions and removals between land in conversion and land remaining in the same land-use category (for cropland and grassland). The ERT recommends that the Party provide transparent information in the NIR to demonstrate the accuracy of the estimates of soil carbon stock changes in cropland and grassland remaining in the same land-use categories, taking into consideration the SOC gains and losses due to changes in management practices.	
L.6	4.A.1 Forest land remaining forest land – CO_2	The Party reported carbon stock changes in mineral soils for forests not in yield in CRF table 4.A as "NA", assuming they are in equilibrium (see ID# L.2 in table 3). During the review, the Party clarified that it plans to estimate the mineral soil carbon stock changes for forests not in yield in the future. The Party further explained that, since this will require significant resources, it is not expected to be implemented for the next few inventory submissions. According to the 2006 IPCC Guidelines (vol. 4, chap. 2, figure 2.4) the application of the tier 1 assumption that mineral soil carbon stocks of forests not in yield are in equilibrium is acceptable given that it is not a key category. The ERT encourages the Party to continue collecting data to enable carbon stock changes in mineral soils for forests not in yield to be estimated in the future. The ERT also encourages the Party to include in the NIR the justification for applying a tier 1 methodology for carbon stock changes in mineral soils for forests not in yield.	Not an issue/problem
L.7	4.A.1 Forest land remaining forest land – CO_2	The Party reported in CRF table 4.A a separate subdivision "Forest not in yield", reporting gains in living biomass (150.87 kt C in 2021); losses are reported as "IE" (see ID# L.1 in table 3). The ERT noted that an explanation for the reporting of "IE" for biomass losses from forest not in yield was not provided in CRF table 9 or in the NIR. During the review, the Party clarified that biomass losses are included in biomass gains and cannot be separated as forests not in yield have been included in only one NFI cycle (2016–2021) and only the net change could be modelled. The Party also clarified that there are currently no plans to separately report biomass gains and losses for forests not in yield. The ERT recommends that the Party provide in CRF table 4.A estimates of the carbon stock change in biomass losses for forests not in yield or provide an explanation for the reporting of biomass losses as "IE" in CRF table 9 and in the NIR.	Yes. Comparability
L.8	4.B Cropland – CO_2	The Party reported in its NIR (section 6.2.3, p.440) that areas with a rotation period of up to 30 years, as well as forest arboretums, forest seed orchards, Christmas tree plantations and plantations of woody plants for the purpose of obtaining fruits such as walnut or sweet chestnut, are not accounted for as forests but as perennial cropland. However, NIR table 278 includes only areas for viticulture, orchards, garden, energy crops and Christmas trees. The ERT noted that is it not clear where all land-use areas categorized as perennial crops are accounted for. During the review, the Party clarified that data on short rotation plantations are compiled under energy crops; and data on forest arboretums, forest seed orchards and plantations of woody plants for the purpose of obtaining fruits such as walnut or sweet chestnut are compiled under orchards. The Party also confirmed that this information will be included in the next inventory submission. The ERT recommends that the Party explain in the NIR where all perennial cropland types (including areas with a rotation period of up to 30 years, forest arboretums, forest seed orchards, Christmas tree plantations and plantations of woody plants for the purpose of obtaining fruits such as walnut or sweet chestnut) are accounted for in the GHG inventory.	Yes. Transparency

ID#	*Finding classification*	*Description of finding with recommendation or encouragement*	*Is finding an issue/problem?*[a]
L.9	4.B.1 Cropland remaining cropland – CO_2	The Party explained in its NIR (section 6.3.4.1.1, pp.471–472) the use of country-specific biomass carbon stock change factors for vineyards, orchards, Christmas tree cultivation and energy crops in the estimation of CO_2 emissions and removals from perennial cropland remaining perennial cropland. The Party also reported in its NIR (section 6.3.4.1.3, p.474) that, for conversions of perennial cropland to other land-use categories, a weighted mean biomass carbon stock change factor based on vineyard and orchard biomass carbon stock change values is applied. The ERT noted that it was not clear why such a weighted mean was used to calculate the biomass carbon stock change values, also noting that the weighted mean biomass carbon stock change factor considers only carbon stocks of vineyards and orchards, and not other perennial crops. During the review, the Party clarified that carbon stock change factors for the conversion of perennial cropland subcategories to other land uses are not available, triggering the need to calculate a ratio of perennial crop type and weighted mean carbon stock change factor, which is then applied across the time series. The Party also clarified that vineyards and orchards have by far the highest proportion (about 90 per cent) of the perennial cropland area, and therefore it considers the current biomass carbon stock change factors used to be accurate and suitable for perennial cropland. In addition, the Party clarified that areas for each crop type at the land parcel level are only available from 2016, and that the weighted mean factors used are considered to be appropriate, since they are calculated with country-specific factors on the basis of national biomass sampling studies to derive the mean stocks and stock change factors for the perennial crop types. In relation to the area of land-use conversions, the Party clarified that it is assumed that land-use changes involve vineyards and orchards crops in the same ratio, which represents a mean for the years back to 1990. The ERT recommends that the Party explain in its NIR how it developed the weighted average biomass carbon stock change factor for the living biomass pool and demonstrate that basing the factor for conversions to and from perennial cropland only on vineyards and orchards allows for accurate estimates of emissions and removals from living biomass.	Yes. Transparency
L.10	4.C.1 Grassland remaining grassland – CO_2	The Party reported in its NIR (section 6.4.2, p.492) that, for grassland remaining grassland, areas are estimated on the basis of national statistics (Statistics Austria 1960–2021), which are iteratively corrected to ensure area consistency in the national land-use change matrices. The ERT noted that there are large differences in the total grassland areas reported in CRF table 4.1 (1,512.11 kha in 2020) and the national statistics data (1,210 kha in 2020), which are not explained in the NIR. During the review, the Party clarified that there are two main reasons for the recalculation of grassland areas from the national statistics data: the national statistics data do not consistently identify areas of alpine pastures across the time series; and the statistics do not account for grassland areas which are not owned by farmers. The Party also reported in its NIR (section 6.1.8, p.432) that a project will start in 2023 to improve the classification of the total grassland area with spatially explicit data sets. The ERT recommends that the Party explain, in the NIR, the correction applied to the areas of grassland remaining grassland from the original source data (the national statistics) and for use in the inventory. The ERT encourages the Party to report in the NIR on the progress of the project that aims to improve the quantification of the total grassland area with spatially explicit data sets.	Yes. Transparency
L.11	4.C.1 Grassland remaining grassland – CO_2	The Party reported in its NIR (section 6.4.4.1.2, p.494) that the soil carbon stock for grassland remaining grassland of 70 t C/ha (based on the soil carbon stock in 1990), the management factors for grassland in accordance with the 2006 IPCC Guidelines (vol. 4, chap. 6, table 6.2) and the areas of related grassland management in Austria in 1990 and 2011 were used to estimate soil carbon stock change for 1990–2021. The SOC content, the country-specific	Yes. Transparency

ID#	*Finding classification*	*Description of finding with recommendation or encouragement*	*Is finding an issue/problem?*[a]
		average value of 70 t C ha^{-1} for 0–30 cm depth of grassland, is based on the nationwide soil inventories, and it was assumed that it represents the soil carbon stock in 1990. The Party clarified that this implies that the management factors can be assumed to be equal to 1. The ERT found that the description in the NIR did not allow a clear understanding of how the country-specific SOC stock change values were assessed, especially for 2011, or for which areas a change in grassland management is considered along the time series. The Party also reported in its NIR (section 6.1.8, p.430) that there is an ongoing national research project on management measures to maintain and enhance SOC stocks in grassland mineral soils, which will allow the use of country-specific SOC stock change values to estimate emissions and removals from grassland remaining grassland. The ERT found that the description in the NIR did not allow a clear understanding of how the country-specific SOC stock change values were assessed. During the review, the Party clarified that the national research project is now completed and that it will update the mineral soil carbon stock changes for grassland remaining grassland in the 2024 inventory submission. The ERT recommends that the Party report the soil carbon stock, management factors, assumptions and data sources and corresponding areas for grassland remaining grassland in the NIR., referring to the current or the potential update based on the national research project on management measures to maintain and enhance SOC stocks in grassland mineral soils.	
L.12	4.D Wetlands	The Party reported in its NIR (section 6.5.2, p.502) that peatland areas have been protected in Austria since before 1990, and thus it is assumed that there has been no drainage since 1990 and that the area of peatland is constant across the time series. The Party only reported emissions under the grassland remaining grassland subcategory from drained peatland in the NIR (section 6.4.4.1.3, p.495). The ERT noted that the peatland area and area of drained peatlands are based on a study (Steiner and Reiter, 1992) conducted more than 30 years ago, and therefore may not be representative of the time series. During the review, the Party clarified that, as reported in the planned improvement section of the NIR (section 6.1.8, p.431), an updated assessment of areas of drained and managed organic soils will be included in the 2025 inventory submission. The ERT recommends that the Party demonstrate in the NIR that the current assumption that the area of drained peatlands has remained constant since 1990 accurately reflects the national circumstances, or if this is not possible, revise the areas using the best available information or a splicing technique from the 2006 IPCC Guidelines (vol.1, chap. 5) and explain any recalculation in the NIR.	Yes. Transparency
L.13	4.D.1 Wetlands remaining wetlands – CO_2	The Party reported in CRF table 4.D "NE" for CO_2 emissions from other wetlands remaining other wetlands and flooded land remaining flooded land, but no explanation was provided in CRF table 9 or in the NIR. The ERT noted that this is not in accordance with the UNFCCC Annex I inventory reporting guidelines because Parties are required to include information and explanations in relation to categories not estimated. During the review, the Party clarified that it is not possible to distinguish the areas of managed water bodies from natural lakes and rivers and therefore all flooded land remaining flooded land areas are included under other wetlands remaining other wetlands. In addition, the Party clarified that "NE" is used for CO_2 emissions for these categories as no default methodology is available in the 2006 IPCC Guidelines. The ERT recommends that Austria provide an explanation for the reporting of "NE" for CO_2 emissions from other wetlands remaining other wetlands and flooded land remaining flooded land in CRF table 9 and in the NIR.	Yes. Transparency

ID#	*Finding classification*	*Description of finding with recommendation or encouragement*	*Is finding an issue/problem?*[a]
L.14	4.G HWP – CO_2	The Party reported in its NIR (section 6.8.2, p.525) the use of factors to convert domestically produced wood products to annual carbon stock inflow but did not report these factors as additional information in either the NIR or CRF table 4.G (the Party reported "NA" for all factors in CRF table 4.G). During the review, the Party provided a table with the conversion factors and source references and confirmed that this information will be included in the next NIR. The ERT encourages the Party to report the factors used to convert from product units to carbon in the NIR. Further, the ERT encourages the Party to report these factors in CRF table 4.G and/or include a reference to the NIR in the documentation box.	Not an issue/problem
Waste			
W.3	5. General (waste) – CH_4	The Party reported in CRF table 5 "NE" for the annual change in total long-term carbon storage in HWP waste. The ERT noted that in CRF table 4.G.s.1 the Party reported "NO" for HWP in SWDS. It also noted that this information was provided for both the LULUCF and waste sectors (memo item in CRF table 5) with the aim of enhancing transparency and facilitating cross-sectoral checks of the carbon storage in SWDS. During the review, the Party indicated that the annual change in total long-term carbon storage in waste is currently included in the annual change in long-term carbon storage, estimated by applying equation 3A1.19 from the 2006 IPCC Guidelines (vol. 5, chap. 3, p.3.37) for all types of waste deposited. The Party added that, owing to the large number and variety of waste code numbers assigned to each waste category, a separation of only HWP-relevant waste streams cannot be made with reasonable effort. More importantly, since 2009 waste is no longer allowed to be deposited without pretreatment in Austria (imposed by the Landfill Ordinance). Therefore, deposition of paper, wood and green waste no longer takes place. In accordance with this, the Party and the ERT agreed that the entry in CRF table 5 for the annual change in long-term carbon storage in HWP waste should be "NO", and the Party will make that change for 2009 onward in its next submission. The ERT recommends that the Party demonstrate clearly in the NIR that deposition of paper, wood and green waste has not taken place since 2009, for example by citing the relevant legislation. The ERT encourages the Party to report the notation key "NO" for the annual change in total long-term carbon storage in HWP waste for the years in which this activity does not occur, in the memo item in CRF table 5.	Yes. Transparency
W.4	5.A Solid waste disposal on land – CH_4	The Party reported information in its NIR (section 7.2.1.2.1, p.544) on landfill gas recovery and the assumptions for estimating landfill gas collected but did not provide detailed information on assumptions made regarding the collected quantities since 2019. During the review, the Party indicated that the most recent study on landfill gas collected covers 2013–2017, and for 2018 and subsequent years assumptions were made on the basis of historical trends in data in the federal provinces of Austria. The Party indicated that a further survey among Austrian landfill site operators on landfill gas recovery and utilization was carried out in 2023, covering 2018–2022, and the results will be included in the next inventory submission. The ERT noted that Austria's reporting is not consistent with the 2006 IPCC Guidelines (vol. 5, chap. 3, p.3.19), whereby CH_4 recovery should be reported only when references documenting the amount of CH_4 recovery are available (for instance, reporting based on metering of all gas recovered or reporting of gas recovery based on the monitoring of produced amount of electricity is consistent with good practice). The ERT welcomed Austria's intended use of the 2023 survey data, which will enable the Party to assess the validity of the assumptions for the most recent years.	Yes. Accuracy

ID#	*Finding classification*	*Description of finding with recommendation or encouragement*	*Is finding an issue/problem?*[a]
		The ERT recommends that Austria review the assumptions regarding landfill gas collection for 2018 onward, taking into consideration, as appropriate, the results of the survey conducted among the landfill operators on the landfill gas recovered and utilized in 2023 and covering 2018–2022, to ensure its reporting is consistent with the 2006 IPCC Guidelines (vol. 5, chap. 3, p.3.19).	
W.5	5.B.2 Anaerobic digestion at biogas facilities – CH_4	The Party reported in CRF table 5.B "IE" for the amount of CH_4 flared from MSW combusted for anaerobic digestion at biogas facilities. The ERT noted that no information is included in the documentation box or CRF table 9 on where this CH_4 flared from MSW combustion is reported; the ERT further noted that this is not in accordance with the UNFCCC Annex I inventory reporting guidelines because the Party reported "IE" but did not indicate in CRF table 9 where the emissions were reported or provide any explanation in the NIR or documentation box of CRF table 5.B. During the review, the Party indicated that the amount of CH_4 flared is reported together with the amount of CH_4 recovered (23.32 kt total in 2021) and is calculated by deducting the CH_4 emissions from the CH_4 generation potential. The Party further indicated that it will include this information in CRF table 9 in the next inventory submission. The ERT recommends that the Party report separately CH_4 flared and CH_4 recovered for MSW combustion. It also recommends that, if the Party cannot report these emissions separately and continues to report CH_4 flared as "IE", including those emissions under the amount of CH_4 for energy recovery, the Party provide an explanation in CRF table 9 and in the NIR to clarify where the CH_4 flared is reported.	Yes. Comparability

[a] Recommendations made by the ERT during the review are related to issues as defined in para. 81 of the UNFCCC review guidelines or problems as defined in para. 69 of the Article 8 review guidelines.

VI. Questions of implementation

10. No questions of implementation were identified by the ERT during the individual review of the Party's 2023 annual inventory submission.

Annex I

Overview of greenhouse gas emissions and removals as reported by Austria in its 2023 inventory submission

Tables I.1–I.3 provide an overview of the total GHG emissions and removals as reported by Austria.

Table I.1
Total greenhouse gas emissions and removals for Austria, base year–2021
(kt CO_2 eq)

	Total GHG emissions excluding indirect CO_2 emissions		*Total GHG emissions and removals including indirect CO_2 emissions*[a]	
	Total including LULUCF	*Total excluding LULUCF*	*Total including LULUCF*	*Total excluding LULUCF*
1990	66 839.80	79 047.23	NA	NA
1995	60 182.37	79 953.24	NA	NA
2000	66 335.33	80 619.36	NA	NA
2010	64 934.19	84 693.29	NA	NA
2015	72 321.37	78 884.46	NA	NA
2020	68 688.65	73 910.84	NA	NA
2021	67 130.65	77 532.35	NA	NA

[a] Austria did not report indirect CO_2 emissions in CRF table 6.

Table I.2
Greenhouse gas emissions and removals by gas for Austria, excluding land use, land-use change and forestry, 1990–2021
(kt CO_2 eq)

	CO_2[a]	*CH_4*	*N_2O*	*HFCs*	*PFCs*	*Unspecified mix of HFCs and PFCs*	*SF_6*	*NF_3*
1990	62 167.16	11 318.85	4 011.19	2.04	1 062.93	NA, NO	485.06	NO, NA
1995	64 044.06	10 513.79	3 856.17	324.03	75.28	NA, NO	1 133.88	6.03
2000	66 171.72	9 217.85	3 871.50	676.69	79.61	NA, NO	592.17	9.84
2010	72 017.32	7 835.56	2 994.28	1 425.57	70.51	NA, NO	346.18	3.85
2015	66 365.64	7 103.22	3 142.20	1 896.86	44.89	NA, NO	319.05	12.60
2020	62 121.25	6 502.90	3 088.92	1 704.97	27.02	NA, NO	454.52	11.27
2021	66 018.63	6 499.26	3 122.74	1 485.82	23.40	NA, NO	370.53	11.96
Percentage change 1990–2021	**6.2**	**–42.6**	**–22.1**	**72 653.2**	**–97.8**	**NA**	**–23.6**	**NA**

[a] Austria did not report indirect CO_2 emissions in CRF table 6.

Table I.3
Greenhouse gas emissions and removals by sector for Austria, 1990–2021
(kt CO_2 eq)

	Energy	*IPPU*	*Agriculture*	*LULUCF*	*Waste*	*Other*
1990	52 664.96	13 615.38	8 399.71	–12 207.43	4 367.18	NO
1995	54 161.65	13 606.45	8 130.44	–19 770.87	4 054.70	NO
2000	55 291.16	14 407.62	7 643.63	–14 284.03	3 276.96	NO
2010	59 281.15	15 934.62	7 188.18	–19 759.10	2 289.35	NO
2015	53 063.77	16 799.96	7 376.00	–6 563.10	1 644.74	NO
2020	49 930.23	15 523.86	7 197.46	–5 222.20	1 259.29	NO
2021	52 141.96	16 958.65	7 221.16	–10 401.70	1 210.58	NO

	Energy	*IPPU*	*Agriculture*	*LULUCF*	*Waste*	*Other*
Percentage change 1990–2021	**–1.0**	**24.6**	**–14.0**	**–14.8**	**–72.3**	**NA**

Note: Austria did not report indirect CO_2 emissions in CRF table 6.

Annex II

Additional information to support findings in table 2

Missing categories that may affect completeness

No mandatory categories from the 2006 IPCC Guidelines were identified as missing.

Annex III

Reference documents

A. Reports of the Intergovernmental Panel on Climate Change

IPCC. 2006. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. S Eggleston, L Buendia, K Miwa, et al. (eds.). Hayama, Japan: Institute for Global Environmental Strategies. Available at http://www.ipcc-nggip.iges.or.jp/public/2006gl.

IPCC. 2014. *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*. T Hiraishi, T Krug, K Tanabe, et al. (eds.). Geneva: IPCC. Available at https://www.ipcc.ch/publication/2013-supplement-to-the-2006-ipcc-guidelines-for-national-greenhouse-gas-inventories-wetlands/.

B. UNFCCC documents

Annual review reports

Reports on the individual reviews of the 2012, 2013, 2014, 2015, 2016, 2018, 2020 and 2022 annual submissions of Austria, contained in documents FCCC/ARR/2012/AUT, FCCC/ARR/2013/AUT, FCCC/ARR/2014/AUT, FCCC/ARR/2015/AUT, FCCC/ARR/2016/AUT, FCCC/ARR/2018/AUT, FCCC/ARR/2020/AUT and FCCC/ARR/2022/AUT respectively.

Other

Aggregate information on greenhouse gas emissions by sources and removals by sinks for Parties included in Annex I to the Convention. Note by the secretariat. Available at https://unfccc.int/documents/630411.

Annual status report for Austria for 2023. Available at https://unfccc.int/sites/default/files/resource/asr2023_AUT.pdf.

C. Other documents used during the review

Responses to questions during the review were received from Guenther Schmidt (Austrian Federal Environment Agency), including additional material on the methodology and assumptions used. The following references may not conform to UNFCCC editorial style as some have been reproduced as received:

Amlinger (2003): information from Dipl.Ing. Florian Amlinger – Compost Consulting & Development, Hochbergstrasse A-2380 Perchtoldsdorf.

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