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Report on the individual review of the annual submission of Greece submitted in 2021*

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 are also required to 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 2021 annual submission of Greece, conducted by an expert review team in accordance with the “Guidelines for review under Article 8 of the Kyoto Protocol”. The review took place from 27 September to 2 October 2021.

* In the symbol for this document, 2021 refers to the year in which the inventory was submitted, not to the year of publication.



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Abbreviations and acronyms

2006 IPCC Guidelines	<i>2006 IPCC Guidelines for National Greenhouse Gas Inventories</i>
AAU	assigned amount unit
AD	activity data
Annex A source	source category included in Annex A to the Kyoto Protocol
AR	afforestation and reforestation
Article 8 review guidelines	“Guidelines for review under Article 8 of the Kyoto Protocol”
BCEF	biomass conversion and expansion factor
CER	certified emission reduction
CH ₄	methane
CM	cropland management
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”
CP	commitment period
CPR	commitment period reserve
CRF	common reporting format
CSC	carbon stock change
EEC	European Economic Commission
EF	emission factor
ERT	expert review team
ERU	emission reduction unit
EU	European Union
EU ETS	European Union Emissions Trading System
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	statistical database of the Food and Agriculture Organization of the United Nations
FCR	fraction of nitrogen in crop residues
F-gas	fluorinated gas
FM	forest management
FMP	forest management plan
FMRL	forest management reference level
GHG	greenhouse gas
GM	grazing land management
HFC	hydrofluorocarbon
HWP	harvested wood products
IE	included elsewhere
IEF	implied emission factor
IPCC	Intergovernmental Panel on Climate Change
IPCC good practice guidance	<i>Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories</i>
IPPU	industrial processes and product use
KP reporting adherence	adherence to the reporting guidelines under Article 7, paragraph 1, of the Kyoto Protocol
KP-LULUCF	activities under Article 3, paragraphs 3–4, of the Kyoto Protocol
LULUCF	land use, land-use change and forestry
MCF	methane correction factor

MSW	municipal solid waste
N	nitrogen
N ₂ O	nitrous oxide
NA	not applicable
NCV	net calorific value
NE	not estimated
Nex	nitrogen excretion
NF ₃	nitrogen trifluoride
NIR	national inventory report
NO	not occurring
ODS	ozone-depleting substance(s)
PFC	perfluorocarbon
QA/QC	quality assurance/quality control
RMU	removal unit
RV	revegetation
SEF	standard electronic format
SF ₆	sulfur hexafluoride
SIAR	standard independent assessment report
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”
WDR	wetland drainage and rewetting
Wetlands Supplement	<i>2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands</i>

I. Introduction

1. This report covers the review of the 2021 annual submission of Greece, organized by the secretariat in accordance with the Article 8 review guidelines (adopted by decision 22/CMP.1 and revised by decision 4/CMP.11). In accordance with the Article 8 review guidelines, this review process also encompasses the review under the Convention as described in the UNFCCC review guidelines, particularly in 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). The review took place from 27 September to 2 October 2021 and was coordinated by María José López (secretariat). Table 1 provides information on the composition of the ERT that conducted the review for Greece.

Table 1

Composition of the expert review team that conducted the review for Greece

<i>Area of expertise</i>	<i>Name</i>	<i>Party</i>
Generalist	Robert Sturgiss	Australia
	Hongwei Yang	China
Energy	Takashi Morimoto	Japan
	Giorgi Mukhigulishvili	Georgia
IPPU	Mark Hunstone	Australia
	Ole-Kenneth Nielsen	Denmark
Agriculture	Joel Gibbs	New Zealand
	Jacques Kouazounde	Benin
LULUCF and KP-LULUCF	Atsushi Sato	Japan
	Midori Yanagawa	Japan
Waste	Veronica Jakarasi	Zimbabwe
	Sirintornthep Towprayoon	Thailand
Lead reviewers	Rob Sturgiss	
	Hongwei Yang	

2. The basis of the findings in this report is the assessment by the ERT of the Party’s 2021 annual submission in accordance with the UNFCCC review guidelines and the Article 8 review guidelines.

3. The ERT has made recommendations that Greece resolve identified findings, including issues¹ designated as problems.² Other findings, and, if applicable, the encouragements of the ERT to Greece to resolve related issues, are also included in this report.

4. A draft version of this report was communicated to the Government of Greece, 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 Greece, including totals excluding and including LULUCF, indirect CO₂ emissions, and emissions by gas and by sector, and contains background data on emissions and removals from KP-LULUCF, if elected by the Party, by gas, sector and activity.

6. Information to be included in the compilation and accounting database can be found in annex II.

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.

II. Summary and general assessment of the Party's 2021 annual submission

7. In accordance with paragraph 76 of the UNFCCC review guidelines and paragraphs 47 and 65 of the Article 8 review guidelines, the ERT has prioritized the review of issues and problems identified in previous review reports or in the initial assessment, recalculations that have changed the estimated emissions or removals for a category by more than 2 per cent or national total emissions by more than 0.5 per cent for any of the recalculated years, and supplementary information reported under the Kyoto Protocol. Table 2 provides the assessment by the ERT of the Party's 2021 annual submission with respect to the tasks undertaken during the desk review. Further information on the issues identified, as well as additional findings, may be found in tables 3, 5 and 6.

Table 2

Summary of review results and general assessment of the 2021 annual submission of Greece

Assessment		Issue/problem ID#(s) in table 3, 5 or 6 ^a	
Dates of submission	Original submission: NIR, 15 April 2021; CRF tables (version 1), 15 April 2021; SEF tables (SEF-CP1-2020 and SEF-CP2-2020), 15 April and 26 May 2021		
Review format	Desk review		
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?	Yes	I.10, I.13, I.18, I.19, A.8, L.10, L.12, L.13, L.14, L.15, W.4
	(c) Development and selection of EFs?	Yes	E.9, E.15, A.4, A.7, A.11, L.3, L.9, KL.1
	(d) Collection and selection of AD?	Yes	I.6, I.17, A.14, L.5, L.8, L.11, L.16, L.17, KL.2
	(e) Reporting of recalculations?	No	
	(f) Reporting of a consistent time series?	Yes	L.19
	(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	Yes	L.11
	(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?	Yes	
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:		

Assessment	<i>Issue/problem ID#(s) in table 3, 5 or 6^a</i>	
	(a) Overall functioning of the national registry?	No
	(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 AAUs, CERs, ERUs and RMUs 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 SIAR?	No
	Have any issues been identified in matters related to Article 3, paragraph 14, of the Kyoto Protocol, specifically problems related to the transparency, completeness or timeliness of the reporting on the Party's activities related to the priority actions listed in decision 15/CMP.1, annex, paragraph 24, in conjunction with decision 3/CMP.11, including any changes since the previous annual submission?	No
	Have any issues been identified related to the following reporting requirements for KP-LULUCF:	
	(a) Reporting requirements of decision 2/CMP.8, annex II, paragraphs 1–5?	Yes KL.3, KL.5, KL.6, KL.7, KL.8
	(b) Demonstration of methodological consistency between the reference level and reporting on FM in accordance with decision 2/CMP.7, annex, paragraph 14?	Yes KL.4, KL.7, KL.9
	(c) Reporting requirements of decision 6/CMP.9?	No
	(d) Country-specific information to support provisions for natural disturbances in accordance with decision 2/CMP.7, annex, paragraphs 33–34?	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?	No
Adjustments	Has the ERT applied any adjustments under Article 5, paragraph 2, of the Kyoto Protocol?	No
	Has the Party submitted a revised estimate to replace a previously applied adjustment?	NA Greece does not have a previously applied adjustment
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, 5 and 6.

^b Missing categories for which methods are provided in the 2006 IPCC Guidelines may affect completeness and are listed in annex III.

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

8. Table 3 compiles the recommendations from previous review reports that were included in the most recent previous review report, published on 31 March 2020,³ and had not been resolved by the time of publication of the report on the review of the Party's 2019 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 Greece

<i>ID#</i>	<i>Issue/problem classification^{a, b}</i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
General			
G.1	CRF tables (G.3, 2019) (G.5, 2017) Comparability	Report complete information in CRF table 9.	Not resolved. The Party did not provide any information in CRF table 9, despite reporting notation keys in the sectoral CRF tables. The Party provided explanations for its notation key usage in the relevant sectoral sections of its NIR. During the review, the Party stated that it encountered problems with CRF Reporter and that it will resolve this issue for its next annual submission.
G.2	NIR (G.5, 2019) Transparency	Improve transparency of reporting by implementing the category-specific recommendations identified in the respective sectoral sections of the previous review report (see document FCCC/ARR/2019/GRC, ID#s E.15, E.16, E.17, A.19, A.20, A.21, A.22, A.24, L.10, L.18, W.28, W.30, W.32, W.33, W.35 and W.37).	Addressing. The Party provided additional information for most of the category-specific recommendations to improve the transparency of the reported emission estimates but some of the recommendations are still pending (see ID#s E.8, E.9, A.4, A.7, A.8, A.11, L.1, L.5, L.8, L.10, L.13, L.14, L.15 and W.4 below).
G.3	Annual submission (G.6, 2019) Completeness	(1) Consistently use “NE” to report all sources considered insignificant in line with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines and provide in the NIR a justification for the use of “NE” showing that the emissions are below the significance threshold indicated in paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines; (2) Demonstrate that the total national aggregate of estimated emissions for all gases and	Resolved. (1) The Party provided justification in the NIR (p.74) for all sources considered insignificant in line with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines; (2) The Party demonstrated in the NIR (p.74) that the total national aggregate of estimated emissions for all gases and categories considered insignificant remains below 0.1 per cent of the national total GHG emissions.

³ FCCC/ARR/2019/GRC. The ERT notes that the report on the individual inventory review of Greece's 2020 annual submission has not been published yet owing to insufficient funding for the review process. As a result, the latest previously published annual review report reflects the findings of the review of the Party's 2019 annual submission.

<i>ID#</i>	<i>Issue/problem classification^{a, b}</i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
		categories considered insignificant remains below 0.1 per cent of the national total GHG emissions, in accordance with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines and include that information in the NIR.	
G.4	National registry (G.7, 2019) KP reporting adherence	Update the Internet address of the EU registry in the NIR.	Resolved. The Party provided the Internet address of the EU registry in its NIR (p.487).
Energy			
E.1	1.A Fuel combustion – sectoral approach – all fuels – CO ₂ (E.11, 2019) Transparency	Include in the NIR detailed information on the results of consistency checks of data across the inventory time series for the subcategories under category 1.A (fuel combustion – sectoral approach) for which it used EU ETS data.	Resolved. The Party reported in its NIR (p.139) that it carries out QA/QC and verification on specific sources by cross-checking energy consumption data from the national energy balance with those reported by major industrial plants under the EU ETS. However, the Party did not provide any results of consistency checks of energy consumption and CO ₂ emissions calculated between the national energy balance and EU ETS for all subcategories under category 1.A in the NIR. During the review, the Party explained that it did not document the results of the cross-check in the NIR because it is not a mandatory requirement but did provide to the ERT during the review the findings of a comparison between CO ₂ emissions reported under the EU ETS and the GHG inventory, made in accordance with EU regulations.
E.2	1.A.1.a Public electricity and heat production – solid fuels – CO ₂ (E.12, 2019) Transparency	Update in the NIR the description of the sources used to derive the oxidation factor for the combustion of lignite in public electricity and heat production by including a reference to the study conducted by the Public Power Corporation in 2004 and by deleting the references to verified EU ETS reports.	Resolved. Although the studies conducted by the Public Power Corporation and published in 1993 and 2004 were not listed in the reference section of the NIR (p.505), the Party did report in its NIR (p.121) a reference to these studies, which were used to derive the oxidation factor for the combustion of lignite in public electricity and heat generation. Also, it deleted the references to verified EU ETS reports that were incorrect in the previous NIR.
E.3	1.A.1.b Petroleum refining – liquid fuels – CO ₂ and CH ₄ (E.13, 2019) Comparability	Reallocate the CO ₂ and CH ₄ emissions from flaring under subcategory 1.A.1.b (petroleum refining) to subcategory 1.B.2.c (venting and flaring) while ensuring time-series consistency, given that EU ETS data are not available for before 2005.	Not resolved. The Party continued to report CO ₂ and CH ₄ emissions from flaring under subcategory 1.A.1.b (petroleum refining) instead of 1.B.2.c (venting and flaring). During the review, the Party explained that emissions from flaring are estimated using EU ETS data for 2005–2019 and that extrapolating to as far back as 1990 involves high uncertainty because of a significant inter-annual variation in flaring activity.
E.4	1.A.2 Manufacturing industries and construction – solid fuels – CO ₂	Include in the NIR the explanation for the inter-annual variation in the NCV of lignite used for manufacturing industries and construction provided to the ERT during the 2019 review.	Resolved. The Party provided in its NIR (p.122) an explanation for the inter-annual variation in the NCV of lignite used for manufacturing industries and construction presented in the NIR (table 3.14), according to which the coals used in manufacturing industries are used in small quantities and mixed with coals of other origins.

ID#	Issue/problem classification ^{a, b}	Recommendation made in previous review report	ERT assessment and rationale
	(E.14, 2019) Transparency		
E.5	1.A.2.f Non-metallic minerals – liquid fuels – CO ₂ (E.6, 2019) (E.8, 2017) (E.18, 2016) (E.18, 2015) Transparency	Include an explanation for the inter-annual change in the CO ₂ IEF between 2003/2004 and 2012/2013.	Resolved. The Party reported in its NIR (p.131) that the inter-annual change in the CO ₂ IEF between 2003/2004 and 2012/2013 is attributable to the fuel mix used in the industry. By way of example, the Party explained that an increase in the CO ₂ IEF between 2012 and 2013 was due to the increased percentage of ‘petcoke’ in the fuel mix.
E.6	1.A.3.b Road transportation – all fuels – CH ₄ and N ₂ O (E.15, 2019) Transparency	Include in the NIR detailed information on the estimation of emissions from road transportation, including annual fleet composition by abatement technology (catalyst categories), fuel consumption and the EFs used for estimating CH ₄ and N ₂ O emissions to the same level of disaggregation.	Resolved. The Party reported the trends in fleet mileage by vehicle type in its NIR (figure 3.8, p.146) and fuel consumption by fuel type (figure 3.10a, p.148). The Party also reported IEFs for CH ₄ and N ₂ O by fuel type in the NIR (table 3.23, p.148). The Party did not provide in the NIR CH ₄ and N ₂ O EFs actually used by vehicle type and fuel type as recommended in the previous review report but did provide references to these EFs which are publicly available.
E.7	1.A.3.c Railways – all fuels – CH ₄ and N ₂ O (E.16, 2019) Transparency	Include in the NIR correct information on the methodology followed for estimating emissions for subcategory 1.A.3.c (railways) together with fuel consumption and EFs used for estimating the CH ₄ and N ₂ O emissions for this subcategory, disaggregated by fuel type.	Resolved. The Party reported in its NIR (p.161) the correct information on the methodology for estimating emissions for category 1.A.3.c (railways). It provided in the NIR the fuel consumption data (table 3.27) and IEFs (table 3.28) by fuel type used for estimating the CH ₄ and N ₂ O emissions for this subcategory.
E.8	1.A.4 Other sectors – all fuels – CH ₄ and N ₂ O (E.17, 2019) Transparency	Include in the NIR information on fuel consumption and EFs, disaggregated by fuel and sector, used for estimating CH ₄ and N ₂ O emissions for this category, and provide an explanation for the trend in emissions.	Addressing. The Party provided in its NIR (pp.118, 122 and 135) information on the data source of EFs used and general information on the emission trend for this subcategory. However, it has not yet provided the values of CH ₄ and N ₂ O EFs by fuel type actually used for the calculation of emissions. In addition, the Party has not yet provided information on fuel consumption by fuel type and sector, although it explained during the review that fuel consumption data are included in CRF table 1.A(a)s4.
E.9	1.B.1.a Coal mining and handling – solid fuels – CH ₄ (E.18, 2019) Accuracy	With regard to the EF for the surface mining of lignite, (1) continue exploring the possibility of conducting measurements to develop a country-specific EF and (2) initiate an analysis of the possibility of updating the EF and report on progress in the NIR. This analysis could include the age of the coal layer (very old in Greece) and its depth (very close to the surface) and correlate with the CH ₄ content of the coal layer.	Addressing. The Party reported in its NIR (p.172) that it has initiated an analysis of the possibility of updating the EF for surface mining, focusing on the age and depth of the coal layer and the correlation with its CH ₄ content, and that the results of this analysis will be provided in the next annual submission.

<i>ID#</i>	<i>Issue/problem classification^{a, b}</i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
E.10	1.B.2 Oil, natural gas and other emissions from energy production – liquid and gaseous fuels – CO ₂ and CH ₄ (E.19, 2019) Transparency	Include in the NIR the explanation regarding the outlying data on oil and gas production in 1999 provided to the ERT during the 2019 review.	Resolved. The Party explained in its NIR (p.176) that the decrease in oil and gas production in 1999 was because the only plant producing oil and natural gas in Greece ceased operating owing to a gradual decline in domestic oil production, a significant decline in crude oil and gas prices and the withdrawal of a foreign joint-venture partner. In 2000, oil and gas production increased again following the reopening of the plant, whose operation was taken over by the Government.
E.11	1.B.2.a Oil – liquid fuels – CO ₂ and CH ₄ (E.20, 2019) Transparency	Include in the NIR the information that imported crude oil is not transported using the domestic pipeline network.	Resolved. The Party reported in its NIR (p.173) that imported crude oil is not transported using the pipeline network because all four large refineries in Greece are located close to the shore, have their own harbours and are equipped with unloading installations.
IPPU			
I.1	2. General (IPPU) (I.1, 2019) (I.10, 2017) Convention reporting adherence	Replace the incorrect references to the IPCC good practice guidance in the chapter on the IPPU sector in the NIR with references to the 2006 IPCC Guidelines.	Resolved. The Party corrected all such references in its NIR (chap. 4).
I.2	2.B.10 Other (chemical industry) – CO ₂ (I.13, 2019) Transparency	Consistently allocate the CO ₂ emissions from hydrogen production for all fuel types under the energy sector or provide in the NIR transparent information on the allocation of CO ₂ emissions from hydrogen production from natural gas and liquid fuels in the IPPU sector chapter, including a cross reference to the relevant section in the energy sector chapter.	Resolved. The Party clarified in its NIR (p.222) that CO ₂ emissions from liquid fuels used in the production of hydrogen continue to be reported under category 1.A.1.b, CO ₂ emissions from natural gas used in hydrogen production continue to be reported under category 2.B.10, and the allocation of hydrogen production from natural gas under category 2.B.10 was made in response to a previous ERT recommendation for the allocation of feedstocks to the IPPU sector. In addition, the Party included in its NIR (section 3.2.3) a cross reference to the relevant part of the energy sector chapter on non-energy use of fuels, as recommended. In the NIR (section 3.2.3), the Party clarifies that the continued allocation of emissions from liquid fuels used in the production of hydrogen to category 1.A.1.b is due to the amount of liquid fuel used for hydrogen production being reported together with the amount of fuel combusted in refineries, as provided in the national energy balance for 1990–2004.
I.3	2.C.1 Iron and steel production – CO ₂ (I.14, 2019) Transparency	Include in the NIR correct information on iron and steel production by replacing the reference to limestone consumption with lime consumption as a carbon input parameter in the carbon balance description.	Resolved. The Party corrected the reference to lime consumption in its NIR (p.227).
I.4	2.C.2 Ferroalloys production – CO ₂ (I.15, 2019) Accuracy	Recalculate the CO ₂ emissions from ferroalloys production for the entire time series without including liquefied petroleum gas consumption given that it is accounted for in the energy sector.	Resolved. The Party explained in its 2020 NIR (p.227) that it recalculated emissions from ferroalloys production for 2013–2017 to prevent double counting of emissions from liquefied petroleum gas consumption included under non-ferrous metals in the energy sector for its 2020 submission.

<i>ID#</i>	<i>Issue/problem classification^{a, b}</i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
I.5	2.C.3 Aluminium production – PFCs (I.16, 2019) Transparency	Correct in the NIR the error relating to the trend in PFC emissions from aluminium production.	Resolved. The Party correctly reported in its NIR (p.233) the trend in PFC emissions between 1995 and 2019.
I.6	2.C.5 Lead production – CO ₂ (I.4, 2019) (I.13, 2017) Transparency	Explain the changes in the CO ₂ IEF values for lead production by including in the NIR information on the changes in lead production across the time series.	Not resolved. During the review, the Party referred the ERT to section 4.13.4 of the NIR. However, this section does not include an explanation of the fluctuations in IEFs for lead production across the time series or time-series data on primary and secondary lead production as recommended. The ERT considers that, in particular, including in the NIR time-series data on primary and secondary lead production would improve transparency of reporting.
I.7	2.D.2 Paraffin wax use – CO ₂ (I.17, 2019) Accuracy	Recalculate the CO ₂ emissions from paraffin wax use for the entire time series using the apparent consumption as well as data on the import and export of paraffin wax, noting that data from the statistical office of the EU on the import and export of candles could be considered for this purpose.	Resolved. The Party recalculated CO ₂ emissions from paraffin wax use on the basis of AD on paraffin wax use, taking into account data on candle imports and exports from the statistical office of the EU. This recalculation increased estimated CO ₂ emissions by 23 kt on average across the whole time series.
I.8	2.F Product uses as substitutes for ODS – HFCs (I.18, 2019) Transparency	Provide in the NIR information on the online platform “Maintenance and monitoring F-gases and ODS” in the section on planned improvements for category 2.F subcategories (2.F.1–2.F.6).	Resolved. The Party provided information in the planned improvements section of the NIR (p.274) on the online platform “Maintenance and monitoring F-gases and ODS”, the aim of which is to serve as a tracking tool and a database for users of F-gases and ODS to register their regular checks of maintenance refilling records and for F-gas traders to register their transactions from 2019 onward.
I.9	2.F.1 Refrigeration and air conditioning – HFCs (I.5, 2019) (I.2, 2017) (I.4, 2016) (I.4, 2015) (46, 2014) Consistency	Use for the annual submission the results of the latest survey on HFC emissions from refrigeration and air-conditioning equipment.	Resolved. The Party reported in its NIR (p.260) that it used the findings from up-to-date surveys by a Greek consultancy firm known as ICAP Advisory S.A. in its estimation of HFC emissions from air-conditioning equipment. It continued to estimate emissions from residential refrigeration equipment for 2014–2019 on the basis of a survey conducted by the same firm in 2014 (which is the latest available survey for that equipment category), as well as expert judgment and national and international studies on market trends.
I.10	2.F.1 Refrigeration and air conditioning – HFCs (I.6, 2019) (I.3, 2017) (I.6, 2016) (I.6, 2015) (48, 2014) Transparency	Improve the transparency of the NIR by including information similar to that provided to the ERT during the review on assumptions used in calculating emissions from refrigeration and air-conditioning equipment, including a plan for periodically verifying the expert judgment, because production and operating standards change over the years.	Addressing. During the review, the Party provided references to additional data in the NIR (figures 4.19–4.24, tables 4.26–4.32 and pp.270–275). While the ERT notes that the Party reported in the NIR (p.260) its process for eliciting expert judgment on the leakage rates, charges and lifetimes of different types of equipment, it did not clearly set out the parameters for each type of equipment.

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I.11	2.F.1 Refrigeration and air conditioning – HFCs and PFCs (I.7, 2019) (I.4, 2017) ((I.10, 2016) (I.10, 2015) Transparency	Provide information in the NIR about recovery of HFCs, including how gases are recovered at end of life and what is done to the recovered gas.	Resolved. The Party included in its NIR (p.260) information on the recovery of HFCs, how recovered gases are taken into consideration in the estimation of emissions, from which types of equipment they are recovered and how they are treated. In addition, during the review, the Party clarified that the volumes of recycled F-gases reported in the CRF tables are not estimates but rather plant-specific AD reproduced as reported by the recycling firm concerned. Communication with this firm is documented (in Greek) and archived in accordance with internal QA/QC procedures. The Party performs QC checks on these data (e.g. comparing them with IPCC default recovery rates, ensuring time-series consistency and consulting with experts from the Ministry of Environment and Energy).
I.12	2.F.1 Refrigeration and air conditioning – HFCs (I.9, 2019) (I.6, 2017) (I.12, 2016) (I.12, 2015) (46, 2014) Accuracy	Use the results of the newly published survey on refrigeration for the next annual submission.	Resolved (see ID# I.9 above).
I.13	2.G.3 N ₂ O from product uses – N ₂ O (I.12, 2019) (I.14, 2017) Accuracy	Estimate and report N ₂ O emissions from product uses using the methodology provided in the 2006 IPCC Guidelines and on the basis of the total amount of N ₂ O supplied in a year.	Not resolved. The Party has not yet estimated and reported N ₂ O emissions from product uses using the methodology provided in the 2006 IPCC Guidelines on the basis of the total amount of N ₂ O supplied in a year. During the review, the Party clarified that its estimation of N ₂ O emissions is based on a country-specific methodology, which is transparently described in the NIR (section 4.22.2). However, the ERT considers that using the methodology in the 2006 IPCC Guidelines together with country-specific EFs and AD would likely provide a more accurate estimate of national emissions than a country-specific methodology based on an average of IEFs of a cluster of countries.
I.14	2.G.3 N ₂ O from product uses – N ₂ O (I.19, 2019) Transparency	Delete from the NIR the incorrect statement regarding N ₂ O emissions from product uses being estimated using AD from the national energy balance and the default EF from the 2006 IPCC Guidelines.	Resolved. The Party has corrected the description in its NIR (pp.277–278) of the method for estimating N ₂ O emissions from product uses.
Agriculture			
A.1	3. General (agriculture) – CH ₄ and N ₂ O (A.18, 2019) Transparency	Provide in the relevant tables of the NIR references to the specific sources of the parameters and EFs, including those from the 2006 IPCC Guidelines, used for estimating CH ₄ and N ₂ O emissions from enteric fermentation and manure management, together with explanations for their choice.	Resolved. The Party provided in its NIR (pp.298, 305 and 306) additional information, including explanations and references, on parameters and EFs used for estimating emissions from enteric fermentation and manure management.

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A.2	3.A.2 Sheep – CH ₄ and N ₂ O (A.19, 2019) Transparency	Include in the NIR the description of the sheep population data provided to the ERT during the review regarding the ratio of female lambs to male lambs.	Resolved. The Party provided the requested information in the NIR (section 5.2.2, p.296).
A.3	3.B Manure management – CH ₄ (A.7, 2019) (A.10, 2017) (A.16, 2016) (A.16, 2015) Transparency	Include in the NIR all parameters used to estimate country-specific EFs, for example in tabular format, and provide an in-depth explanation of the methodology used in particular for cattle and sheep.	Resolved. The Party provided improved explanations in the NIR (tables 5.17–5.18 and pp.304–305) for its CH ₄ EFs.
A.4	3.B Manure management – N ₂ O (A.10, 2019) (A.12, 2017) (A.7, 2016) (A.7, 2015) (61, 2014) Transparency	Provide all the N ₂ O EFs and parameters used for calculating N ₂ O emissions, for example in tabular format.	Addressing. The Party provided useful information on the calculation of Nex in the NIR (table 5.19). However, during the review, the ERT was unable to identify the specific EFs and other parameters used for calculating direct and indirect N ₂ O emissions because the references to the relevant tables and sections of the 2006 IPCC Guidelines were unclear. The ERT considers that the recommendation has not yet been fully addressed because the Party has not yet transparently outlined the N ₂ O EFs used for estimating emissions from manure management or provided a full set of N ₂ O EFs and parameters as requested by the previous ERT. Providing more information on these EFs and parameters, for instance in tabular format, broken down by livestock species, type of manure management system and type of emissions (direct or indirect), would improve transparency of reporting.
A.5	3.B Manure management – N ₂ O (A.11, 2019) (A.13, 2017) (A.18, 2016) (A.18, 2015) Transparency	Include in the NIR an explanation regarding total Nex and Nex rate as well as all the parameters used to estimate country-specific EFs, for example in tabular format.	Resolved. The Party provided in the NIR (table 5.19 and pp.306–307) additional information on Nex calculation and amounts and on the parameters used for calculating country-specific EFs for dairy cattle.
A.6	3.B.3 Swine – CH ₄ (A.20, 2019) Transparency	Provide in the relevant table of the NIR a reference to the EFs from the 2006 IPCC Guidelines (vol. 4, table 10.14) used in deriving the EF for CH ₄ emissions from manure management for swine, and include in the NIR the detailed explanation regarding the derivation of the EF provided to the ERT during the review.	Resolved. The Party provided in the NIR (table 5.18 and pp.301 and 305) additional information on the calculation of the manure management CH ₄ EF for swine, including reference to the EFs from the 2006 IPCC Guidelines (vol. 4, table 10.14) and the explanation regarding the derivation of the EF for swine.
A.7	3.B.4 Other livestock – CH ₄	Provide in the relevant table of the NIR a reference to the EF from the 2006 IPCC Guidelines (vol. 4, table 10.14) used for	Addressing. The Party provided in the NIR (table 5.18) a reference to the EF from the 2006 IPCC Guidelines (vol. 4, table 10.14) used for estimating CH ₄ emissions from manure management for buffalo, but did not provide a detailed explanation of

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	(A.21, 2019) Transparency	estimating CH ₄ emissions from manure management for buffalo, and include in the NIR the detailed explanation regarding the EF provided to the ERT during the review.	<p>how the EF was obtained. During the previous review, the Party explained that it used the EF for Eastern Europe for buffalo (9 kg CH₄/head/year at an average annual temperature of 18 °C) because the solids-based systems predominantly used for the management of buffalo manure in Greece are more similar to those used in Eastern Europe rather the liquid/slurry and pit storage systems commonly used for the management of cattle manure in Western Europe. During the current review, the Party clarified that the explanation provided to the ERT during the previous review is still valid for the 2021 submission.</p> <p>The ERT considers that the recommendation has not yet been fully addressed because the Party has not yet included in the NIR a detailed explanation of the calculation of CH₄ emissions from manure management for buffalo, as provided during the previous review.</p>
A.8	3.D.a Direct N ₂ O emissions from managed soils – N ₂ O (A.14, 2019) (A.15, 2017) (A.19, 2016) (A.19, 2015) Transparency	Include a detailed explanation of the method used to estimate the amount of N applied to soils from each source (animal manure applied to soils and N in crop residues returned to soils), and include the equations used to estimate direct N ₂ O emissions from managed soils.	<p>Addressing. The Party provided in the NIR (section 5.5.2, table 5.24) data on the annual amount of N deposited by grazing animals on pasture, range and paddock. However, it did not clearly explain the methods used to calculate urine and dung N deposited by grazing animals (known as F_{PRP}), key equations and data sources, or how that calculation is related to the calculation of Nex. In addition, the methods used to calculate N in crop residues applied to soils were not clearly explained in the NIR. During the review, the Party clarified that it sourced the equations from the 2006 IPCC Guidelines but had not listed in its NIR the parameters used in the calculations.</p> <p>The ERT considers that the recommendation has not yet been fully addressed because the Party has not yet included in the NIR a detailed explanation for how the amount of N applied to soils was calculated. The ERT considers that further elaboration in the NIR on the parameters used, including equations and parameters used to calculate N application, as well as information on the fraction of N in animal manure crop residues applied to soils (rather than just referencing the 2006 IPCC Guidelines) would resolve this issue.</p>
A.9	3.D.a Direct N ₂ O emissions from managed soils – N ₂ O (A.22, 2019) Transparency	Include in the NIR the sources for the fraction of animal manure N applied to soils and the fraction of N in crop residues applied to soils, detailed information on crop type and the parameters outlined in the 2006 IPCC Guidelines (vol. 4, table 11.2), and the equation used to estimate the fraction of N in crop residues applied to soils, including by providing a table with N flows/balance for all N inputs to agricultural soils.	Resolved. The Party provided in the NIR (tables 5.16, 5.26 and 5.28) additional information on the sources of N for the fraction of animal manure N applied to soils and the fraction of N in crop residues applied to soils, and references to the relevant sections of the 2006 IPCC Guidelines (vol. 4, equation 11.6).

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A.10	3.D.a.5 Mineralization/ immobilization associated with loss/gain of soil organic matter – N ₂ O (A.23, 2019) Transparency	Either provide in the NIR an estimate of N ₂ O emissions for this category or report the emissions as “NE” by considering them as insignificant as per paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines, providing a justification for the reporting that is based on the approximate level of emissions.	Resolved. The Party reported emissions for this category as “NE” in its NIR (p.319) and CRF table 3.D.1.5 on the basis that they were below the significance threshold provided in paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines.
A.11	3.F Field burning of agricultural residues – CH ₄ and N ₂ O (A.24, 2019) Transparency	Include in the NIR information on the amount of dry matter burned by crop type and estimate CH ₄ and N ₂ O emissions from the field burning of agricultural residues using the EFs provided in the 2006 IPCC Guidelines (vol. 4, table 2.5).	Addressing. The Party reported in its NIR (p.324) and during the review that it is unable to use the EFs for crop burning provided in the 2006 IPCC Guidelines (vol. 4, table 2.5); however, during the review, the Party did not provide any country-specific data or research to justify this statement or explain why the reported 10 per cent is a suitable value for the proportion of agricultural residues burned annually in Greece.
LULUCF			
L.1	4. General (LULUCF) (L.8, 2019) Transparency	Include in the NIR information on planned improvements for the LULUCF sector.	Not resolved. The Party did not report in its NIR information on planned improvements for the LULUCF sector. During the review, the Party stated that information on such improvements will be included in the next annual submission.
L.2	4. General (LULUCF) – CO ₂ (L.1, 2019) (L.2, 2017) (L.3, 2016) (L.3, 2015) (70, 2014) (59, 2013) Completeness	Make efforts to collect the necessary information and report the AD and emission and removal estimates for the CSCs in the living biomass and dead organic matter pools for grassland converted to forest land, and CSCs in living biomass for cropland converted to settlements for future annual submissions.	Resolved. The Party reported CSCs in living biomass for cropland converted to settlements in CRF table 4.E and described the corresponding methodology in its NIR (pp.382–383). Regarding CSCs in all pools for grassland converted forest land, the Party explained in its NIR (p.356) and during the review that it did not report any emissions by sources and removals by sinks for areas of grassland converted to forest land because such conversion was the result of natural forest expansion rather than human activity (e.g. land preparation, soil scarification or planting).
L.3	4.A.2.1 Cropland converted to forest land – CO ₂ (L.2, 2019) (L.6, 2017) (L.9, 2016) (L.9, 2015) Accuracy	Use EFs instead of IEFs from Italy and apply the method provided in the 2006 IPCC Guidelines to improve accuracy for cropland converted to forest land.	Not resolved. The Party continued to use IEFs from Italy for estimating emissions and removals for cropland converted to forest land (NIR table 6.10). During the review, the Party stated that it has a specific plan, with clear timelines and allocation of tasks among responsible parties, for the use of country-specific EFs and the application of the method provided in the 2006 IPCC Guidelines (vol. 4, chap. 4, p.4.29) for the next annual submission (see ID# L.9 below).
L.4	4.A Forest land – CO ₂ (L.3, 2019) (L.7, 2017) Completeness	Estimate and report emissions and removals from mineral and organic soils under grassland converted to forest land through natural expansion of forest over managed grassland, or provide transparent information justifying why emissions and removals from managed grassland converted to forest land have not been estimated and reported, taking into account the	Resolved. CRF table 4.A contains “NO” for area of organic soils and emissions and removals from organic soils under grassland converted to forest land, and a value for area of mineral soils but no estimated emissions and removals from mineral soils. The Party explained in its NIR (p.356) that it did not report any emissions by sources and removals by sinks for areas of grassland converted to forest land because such conversion was the result of natural forest expansion rather than human activity. During the review, the Party clarified that conversions from grassland to forest land did not occur on organic soils, and that there were no anthropogenic emissions and

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		relevant guidance provided in the 2006 IPCC Guidelines (vol. 4, section 4.1).	removals from mineral soils under grassland converted to forest land (see ID# L.2 above).
L.5	4.A.1 Forest land remaining forest land – CO ₂ (L.9, 2019) Transparency	Include in the NIR disaggregated information on forests from the FMP database that is relevant for the GHG inventory, such as a general description of the forest together with information on purpose, parameters, planning and products, and provide a link to the web-based tool for the FMP database or any central database containing the FMP maps once they become available.	Not resolved. The Party did not include in its NIR disaggregated information on forest from the FMP database. During the review, the Party clarified that this recommendation has not yet been implemented owing to a lack of up-to-date official data. It added that official disaggregated information on forests will be included in the national inventory as part of efforts to develop a monitoring system for forests and forest areas in Greece, and that the corresponding database is expected to be available by 2023.
L.6	4.A.1 Forest land remaining forest land – CO ₂ (L.10, 2019) Transparency	Include in the NIR the default below-ground biomass to above-ground biomass ratio values from the 2006 IPCC Guidelines (vol. 4, table 4.4) that the Party used for various forest species and information on their appropriateness with respect to the above-ground biomass stock levels of the forest.	Resolved. The Party included in the NIR (table 6.8, p.350) the default below-ground biomass to above-ground biomass ratio values from the 2006 IPCC Guidelines (vol. 4, table 4.4) for different stock levels of different forest species taking into account the forest type, ecological zone and above-ground biomass stock levels of the forest.
L.7	4.A.1 Forest land remaining forest land – CO ₂ (L.11, 2019) Accuracy	Use 1985 as the starting year in order to calculate, by interpolation and extrapolation, more accurate areas of forest land remaining forest land; use the areas calculated to develop land-transition matrices; and use these land-use change matrices in the QC activities for the LULUCF sector.	Not resolved. The Party did not use 1985 as the starting year to calculate areas of forest land remaining forest land. During the review, the Party explained that this recommendation is expected to be addressed for the next annual submission. It added that more accurate data will become available upon completion of the national forest inventory project in 2023.
L.8	4.A.1 Forest land remaining forest land – CO ₂ (L.12, 2019) Transparency	Include in the NIR updated information on efforts to generate accurate information on forest areas in the country.	Addressing. The Party did not report in the NIR information on its efforts to generate accurate information on forest areas. During the review, the Party clarified that a project for the establishment of a national inventory and monitoring system for forests and forest areas was expected to begin in late 2021. The project will involve the compilation of a detailed inventory of forest land and forest areas in Greece and the continuous monitoring of biotic and abiotic parameters for assessing the impact of climate change on forests and is due for completion in 2023.
L.9	4.A.2.1 Cropland converted to forest land – CO ₂ (L.13, 2019) Accuracy	Make efforts to develop country-specific EFs to estimate CSCs in living biomass for cropland converted to forest land. Pending the development of such country-specific EFs, investigate the appropriateness of the IEFs chosen from Italy for estimating the CSCs in living biomass for cropland converted to forest	Addressing. The Party continued to use IEFs from Italy for estimating emissions and removals from cropland converted to forest land (NIR table 6.10). During the review, the Party clarified that country-specific EFs are still not available and the appropriateness of the chosen IEFs will be investigated for future annual submissions. The Party also explained that efforts to obtain the relevant IEFs for cropland converted to forest land in Italy subject to EEC regulations 2080/92 and 1257/99 will be reported in the next NIR. It added that this recommendation will be

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		land, including by making efforts to obtain the relevant IEFs for cropland converted to forest land in Italy subject to EEC regulations 2080/92 and 1257/99, and report on such efforts in the NIR.	implemented as part of a specific plan, with clear timelines and allocation of tasks among responsible parties (see ID# L.3 above).
L.10	4.B.1 Cropland remaining cropland – CO ₂ (L.14, 2019) Transparency	Include in the NIR information on the methodological changes made in 2014 to the collection of data that resulted in an increase in the estimated area under cropland remaining cropland, as well as updated information on the changes to the methodology for data collection currently being implemented.	Not resolved. The Party did not provide information on the methodological changes made in 2014 to the collection of data or updated information on the changes to the methodology for data collection currently being implemented. During the review, the Party explained that the Hellenic Statistical Authority, in cooperation with the Ministry of Rural Development and Food, designed and distributed an electronic questionnaire for completion by certified statistical correspondents as part of an overhaul of the annual agricultural research process in 2014. It noted that the methodology for data collection currently being implemented has not changed since 2014.
L.11	4.B.1 Cropland remaining cropland – CO ₂ (L.15, 2019) Completeness	Report in CRF table 4.B the CSCs in the SOC pool in mineral soils for cropland remaining cropland.	Not resolved. The Party did not report in CRF table 4.B the CSCs in the SOC pool in mineral soils for cropland remaining cropland. During the review, the Party clarified that data for the SOC pool concerned have yet to be estimated and are expected to be included in the next annual submission.
L.12	4.G HWP – CO ₂ (L.5, 2019) (L.8, 2017) Consistency	Provide in the NIR a transparent explanation for the large inter-annual variations in the estimates of removals from HWP produced and consumed domestically (particularly between 1998 and 1999, 1999 and 2000, and 2008 and 2009), including the reasons for the inter-annual variations in the inflows and outflows of sawn wood and wood panels responsible for those variations.	Not resolved. The Party did not provide a transparent explanation for the large inter-annual variations in the estimates of removals from HWP produced and consumed domestically. During the review, the Party clarified that the data reported were taken from FAO statistics, which for some years are based on either unofficial figures or FAO data, depending on imputation methodology. It added that efforts will be made to further investigate the origin of these variations for future annual submissions.
L.13	4(V) Biomass burning – CO ₂ , CH ₄ and N ₂ O (L.16, 2019) Transparency	Correctly present in the NIR the equation from the 2006 IPCC Guidelines (vol. 4, equation 2.14) used to estimate carbon loss in living biomass from wildfires by including the correct set of parameters.	Addressing. The Party corrected in the NIR (p.354) the equation from the 2006 IPCC Guidelines (vol. 4, equation 2.14) that it used to estimate carbon loss in living biomass from wildfires; however, it did not provide the correct set of parameters. During the review, the Party provided the ERT with the parameters concerned and an accompanying explanation and reference. The ERT considers that including in the NIR the set of parameters provided during the review and the accompanying explanation and reference would resolve this issue.
L.14	4(V) Biomass burning – CO ₂ , CH ₄ and N ₂ O (L.17, 2019) Transparency	Provide in the NIR a reference to the correct parameter (combustion factor) and its values from the 2006 IPCC Guidelines (vol. 4, table 2.6) used to estimate carbon loss in living biomass from wildfires.	Not resolved. The Party did not provide in the NIR a reference to the correct parameter (combustion factor). During the review, the Party clarified that the reference in the NIR (p.359) to the 2006 IPCC Guidelines (vol. 4, table 2.6) is erroneous, and that the values reported refer to the fraction of biomass left to decay

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			in forest used in equation 2.14 to determine the fraction of biomass lost in disturbance.
L.15	4(V) Biomass burning – CO ₂ , CH ₄ and N ₂ O (L.18, 2019) Transparency	Provide in the NIR (1) the specific default values for BCEF and the ratio of below-ground biomass to above-ground biomass from the 2006 IPCC Guidelines (vol. 4, tables 4.4–4.5) used to calculate the average biomass stock of understorey vegetation in order to calculate, in turn, carbon loss in living biomass from wildfires; and (2) an explanation as to why default values for BCEF from the 2006 IPCC Guidelines were used for calculating emissions from biomass burning of understorey vegetation, even though BCEF values for Mediterranean species from Catalonia (NIR table 6.8) were used for calculating CSCs in living biomass.	Addressing. (1) The Party provided in the NIR (table 6.8 and pp.349–350) the specific values for BCEF and the ratio of below-ground biomass to above-ground biomass used; however, the ERT noted that the Party did not correct the reference in the NIR (p.359) to the 2006 IPCC Guidelines (vol. 4, table 4.5); (2) The Party did not explain why it used default values for BCEF from the 2006 IPCC Guidelines for calculating emissions from biomass burning of understorey vegetation. During the review, the Party clarified that BCEF values for Mediterranean species from Catalonia (NIR table 6.9, p.350) were used to calculate the carbon loss in living biomass for both forest land remaining forest land and land converted to forest land, while the reference in the NIR to the 2006 IPCC Guidelines (vol. 4, table 4.5) was a mistake.
L.16	4(V) Biomass burning – CO ₂ , CH ₄ and N ₂ O (L.19, 2019) Accuracy	Explore the possibility of collecting information on the burned areas of managed forest land from the Official Government Gazette, including by making efforts to store maps of burned areas in a unified database, and use this information to calculate the emissions from biomass burning due to wildfires in managed forest land, as well as report on such efforts in the NIR.	Not resolved. The Party did not provide in its NIR information on emissions from biomass burning due to wildfires on managed forest land. During the review, the Party stated that the possibility of collecting information on the burned area of managed forest land from the Official Government Gazette is being explored; and the Party provided information on the status of data collection, including published burned areas of forest land and data collection constraints. The Party informed the ERT that it will include information on its efforts to collect such information in its next annual submission.
Waste			
W.1	5. General (waste) (W.28, 2019) Transparency	Include in the NIR transparent information on the amounts of sludge treated along different pathways by providing a table presenting the amounts of sludge treated along different pathways.	Resolved. The Party reported in its NIR (table 7.13, p.418) information on the amounts of sludge treated along different pathways for 1990–2019, namely the total sludge removed from domestic wastewater treatment, the amount landfilled, the amount used for spreading on agricultural soils and other sludge disposal.
W.2	5.A Solid waste disposal on land – CH ₄ (W.29, 2019) Transparency	Provide in the NIR transparent information on (1) the sources of data and assumptions used for constructing the time series for the amount of solid waste disposed of in landfills, including a description of the solid waste statistics system currently in place; (2) the data used for different years in the time series, either in textual or graphical format; and (3) an explanation that per	Resolved. The Party provided information in its NIR on: (1) The generated quantities of MSW and their sources for different parts of the time series, including data on the assumptions and splicing methods applied for the purpose of interpolation from 1992 to 1996 and extrapolation from 1998 to 2000. For 2000–2019, official data were provided by the Ministry of Environment and Energy. The quantities of MSW for 1960–2000 were estimated on the basis of population figures and assumptions regarding generation rates per capita and per day to derive a complete time series for waste quantities generated (pp.407–408);

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		capita solid waste generation rates are used only until 2000.	(2) The data used for different years in the time series (figure 7.3, p.411); (3) An explanation that it used per capita solid waste generation rates until 2000 and data obtained from the Directorate for Waste Management and Environmental Certification of the Ministry of Environment and Energy for 2001–2019 (pp.407–411).
W.3	5.A Solid waste disposal on land – CH ₄ (W.30, 2019) Transparency	Include in the NIR (1) a table containing the amounts of recycled solid waste, divided into the same waste fractions as those in the tables on waste composition, together with references to the relevant data sources; and (2) an explanation for the significant change in the amount of paper recycled between 2006 and 2007.	Resolved. The Party provided in its NIR: (1) The recovered amounts of MSW for 1990–2019 and references to the relevant data sources, including the Union of Local Authorities in the Prefecture of Attica and the Ministry of Environment and Energy (table 7.10, p.415); (2) An explanation that the amounts of waste paper recycled increased between 2006 and 2007 owing to State investment in the recycling system, leading to more frequent collections and better treatment, as well as efforts to raise public awareness of the importance of recycling to environmental protection (pp.414–415).
W.4	5.A Solid waste disposal on land – CH ₄ (W.5, 2019) (W.6, 2017) (W.9, 2016) (W.9, 2015) Transparency	Improve the documentation of the justifications for (1) the share of putrescibles, which is assumed to decrease by 0.3 per cent annually; (2) the share of paper and plastics, which is assumed to increase by 0.2 per cent annually; and (3) the share of garden waste, park waste and other non-food organic putrescibles, wood and textiles, which is assumed to be constant.	Addressing. The Party included information in its NIR (pp.412–413) on: (1) The share of putrescibles and its variation along the time series, including its assumed decrease of 0.3 per cent in 1990–1997 and 0.23 per cent in 1998–2019, along with references; (2) The share of paper and plastics and the assumed increase thereof, as well as relevant references; (3) The share of other waste such as garden waste and park waste, which are assumed to be constant throughout the time series, together with references to data sources, including the Ministry of Environment and Energy. During the review, the Party clarified that investment in the paper industry and the plastic industry was not equal, hence the increase in paper recycling compared with plastic recycling. The ERT considers that the recommendation has not yet been fully addressed because the Party has not fully explained and justified the trends in the time series.
W.5	5.A Solid waste disposal on land – CH ₄ (W.10, 2019) (W.8, 2017) (W.11, 2016) (W.11, 2015) Transparency	Correct the uncertainty values for CH ₄ emissions, if necessary, or justify the low values reported.	Resolved. The Party reviewed the uncertainty values for CH ₄ emissions from managed and unmanaged SWDS and for AD and EFs. It reported in its NIR (section 7.2.3, p.424) that the combined uncertainty value for CH ₄ emissions was 84.9 per cent and AD and EF uncertainty 60 per cent.
W.6	5.B.2 Anaerobic digestion at biogas facilities – CH ₄	Either provide in CRF table 5.B a CH ₄ emission estimate for anaerobic digestions at biogas facilities or report the category as “NE”, including in the NIR a justification for the	Resolved. The Party reported in CRF table 5.B estimated CH ₄ emissions from anaerobic digestion at biogas facilities across the time series. It also reported in its NIR (section 7.3.1, p.427) and during the review that AD are reported as “NE” because the CH ₄ emission estimates are calculated on the assumption that 5 per cent

<i>ID#</i>	<i>Issue/problem classification^{a, b}</i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
	(W.31, 2019) Completeness	exclusion in terms of the likely level of emissions, as indicated in paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines.	of the CH ₄ generated is accounted for by unintentional leakages during process disturbances or other unexpected events, in accordance with the 2006 IPCC Guidelines (vol. 5, chap. 4, p.4.4).
W.7	5.C.1 Waste incineration – CO ₂ , CH ₄ and N ₂ O (W.14, 2019) (W.23, 2017) Consistency	Recalculate the emissions from waste incineration for the years for which AD are currently unavailable by using the AD from the national statistical authority as and when they become available. Pending the availability of such AD, recalculate these emissions by filling the gaps in AD using the good practice data splicing techniques provided in the 2006 IPCC Guidelines (vol. 1, chap. 5).	Resolved. The Party reported in its NIR (7.4.2, p.429) that it applied the data splicing techniques provided in the 2006 IPCC Guidelines (vol. 1, chap. 5), using interpolation and extrapolation in its calculation of emissions and AD, respectively. Updated AD for 2015–2018 were used for the recalculations.
W.8	5.C.1 Waste incineration – CO ₂ , CH ₄ and N ₂ O (W.32, 2019) Transparency	Include in the NIR updated and transparent information on the AD and the extrapolation method used to generate the AD used for estimating emissions from waste incineration.	Resolved. The Party provided sources of AD and information on the extrapolation and splicing techniques used to estimate emissions. It reported in the NIR (table 7.21, p.431) waste amounts and emissions for 1990–2019. The data used were taken from sources such as the Association of Communities and Municipalities in the Attica Region and the Hellenic Statistical Authority. Data and emissions were extrapolated in such a way as to establish a smooth trend line on the basis of available information from previous years. Data for years for which no values were available were interpolated on the basis of the average values for adjacent years.
W.9	5.C.1 Waste incineration – CO ₂ , CH ₄ and N ₂ O (W.17, 2019) (W.10, 2017) (W.13, 2016) (W.13, 2015) Convention reporting adherence	Review the uncertainties and correct them, if necessary, or justify the reported values.	Resolved. The Party reported in its NIR (section 7.4.3, table 1.8, p.432) AD uncertainty of 50 per cent and EF uncertainty for all gases of 111.8 per cent in accordance with the 2006 IPCC Guidelines (vol. 5, chap. 5, p.5.23).
W.10	5.C.2 Open burning of waste – CO ₂ , CH ₄ and N ₂ O (W.18, 2019) (W.25, 2017) Transparency	Include in the NIR information substantiating the claim that open burning is not practised in the country (e.g. references to legislation).	Resolved. The Party reported “NO” for open burning in CRF table 5.C.2 and provided references in the NIR (section 7.4.1, p.429) to the laws under which open burning is prohibited, namely joint ministerial decisions 11535/1993; 50910/2003, article 10 of which provides for the prohibition of uncontrolled discharge and disposal of solid waste; 50910/2003, article 11 of which provides for the obligation to deposit waste with licensed bodies; and 36060/2013, which provides for the establishment of conditions and criteria for waste incineration.
W.11	5.D Wastewater treatment and discharge – CH ₄ (W.20, 2019) (W.12,	Change the reporting on CH ₄ recovery either by providing an estimate of the amount of recovered CH ₄ or by replacing the currently	Resolved. The Party reported in its NIR (p.437) and CRF table 5.D that no CH ₄ is recovered from sludge, hence the use of “NO”.

<i>ID#</i>	<i>Issue/problem classification^{a, b}</i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
	2017) (W.4, 2016) (W.4, 2015) (81, 2014) Comparability	used notation key with “NE” where no numerical estimate is available.	
W.12	5.D.1 Domestic wastewater – CH ₄ (W.33, 2019) Transparency	Include in the NIR a table providing a time series of the share of the population connected to the sewer system, including references to the sources of information, and a clarification that it applied an MCF of 0.5 to the share of wastewater from the population not connected to the sewer system, assuming septic tanks to be the wastewater treatment system, including the reasoning behind this assumption.	Resolved. The Party reported in its NIR (table 7.24, p.436) a time series of the share of the population connected to the sewer system based on data from the Ministry of Environment and Energy, specifying that in 2019, 91 per cent of the population were connected to the sewer systems and the other 9 per cent resided in remote areas and either discharged directly into rivers or used septic tanks. The Party uses an MCF of 0.5 for the population that is not connected to the sewer system in line with the 2006 IPCC Guidelines (vol. 5, chap. 6, table 6.3) and expert judgment (2016 EU review recommendation under the effort-sharing decision review).
W.13	5.D.1 Domestic wastewater – N ₂ O (W.34, 2019) Accuracy	Use updated data on protein consumption for estimating N ₂ O emissions from domestic wastewater treatment (e.g. those available from international data sources such as FAOSTAT).	Resolved. The Party reported in its NIR (table 7.26, p.439) the consumption of protein (kg/person/year) for 1990–2019 and used updated data on protein consumption from FAOSTAT for estimating N ₂ O emissions from domestic wastewater treatment (using the value of 39.71 kg/person/year for 2013 onward).
W.14	5.D.2 Industrial wastewater – CH ₄ (W.35, 2019) Transparency	Include in the NIR an explanation of the types of treatment of industrial wastewater assumed (i.e. centralized aerobic treatment plants and anaerobic reactors) when estimating CH ₄ emissions for the category and the shares of the wastewater treated anaerobically in each industrial sector.	Resolved. The Party provided information in its NIR (table 7.27, p.440) on the shares of wastewater treated anaerobically for each industrial sector. It noted that the parameters used for estimating emissions from industrial wastewater include volume of wastewater generated and chemical oxygen demand, for which it provided sources.
W.15	5.D.2 Industrial wastewater – CH ₄ (W.36, 2019) Transparency	Include in the NIR correct references to the IPCC guidelines that are the sources of the parameters used for estimating CH ₄ emissions from industrial wastewater treatment as well as the values of such parameters for all industries occurring in Greece that are included in the estimates.	Resolved. The Party reported in its NIR (table 7.27, p.440) the values for key parameters and their sources and specified whether they were taken from the 2006 IPCC Guidelines or the IPCC good practice guidance or are country-specific.
W.16	5.D.2 Industrial wastewater – CH ₄ and N ₂ O (W.37, 2019) Transparency	Include in the NIR information on annual production in various industries in tabular format.	Resolved. The Party reported in its NIR (table 7.27, p.440) estimated annual production for various industries for 2019.

KP-LULUCF

<i>ID#</i>	<i>Issue/problem classification^{a, b}</i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
KL.1	AR – CO ₂ (KL.4, 2019) Accuracy	Investigate the appropriateness of the IEFs chosen from Italy for estimating the CSCs in living biomass in land subject to AR, including by making efforts to obtain the relevant IEFs for cropland converted to forest land in Italy subject to EEC regulations 2080/92 and 1257/99, and report on such efforts in the NIR.	Addressing. The Party has not provided any information on the appropriateness of the IEFs chosen from Italy for estimating the CSCs in living biomass in land subject to AR. During the review, the Party explained that it will make efforts to obtain the relevant IEFs for cropland converted to forest land in Italy subject to EEC regulations 2080/92 and 1257/99 and report the results in its next NIR. It added that this recommendation will be implemented as part of a specific plan, with clear timelines and allocation of tasks among responsible parties (see ID# L.9 above).
KL.2	Biomass burning – CO ₂ , CH ₄ and N ₂ O (KL.5, 2019) Accuracy	Investigate the possibility of collecting AD on the burned areas in managed forest land from the Official Government Gazette, including by making efforts to store the maps of burned areas in a unified database, and use this information to estimate and report the emissions from biomass burning in land subject to AR, deforestation and FM, and report on such efforts in the NIR.	Not resolved. The Party did not provide in the NIR information on the burned areas of managed forest land from the Official Government Gazette. During the review, the Party stated that it will include in its next annual submission information on its efforts to collect such information (see ID# L.9 above).

^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 The review of the 2020 annual submission of Greece was not available at the time of this review. Therefore, the recommendations reflected in this table are taken from the 2019 annual review report. For the same reason, 2020 and 2018 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

9. 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 2021 annual submission of Greece, and had not been addressed by the Party at 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 Greece

<i>ID#</i>	<i>Previous recommendation for issue</i>	<i>Number of successive reviews issue not addressed^a</i>
General		
G.1	Report complete information in CRF table 9.	3 (2017–2021)
Energy	No issues identified.	
IPPU		

<i>ID#</i>	<i>Previous recommendation for issue</i>	<i>Number of successive reviews issue not addressed^a</i>
I.11	Provide information in the NIR about recovery of HFCs, including how gases are recovered at end of life and what is done to the recovered gas.	4 (2015/2016–2021)
I.13	Estimate and report N ₂ O emissions from product uses using the methodology provided in the 2006 IPCC Guidelines and on the basis of the total amount of N ₂ O supplied in a year.	3 (2017–2021)
Agriculture		
A.4	Provide all the N ₂ O EFs and parameters used for calculating N ₂ O emissions, for example in tabular format.	5 (2014–2021)
A.8	Include a detailed explanation of the method used to estimate the amount of N applied to soils from each source (animal manure applied to soils and N in crop residues returned to soils), and include the equations used to estimate direct N ₂ O emissions from managed soils.	4 (2015/2016–2021)
LULUCF		
L.3	Use EFs instead of IEFs from Italy and apply the method provided in the 2006 IPCC Guidelines to improve accuracy for cropland converted to forest land.	4 (2015/2016–2021)
L.12	Provide in the NIR a transparent explanation for the large inter-annual variations in the estimates of removals from HWP produced and consumed domestically (particularly between 1998 and 1999, 1999 and 2000, and 2008 and 2009), including the reasons for the inter-annual variations in the inflows and outflows of sawn wood and wood panels responsible for those variations.	3 (2017–2021)
Waste		
W.4	Improve the documentation of the justifications for (1) the share of putrescibles, which is assumed to decrease by 0.3 per cent annually; (2) the share of paper and plastics, which is assumed to increase by 0.2 per cent annually; and (3) the share of garden waste, park waste and other non-food organic putrescibles, wood and textiles, which is assumed to be constant.	4 (2015/2016–2021)
W.9	Review the uncertainties and correct them, if necessary, or justify the reported values.	4 (2015/2016–2021)
KP-LULUCF	No issues identified.	

^a The reports on the reviews of the 2018 and 2020 annual submissions of Greece have not yet been published. Therefore, 2018 and 2020 were not included when counting the number of successive years for this table. In addition, as the reviews of the Party's 2015 and 2016 annual submissions were conducted together, they are not considered successive and 2015/2016 is considered as one year.

V. Additional findings made during the individual review of the Party's 2021 annual submission

10. Tables 5–6 present findings made by the ERT during the individual review of the 2021 annual submission of Greece that are additional to those identified in table 3. In accordance with paragraph 76(b) of the UNFCCC review guidelines, the ERT has prioritized in table 5 recalculations that

changed the estimated total emissions or removals for a category by more than 2 per cent and/or national total emissions by more than 0.5 per cent for any of the recalculated years.

Table 5
Additional findings made during the individual review of the 2021 annual submission of Greece related to recalculations

<i>ID#</i>	<i>Finding classification</i>	<i>Description of finding with recommendation or encouragement</i>	<i>Is finding an issue/problem?^a</i>
General		Recalculations changed the estimated emissions for a category by more than 2 per cent and/or national total emissions by more than 0.5 per cent; however, the ERT did not identify any issues or problems with these recalculations.	
Energy		Recalculations made for the energy sector changed the estimated emissions for a category by more than 2 per cent and/or national total emissions by more than 0.5 per cent; however, the ERT did not identify any issues or problems with these recalculations.	
IPPU		Recalculations made for the IPPU sector changed the estimated emissions for a category by more than 2 per cent and/or national total emissions by more than 0.5 per cent; however, the ERT did not identify any issues or problems with these recalculations.	
Agriculture		Recalculations made for the agriculture sector changed the estimated emissions for a category by more than 2 per cent and/or national total emissions by more than 0.5 per cent; however, the ERT did not identify any issues or problems with these recalculations.	
LULUCF		Recalculations made for the LULUCF sector changed the estimated emissions or removals for a category by more than 2 per cent and/or national total emissions by more than 0.5 per cent; however, the ERT did not identify any issues or problems with these recalculations.	
Waste		Recalculations made for the waste sector changed the estimated emissions for a category by more than 2 per cent and/or national total emissions by more than 0.5 per cent; however, the ERT did not identify any issues or problems with these recalculations.	
KP-LULUCF		Recalculations made for KP-LULUCF changed the estimated emissions or removals for a category by more than 2 per cent and/or national total emissions by more than 0.5 per cent; however, the ERT did not identify any issues or problems with these recalculations.	

^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.

11. Table 6 contains additional findings made by the ERT during the individual review of the 2021 annual submission that are not covered in table 3 or 5, but are within the scope of the desk review as specified in paragraph 76 of the UNFCCC review guidelines or paragraph 65 of the Article 8 review guidelines and are findings that the ERT wishes to convey to the Party.

Table 6
Additional findings made during the individual review of the 2021 annual submission of Greece

<i>ID#</i>	<i>Finding classification</i>	<i>Description of finding with recommendation or encouragement</i>	<i>Is finding an issue/problem?^a</i>
General			
		No general findings additional to those included in table 3 were made by the ERT during the review.	
Energy			
E.12	Feedstocks, reductants and other non-energy use of fuels	<p>The Party reported CO₂ emissions from non-energy use of lubricants, petroleum coke, other bituminous coals, lignite and natural gas for 2016–2019 in CRF table 1.A(d) and those for 1990–2015 as “IE” but they are not included in the reference approach.</p> <p>During the review, the Party clarified that it continued to report “IE” for 1990–2015 owing to lack of resources for improving its reporting in CRF table 1.A(d).</p> <p>The ERT encourages the Party to report correct data in CRF table 1.A(d) of its next annual submission for CO₂ emissions from non-energy use of lubricants, petroleum coke, other bituminous coals, lignite and natural gas for 1990–2015.</p>	Not an issue/problem
E.13	Feedstocks, reductants and other non-energy use of fuels – lubricants	<p>For 2012 onward, the lubricant use reported under the reference approach in CRF table 1.A(d) does not correspond with the lubricant AD reported in CRF table 2(I).A-Hs2 when applying the NCV of 40.2 TJ/kt reported in the NIR (p.245). For example, for 2019, it is reported in CRF table 1.A(d) that there were 82.6 kt lubricants deducted under the energy sector while 23.1 kt lubricants are reported in CRF table 2(I).A-Hs2.</p> <p>During the review, the Party clarified that the AD reported in table CRF table 2(I).A-Hs2 are correct and that an error was made when reporting lubricant use AD and CO₂ emissions excluded in CRF table 1.A(d) in CRF Reporter.</p> <p>The ERT recommends that the Party ensure that, in future annual submissions, lubricant use AD and excluded CO₂ emissions are reported consistently between the IPPU sector and the reference approach under the energy sector.</p>	Yes. Convention reporting adherence
E.14	1.A.2.g Other (manufacturing industries and construction) – all fuels – CO ₂ , CH ₄ and N ₂ O	<p>The Party reported in CRF table 1.A(a)s2 emissions from other manufacturing industries under category 1.A.2.f non-metallic minerals instead of category 1.A.2.g other.</p> <p>During the review, the Party clarified that its reporting is in line with the UNFCCC Annex I inventory reporting guidelines and footnote 9 to CRF table 1.A(a)s4. However, the ERT noted that the footnote states that “if detailed data are not available, Parties should include all emissions from manufacturing industries and construction not included in subcategories 1.A.2.a–1.A.2.f here (i.e. 1.A.2.g)”. The ERT also noted that Greece is the only Party included in Annex I to the Convention that reported “IE” for category 1.A.2.g other.</p> <p>The ERT encourages the Party to reallocate all emissions from other manufacturing industries and construction not included in subcategories 1.A.2.a–1.A.2.f to category 1.A.2.g other rather than category 1.A.2.f non-metallic minerals to improve comparability of its reporting.</p>	Not an issue/problem

<i>ID#</i>	<i>Finding classification</i>	<i>Description of finding with recommendation or encouragement</i>	<i>Is finding an issue/problem?^a</i>
E.14	1.A.3.c Railways – CH ₄ and N ₂ O	<p>The Party reported in its NIR (table 3.28, pp.165–166) the CH₄ and N₂O IEF for gas/diesel oil for category 1.A.3.c railways for 1990–2019. Although the default EFs (4.15 kg CH₄/TJ and 28.6 kg N₂O/TJ) from the 2006 IPCC Guidelines (vol. 2, chap. 3, p.3.43) were used, the IEFs reported in the NIR show slight variations for after 1998. During the review, the Party clarified that the EFs used for after 1998 were changed owing to a clerical error.</p> <p>The ERT recommends that the Party, for its next annual submission, recalculate CH₄ and N₂O emissions for category 1.A.3.c railways for 1999 onward using correct EFs.</p>	Yes. Accuracy
E.15	1.A.4.c.ii Off-road vehicles and other machinery – diesel oil – CH ₄ and N ₂ O	<p>The Party reported in its NIR (p.135) that diesel consumption for agricultural machinery is estimated on the basis of the distribution of diesel consumption between stationary and off-road mobile combustion. This distribution ratio is constant for the whole time series. The data source and actual ratio of distribution were not provided in the NIR.</p> <p>During the review, the Party clarified that the ratio of distribution between thermal needs and machinery is based on the expert judgment of the Ministry of Environment and Energy agency responsible for compiling the national energy balance and was verified by experts from the Ministry of Agriculture and Food. The Party used 95 per cent for off-road machinery and 5 per cent for stationary combustion for the distribution of diesel consumption.</p> <p>The ERT recommends that the Party include in the NIR the data source and actual ratio of distribution of diesel consumption between off-road machinery and stationary combustion.</p>	Yes. Transparency
E.16	1.B.1.a Coal mining and handling – CH ₄	<p>The Party reported in CRF table 1.B.1 CH₄ emissions from surface mining activities and post-mining activities under mining activities, and “IE” for CH₄ emissions from post-mining activities. It reported in the NIR (p.172) that the default EFs for mining activities (1.2 m³/t) and post-mining activities (0.1 m³/t) were used for estimating CH₄ emissions from surface mining activities. Therefore, the emissions can be reported separately, which the ERT notes might improve the comparability of the reported data.</p> <p>The ERT recommends that the Party report CH₄ emissions from surface mining activities and post-mining activities separately in CRF table 1.B.1.</p>	Yes. Comparability
IPPU			
I.15	2. General (IPPU) – CO ₂ , CH ₄ , PFCs and HFCs	<p>The Party incorrectly entered AD in CRF table 2(I).A-Hs2 for aluminium production (category 2.C.3). Specifically, AD for 2019 were incorrectly entered (182.696 kt) resulting in a CO₂ IEF of 0.0016 t/t, which is well below the IEF for 2018 of 1.59 t/t. During the review, the Party confirmed that the correct value for the AD is 182,696 kt. Additionally, the quantity of limestone consumed in sulfur dioxide scrubbing and mineral wool production (category 2.A.4.d other) was incorrectly entered in CRF table 2(I).A-Hs1 (193.00 kt). During the review, The Party confirmed that the correct value for limestone consumption is 359.38 kt. The Party also confirmed that, while the AD are incorrect, emissions for categories 2.C.3 and 2.A.4.d were correctly reported.</p> <p>The ERT recommends that the Party correct the typographical errors in the CRF tables for its next annual submission.</p>	Yes. Convention reporting adherence
I.16	2.C.3 Aluminium production – PFCs	<p>The reporting of PFC emissions from anode effects in category 2.C.3 aluminium production is misallocated in CRF table 2(II)B-Hs1 to F-gases used in foundries rather than by-product emissions. During the review, the Party acknowledged the misallocation and indicated that it will reallocate the emissions to by-product emissions in the next annual submission.</p> <p>The ERT recommends that the Party reallocate PFC emissions from anode effects to by-product emissions in its next annual submission.</p>	Yes. Comparability

ID#	Finding classification	Description of finding with recommendation or encouragement	Is finding an issue/problem? ^a
I.17	2.C.5 Lead production – CO ₂	<p>The Party reported in the NIR (p.240) and CRF table 2(I).A-Hs2 AD and CO₂ emissions for lead production. During the review, in response to a question regarding AD on primary and secondary lead production, the Party clarified that revisions to primary lead production by the AD source provider were not incorporated into the calculation used to derive emissions from lead production. The Party provided revised estimates showing that emissions from lead production were overestimated by an average of 4.5 kt CO₂ between 2011 and 2019.</p> <p>The ERT agrees with the revised estimates provided and recommends that the Party correct in its next annual submission the estimates of CO₂ emissions from lead production for 2011–2019 by using the correct AD that incorporate revisions by the AD source provider to primary lead production.</p>	Yes. Accuracy
I.18	2.F.2 Foam blowing agents – HFC-134a and HFC-152(es)	<p>The Party reported “NO” in CRF table 2(II)B-Hs2 for emissions from decommissioning of foam products (extruded polystyrene insulation panels). During the review, the Party clarified that it applied the IPCC default lifetime of 20 years for extruded polystyrene insulation panels in its calculation of emissions from foam blowing agents in line with the 2006 IPCC Guidelines (vol. 3, chap. 7, table 7.5). As a result of this and the fact that the consumption of foam products containing HFCs only commenced in 2001, the Party maintained that reporting “NO” is justified. During the review, the Party clarified that emissions from decommissioning of foam products will be reported from the 2023 submission onward.</p> <p>The ERT recommends that the Party provide information in the NIR on equipment lifetimes, which should be based on the commencement of the consumption of HFC-containing foam products and the IPCC default product lifetime of 20 years, in order to justify that no emissions from disposal are being reported.</p>	Yes. Transparency
I.19	2.F.3 Fire protection – HFCs	<p>The NIR (p.269) states that a country-specific estimation of HFC-227ea emissions was performed on the assumption that the use of HFCs in fire equipment in Greece is similar to in other Mediterranean countries (Italy, Portugal and Spain), taking into account the country’s population.</p> <p>The ERT noted that, in CRF table 2(II)B-Hs2, emissions from manufacturing and disposal were reported as “NO”, while the other countries listed above reported estimates of emissions from manufacturing and disposal. It also noted that these neighbouring countries reported emissions of additional HFCs (e.g. HFC-125, HFC236fa and HFC-23). During the review, the Party clarified that emissions from manufacture and disposal are taken into account when deriving a per capita emission estimate for fire protection equipment as reported in CRF table 2(II)B-Hs2. The Party also clarified that, as additional HFCs are not used in significant quantities, they are not reported separately in its estimates of emissions from fire protection equipment.</p> <p>The ERT recommends that the Party revise the notation keys used for reporting manufacturing and disposal of HFC-227ea from fire protection and other F-gases from “NO” to “IE” and provide an explanation for the use of this notation key in the NIR and CRF table 9. It also recommends that the Party provide a detailed explanation of its approach to deriving the per capita EF, including how the use of F-gas propellants other than HFC-227ea is considered.</p>	Yes. Transparency
Agriculture			
A.12	3.A.1 Cattle – CH ₄ and N ₂ O	<p>The Party reported in the NIR (section 5.2.2, p.290) that dairy cattle in Greece are “confined to a small area thus no energy is required to acquire feed (Ca = 0)” (with the Ca coefficient used to calculate net energy for animal activity). The NIR (table 5.16, p.302) indicates that 8 per cent of dairy cattle manure is deposited on pasture, range and paddock. During the review, as justification for the Ca coefficient of 0 the Party clarified that dairy cattle on farms in Greece spend very little or no energy on acquiring food. However, the Party noted that during the summer months dairy cattle spend a</p>	Yes. Transparency

ID#	Finding classification	Description of finding with recommendation or encouragement	Is finding an issue/problem? ^a
		<p>portion of their time “in pasture, where modest energy expense to acquire food is required”. The Party clarified that for that period it considers the Ca coefficient to be equal to 0.17, considering that the cattle “are confined in areas with sufficient forage requiring modest energy expense to acquire feed”.</p> <p>During the review, the Party clarified that, while the periods for which the Ca coefficient for dairy cattle is 0 or 0.17 are accounted for in the inventory, there is an error in the NIR in that the text describing the energy requirement calculations for dairy cattle does not adequately indicate the period for which the Ca coefficient is 0.17 (i.e. when cattle are on pasture) and indicated that this will be corrected in next annual submission.</p> <p>The ERT recommends that the Party correct in the NIR the Ca coefficient used for estimating energy used for acquiring feed in the different periods. It also recommends that the Party clarify in the NIR whether the assumption that 8 per cent of dairy cattle manure is deposited on pasture, range and paddock is linked to the assumption that dairy cattle spend a portion of their time on pasture in the summer months.</p>	
A.13	3.A.1 Cattle – CH ₄ and N ₂ O	<p>The Party reported in the NIR (section 5.2.2, p.291) that the estimated average bodyweight of dairy cattle is 600 kg but did not document this value or provide references to relevant information sources.</p> <p>During the review, the Party clarified that the estimate is based on the 2006 IPCC Guidelines (vol. 4, chap. 10, p.10.72) default for Western Europe and noted that it was confirmed as being approximately correct by the main dairy cattle farm operators in Greece. However, no documentation (or references to relevant documentation) was provided to verify this confirmation.</p> <p>The ERT recommends that the Party obtain documented evidence to confirm the estimate of 600 kg for the average bodyweight of dairy cattle and include in the NIR references to the sources of such evidence.</p>	Yes. Transparency
A.14	3.G Liming – CO ₂	<p>The Party reported in its NIR (p.327) that neither limestone nor dolomite is used in Greece and reported the emissions as “NO” in CRF table 3.G-I. However, no other evidence or reference to other documentation or research was provided in the NIR as confirmation.</p> <p>During the review, the Party clarified that confirmation of the non-use of lime and dolomite was provided by the Pan-Hellenic Association of Professional Producers and Dealers of Fertilizer but did not provide any documentation to support this.</p> <p>In addition, the ERT noted that the NIR does not adequately explain why emissions do not occur for this category.</p> <p>The ERT recommends that the Party provide documented evidence and relevant references in the NIR to prove that liming is not practised in the country and include a reference for the evidence in the NIR.</p>	Yes. Transparency
LULUCF			
L.17	Land representation – all gases	<p>The areas of forest land remaining forest land and of cropland and grassland converted to forest land for 2018 reported in the NIR (table 6.5, p.344) differ from those reported in CRF table 4.A. Specifically, in the NIR and CRF table 4.A, respectively, areas of 3,392.596 and 3,390.54 kha are reported for forest land remaining forest land, 15.65 and 17.85 kha for cropland converted to forest land and 63.36 and 63.18 kha for grassland converted to forest land.</p> <p>The Party reported the area of cropland converted to forest land for 2018 but did not add the area for 2019 to the area of land conversion reported in the NIR (table 6.5, p.344). For example, Greece reported in its NIR the area of cropland</p>	Yes. Convention reporting adherence

ID#	Finding classification	Description of finding with recommendation or encouragement	Is finding an issue/problem? ^a
		<p>converted to forest land for 2018 as 15,646 ha while reporting the same figure for the cumulative 20-year conversion area (1999–2018).</p> <p>During the review, the Party clarified that the areas of cropland and grassland converted to forest land for 2018 were updated in the CRF tables on the basis of more accurate information, but not in the land-use matrix. It noted that the land-use matrix tables will be updated, such that they are consistent with the CRF tables, for the next annual submission. It provided corrected land-use matrix tables for 2018–2019 during the review.</p> <p>The ERT recommends that the Party include in the NIR the corrected land-use matrix tables for 2018–2019 provided to the ERT during the review, which are consistent with CRF tables 4.1 and 4.A, paying particular attention to the values for forest land remaining forest land and cropland and grassland converted to forest land.</p>	
L.18	4.A Forest land – all gases	<p>The ERT noted that the area of managed forest for 2019 is reported as 1,262 kha in the NIR (p.348), but as 1,268.09 kha in CRF table 4.A.</p> <p>During the review, the Party clarified that the value reported in the NIR is not up to date and will be corrected in the next annual submission.</p> <p>The ERT recommends that the Party update in the NIR the reported area of managed forest for 2019, such that it is consistent with the area reported in the CRF tables and enhance its QA/QC procedures to ensure consistency between the data reported in the NIR and the CRF tables.</p>	Yes. Convention reporting adherence
L.19	4(V) Biomass burning – all gases	<p>The ERT noted the trend in the IEFs for CO₂, CH₄ and N₂O emissions from biomass burning on forest land remaining forest land and land converted to forest land is not stable. For example, for forest land remaining forest land, values of 18.72 t CO₂/ha, 0.24 t CH₄/ha and 0.00165 t N₂O/ha are reported for 1990–1998, versus 36.35 t CO₂/ha, 0.16 t CH₄/ha and 0.00109 t N₂O/ha for 2019.</p> <p>During the review, the Party clarified that the data were misreported in the CRF tables for 2019 and will be corrected in the next annual submission.</p> <p>The ERT recommends that the Party correct the estimates of CO₂, CH₄ and N₂O emissions reported for 2019 in CRF table 4(V) and enhance its QA/QC procedures to ensure that correct data are reported in the CRF tables.</p>	Yes. Accuracy
	Waste	<p>No findings for the waste sector additional to those included in table 3 were made by the ERT during the review.</p>	
	KP-LULUCF		
KL.3	General (KP-LULUCF) – all gases	<p>The Party reported the same area of 34.25 ha (in CRF table 4(KP-I) A.1) for AR for 2013–2019, which is equivalent to the area of cropland converted to forest land at the start of the second commitment period of the Kyoto Protocol (in CRF table 4(A) of the Party's 2013 submission). The conversion of grassland to forest land is excluded from AR as it is considered not to result directly from human activities (NIR p.356) and AR is deemed to be equivalent to land converted to forest land (NIR p.454). The ERT noted that, while the exclusion of grassland converted to forest land is not an issue, failing to include in AR new conversions of cropland to forest land for 2018–2019 is problematic (NIR p.344).</p> <p>During the review, Greece explained that the land-matrix tables in the NIR (chap. 6) are incorrect. No area was reported for AR for 2018–2019, which is consistent with CRF table 4.1. The Party provided the corrected tables for 2018–2019.</p>	Yes. Transparency

ID#	Finding classification	Description of finding with recommendation or encouragement	Is finding an issue/problem? ^a
KL.4	General (KP-LULUCF) – all gases	<p>The ERT recommends that Greece include in the NIR and CRF table 4(KP-I) A.1 the corrected land-matrix tables for 2018–2019 that it provided to the ERT during the review, which are consistent with CRF tables 4.1 and 4.A, in the next annual submission (see ID# L.17 above).</p> <p>The Party did not provide information on how double counting was avoided in the estimates reported for FM and basic wood density for the living biomass pool. The NIR (p.366) indicates that, for forest land converted to other land uses, basic wood density is estimated during conversion by subtracting carbon after conversion from carbon before conversion. However, it is unclear whether forest land remaining forest land and basic wood density are considered separately when the stock difference method is applied.</p> <p>During the review, the Party clarified that CSCs in forest land remaining forest land are estimated using the stock difference method on the basis of information from FM plans and for managed forest land only. It is assumed that deforestation occurs only in unmanaged forest land remaining forest land, such that any double counting is avoided. The Party also clarified that a reference will be included in the next annual submission to resolve this issue.</p> <p>The ERT recommends that Greece include in its next annual submission information on how double counting has been avoided in the estimates reported for FM and basic wood density for the living biomass pool.</p>	Yes. Transparency
KL.5	General (KP-LULUCF) – CO ₂	<p>The Party did not provide information on how double counting was avoided in the estimates reported for FM and AR for the living biomass pool. The NIR (p.357) indicates that, for cropland converted to forest land, AR is estimated by multiplying area by the IEF for biomass; however, the NIR (p.349) does not clearly indicate if the resulting value is subtracted or separated from the stock difference method applied for forest land remaining forest land. The NIR (p.355) indicates that forest land remaining forest land and land converted to forest land are considered separately only for estimating GHG emissions from biomass burning.</p> <p>During the review, the Party clarified that the estimation of carbon stocks for forest land remaining forest land is based on information from FM plans and is clearly separated from the estimation for AR, which is based on the use of IEFs, so no double counting is possible. The Party also clarified that a reference will be included in the next annual submission to resolve this issue.</p> <p>The ERT recommends that the Party include information in its next annual submission on how double counting was avoided for the estimates reported for FM and AR for the living biomass pool.</p>	Yes. KP reporting adherence
KL.6	General (KP-LULUCF) – all gases	<p>According to decision 2/CMP.8, annex II, paragraph 2(g)(iv), Parties shall provide information on how emissions from the HWP pool that have been accounted for during the first commitment period of the Kyoto Protocol on the basis of instantaneous oxidation have been excluded from the accounting for the second commitment period.</p> <p>During the review, the Party clarified that it did not exclude emissions from the HWP pool accounted for in the first commitment period on the basis of instantaneous oxidation from the accounting for the second commitment period, and that therefore it had no such information to provide. The Party noted that it will include an explicit reference in its next annual submission to the information required.</p> <p>The ERT recommends that Greece provide in the NIR the information required by decision 2/CMP.8, annex II, paragraph 2(g)(iv).</p>	Yes. KP reporting adherence

ID#	Finding classification	Description of finding with recommendation or encouragement	Is finding an issue/problem? ^a
KL.7	General (KP-LULUCF) – all gases	<p>According to decision 2/CMP.8, annex II, paragraph 2(g)(vi), Parties shall provide information showing that CO₂ emissions from HWP in SWDS and from wood harvested for energy purposes have been accounted on the basis of instantaneous oxidation. The ERT noted that Greece did not include this information in its NIR (chap. 9).</p> <p>During the review, the Party clarified that CO₂ emissions from HWP in SWDS and from wood harvested for energy purposes were not estimated.</p> <p>The ERT recommends that the Party provide in the NIR the information required by decision 2/CMP.8, annex II, paragraph 2(g)(vi), namely on how CO₂ emissions from HWP in SWDS and wood logged for energy purposes have been accounted on the basis of instantaneous oxidation.</p>	Yes. KP reporting adherence
KL.8	FM – all gases	<p>According to decision 2/CMP.8, annex II, paragraph 5, Parties shall provide information on, if included in their accounting of FM, emissions and removals resulting from the harvest and conversion of forest plantation to non-forest land, and information on how requirements set out in decision 2/CMP.7, annex, paragraphs 37–39, were met.</p> <p>During the review, the Party clarified that Greece will not apply the provision on carbon equivalent forests, as described in decision 2/CMP.7, annex, paragraphs 37–39, and consequently will not include, under FM, emissions and removals resulting from the harvest and conversion of forest plantations to non-forest land. Therefore, the Party did not provide the information required by decision 2/CMP.8, annex II, paragraphs 5(g)(i–iv). The Party also clarified that it will include in its next annual submission an explicit reference to the information required by decision 2/CMP.8, annex II, paragraphs 5(g)(i–iv).</p> <p>The ERT recommends that the Party include in the NIR the information required by decision 2/CMP.8, annex II, paragraphs 5(g)(i–iv).</p>	Yes. KP reporting adherence
KL.9	FM – all gases	<p>The Party did not provide information as per the <i>2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol</i> (p.2.97) on the main factors generating the accounted quantity (i.e. the difference in net emissions between reporting of FM for the second commitment period and the FMRL) and whether the accounted quantity is consistent with those factors, with a view to demonstrating that accounted quantities can be explained as deviations in actual policies compared with those historical policies included in the FMRL, rather than as differences in the methodological elements or as factors or parameters, including increments, used in the FMRL and in the actual GHG emissions and removals.</p> <p>During the review, Greece clarified that information on the main factors generating the accounted quantity will be included in the next annual submission.</p> <p>The ERT recommends that Greece provide in its next annual submission a concise explanation of the major drivers affecting the trend in net emissions under FM as compared with what was assumed in the FMRL, and of how the accounted quantity is the result of deviations in actual policies compared with those historical policies included in the FMRL.</p>	Yes. Transparency

^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. Application of adjustments

12. The ERT did not identify the need to apply any adjustments for the 2021 annual submission of Greece.

VII. Accounting quantities for activities under Article 3, paragraph 3, and, if any, activities under Article 3, paragraph 4, of the Kyoto Protocol

13. Greece elected commitment period accounting and therefore the issuance and cancellation of units for KP-LULUCF is not applicable to the 2021 review.

VIII. Questions of implementation

14. No questions of implementation were identified by the ERT during the individual review of the Party's 2021 annual submission.

Annex I

Overview of greenhouse gas emissions and removals and data and information on activities under Article 3, paragraphs 3–4, of the Kyoto Protocol, as submitted by Greece in its 2021 annual submission

1. Tables I.1–I.4 provide an overview of the total GHG emissions and removals as submitted by Greece.

Table I.1

Total greenhouse gas emissions and removals for Greece, base year–2019

(kt CO₂ eq)

	<i>Total GHG emissions excluding indirect CO₂ emissions</i>		<i>Total GHG emissions and removals including indirect CO₂ emissions^a</i>		<i>Land-use change (Article 3.7 bis as contained in the Doha Amendment)^b</i>	<i>KP-LULUCF (Article 3.4 of the Kyoto Protocol)</i>	
	<i>Total including LULUCF</i>	<i>Total excluding LULUCF</i>	<i>Total including LULUCF</i>	<i>Total excluding LULUCF</i>		<i>CM, GM, RV, WDR</i>	<i>FM</i>
FMRL							–1 830.00
Base year ^d	104 029.20	106 137.10	NA	NA	NA	NA	
1990	101 181.55	103 289.46	NA	NA			
1995	106 438.51	109 310.88	NA	NA			
2000	124 529.53	126 470.88	NA	NA			
2010	115 456.96	118 500.04	NA	NA			
2011	112 440.47	115 571.73	NA	NA			
2012	109 219.39	112 305.52	NA	NA			
2013	101 102.22	102 684.38	NA	NA		–88.52	NA –1 964.66
2014	99 132.03	99 257.81	NA	NA		–99.61	NA –1 964.66
2015	91 744.79	95 463.98	NA	NA		–79.51	NA –1 953.56
2016	88 348.57	91 821.84	NA	NA		–82.25	NA –1 922.38
2017	92 352.55	95 600.99	NA	NA		–27.73	NA –1 972.54
2018	88 216.39	92 308.35	NA	NA		–73.77	NA –1 999.72
2019	82 150.06	85 630.94	NA	NA		–75.81	NA –1 900.30

Note: Emissions and removals reported in the sector other (sector 6) are not included in the total GHG emissions.

^a The Party did not report indirect CO₂ emissions in CRF table 6.

^b The value reported in this column relates to GHG emissions from conversion of forests (deforestation) in 1990 as contained in the report on the review of the Party's report to facilitate the calculation of the assigned amount for the second commitment period of the Kyoto Protocol.

^c Activities under Article 3, para. 3, of the Kyoto Protocol, namely AR and deforestation.

^d “Base year” refers to the base year under the Kyoto Protocol, which is 1990 for CO₂, CH₄ and N₂O, 1995 for HFCs, PFCs and SF₆ and 2000 for NF₃. Greece has not elected any activities under Article 3, para. 4, of the Kyoto Protocol. For activities under Article 3, para. 3, of the Kyoto Protocol and FM under Article 3, para. 4, only the inventory years of the commitment period must be reported.

Table I.2

Greenhouse gas emissions and removals by gas for Greece, excluding land use, land-use change and forestry, 1990–2019(kt CO₂ eq)

	<i>CO₂^a</i>	<i>CH₄</i>	<i>N₂O</i>	<i>HFCs</i>	<i>PFCs</i>	<i>Unspecified mix of HFCs and PFCs</i>	<i>SF₆</i>	<i>NF₃</i>
1990	83 425.55	11 042.24	7 445.66	1 182.82	190.26	NA, NO	2.93	NA, NO
1995	86 979.10	11 427.51	6 680.62	4 157.38	62.85	NA, NO	3.42	NA, NO
2000	102 999.03	11 735.94	6 347.98	5 261.86	122.26	NA, NO	3.81	NA, NO
2010	97 361.43	11 068.19	5 467.36	4 467.76	129.44	NA, NO	5.86	NA, NO
2011	94 549.57	10 935.66	5 223.62	4 747.22	110.53	NA, NO	5.13	NA, NO
2012	91 430.55	10 772.42	4 795.80	5 153.93	147.77	NA, NO	5.05	NA, NO
2013	81 736.13	10 532.86	4 496.20	5 741.48	172.56	NA, NO	5.15	NA, NO
2014	78 662.11	10 323.58	4 289.62	5 842.95	134.63	NA, NO	4.92	NA, NO
2015	74 961.09	10 150.12	4 228.34	5 999.84	119.52	NO, NA	5.06	NO, NA
2016	71 372.74	9 800.77	4 284.09	6 223.86	135.17	NO, NA	5.20	NO, NA
2017	74 855.08	10 092.48	4 344.70	6 177.93	125.79	NO, NA	5.01	NO, NA
2018	71 807.55	10 188.81	4 264.15	5 907.58	135.31	NO, NA	4.94	NO, NA
2019	6 5735.92	10 016.15	4 289.68	5 447.17	137.10	NO, NA	4.92	NO, NA
Percentage change 1990–2019	-21.2	-9.3	-42.4	360.5	-27.9	NA	68.0	NA

Note: Emissions and removals reported in the sector other (sector 6) are not included in this table.

^a Greece did not report indirect CO₂ emissions in CRF table 6.

Table I.3

Greenhouse gas emissions and removals by sector for Greece, 1990–2019(kt CO₂ eq)

	<i>Energy</i>	<i>IPPU</i>	<i>Agriculture</i>	<i>LULUCF</i>	<i>Waste</i>	<i>Other</i>
1990	77 026.71	11 277.14	10 120.79	-2 107.91	4 864.81	NO
1995	81 090.93	13 603.11	9 465.84	-2 872.37	5 151.00	NO
2000	96 797.04	15 193.13	9 124.74	-1 941.35	5 355.96	NO
2010	93 155.42	11 759.57	8 815.94	-3 043.08	4 769.11	NO
2011	92 035.90	10 423.91	8 574.71	-3 131.25	4 537.20	NO
2012	88 303.64	11 245.63	8 446.56	-3 086.12	4 309.69	NO
2013	77 926.18	11 966.80	8 382.83	-1 582.16	4 408.57	NO
2014	74 490.73	12 329.99	7 968.54	-125.78	4 468.55	NO
2015	71 189.39	11 998.07	7 826.86	-3 719.19	4 449.66	NO

	<i>Energy</i>	<i>IPPU</i>	<i>Agriculture</i>	<i>LULUCF</i>	<i>Waste</i>	<i>Other</i>
2016	66 966.41	12 506.82	7 837.72	-3 473.26	4 510.88	NO
2017	70 257.48	12 795.12	7 864.47	-3 248.44	4 683.92	NO
2018	67 303.33	12 399.23	7 806.02	-4 091.96	4 799.76	NO
2019	61 228.32	11 688.04	7 875.00	-3 480.88	4 839.58	NO
Percentage change average for 1990–2019	-20.5	3.6	-22.2	65.1	-0.5	NA

Notes: (1) Greece did not report emissions or removals in the sector other (sector 6); the corresponding cells in the CRF tables were left blank; (2) totals include indirect CO₂ emissions reported in CRF table 6.

Table I.4

Greenhouse gas emissions and removals from activities under Article 3, paragraphs 3–4, of the Kyoto Protocol by activity, base year–2019, for Greece
(kt CO₂ eq)

	<i>Article 3.7 bis as contained in the Doha Amendment^a</i>	<i>Activities under Article 3.3 of the Kyoto Protocol</i>		<i>FM and elected activities under Article 3.4 of the Kyoto Protocol</i>				
	<i>Land-use change</i>	<i>AR</i>	<i>Deforestation</i>	<i>FM</i>	<i>CM</i>	<i>GM</i>	<i>RV</i>	<i>WDR</i>
FMRL				-1 830.00				
Technical correction				210.40				
Base year	NA				NA	NA	NA	NA
2013		-135.85	47.33	-1 964.66	NA	NA	NA	NA
2014		-146.89	47.28	-1 964.66	NA	NA	NA	NA
2015		-124.41	44.90	-1 953.56	NA	NA	NA	NA
2016		-138.41	56.17	-1 922.38	NA	NA	NA	NA
2017		-80.13	52.39	-1 972.54	NA	NA	NA	NA
2018		-126.17	52.39	-1 999.72	NA	NA	NA	NA
2019		-121.46	45.65	-1 900.30	NA	NA	NA	NA
Percentage change base year–2019					NA	NA	NA	NA

Note: Values in this table include emissions from land subject to natural disturbances, if applicable.

^a The value reported in this column relates to 1990.

2. Table I.5 provides an overview of key relevant data from Greece's reporting under Article 3, paragraphs 3–4, of the Kyoto Protocol.

Table I.5
Key relevant data for Greece under Article 3, paragraphs 3–4, of the Kyoto Protocol from its 2021 annual submission

<i>Parameter</i>	<i>Data values</i>
Periodicity of accounting	(a) AR: commitment period accounting (b) Deforestation: commitment period accounting (c) FM: commitment period accounting (d) CM: not elected (e) GM: not elected (f) RV: not elected (g) WDR: not elected
Elected activities under Article 3, paragraph 4, of the Kyoto Protocol	None
Election of application of provisions for natural disturbances	Yes, for AR and FM
3.5% of total base-year GHG emissions, excluding LULUCF	3 764.745 kt CO ₂ eq (30 117.958 kt CO ₂ eq for the duration of the commitment period)
Cancellation of AAUs, CERs and ERUs and/or issuance of RMUs in the national registry for:	
1. AR	NA
2. Deforestation	NA
3. FM	NA

Annex II

Information to be included in the compilation and accounting database

Tables II.1–II.7 include the information to be included in the compilation and accounting database for Greece. Data shown are from the Party's annual submission, including the latest revised estimates submitted, adjustments (if applicable) and the final data to be included in the compilation and accounting database.

Table II.1

Information to be included in the compilation and accounting database for 2019, including on the commitment period reserve, for Greece

(t CO₂ eq)

	<i>Original submission</i>	<i>Revised submission</i>	<i>Adjustment</i>	<i>Final value</i>
CPR	432 712 049	–	–	432 712 049
Annex A emissions				
CO ₂	65 735 923	–	–	65 735 923
CH ₄	10 016 154	–	–	10 016 154
N ₂ O	4 289 676	–	–	4 289 676
HFCs	5 447 169	–	–	5 447 169
PFCs	137 100	–	–	137 100
Unspecified mix of HFCs and PFCs	NO, NA	–	–	NO, NA
SF ₆	4 921	–	–	4 921
NF ₃	NO, NA	–	–	NO, NA
Total Annex A sources	85 630 943	–	–	85 630 943
Activities under Article 3, paragraph 3, of the Kyoto Protocol				
AR	–121 462	–	–	–121 462
Deforestation	45 650	–	–	45 650
FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol				
FM	–1 900 301	–	–	–1 900 301

Table II.2

Information to be included in the compilation and accounting database for 2018 for Greece

(t CO₂ eq)

	<i>Original submission</i>	<i>Revised submission</i>	<i>Adjustment</i>	<i>Final value</i>
Annex A emissions				
CO ₂	71 807 547	–	–	71 807 547
CH ₄	10 188 810	–	–	10 188 810
N ₂ O	4 264 151	–	–	4 264 151
HFCs	5 907 582	–	–	5 907 582
PFCs	135 313	–	–	135 313
Unspecified mix of HFCs and PFCs	NO, NA	–	–	NO, NA
SF ₆	4 943	–	–	4 943
NF ₃	NO, NA	–	–	NO, NA
Total Annex A sources	92 308 345	–	–	92 308 345
Activities under Article 3, paragraph 3, of the Kyoto Protocol				
AR	–126 165	–	–	–126 165
Deforestation	52 395	–	–	52 395
FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol				
FM	–1 999 719	–	–	–1 999 719

Table II.3

Information to be included in the compilation and accounting database for 2017 for Greece(t CO₂ eq)

	<i>Original submission</i>	<i>Revised submission</i>	<i>Adjustment</i>	<i>Final value</i>
Annex A emissions				
CO ₂	74 855 081	–	–	74 855 081
CH ₄	10 092 478	–	–	10 092 478
N ₂ O	4 344 696	–	–	4 344 696
HFCs	6 177 932	–	–	6 177 932
PFCs	125 794	–	–	125 794
Unspecified mix of HFCs and PFCs	NO, NA	–	–	NO, NA
SF ₆	5 011	–	–	5 011
NF ₃	NO, NA	–	–	NO, NA
Total Annex A sources	95 600 993			95 600 993
Activities under Article 3, paragraph 3, of the Kyoto Protocol				
AR	–80 128	–	–	–80 128
Deforestation	52 395	–	–	52 395
FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol				
FM	–1 972 541	–	–	–1 972 541

Table II.4

Information to be included in the compilation and accounting database for 2016 for Greece(t CO₂ eq)

	<i>Original submission</i>	<i>Revised submission</i>	<i>Adjustment</i>	<i>Final value</i>
Annex A emissions				
CO ₂	71 372 744	–	–	71 372 744
CH ₄	9 800 771	–	–	9 800 771
N ₂ O	4 284 090	–	–	4 284 090
HFCs	6 223 862	–	–	6 223 862
PFCs	135 168	–	–	135 168
Unspecified mix of HFCs and PFCs	NO, NA	–	–	NO, NA
SF ₆	5 202	–	–	5 202
NF ₃	NO, NA	–	–	NO, NA
Total Annex A sources	91 821 836			91 821 836
Activities under Article 3, paragraph 3, of the Kyoto Protocol				
AR	–138 411	–	–	–138 411
Deforestation	56 166	–	–	56 166
FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol				
FM	–1 922 383	–	–	–1 922 383

Table II.5

Information to be included in the compilation and accounting database for 2015 for Greece(t CO₂ eq)

	<i>Original submission</i>	<i>Revised submission</i>	<i>Adjustment</i>	<i>Final value</i>
Annex A emissions				
CO ₂	74 961 086	–	–	74 961 086
CH ₄	10 150 122	–	–	10 150 122
N ₂ O	4 228 344	–	–	4 228 344
HFCs	5 999 845	–	–	5 999 845
PFCs	119 522	–	–	119 522
Unspecified mix of HFCs and PFCs	NO, NA	–	–	NO, NA
SF ₆	5 060	–	–	5 060

	<i>Original submission</i>	<i>Revised submission</i>	<i>Adjustment</i>	<i>Final value</i>
NF ₃	NO, NA	–	–	NO, NA
Total Annex A sources	95 463 979			95 463 979
Activities under Article 3, paragraph 3, of the Kyoto Protocol				
AR	–124 406	–	–	–124 406
Deforestation	44 896	–	–	44 896
FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol				
FM	–1 953 555	–	–	–1 953 555

Table II.6

Information to be included in the compilation and accounting database for 2014 for Greece(t CO₂ eq)

	<i>Original submission</i>	<i>Revised submission</i>	<i>Adjustment</i>	<i>Final value</i>
Annex A emissions				
CO ₂	78 662 108	–	–	78 662 108
CH ₄	10 323 577	–	–	10 323 577
N ₂ O	4 289 615	–	–	4 289 615
HFCs	5 842 951	–	–	5 842 951
PFCs	134 634	–	–	134 634
Unspecified mix of HFCs and PFCs	NA, NO	–	–	NA, NO
SF ₆	4 922	–	–	4 922
NF ₃	NA, NO	–	–	NA, NO
Total Annex A sources	99 257 806			99 257 806
Activities under Article 3, paragraph 3, of the Kyoto Protocol				
AR	–146 890	–	–	–146 890
Deforestation	47 277	–	–	47 277
FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol				
FM	–1 964 656	–	–	–1 964 656

Table II.7

Information to be included in the compilation and accounting database for 2013 for Greece(t CO₂ eq)

	<i>Original submission</i>	<i>Revised submission</i>	<i>Adjustment</i>	<i>Final value</i>
Annex A emissions				
CO ₂	81 736 129	–	–	81 736 129
CH ₄	10 532 859	–	–	10 532 859
N ₂ O	4 496 202	–	–	4 496 202
HFCs	5 741 476	–	–	5 741 476
PFCs	172 562	–	–	172 562
Unspecified mix of HFCs and PFCs	NA, NO	–	–	NA, NO
SF ₆	5 151	–	–	5 151
NF ₃	NA, NO	–	–	NA, NO
Total Annex A sources	102 684 379			102 684 379
Activities under Article 3, paragraph 3, of the Kyoto Protocol				
AR	–135 854	–	–	–135 854
Deforestation	47 334	–	–	47 334
FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol				
FM	–1 964 657	–	–	–1 964 657

Annex III

Additional information to support findings in table 2

Missing categories that may affect completeness

The category for which methods are included in the 2006 IPCC Guidelines that was reported as “NE” or for which the ERT otherwise determined that there may be an issue with the completeness of reporting in the Party’s inventory is CO₂ emissions from CSCs in the SOC pool for cropland remaining cropland (see ID# L.11 in table 3).

Annex IV

Reference documents

A. Reports of the Intergovernmental Panel on Climate Change

IPCC. 2000. *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*. J Penman, D Kruger, I Galbally, et al. (eds.). Hayama, Japan: IPCC/Organisation for Economic Co-operation and Development/International Energy Agency/Institute for Global Environmental Strategies. Available at <https://www.ipcc.ch/publication/good-practice-guidance-and-uncertainty-management-in-national-greenhouse-gas-inventories/>.

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 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol*. T Hiraishi, T Krug, K Tanabe, et al. (eds.). Hayama, Japan: Institute for Global Environmental Strategies. Available at <https://www.ipcc.ch/publication/2013-revised-supplementary-methods-and-good-practice-guidance-arising-from-the-kyoto-protocol/>.

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 2014, 2015, 2016, 2017 and 2019 annual submissions of Greece, contained in documents FCCC/ARR/2014/GRC, FCCC/ARR/2015/GRC, FCCC/ARR/2016/GRC, FCCC/ARR/2017/GRC and FCCC/ARR/2019/GRC, 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/sites/default/files/resource/AGI%202020_final.pdf.

Annual status report for Greece for 2021. Available at https://unfccc.int/sites/default/files/resource/asr2020_GRC.pdf.

C. Other documents used during the review

Responses to questions during the review were received from Dimitris Niavis (Ministry of Environment and Energy of Greece).
