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Report on the individual review of the annual submission of Malta 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 Malta, 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 4 to 9 October 2021 remotely.

Contents

Abbreviations and acronyms

2006 IPCC Guidelines	*2006 IPCC Guidelines for National Greenhouse Gas Inventories*
2019 Refinement to the 2006 IPCC Guidelines	*2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories*
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"
AWMS	animal waste management system(s)
C	carbon
CF	fraction of carbon in dry matter
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"
COPERT	software tool for calculating road transport emissions
CORINE	Coordination of Information on the Environment (programme)
CPR	commitment period reserve
CRF	common reporting format
DE	digestible energy
dm	dry matter
DOC_f	fraction of degradable organic carbon that decomposes
EEA	European Environment Agency
EF	emission factor
EMEP	Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe
EMEP/EEA guidebook	*EMEP/EEA air pollutant emission inventory guidebook*
ERT	expert review team
EU	European Union
EU ETS	European Union Emissions Trading System
EUROCONTROL	European Organisation for the Safety of Air Navigation
Eurostat	statistical office of the European Union
FCF	fossil carbon fraction
F-gas	fluorinated gas
FM	forest management
FMRL	forest management reference level
FOD	first-order decay
GE	gross energy intake
GHG	greenhouse gas
GM	grazing land management
HFC	hydrofluorocarbon
IE	included elsewhere
IEA	International Energy Agency
IEF	implied emission factor
IPCC	Intergovernmental Panel on Climate Change
IPPU	industrial processes and product use

KP-LULUCF	activities under Article 3, paragraphs 3–4, of the Kyoto Protocol
KP reporting adherence	adherence to the reporting guidelines under Article 7, paragraph 1, of the Kyoto Protocol
LPG	liquefied petroleum gas
LULUCF	land use, land-use change and forestry
MCF	methane conversion factor (agriculture)
MMS	manure management system(s)
MRA	Malta Resources Authority
MSW	municipal solid waste
N	nitrogen
N_2O	nitrous oxide
NA	not applicable
NCV	net calorific value
NE	not estimated
Nex	nitrogen excretion
NF_3	nitrogen trifluoride
NH_3	ammonia
NIR	national inventory report
NO	not occurring
NO_X	nitrogen oxides
PFC	perfluorocarbon
QA/QC	quality assurance/quality control
QMS	quality management system
RV	revegetation
SEF	standard electronic format
SF_6	sulfur hexafluoride
SIAR	standard independent assessment report
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	*2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*

I. Introduction

1. This report covers the review of the 2021 annual submission of Malta, 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 4 to 9 October 2021 remotely[1] and was coordinated by Sohel Pasha, Claudia do Valle, Roman Payo and Karin Simonson (secretariat). Table 1 provides information on the composition of the ERT that conducted the review for Malta.

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

Area of expertise	*Name*	*Party*
Generalist	Justin Goodwin	United Kingdom
	Marcelo Theoto Rocha	Brazil
Energy	Pierre Boileau	Canada
	Veronica Eklund	Sweden
	Yuriko Hayabuchi	Japan
	Nicola McPherson	Australia
IPPU	Yongsook Lyu	Republic of Korea
	Juan Luis Martin Ortega	El Salvador
	Mauro Meirelles de Oliveira Santos	Brazil
Agriculture	Laura Cardenas	United Kingdom
	Etienne Mathias	France
	Batima Punsalmaa	Mongolia
LULUCF and KP-LULUCF	Pierre Brender	United Kingdom
	Craig Elvidge	New Zealand
	Yasna Rojas Ponce	Chile
Waste	Satoshi Kawanishi	Japan
	Tertius Vitus de Kluyver	Australia
	Tatiana Tugui	Republic of Moldova
Lead reviewers	Justin Goodwin	
	Marcelo Theoto Rocha	

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 Malta resolve identified findings, including issues[2] designated as problems.[3] Other findings, and, if applicable, the encouragements of the ERT to Malta to resolve related issues, are also included in this report.

[1] Owing to the circumstances related to the coronavirus disease 2019, the review had to be conducted remotely.
[2] Issues are defined in decision 13/CP.20, annex, para. 81.
[3] Problems are defined in decision 22/CMP.1, annex, paras. 68–69, as revised by decision 4/CMP.11.

4. A draft version of this report was communicated to the Government of Malta, 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 Malta, including totals excluding and including LULUCF, indirect CO_2 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.

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

7. Table 2 provides the assessment by the ERT of the Party's 2021 annual submission with respect to the tasks undertaken during the review. Further information on the issues identified, as well as additional findings, may be found in tables 3 and 5.

Table 2
Summary of review results and general assessment of the 2021 annual submission of Malta

Assessment			*Issue/problem ID#(s) in table 3 or 5[a]*
Dates of submission	Original submission: NIR, 15 April 2021; CRF tables (version 2), 15 April 2021; SEF tables, 17 April 2021 Revised submission: CRF tables (version 3), 20 October 2021 Unless otherwise specified, values from the most recent submission are included in this report		
Review format	Centralized review conducted remotely		
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	E.17, E.20, I.5, A.25, L.5, L.8
	(c) Development and selection of EFs?	Yes	E.13, E.19, A.8, W.18
	(d) Collection and selection of AD?	Yes	E.10, E.14, I.10, A.2, A.27, W.3, W.14
	(e) Reporting of recalculations?	No	
	(f) Reporting of a consistent time series?	Yes	E.15, E.16, E.22, E.27, I.3, A.1
	(g) Reporting of uncertainties, including methodologies?	Yes	G.15, G.16, G.17, G.19, G.20
	(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	G.9, I.2, I.4, W.20
	(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?	No	
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	

Assessment			*Issue/problem ID#(s) in table 3 or 5*[a]
Supplementary information under the Kyoto Protocol	Have any issues been identified related to the following aspects of the national system:		
	(a) Overall organization of the national system, including the effectiveness and reliability of the institutional, procedural and legal arrangements?	No	
	(b) Performance of the national system functions?	No	
	Have any issues been identified related to the national registry:		
	(a) Overall functioning of the national registry?	No	
	(b) Performance of the functions of the national registry and the adherence to technical standards for data exchange?	No	
	Have any issues been identified related to the reporting of information on assigned amount units, certified emission reductions, emission reduction units and removal units and on discrepancies in accordance with decision 15/CMP.1, annex, chapter I.E, in conjunction with decision 3/CMP.11, taking into consideration any findings or recommendations contained in the SIAR?	Yes	G.6
	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.1, KL.5
	(b) Demonstration of methodological consistency between the reference level and reporting on FM in accordance with decision 2/CMP.7, annex, paragraph 14?	No	
	(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?	NA	
CPR	Was the CPR reported in accordance with decision 18/CP.7, annex; decision 11/CMP.1, annex; and decision 1/CMP.8, paragraph 18?	Yes	
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	Malta 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	

Assessment		*Issue/problem ID#(s) in table 3 or 5*[a]
Recommendation for an exceptional in-country review	On the basis of the issues identified, does the ERT recommend that the next review be conducted as an in-country review?	No
Questions of implementation	Did the ERT list any questions of implementation?	No

[a] Further information on the issues identified, as well as additional findings, may be found in tables 3 and 5.
[b] Missing categories for which methods are provided in the 2006 IPCC Guidelines may affect completeness and are listed in annex 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 15 May 2020,[4] 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 Malta

ID#	*Issue/problem classification*[a, b]	*Recommendation made in previous review report*	*ERT assessment and rationale*
General			
G.1	Annual submission (G.1, 2019) (G.16, 2017) KP reporting adherence	Submit all the elements of the next annual submission by 15 April, as required by decision 15/CMP.1, paragraph 3(a).	Resolved. The NIR and CRF tables were submitted by 15 April 2021. During the review, Malta clarified that there was a delay of two days for the submission of the SEF tables as it was awaiting the results of the informal check by the SIAR assessment team.
G.2	Annual submission (G.13, 2019) KP reporting adherence	Implement all necessary improvements to ensure the timely submission of all parts of the inventory.	Resolved (see ID# G.1 above).
G.3	Article 3.14 (G.2, 2019) (G.12, 2017) (G.21, 2016) (G.21, 2015) KP reporting adherence	Include, as appropriate, information on the minimization of adverse impacts in accordance with decision 15/CMP.1, annex, paragraphs 23–24, including any changes since the previous annual submission.	Addressing. The Party reported in its NIR (p.366) information including a reference on financial support provided by Malta to developing countries from 2013 to 2019 in the areas of mitigation and adaptation actions and capacity-building. However, Malta did not include a statement on whether any changes have occurred since the last report. During the review, the Party clarified that it has started reporting on the financial support it provides to developing countries, although it is not a Party included in Annex II to the Convention.
G.4	Inventory planning (G.14, 2019) Transparency	Include information on annual inventory improvement plans, clearly detailing targets, responsibilities and schedules, and document these and the results of the improvement actions in the NIR.	Addressing. The Party reported in its NIR (in different chapters) sector-specific planned improvements, including those linked to the review process. However, the information provided lacked clear detail of targets, responsibilities and schedules in relation to the improvement actions. Furthermore, no summary of improvements was provided in chapter 10 of the NIR. During the review, the Party clarified that a record of the improvement plan is kept as an internal MRA QMS document, which can be made available to the reviewers if necessary. The ERT considers that the recommendation has not yet been fully addressed

[4] FCCC/ARR/2019/MLT. The ERT notes that the report on the individual inventory review of Malta'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.

ID#	*Issue/problem classification*[a, b]	*Recommendation made in previous review report*	*ERT assessment and rationale*
			because the Party did not include in the NIR clear, detailed information on targets, responsibilities and schedules.
G.5	National registry (G.15, 2019) KP reporting adherence	Include in the annual submission information on actions and changes to address discrepancies in accordance with decision 15/CMP.1, annex, paragraph 17.	Not resolved. The Party reported in its NIR (p.361) information on the accounting of Kyoto units. According to the SIAR assessor, the Party did not provide information on actions taken and changes made to address discrepancies in accordance with decision 15/CMP.1, annex, paragraph 17. During the review, the Party clarified that it took note of this finding and the findings of the SIAR assessment in order to improve its reporting on the national registry.
G.6	National registry (G.15, 2019) KP reporting adherence	Include in the annual submission details of publicly available information in accordance with decision 13/CMP.1, annex, paragraphs 45 and 47–48.	Not resolved. The Party reported in its NIR (p.361) information on the accounting of Kyoto units. According to the SIAR assessor, the Party did not provide details of publicly available information in accordance with decision 13/CMP.1, annex, paragraphs 45 and 47–48 and/or a weblink to the publicly available information. During the review, the Party clarified that it took note of this finding and the findings of the SIAR assessment in order to improve its reporting on the national registry.
G.7	Notation keys (G.5, 2019) (G.19, 2017) Transparency	Provide relevant explanations in CRF table 9 for all cases of the notation keys "NE" and "IE" being reported.	Addressing. The Party reported in CRF table 9 additional explanations for the use of "NE" for the LULUCF (categories 4.B.1 and 4.C.1) and agriculture (category 3.H) sectors. However, information on the use of "NE" for the IPPU sector was not included in CRF table 9. During the review, the Party clarified that to the extent possible, it provided more information on the use of such notation keys in CRF table 9. Malta will continue its efforts to ensure that where "NE" or "IE" is used, the information provided is appropriately complete and transparent.
G.8	Notation keys (G.16, 2019) Convention reporting adherence	Correct the use of notation keys (in particular those referred to in ID#s I.7, I.8, L.8, W.11, W.13 and W.14 in table 3 of document FCCC/ARR/2019/MLT) and include the previously missing information on the use of "NE" both in CRF table 9 and in the NIR.	Addressing. See ID#s I.6, I.7 and W.9 below.
G.9	Other (G.6, 2019) (G.17, 2017) Completeness	Provide emission estimates for the missing categories. If these emissions are considered insignificant in accordance with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines, provide reporting information on emissions sources in the inventory that are considered insignificant, including their likely emission levels.	Addressing. The Party reported in its NIR (p.150) that for transport refrigeration (subcategory 2.F.1.d), manufacturing emissions do not occur in Malta since no vehicle production takes place. Therefore, it reported as "NO" HFC-32 emissions from manufacturing for all years of the time series. However, the ERT noted that the Party continued to report as "NE" HFC-32 emissions from disposal for 2005 onward. The Party further reported in its NIR (p.162) that in closed-cell foam, only minimal HFC emissions occur during the manufacturing phase. Emissions do not occur until end of life. The ERT noted that the Party continued to report as "NE" HFC emissions from disposal of closed-cell foams (subcategory 2.F.2.a) for 2000 onward (except for HFC-227ea for which "NE" is reported for 2008 onward). The ERT also noted that the Party reported as "NE" CO_2 emissions from urea application (category 3.H) for all years of the time series. During the

ID#	Issue/problem classification[a, b]	Recommendation made in previous review report	ERT assessment and rationale
			review, the Party clarified that it made every effort to ensure that reporting is as complete as possible. Where emissions for certain categories were not reported, this is not due to those categories being considered as insignificant, but rather to the fact that it was not possible to estimate emissions for other reasons (e.g. unavailability of data). Malta made every effort to reduce the number of categories reported as "NE". The ERT noted that the Party should either report the emissions or justify, in accordance with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines, that the emissions are insignificant. The ERT believes that this issue should be raised again in future reviews to ensure that emissions are not underestimated.
G.10	QA/QC and verification (G.7, 2019) (G.3, 2017) (G.6, 2016) (G.6, 2015) (table 3, 2013) (17, 2012) (18, 2011) Convention reporting adherence	Develop a QA/QC plan, in particular tier 1 QC procedures, and provide information on the QA/QC plan in the NIR.	Addressing. The Party reported in its NIR (in different chapters) on category-specific QA/QC activities. However, a description of a QA/QC plan was not provided in the general sections of the NIR. During the review, the Party clarified that it is continuing its efforts to both develop a robust QA/QC plan and report on the same. The Party further clarified that for recent annual submissions, it has striven to include more detailed reporting on QA/QC and improvement actions being taken.
G.11	QA/QC and verification (G.8, 2019) (G.4, 2017) (G.14, 2016) (G.14, 2015) Transparency	Elaborate an inventory QA/QC plan, implement general inventory QC procedures in accordance with the QA/QC plan and report information on these issues in the NIR.	Addressing. The Party reported in its NIR (in different chapters) on category-specific QA/QC activities, without elaborating on the QA/QC plan, its implementation and any issues in the general sections of the NIR. During the review, the Party clarified that for recent annual submissions, it has made efforts to ensure more comprehensive and transparent reporting on QA/QC activities undertaken during the course of preparing its national GHG inventory. This includes reporting, with tables in each sector chapter, on QA/QC checks and the status of actions taken in response to reviews. While acknowledging that there is more to be done, Malta remains open to any further suggestions that would enable it to continue to improve this aspect of national GHG inventory reporting. Furthermore, a record of the improvement plan is kept as an internal MRA QMS document, which can be made available to the reviewers if necessary.
G.12	QA/QC and verification (G.9, 2019) (G.5, 2017) (G.19, 2016) (G.19, 2015) Convention reporting adherence	Complete the quality manual and standard QC operating procedures and implement them to ensure consistent reporting between the CRF tables and the NIR.	Resolved. The Party reported in its NIR (in different chapters) on category-specific QA/QC activities. During the review, the Party clarified that the documentation of the QMS of MRA in respect of the GHG inventory functions of MRA has been completed, and the QMS has been certified in accordance with International Organization for Standardization standard 9001:2015. The preparation of the annual GHG inventory by MRA is now performed in accordance with the documented QMS. The ERT noted that consistency between the NIR and the CRF tables has been improved (see ID#s E.5, E.18, A.6, A.10, A.17 and W.11).
G.13	QA/QC and verification (G.17, 2019) Transparency	Implement the QA/QC procedures contained in the operations and quality manual and complete the descriptions of sector-specific QA/QC procedures.	Resolved. The Party reported in its NIR (table 1-2) on the QA/QC procedures contained in the operations and quality manual and in different chapters of its NIR on sector-specific QA/QC procedures.

ID#	*Issue/problem classification[a, b]*	*Recommendation made in previous review report*	*ERT assessment and rationale*
G.14	QA/QC and verification (G.17, 2019) Convention reporting adherence	Implement the sector-specific QA/QC procedures and specifically address ID#s E.2, E.3, I.1 and W.1 in table 3 and ID#s A.21–24 and A.27 in table 5 of document FCCC/ARR/2019/MLT.	Resolved. The Party reported in its NIR (in different chapters) on sector-specific QA/QC procedures. See ID#s E.2 and W.1 of document FCCC/ARR/2019/MLT and ID#s E.2, I.1, A.9–A.11, A.13 and A.17 below.
G.15	Uncertainty analysis (G.10, 2019) (G.6, 2017) (G.9, 2016) (G.9, 2015) (table 4, 2013) (14, 2012) Transparency	Improve the transparency of the uncertainty analysis by including information on the assumptions used to calculate the uncertainty of AD and EFs at the category level.	Not resolved. The Party did not report information on the assumptions used to calculate the uncertainty of AD and EFs at the category level. The Party reported in its NIR (p.47) that the method of determining sector-specific and overall inventory and trend uncertainties has been updated for reporting in subsequent submissions. During the review, the Party clarified that efforts have been made to improve the reporting on uncertainties, especially in the sectoral chapters. On the basis of any further feedback that Malta may receive from this review and future reviews, further information on its reporting of uncertainties will be included in the NIR.
G.16	Uncertainty analysis (G.11, 2019) (G.7, 2017) (G.10, 2016) (G.10, 2015) (table 4, 2013) (14, 2012) Transparency	Provide information to explain how the uncertainty analysis is used to prioritize further inventory improvements.	Addressing. The Party reported in its NIR (p.47) the results of an approach 1 uncertainty assessment and stated that the national inventory agency (MRA) received capacity-building support from external consultants in setting up a tool that provides a detailed uncertainty assessment of its national GHG inventory. Under this ongoing project, the Party updated the method for determining sector-specific uncertainties and determined overall inventory and trend uncertainties, to be reported in subsequent annual submissions. During the review, the Party further clarified that to date, improvements have primarily been targeted at addressing gaps in the inventory and improving the quality of estimates, especially for key categories. Consideration of the uncertainty analysis will indeed further support the improvement process. This will also entail greater awareness on the part of data providers of the importance of also providing uncertainties for the data provided. The ERT considers that the recommendation has not yet been fully addressed because the Party has not yet implemented the uncertainty tool with a view to prioritizing further inventory improvements.
G.17	Uncertainty analysis (G.12, 2019) (G.8, 2017) (G.20, 2016) (G.20, 2015) Convention reporting adherence	Discuss qualitatively the uncertainty of the data used for all source and sink categories in a transparent manner in the NIR, in particular for categories identified as key categories.	Not resolved (see ID# G.15 above).
G.18	Uncertainty analysis (G.18, 2019) Convention reporting adherence	Complete the capacity-building project for estimating uncertainties for all source and sink categories, especially for key categories, for the next annual submission if possible, or provide	Resolved. The Party provided information in the NIR on the progress (NIR p.47 and p.374) and timeline (NIR table 3-1) of the capacity-building project for estimating uncertainties.

ID#	Issue/problem classification[a, b]	Recommendation made in previous review report	ERT assessment and rationale
		information on the progress and timeline in the NIR.	
G.19	Uncertainty analysis (G.18, 2019) Convention reporting adherence	Document in the NIR details on the calculation of uncertainties at the category level, and include information on the assumptions made when estimating the uncertainties of AD and EFs at the category level.	Not resolved (see ID# G.15 above).
G.20	Uncertainty analysis (G.18, 2019) Convention reporting adherence	Use the results of the uncertainty analysis to prioritize improvements to the inventory, and include a statement in the NIR on how the results of the analysis are used to prioritize improvements.	Addressing (see ID# G.16 above).
Energy			
E.1	1. General (energy sector) (E.1, 2019) (E.1, 2017) (E.3, 2016) (E.3, 2015) (16, 2013) (28, 2012) Comparability	Allocate AD and emissions to the appropriate subcategories in order to improve the comparability of the emission estimates with those of other Parties included in Annex I to the Convention.	Not resolved. The Party reported "NO" for all subcategories under category 1.A.2 and reported all corresponding emissions under subcategory 1.A.2.g Other in CRF table 1.A(a) (sheet 2). The Party reported in NIR section 3.2.5.6 that during a capacity-building visit organized for the EU effort-sharing decision review, it was deemed not possible to further disaggregate emissions under manufacturing industries and construction (category 1.A.2) as there is no manufacturing industry in Malta. In addition, Eurostat does not provide data to the level of disaggregation required. However, the ERT noted that there are emissions reported for category 1.A.2 for liquid fuels used in all industries. During the review, the Party clarified that following the capacity-building visit it changed its reporting from "IE" to "NO". The ERT considers that the recommendation has not yet been addressed because the Party did not provide details in its NIR on the source of emissions allocated to subcategory 1.A.2.g Other, given that the Party reported that there is no manufacturing industry in Malta.
E.2	1. General (energy sector) (E.3, 2019) (E.3, 2017) (E.6, 2016) (E.6, 2015) (18, 2013) Transparency	Improve the description in the NIR of the category-specific QA/QC activities performed on the AD, with the objective of better understanding the links between the EU ETS, the energy balances and the data reported in the CRF tables.	Not resolved. The Party did not include detailed information on QA/QC activities relating to links between the EU ETS, the energy balance and data from international sources such as IEA that could be used for verification purposes. In NIR table 3-3 (p.80), the Party reported that a number of sector-specific activities, such as comparisons with alternative AD or independently compiled data, will be investigated. The Party included information on category-specific QA/QC activities for most categories; however, the level of detail of the information reported varies between categories. During the review, the Party clarified that efforts are being made to better explain QA/QC procedures under each subcategory.
E.3	Fuel combustion – reference approach (E.5, 2019) (E.5, 2017) (E.11, 2016) (E.11, 2015)	Estimate CO_2 emissions using the reference approach for all years of the time series.	Addressing. The Party reported in CRF table 1.A(c) CO_2 emissions using both the reference and the sectoral approaches for the whole time series. The Party used the reference approach to calculate emissions from biomass fuels for 2010 onward and emissions from gaseous fuels for 2017 onward. During the review, the Party clarified that efforts are being made to

ID#	*Issue/problem classification*[a, b]	*Recommendation made in previous review report*	*ERT assessment and rationale*
	(23, 2013) (33, 2012) (33, 2011) Convention reporting adherence		estimate CO_2 emissions covering the other years in the time series and to include the estimate in future annual submissions.
E.4	Fuel combustion – reference approach (E.6, 2019) (E.6, 2017) (E.12, 2016) (E.12, 2015) (23, 2013) Transparency	Explain differences in CO_2 emissions that are above 2 per cent.	Not resolved. The Party reported a difference in CO_2 emissions of 2.2 per cent for 2019 between the reference and the sectoral approaches for liquid fuels in NIR table 3-7 (p.85) but did not provide an explanation for this difference in the NIR. In addition, the ERT noted that in CRF table 1.A(c) for all fuels the differences are still too high for 1990–2004 (for example, 33.5 per cent in 1990), for liquid fuels the difference reaches up to 18.0 per cent in 2000 and these differences are not explained in the NIR. During the review, the Party clarified that the inconsistency occurred in subcategory 1.A.1.a for gas/diesel oil consumption. Diesel consumption data from power stations were sourced from the EU ETS, while the data for the reference approach were sourced from the annual energy balance of Eurostat. The Party reported that the discrepancy between the data sources resulted in the differences between the reference and the sectoral approaches.
E.5	Fuel combustion – reference approach (E.9, 2019) (E.9, 2017) (E.36, 2016) (E.36, 2015) Convention reporting adherence	Correct the notation keys for the AD for solid and other fossil fuels in NIR table 3-1 (corresponds to NIR table 3-6 referred to in document FCCC/ARR/2019/MLT) and CRF table 1.A(c).	Resolved. The use of "NO" for solid fuels and other fossil fuels reported in NIR table 3-7 (corresponds to NIR table 3-6 referred to in document FCCC/ARR/2019/MLT) is consistent with the AD notation keys reported in CRF table 1.A(c).
E.6	Fuel combustion – reference approach – gaseous, liquid and solid fuels – CO_2 (E.29, 2019) Transparency	Review whether the same fuels are reported in the IEA data and in the CRF tables and investigate the emissions from other bituminous coal for the whole time series and report the related information transparently in the NIR, or revise the calculations.	Not resolved. For other bituminous coal the Party reported import figures for 1990–1995 and "NO" in CRF table 1.A(b) for the rest of the time series. The ERT noted that these figures are lower in CRF table 1.A(b) than what is reported in the IEA data (e.g. 7,740 TJ for 1990 in IEA data, but 7,500 TJ for the same year in CRF table1.A(b)). During the review, the Party clarified that other bituminous coal was used in 1990–1995 for electricity generation, and the Eurostat annual energy balance reflects the use of other bituminous coal during this time frame. To the extent possible, Malta will review the comparability of data sourced from Eurostat and IEA and will then report on this in future annual submissions. As the IEA data reflect the use of other bituminous coal during 1990–1995, the ERT believes that there are no expected emissions in the later years (1996 onwards). The ERT considers that the recommendation has not yet been addressed because the Party has not yet reported the related information transparently in the NIR, including an explanation of the differences between the CRF tables and IEA data on other bituminous coal used in 1990–1995.
E.7	Comparison with international data – liquid fuels – CO_2 (E.30, 2019) Transparency	Investigate and address the inconsistences identified between the IEA data and the reference approach data, in particular those related to stock changes and imports and exports of liquid fuels, correct the values reported	Not resolved. There are significant differences in the stock change figures for liquid fuels in CRF table 1.A(b) and the IEA figures for 2000–2004 (e.g. for 2000 the CRF table figures are 558.2 per cent higher than the IEA figures). The Party did not explain the inconsistencies identified between the IEA and reference approach data. During the review, the Party clarified that for the purpose of the NIR, sectoral and reference approach data are acquired either from national statistics or from the Eurostat annual energy balance. To the

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		under the reference approach and provide related explanations in the NIR, if appropriate.	extent possible, Malta will investigate the comparability of data sourced from national statistics or from Eurostat and IEA and will report on this in future annual submissions. The ERT considers that the recommendation has not yet been addressed because the Party did not address in the NIR discrepancies between the IEA data and the reference approach data, and related explanations are not provided in the NIR.
E.8	Comparison with international data – liquid fuels – CO_2 (E.31, 2019) Transparency	Investigate and address the inconsistences identified between the IEA data and the aviation gasoline data reported in CRF tables, correct the values reported and provide related explanations in the NIR, if appropriate.	Not resolved. Although data for international aviation gasoline were reported in the CRF tables for all years, data were reported to IEA for 2000 onward only. The figures reported to IEA are higher than what is reported in CRF table 1.D (e.g. up to 92.2 per cent higher for 2004). Data for international aviation gasoline were reported to IEA as "NO" for 2002, 2003 and 2005–2017. The Party did not explain the inconsistencies identified between the IEA and international aviation gasoline data reported in the CRF tables. During the review, the Party clarified that for the purpose of the NIR, sectoral and reference approach data are acquired either from national statistics or from the Eurostat annual energy balance. To the extent possible, Malta will investigate the comparability of data sourced from national statistics or from Eurostat and IEA data and will report on this in future annual submissions. The ERT considers that the recommendation has not yet been addressed because the Party has not yet reported the related information transparently in the NIR, including an explanation of the differences between the CRF tables and IEA data on international aviation gasoline.
E.9	Feedstocks, reductants and other non-energy use of fuels – bitumen, lubricants – CO_2 (E.32, 2019) Comparability	Report in CRF table 1.A(d) CO_2 emissions from the non-energy use of fuels for bitumen and lubricants.	Not resolved. The Party did not report the quantity of CO_2 emissions from the non-energy use of fuels for bitumen and lubricants in CRF table 1.A(d) and instead reported "IE". The ERT noted, however, that 3.18 kt CO_2 emissions from lubricants use are reported for 2019 in the IPPU sector. During the review, the Party indicated that the energy sector expert will work with the IPPU sector expert to report the quantity of CO_2 emissions from the non-energy use of fuels for bitumen and lubricants in CRF table 1.A(d).
E.10	International bunkers and multilateral operations – liquid fuels – CO_2, CH_4 and N_2O (E.33, 2019) Accuracy	Investigate and address the differences in the reporting of jet kerosene, residual fuel oil and gas and diesel oil used in international aviation and navigation in CRF tables 1.A(b) and 1.D.	Not resolved. The Party reported jet kerosene, residual fuel oil and gas and diesel oil used in international aviation and navigation, with discrepancies between CRF tables 1.A(b) and 1.D. For example, CRF tables 1.A(b) and 1.D reported jet kerosene consumption as 6,899.78 and 7,198.88 TJ, respectively, for 2019. During the review, the Party clarified that data for international aviation and navigation are being revised and any inconsistencies will be addressed through recalculations, which will be reported in future annual submissions.
E.11	1.A.1.a Public electricity and heat production – liquid fuels – CO_2, CH_4 and N_2O (E.14, 2019) (E.13, 2017) (E.23, 2016) (E.23, 2015) (29, 2013) Transparency	Report estimates, including any relevant information such as NCVs, oxidation factors, EFs and AD used for the estimation of emissions, in the NIR.	Addressing. The Party reported in NIR table 3-9 plant-specific information, including NCVs, oxidation factors, EFs and AD, for all operational public electricity generation installations. The Party reported in its NIR (p.89) that the estimation of emissions for 1990–2004 was carried out using an oxidation factor of 1 in accordance with the 2006 IPCC Guidelines (vol. 2, chap. 2, p.2.6) and a country-specific calorific value for each of the fuels used in power stations; however, these country-specific values were not reported in the NIR. For 2005 onward, Malta used the NCVs and oxidation factors identified in the verified emission reports submitted in accordance with EU directive 2003/87/EC (see NIR section 3.2.4.2). During the review, the Party clarified that the data contained in NIR table 3-9 are

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			specific to the 2019 reporting year, with country-specific data varying slightly between years. The ERT considers that the recommendation has not yet been fully addressed because the Party did not include in the NIR the country-specific calorific value and EFs used for estimating emissions for 1990–2004 and for 2005 onward, respectively.
E.12	1.A.3.a Domestic aviation – liquid fuels – CO_2, CH_4 and N_2O (E.17, 2019) (E.16, 2017) (E.27, 2016) (E.27, 2015) (38, 2013) Convention reporting adherence	Make use of additional sources of information, such as EUROCONTROL, which is based on higher-tier methods, as a supplementary QA activity to verify the fuel allocation for domestic and international uses.	Addressing. The Party reported in NIR section 3.2.6.2 that it uses EUROCONTROL data as part of its methodology for estimating domestic aviation emissions, which is of higher quality than previous data sources used. As the EUROCONTROL model is now used as the primary data source, it is unsuitable for use for verification purposes. During the review, the Party clarified that the domestic aviation methodology is currently being updated to ensure consistency and accuracy with regard to updates to be reported in future annual submissions and it may use data from national and other international sources, such as MRA and Eurostat, to perform QA on EUROCONTROL data. The ERT considers that the recommendation has not yet been fully addressed because the Party has not yet verified the tier 3 EUROCONTROL model using data from additional sources and verified the fuel allocation between domestic and international uses.
E.13	1.A.3.a Domestic aviation – liquid fuels – N_2O (E.18, 2019) (E.26, 2017) Accuracy	Use an IPCC default EF or justify in the NIR the use of a country-specific EF.	Not resolved. NIR section 3.2.6.2 does not include a justification for the use of a country-specific N_2O EF for domestic aviation (for aviation gasoline the EF was 0.6 kg/TJ for 1990–2004, "NO" for 2005–2006, 1,964.59 kg/TJ for 2007, 1.96 kg/TJ for 2008–2009, "NO" for 2010, 1.96 kg/TJ for 2011–2018 and 1.93 kg/TJ for 2019; and for jet kerosene the EF was 0.6 kg/TJ for 1990–2004, 1.94 kg/TJ for 2005–2011, 0.6 kg/TJ in 2012 and 1.94 kg/TJ for 2013–2019), whereas the IPCC default value is 2 kg/TJ. The Party carried out a recalculation for N_2O emissions from domestic aviation and explained in the NIR (section 3.2.6.5) that the error for 2007 was corrected. During the review, the Party indicated that it will include a justification for the data sources and EFs used for domestic aviation in future annual submissions. The ERT considers that the recommendation has not yet been addressed because the Party used 1,964.59 kg/TJ as the N_2O IEF for aviation gasoline for 2007 which would appear to be an error and it did not provide a justification for the use of a country-specific EF.
E.14	1.A.3.b Road transportation – liquid fuels – CO_2 (E.19, 2019) (E.17, 2017) (E.28, 2016) (E.28, 2015) (33, 2013) Consistency	Obtain data on the NCVs and carbon content from the fuel suppliers in order to develop and use a more accurate EF when estimating CO_2 emissions from gasoline; if such data are not available, use the default CO_2 EF from the 2006 IPCC Guidelines that is applicable to European gasoline passenger cars.	Addressing. The Party has not yet obtained data on NCVs and carbon content from fuel suppliers. The Party reported in NIR section 3.2.6.8 that the CO_2 EFs for road transport were sourced from COPERT V and the EMEP/EEA air pollutant emission inventory guidebook. Emissions for all years from 2005 onward were estimated using the COPERT V model (NIR table 3-1, p.77), while emissions for 1990–2004 were estimated using a tier 1 approach. The ERT noted that Malta applied the default CO_2 EF (69.30 t/TJ) from the 2006 IPCC Guidelines (vol.2, chap.3, table 3.5.2) only for 2017–2018 and for other years it applied an EF ranging from 71.66 to 72.19 t/TJ (CRF table 1.A(a) (sheet 3)). During the review, the Party clarified that COPERT V applied hydrogen/carbon ratios from the EMEP/EEA air pollutant emission inventory guidebook 2016 to generate an EF. Malta confirmed that it is in discussions with the publishers of COPERT V on how to change the

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			ratio to ensure consistency with the EF from the 2006 IPCC Guidelines. The Party indicated that a detailed methodology for the category will be provided in future annual submissions.
E.15	1.A.3.b Road transportation – liquid fuels – CO_2, CH_4 and N_2O (E.20, 2019) (E.20, 2017) (E.37, 2016) (E.37, 2015) Consistency	Ensure the time-series consistency of the CO_2, CH_4 and N_2O emission estimates for liquid fuels in road transportation by using the same methodology (COPERT IV model) for the entire time series, or demonstrate in the NIR that the use of two different methodologies does not introduce inconsistencies in the time series.	Addressing. The Party reported in NIR section 3.2.6.9 that vehicle fleet information is only available for 2005 onward; however, the section does not explain how the Party maintains time-series consistency between the two different methodologies used. During the review, the Party clarified that the consistency of the emission estimates is dependent on the AD rather than the methodology used. The Party indicated that it is collecting the necessary AD to recalculate the CO_2, CH_4 and N_2O emission estimates for liquid fuels in road transportation (including for years prior to 2005) and will include more information on the methods and EFs that impact consistency in its future annual submissions.
E.16	1.A.3.b Road transportation – liquid fuels – CO_2 and N_2O (E.21, 2019) (E.21, 2017) (E.39, 2016) (E.39, 2015) Consistency	Review the CO_2 and N_2O IEFs for cars for gasoline, diesel oil and liquefied petroleum gas and explain any significant inter-annual changes and how the consistency of the time series is ensured.	Addressing. The ERT noted that there are several significant inter-annual changes in the CO_2 and N_2O IEFs for gasoline, diesel oil and LPG for cars for different years of the time series (e.g. in its 2021 submission the changes for the N_2O IEF were –59.0 per cent for gasoline and –73.5 per cent for LPG between 2016 and 2017; and in its 2016 submission the changes for the CO_2 IEF were 12.1 per cent for diesel oil between 2013 and 2014, and 9.2 per cent for gasoline between 2009 and 2010, while the changes for the N_2O IEF were –44.4 per cent for diesel oil between 2009 and 2010, 86.5 per cent for gasoline between 2010 and 2011, and 222.8 per cent for LPG between 2013 and 2014). NIR section 3.2.6.8 does not provide detailed information on how consistency was maintained for road transportation after different data sources were used for 1990–2004 and 2005–2017. The Party indicated that work is under way to include pre-2005 data in the COPERT V model. NIR table 3-4 (p.82) also reports that the Party will address time-series consistency for the road transportation subcategory in the coming years by developing emission estimates for 1990–2019 using the COPERT V model. During the review, the Party indicated that it will review the CO_2 and N_2O IEFs for cars for gasoline, diesel oil and LPG and will report additional information in future annual submissions.
E.17	1.A.3.b Road transportation – liquid fuels – CO_2, CH_4 and N_2O (E.22, 2019) (E.27, 2017) Accuracy	Calculate CO_2 emissions from fuel sold in accordance with the 2006 IPCC Guidelines and apply the procedure for validating vehicle kilometres travelled with fuel statistics data, and correct the data if necessary, before estimating CH_4 and N_2O emissions using the COPERT V model, and describe this procedure and the results in the NIR.	Addressing. The Party reported in the NIR (section 3.2.6.12) that the figures for fuel sold for transport were obtained from a fuel survey conducted by the National Statistics Office and the Regulator for Energy and Water Services and that it will consult them to improve data accuracy. The Party did not use the tier 1 method from the 2006 IPCC Guidelines (volume 2, p.3.10) to verify the emissions estimated using the COPERT V model. During the review, the Party clarified that it plans to estimate CO_2 emissions using the tier 1 method from the 2006 IPCC Guidelines to verify the estimates calculated using the COPERT V model and report the results in future annual submissions.
E.18	1.A.3.b.i Cars – liquid fuels – CO_2 and CH_4 (E.23, 2019) (E.28, 2017) Transparency	(a) Correct the discrepancies between the NIR and the CRF tables; (b) Add a description in the NIR of the treatment of biodiesel in the COPERT V	(a) Resolved. The CO_2 and CH_4 emissions reported in the NIR (section 3.2.6.11) are consistent with the emissions reported in CRF table 1.A(a) (sheet 3); (b) Not resolved. The Party did not provide a description of the treatment of biodiesel in the COPERT V model. During the review, the Party clarified that it intends to provide a

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		model.	description of the treatment of biodiesel in the COPERT V model in future annual submissions.
E.19	1.A.3.b.i Cars – liquid fuels – N_2O (E.24, 2019) (E.29, 2017) Accuracy	Justify in the NIR the use of the country-specific N_2O EF for biodiesel.	Not resolved. There is no specific N_2O EF marked for biodiesel in the NIR, but the fuel is mentioned as being used in road transport. The EF reported in NIR table 3-10 for diesel oil is 0.6 kg/TJ, which is well below the IPCC default value (3.9 kg/TJ). NIR section 3.2.6.8 does not include an explanation and a justification for the use of a country-specific EF for N_2O for biodiesel. During the review, the Party indicated that it is currently updating its methodology and will report more details on the N_2O EF for biodiesel in future annual submissions.
E.20	1.A.3.b.i Cars – diesel – CO_2 and CH_4 (E.34, 2019) Convention reporting adherence	Provide in the NIR verification information on the COPERT V model used to estimate GHG emissions from cars under category 1.A.3.b.i (para. 41 of the UNFCCC Annex I inventory reporting guidelines).	Not resolved. The Party provided information on the method (COPERT V model) used to estimate emissions in its NIR (section 3.2.6.8) and the parameters used in NIR table 17-7 (p.375). However, the NIR does not contain information on or results of any verification procedures. During the review, the Party clarified that COPERT V was used to estimate emissions following a methodology that is very similar to the one provided in the 2006 IPCC Guidelines, which is based on vehicle kilometres rather than fuel sold. The Party indicated that it plans to use the 2006 IPCC Guidelines tier 1 methodology to verify the estimates produced using the COPERT V model and report the results in future annual submissions.
E.21	1.A.3.b.iv Motorcycles – lubricants – CO_2 (E.35, 2019) Transparency	Transparently explain in the NIR how the Party reported CO_2 emissions from lubricants used as fuel in two-stroke engines.	Addressing. The Party reported in its NIR (section 3.2.2) that emissions from lubricants used as fuel in two-stroke engines were estimated and reported under subcategory 1.A.3.b Road transportation. However, the NIR contains no information on the method for estimating emissions from lubricants used as fuel in two-stroke engines. During the review, the Party clarified that CO_2 emissions from lubricants were estimated using the COPERT V model, and that it will provide additional information on the method used in future NIRs.
E.22	1.A.3.d Domestic navigation – liquid fuels – CO_2, CH_4 and N_2O (E.25, 2019) (E.30, 2017) Consistency	Document the changes in data sources and methodology in the NIR and also describe in the NIR how the consistency of the time series is maintained.	Addressing. The Party provided in the NIR details of the tier 1 methodology (section 3.2.6.14) and included the sources of the EFs for residual fuel oil (NIR table 3-14). The Party reported in NIR section 3.2.6.17 that no changes were made to the data sources for the 2021 submission. In NIR section 3.2.6.15, the Party noted minor inconsistencies in the fuel sales data; specifically, residual fuel oil sales data were not available for 2017 and 2018. In NIR section 3.2.6.15, the Party reported that it confirmed with the National Statistics Office and the Regulator for Energy and Water Services that no residual fuel oil was sold in 2017; however, no such confirmation was made for 2018. During the review, the Party indicated that it is investigating potential new data providers with a view to acquiring more reliable and accurate AD and will report more detail on this exercise in future submissions.
E.23	1.A.3.d Domestic navigation – liquid fuels – CO_2, CH_4 and N_2O (E.26, 2019) (E.30, 2017) Transparency	Describe in the NIR the factors contributing to the significant inter-annual variation in the consumption of residual fuel oil.	Not resolved. The inter-annual change in residual fuel oil consumption for recent years has been identified as significant, in particular the 95.3 per cent increase between 2012 (150.25 TJ) and 2013 (293.50 TJ) and the subsequent 51.2 per cent decrease between 2013 and 2014 (143.37 TJ). The Party did not report the contributing factors for the inter-annual variation in the consumption of residual fuel oil in NIR section 3.2.6. During the review, the Party

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			clarified that it is undertaking an investigation aimed at identifying contributing factors for the inter-annual variation and will report any new findings in future annual submissions.
E.24	1.A.4.a Commercial/institutional – biomass – CH_4 (E.36, 2019) Transparency	Transparently report the type of fuel constituting the biomass used in the commercial/institutional sector and the quantities of each fuel type used over the time series, and refer to table 1.1 in chapter 1, volume 2, of the 2006 IPCC Guidelines for information on fuel classification.	Addressing. The Party reported in its NIR (section 3.2.7.1) that biodiesel and biogas are used in the commercial/institutional sector, but provided no further details on their use across the time series. During the review, the Party clarified that it updated the biomass types used in the commercial/institutional sector in line with the 2006 IPCC Guidelines for 2019, with similar updates to be reported in future annual submissions for the remainder of the time series. The ERT considers that the recommendation has not yet been fully addressed because the Party did not report the quantities of biodiesel and biogas used in its NIR or apply the classifications from the 2006 IPCC Guidelines (vol. 2, chap. 1, table 1.1) to biomass used in the commercial/institutional sector over the time series.
E.25	1.A.4.a Commercial/institutional – biomass – CH_4 (E.36, 2019) Transparency	Transparently report the CH_4 EFs applied for each biomass type and any recalculations for this category.	Not resolved. The NIR does not report the CH_4 EFs applied for each biomass type. During the review, the Party clarified that it will report CH_4 EFs for each biomass type in future annual submissions.
E.26	1.A.5 Other (not specified elsewhere) – liquid fuels – CO_2, CH_4 and N_2O (E.27, 2019) (E.22, 2017) (E.41, 2016) (E.41, 2015) Transparency	Explain in the NIR the methodology, assumptions and sources of AD and EFs used to estimate and report CO_2, CH_4 and N_2O emissions from fuel use in the military (both stationary and mobile combustion) for the entire time series since 1990.	Addressing. The Party reported in NIR table 3-1 that the Armed Forces of Malta was the data source for fuels used for military purposes for 2017–2019; however, it did not report any details of the AD used for the remainder of the time series. NIR section 3.2.8.3 reports that emissions from the military were allocated to subcategories 1.A.3.B Road transportation and 1.A.3.d Domestic navigation for 2019, and to category 1.A.5 Other for 1990–2018. During the review, the Party clarified that the allocations for 2019 will be applied to all years of the time series in future annual submissions, and emissions from military aviation will be allocated to subcategory 1.A.3.a Domestic aviation.
IPPU			
I.1	2. General (IPPU) (I.1, 2019) (I.1, 2017) (I.1, 2016) (I.1, 2015) (42, 2013) (50, 2012) Convention reporting adherence	Develop and implement QA/QC procedures for the IPPU sector.	Addressing. In its NIR (section 4.1), the Party stated that the data received from data providers were checked and compared with the trend in the specific AD over previous years. Any variations and outliers were brought to the attention of and discussed with the data providers. These discussions occasionally led to revisions of data that would otherwise have been submitted. Malta is taking steps to identify alternative sources of data, where possible, to enable more robust QA/QC checks. During the review, the Party clarified that it plans to develop QA/QC procedures for all the subcategories in the IPPU sector. This action is being implemented gradually with the aim of completing implementation in 2026.
I.2	2.A.4 Other process uses of carbonates – CO_2 (I.2, 2019) (I.2, 2017) (I.5, 2016) (I.5, 2015)	Investigate the extent of the use of carbonates in the production of ceramics (at least one company seems to produce ceramic products in Malta), calculate the	Not resolved. In its NIR (section 4.2.4.2.6), the Party stated that it plans to determine whether the production process in the local ceramics industry leads to emissions or whether products are imported. The ERT noted that, according to a preliminary assessment carried out by the previous ERT (FCCC/ARR/2017/MLT) on the basis of the reported size of the companies, GHG emissions for this category are likely to be below the significance threshold established in paragraph 37(b) of the UNFCCC Annex I inventory reporting

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	(48, 2013) Completeness	emissions, if appropriate, and report on the results in the NIR.	guidelines. However, Malta did not report such an assessment in the NIR. During the review, the Party clarified that the use of carbonates in the production of ceramics is being investigated. It is the intention of the national inventory agency to determine whether the processes carried out in the local ceramics industry emit GHGs or involve the use of imported products. If appropriate, emissions will be estimated, and the results will be reported in the NIR. This action is being implemented with the aim of completing implementation in 2024.
I.3	2.D.3 Other (non-energy products from fuels and solvent use) – CO_2 (I.3, 2019) (I.4, 2017) (I.10, 2016) (I.10, 2015) (51, 2013) (60, 2012) Consistency	Investigate the time-series inconsistency of the estimates of CO_2 emissions from road paving with asphalt, recalculate the emissions, if appropriate, and report on the findings in the NIR.	Addressing. The Party extrapolated AD for the years prior to 2004, but the time-series consistency of the AD is still being analysed (NIR section 4.5.3.1.6). During the review, the Party clarified that the national inventory agency is discussing the matter with the data provider to determine a time series of AD that is as consistent as possible and dates back as far as possible. The data provider used to be the authority for transport in Malta, but this responsibility has been transferred to the agency entrusted with the development, maintenance and upgrading of roads and other public infrastructure in the Maltese islands. Efforts are being made to develop a consistent data set starting from 2004. On the basis of such a time series, data could be extrapolated back to 1990. Moreover, the Party plans to perform an analysis of the data reported in earlier GHG inventories, particularly for the years prior to 2004, to determine whether these data need to be revised. Issues with consistent and timely receipt of data are also being discussed. Simultaneously, Malta is seeking an alternative data set to use for subcategory-specific QA/QC. This action is being implemented with the aim of completing implementation in 2023.
I.4	2.D.3 Other (non-energy products from fuels and solvent use) – CO_2 (I.16, 2019) Completeness	Report emissions from the use of urea in road transportation in order to ensure completeness.	Addressing. In NIR table 4-3 (p.111) the Party reported that it did not estimate the amount of urea solution, and estimates of emissions from the use of urea in road transportation were therefore not reported in the respective CRF table. Malta stated in its NIR (section 4.5.3.3.6) that the national inventory agency will estimate and report in the CRF tables the amount of urea solution consumed in selective catalytic reduction in transport according to the COPERT V model. During the review, the Party clarified that it determined the methodology needed to estimate emissions from the use of urea in road transportation with the support of the EU effort-sharing decision review team in October 2019. However, as stated in the NIR (section 4.5.3.3.6), the national inventory agency will estimate and report in the CRF tables the amount of urea solution consumed in selective catalytic reduction in transport according to the COPERT V model. The target for implementing this improvement is 2023.
I.5	2.F.1 Refrigeration and air conditioning – HFCs and PFCs (I.5, 2019) (I.6, 2017) (I.12, 2016) (I.12, 2015) (44, 2013) Accuracy	Proceed with the project to develop a better methodology for estimating emissions from refrigeration and air conditioning and report on the status in the NIR.	Addressing. The Party reported in NIR table 4-3 (p.109) that the project it conducted in 2012–2014 to improve the methodology of the NIR in the sector of product uses as substitutes for ozone-depleting substances, as suggested by previous ERTs, has ended, and the results were first used for the 2015 submission. However, in its NIR (section 4.7.1.6), the Party stated that some AD for 2019 are assumed to be equal to those reported for 2018, and the missing data will be updated in due course. During the review, the Party clarified that the national inventory agency intends to improve the transparency of reporting for this

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			category by including a more detailed explanation of the model used, describing the assumptions and expert judgments applied. The target for completing implementation is 2025. The ERT considers that the recommendation has not yet been fully addressed because the Party has not yet improved the accuracy of the AD.
I.6	2.F.1 Refrigeration and air conditioning – HFCs (I.7, 2019) (I.9, 2017) (I.15, 2016) (I.15, 2015) Transparency	Ensure consistency between the notation keys used to report AD for "filled into new manufactured products" ("NO") and for "remaining in products at decommissioning" ("NE") and the associated emissions ("NO").	Addressing. The Party reported in CRF table 2(II)B-H (sheet 2) AD for HFCs remaining in products at decommissioning as "NE" and the associated emissions as "IE" without providing an explanation in CRF table 9. However, the NIR (p.131) explains that the EF includes both operational and disposal emissions in the category, in view of the fact that disposal emissions for larger systems are usually small due to recollection of gas. During the review, the Party provided no further clarification. The ERT considers that the recommendation has not yet been addressed because the Party has not yet explained the use of "IE" use in CRF table 9.
I.7	2.F.1 Refrigeration and air conditioning – HFCs (I.8, 2019) (I.11, 2017) (I.16, 2016) (I.16, 2015) Transparency	Review the notation keys reported for disposal emissions in CRF table 2(II).B-H to ensure that the correct notation keys are used.	Addressing. The Party reported disposal emissions from transport refrigeration and stationary air conditioning as "NE" (HFC-32) and "IE" (HFC-32, HFC-123, HFC-134a and HFC-143a), respectively, in CRF table 2(II)B-H (sheet 2). For transport refrigeration, HFC-134a emissions from disposal were reported for 2016–2019 and reported as "NO" in previous years (table 4-29 of the NIR) because the equipment had not yet reached end of life for these years. During the review, the Party clarified that this issue has been addressed. The ERT considers that the recommendation has not yet been fully addressed because the Party did not use the correct notation key ("NO") for years when emissions were assumed to be zero and the use of "NE" and "IE" is not explained in CRF table 9.
I.8	2.F.1 Refrigeration and air conditioning – HFCs (I.13, 2019) (I.19, 2017) Comparability	Report emissions from mobile air conditioning separately in subcategory 2.F.1.e mobile air conditioning in order to ensure transparency and comparability.	Not resolved. In NIR table 4-3 (p.111) the Party reported that it conducted an exercise to adapt its methodology to enable separate reporting for subcategories 2.F.1.d Transport refrigeration and 2.F.1.e Mobile air conditioning. However, Malta reported in CRF table 2(II)B-H (sheet 2) emissions from mobile air conditioning as "IE" to signify the allocation of emissions to other categories, reporting the emissions under transport refrigeration. During the review, the Party clarified that it is implementing the necessary procedures to enable emissions for subcategory 2.F.1.e Mobile air conditioning to be reported separately, rather than including them under subcategory 2.F.1.d Transport refrigeration. However, this can only be achieved if adequate data are submitted by the data provider. The number of registered vehicles for the whole time series needs to be revised. Discussions are being held with the local authority for transport to make sure that these data are received in a consistent and timely manner for future annual submissions, and the target for separate reporting for subcategories 2.F.1.d and 2.F.1.e is 2022.
I.9	2.F.1 Refrigeration and air conditioning – HFCs (I.17, 2019) Transparency	Explain why the average charge factor for buses and coaches is higher than for mobile refrigeration vehicles.	Not resolved. The Party reported the average charge of 12 kg for buses and coaches (NIR p.160), which is much higher than the 3.9 kg reported for mobile refrigeration vehicles (NIR p.150). In its NIR (sections 4.7.1.3.2 and 4.7.1.4.2.1), Malta continued to report the same average charge factors, which are above the IPCC default values (vol. 3, chap. 7, table 7.9), without providing any justification. During the review, the Party clarified that the average charge for both buses and transport refrigeration (articulated heavy goods vehicles) is higher

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			than the default range of 0.5–1.5 kg specified in the 2006 IPCC Guidelines (vol. 3, chap. 7, table 7.9). However, the average charge for buses is within the default range of 4–18 kg specified in the 2019 Refinement to the 2006 IPCC Guidelines (vol. 3, chap. 7, table 7.9), but this is not the case for transport refrigeration (articulated heavy goods vehicle). Moreover, according to the default charge values specified in the 2019 Refinement to the 2006 IPCC Guidelines, by default, the charge in buses may be up to nine times higher than the charge in transport refrigeration (articulated heavy goods vehicle), whereas in the NIR (pp.150 and 160), the charge in buses is only three times higher than the charge in transport refrigeration (articulated heavy goods vehicle). The Party further clarified that its approach takes into account the charges used by other European countries with product use markets similar to Malta's (e.g. Germany and United Kingdom of Great Britain and Northern Ireland (Department of Energy and Climate Change, 2013)).
I.10	2.F.2 Foam blowing agents – HFCs (I.9, 2019) (I.14, 2017) (I.18, 2016) (I.18, 2015) Accuracy	Review the AD and ensure that there is a robust and consistent approach to collecting AD for this category in a way that eliminates any possibility of data gaps from some of the importers, and explain any significant inter-annual changes in emissions.	Addressing. The Party gathered AD from companies registered with the Regulator for Energy and Water Services (NIR section 4.7.2.2). It was assumed that the vast majority of the local foam blowing market is covered by the AD gathered. During the review, the Party clarified that it conducted a review of the AD to improve the robustness and consistency of AD collection and reporting for category 2.F.2, the current approach is considered to be adequate and no recalculations were required. However, the inter-annual changes in emissions still need to be adequately analysed, and the target is to complete the analysis in 2023.
Agriculture			
A.1	3. General (agriculture) – (A.2, 2019) (A.2, 2017) (A.4, 2016) (A.4, 2015) (56, 2013) (69, 2012) Consistency	Review the population data for all livestock categories, ensure time-series consistency and report on any recalculations.	Addressing. The Party reported in its NIR (section 5.1.2) the data sources and methods used to estimate livestock populations. The characterization of livestock is still largely reliant on expert judgment owing to limited data availability. Recalculations were described in the NIR in the relevant sections, with the reporting supplemented by tables showing the resulting changes in emission estimates. During the review, the Party clarified that it carried out a detailed review of the population data in 2020 and decided to continue using the values reported in the national inventory, which are based on national values reported by the National Statistics Office, until a more reliable and complete source becomes available. The ERT considers that the recommendation has not yet been fully addressed because the Party did not use complete livestock population data substantiated by published data and official documents, or provide a detailed review of the population data for all livestock categories in its NIR.
A.2	3. General (agriculture) – (A.3, 2019) (A.3, 2017) (A.22, 2016) (A.22, 2015) Consistency	Undertake a detailed review of the AD (animal populations) for the agriculture sector in order to identify the most appropriate data source, including for the base year, and use appropriate techniques as detailed in the 2006 IPCC Guidelines	Addressing. The Party reported in its NIR (pp.185–188) a description of livestock categories, but data sources were not provided for all categories reported (e.g. swine). During the review, the Party clarified that it carried out a detailed review of animal populations in 2020 and decided to continue using the values reported in the national inventory, which are based on national values reported by the National Statistics Office, until a more reliable and complete source becomes available. The ERT considers that the recommendation has not yet been fully addressed because the Party did not provide in the

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		for the development of a consistent time series of AD.	NIR a detailed review of the AD of all animal populations and a clarification of whether appropriate techniques, as detailed in the 2006 IPCC Guidelines for the development of a consistent time series of AD, were needed and used.
A.3	3. General (agriculture) – CH_4 and N_2O (A.17, 2019) Convention reporting adherence	Correct the number of horses for 2008–2009 reported in CRF tables 3.A (sheet 1) and 3.B(b) and enhance the QA/QC procedures for the agriculture sector to minimize transcription errors in the reporting of data in the CRF tables.	Resolved. The Party reported the corrected number of horses in CRF tables 3.A (sheet 1) and 3.B(b) for 2008–2009 (1,153 and 1,454, respectively).
A.4	3.A.2 Sheep – CH_4 (A.4, 2019) (A.31, 2017) Transparency	Explain in the NIR that the net energy to produce wool is excluded from the calculation of CH_4 emissions from enteric fermentation for sheep and how the coefficient for pregnancy was derived.	Resolved. The Party reported in its NIR (section 5.2.2) that the method for deriving the coefficient for pregnancy for sheep was taken from an unpublished diploma dissertation (Valletta, 2011). The previous ERT (FCCC/ARR/2017/MLT) noted that the Party reported in the NIR that the net energy to produce wool is excluded from gross energy calculations but did not provide a rationale for this and recommended that Malta explain in the NIR that the net energy to produce wool is excluded from the estimation. The Party reported in its NIR (section 5.2.2, p.186) that it is a common practice in Malta to discard wool and since energy is used for sheep, the energy required to produce wool is included in the estimation of emissions from enteric fermentation for the entire time series (CRF table 3.A (sheet 1)). The Party reported the estimation method, and relevant information can be found in the NIR (table 5-18). The ERT found that the parameters and equations used in the estimation of emissions from enteric fermentation for sheep according to NIR table 5-18 are consistent with the 2006 IPCC Guidelines (vol. 4, chap. 10, equation 10.12, p.10.19), and since the energy required to produce wool is included in the estimation, a rationale as recommended by the previous ERT is no longer required.
A.5	3.A.2 Sheep – CH_4 (A.18, 2019) Accuracy	Include the net energy associated with wool production in the gross energy estimates when deriving EFs for CH_4 emissions from enteric fermentation associated with sheep livestock.	Resolved. The Party reported in NIR table 5-18 the equation used to estimate gross energy, which shows that the net energy associated with wool production is included in the gross energy estimates, and higher CH_4 EFs were reported in CRF table 3.A (sheet 1) (e.g. 10.10 kg CH_4/head/year in 2015 whereas 7.05 kg CH_4/head/year was reported for 2019).
A.6	3.A.3 Swine – CH_4 (A.19, 2019) Convention reporting adherence	Correct the information on the method used for category 3.A.3 Swine in CRF table 3 (sheet 2) and enhance the QA/QC procedures for the agriculture sector to ensure that the information reported in the NIR is consistent with that reported in the CRF tables.	Resolved. The NIR (p.184 and table 5-2) refers to a tier 1 methodology for this category. The information is presented consistently in the NIR and CRF table Summary 3 (sheet 2).
A.7	3.A.4 Other livestock – CH_4 (A.5, 2019) (A.4, 2017)	Justify the applicability of the Italian CH_4 EF for rabbits to the national circumstances of Malta.	Resolved. The Party reported in its NIR (p.188) that following consultation with local experts, it used the Italian CH_4 EF (Agency for Environmental Protection and Technical Services (APAT), 2005) for estimating emissions from rabbits, as Italy is a neighbouring

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	(A.5, 2016) (A.5, 2015) (57, 2013) (67, 2012) Accuracy		country with a similar climate for rabbits. The Party provided the value used in table 5-16 of the NIR (p.190) and CRF table 3.A (sheet 1). During the review, the Party clarified that it used the Italian CH_4 EF because it does not have a country-specific value, and Italy's national circumstances, including climate, livestock rearing and agricultural practices, are very similar to Malta's. Further, the Party looked into the CH_4 EFs of other countries and found that France (the other European country which produces and consumes a very similar number of rabbits as Malta) uses the same CH_4 EF as Malta. The ERT finds the justification provided by the Party for the use of the Italian CH_4 EF for rabbits is acceptable.
A.8	3.A.4 Other livestock – CH_4 (A.20, 2019) Accuracy	Review the EFs reported by the small number of Parties that report CH_4 emissions from enteric fermentation for poultry, choose an EF that best represents poultry production practices in Malta, revise the estimates, if appropriate, and provide an appropriate rationale and reference for the choice of EF in the NIR.	Not resolved. The Party reported in NIR table 5-2 that it used tier 1 methodology for estimating enteric CH_4 emissions from poultry and reported the emissions for this category in CRF table 3.A (sheet 1) without further clarifying the EF source. During the review, the Party clarified that Italy does not seem to report any estimates of CH_4 emissions from enteric fermentation for poultry, and thus it does not have an Italian EF to follow. The ERT considers that the recommendation has not yet been addressed because the Party has not yet reviewed the EFs for enteric CH_4 emissions for poultry applied by other Parties and revised the estimates, if appropriate.
A.9	3.B Manure management – N_2O (A.21, 2019) Convention reporting adherence	Include the appropriate population numbers in CRF tables 3.A (sheet 1) and 3.B(b) for all livestock species, in particular for poultry and rabbits, and ensure that these data are not rounded before being entered into CRF tables 3.A (sheet 1) and 3.B(b).	Resolved. The Party reported in CRF tables 3.A (sheet 1) and 3.B(b) unrounded population numbers for all livestock categories.
A.10	3.B.1 Cattle – CH_4 (A.22, 2019) Convention reporting adherence	Report the correct method used to estimate emissions for category 3.B.1 Cattle in CRF table 3 (sheet 2) and enhance the QA/QC procedures for the agriculture sector to ensure that the information reported in the CRF tables is consistent with that reported in the NIR and across the time series.	Resolved. The Party reported in its NIR the methods applied to estimate CH_4 emissions from manure management (p.196) and the equations and parameter values used (table 5-23). The information is consistently reported in CRF table Summary 3 (sheet 2).
A.11	3.B.1 Cattle – N_2O (A.23, 2019) Convention reporting adherence	Correct the value in NIR table 5-24 regarding the proportion of N from manure that volatilizes as NH_3 and is lost through leaching for bulls, and enhance the QA/QC procedures for the agriculture sector to ensure that the information reported in the NIR is consistent with that reported in CRF table 3.B(b).	Resolved. The Party reported in its NIR (table 5-30) the corrected value of 45 per cent for the proportion of N from manure management that volatilizes as NH_3 and is lost through leaching for other cattle in accordance with the 2006 IPCC Guidelines (vol. 4, table 10.22), which includes bulls.

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A.12	3.B.1 Cattle and 3.D.a.2.a Animal manure applied to soils – N_2O (A.8, 2019) (A.15, 2017) (A.29, 2016) (A.29, 2015) Transparency	Explain in the NIR how N_2O emissions from manure management for dairy cattle, including the Nex used, and N_2O emissions from animal manure applied to soils are estimated, and how these estimates are consistent with the tier 2 approach used to estimate CH_4 emissions from enteric fermentation for dairy cattle.	Not resolved. The Party explained in its NIR the method used to estimate N_2O emissions from manure management for dairy cattle (section 5.3.2.2.1) and reported the equation used to calculate Nex values (NIR table 5-27, p.202). The Party explained in its NIR the methods used to estimate N_2O emissions from animal manure applied to soils (section 5.5.2.1.2), which included a correction in N due to losses. However, the equations applied for estimating these emissions were not provided in the NIR. During the review, the Party provided the equations applied to estimate emissions, in which the losses as N_2O were subtracted to estimate the total N available for application to soils. The ERT looked into the calculations provided by the Party and found that the total Nex value provided by the Party is not consistent with the values reported in CRF table 3.B(b). With regard to explaining how the estimates of N_2O emissions are consistent with the tier 2 approach used for estimating CH_4 emissions, the ERT noted that the methods applied involve a mixture of the 2006 IPCC Guidelines and the 2019 Refinement to the 2006 IPCC Guidelines, which adds complexity and reduces clarity in terms of the calculations carried out. The ERT considers that the recommendation has not yet been addressed because the Party did not clearly describe which set of guidelines it used, clearly justify its reasons for introducing a modification to equation 10.34 of the 2019 Refinement to the 2006 IPCC Guidelines, or explain how its calculations are consistent with the values reported in CRF table 3.B(b).
A.13	3.B.2 Sheep – CH_4 (A.24, 2019) Convention reporting adherence	Report the correct method used to estimate emissions for category 3.B.2 Sheep in CRF table 3 (sheet 2) and enhance the QA/QC procedures for the agriculture sector to ensure that the information reported in the NIR is consistent with that reported in the CRF tables and across the time series with respect to the methodological description.	Resolved. The Party reported in its NIR (p.197 and table 5-26) the method and parameter values applied to estimate CH_4 emissions from sheep. The information on method used (tier 1) presented in NIR table 5-2 and CRF table Summary 3 is consistent across the time series suggesting enhanced QA/QC procedures.
A.14	3.B.4 Other livestock – N_2O (A.25, 2019) Completeness	Include turkeys in the estimation of emissions from other poultry for all years by using an appropriate method from the 2006 IPCC Guidelines to derive population statistics for years between farm structure surveys.	Resolved. In NIR table 5-29, the Party provided the corrected value of the total N excretion for other poultry. The Party reported in its NIR (section 5.2.2, p.187) that other poultry is mainly comprised of turkeys and every three years (starting from 2010) the National Statistics Office conducts a survey and provides turkey population data under other poultry. Thus, the data for other poultry is available for 2010, 2013, 2016 and so on. For the intervening years the Party used an extrapolation method based on historical turkey population data to fill the data gap.
A.15	3.D.a.2 Organic N fertilizers – N_2O (A.26, 2019) Transparency	Explain in the NIR the basis for the assumption that no organic fertilizers other than animal manure are applied to agricultural soils on the basis of, for example, the results of discussions with national experts, as appropriate.	Resolved. The Party continues to report only animal manure under organic N fertilizers and uses "NO" for other organic fertilizers in CRF table 3.D. The Party reported in its NIR (section 5.5, p.209) and CRF table 3.D emissions from animal manure applied to soils and provided justification for not reporting emissions from sewage sludge. During an agriculture stakeholder meeting towards the end of 2020, it was communicated to Malta's agricultural

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			inventory compiler that organic fertilizer application in Malta comprises only livestock manure.
A.16	3.D.a.2.a Animal manure applied to soils – N_2O (A.15, 2019) (A.27, 2017) (A.37, 2016) (A.37, 2015) Transparency	Undertake a representative survey of AWMS for all livestock species as part of future improvements to the inventory and include in the NIR information on the AWMS used in the country.	Not resolved. The Party reported in CRF table 3.B(a) (sheet 2) the proportions of manure in the different AWMS. However, the source of these data is not clear from the NIR. According to the NIR (p.180) the Ministry for Sustainable Development, Environment and Climate Change has recently commissioned a study aimed at improving AD and data-collection methodologies adopted for the agriculture sector. During the review, the Party clarified that it is gathering information, but no reference to data sources was given. The ERT considers that the recommendation has not yet been addressed because the Party has not yet provided detailed data sources for the information on AWMS for all livestock species.
A.17	3.D.a.4 Crop residues – N_2O (A.27, 2019) Convention reporting adherence	Report the correct method used to estimate emissions for category 3.D.a.4 Crop residues in CRF table 3 (sheet 2) and enhance the QA/QC procedures for the agriculture sector to ensure that the information reported in the CRF tables is consistent with that reported in the NIR and across the time series with respect to the methodological description.	Resolved. The Party reported in its NIR (section 5.5.2.1.3) the method used to estimate N_2O emissions from crop residues using country-specific data. The Party made the correction in CRF table 3 (sheet 2) which is consistent with the information provided in the NIR.
A.18	3.G Liming – CO_2 (A.28, 2019) Transparency	Enhance the transparency of the reporting by providing information in the next annual submission on the pH value of soils in Malta, as provided in the Maltese soil information system, and/or include further reference materials to support the reporting of "NO" for this category.	Resolved. The Party reported in its NIR (section 5.8.1) a description of the soil types and associated pH values in Malta. During the review, the Party clarified that the Maltese islands are composed entirely of Oligo-Miocene sedimentary rocks, which are largely of marine biogenic origin. These are highly calcareous, thus giving rise to alkaline soils with a pH generally ranging from 7.0 to about 8.5. More information regarding the soil types of Malta can be found in the Maltese soil information system. This information will be provided in future annual submissions. The ERT considers that the recommendation has been fully addressed because the Party reasonably justified the absence of emissions from liming in the country.
LULUCF			
L.1	4. General (LULUCF) – CO_2 (L.2, 2019) (L.18, 2017) Consistency	Maintain consistency of the total areas for each land-use category between the land-transition matrix in CRF table 4.1 and CRF tables 4.B, 4.C, 4.E and 4.F by including the land areas under conversion in the land-use change matrices.	Resolved. The Party reported consistent total areas for each land-use category between the land-transition matrix in CRF table 4.1 and CRF tables 4.B, 4.C, 4.E and 4.F by including the land areas under conversion in the land-use change matrices.
L.2	Land representation – (L.3, 2019) (L.9, 2017)	Report all information, including assumptions, on the method applied to construct a consistent land representation	Addressing. The Party included information on the construction of land representation in its NIR (section 6.1.4) as part of the description of the main issues detected under the capacity-building project organized in coordination with the European Commission and its Joint

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	(L.15, 2016) (L.15, 2015) Transparency	while using two different data sets (national statistics for cropland and forest land and CORINE land-cover data for all other land uses).	Research Centre. The ERT noted that reporting the information included in the description of the issues (1–3) would help to improve the transparency of NIR section 6.3. The Party has worked on the consistency of the land-transition matrix and included additional information in tables 6-9 and 6-10 in section 6.3 of the NIR. During the review, the Party provided the ERT with additional information (in a spreadsheet) on the method applied to construct land representation. The ERT noted that for the years for which the Party used CORINE land-cover information (1990, 2000, 2006 and 2012), the Party distributed different area (in kha) for the grassland category (maquis and other). The ERT considers that the recommendation has not yet been fully addressed because the Party did not transparently report all relevant information in the NIR (section 6.3) to help improve understanding of how it constructed a consistent land representation while using two different data sets (national statistics for cropland and CORINE land-cover data for other land).
L.3	4.A.1 Forest land remaining forest land – CO_2 (L.5, 2019) (L.13, 2017) (L.19, 2016) (L.19, 2015) Transparency	Report any information collected from the surveillance system on any disturbance that has occurred on forest land and report the associated GHG emissions and subsequent removals.	Addressing. The Party mentioned in its NIR (section 6.4.1.2, p.259) that new documentation and AD were collected and analysed in relation to the forestry inventories, which were required for submission to the National Forestry Accounting Plan and for establishing the forest reference level. The ERT noted that it is important that new documentation and AD collected are included in the NIR because Malta reported that the annual net carbon stock changes in the biomass pool can be assumed to be equal to zero across time (section 6.4.1.2, p.259), provided that no disturbances, including harvesting, occur. For this reason, it is important to have updated information about any disturbances, including harvesting in forest land. During the review, the Party clarified that efforts are under way to report calculations and additional information for the forest land category in future annual submissions.
L.4	4.E.2.3 Grassland converted to settlements – N_2O (L.7, 2019) (L.19, 2017) Comparability	Report in CRF table 9 the information required in relation to the use of the notation key "IE" for grassland converted to settlements.	Resolved. The Party reported in CRF table 9 the information required in relation to the use of "IE" for grassland converted to settlements.
L.5	4.F.2 Land converted to other land – CO_2 (L.11, 2019) Accuracy	Recalculate carbon stock changes in living biomass for land converted to other land in line with the 2006 IPCC Guidelines and include relevant information in the next annual submission.	Addressing. The Party reported in its NIR (p.281) information about the conversion of grassland to other land, with references to the country-specific EF for biomass (table 6.13, p.264). However, in NIR table 6.13 the EF for carbon stock change in living biomass for grassland converted to other land was reported as 18.8 t C ha^{-1} (maquis grassland converted to other land), and the EF reported in CRF table 4.F is much lower than this value; for instance, 0.00099 t C ha^{-1} was reported for 2009. During the review, the Party provided the calculation sheets for biomass for all land conversions. The ERT found that the Party made a calculation error when calculating the initial change in biomass carbon stocks on land converted to another land category according to equation 2.16 of the 2006 IPCC Guidelines (vol. 4, chap. 2, p.2.20). The parameter should be in t C/year, and this value should be multiplied by the area expressed in ha. However, the Party converted the units for change in

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			biomass to kt C by dividing by 1,000 and then multiplied this value by the area expressed in kha. Because of the error in change of units, a lower EF was calculated. The ERT considers that the recommendation has not yet been fully addressed because the Party did not correctly recalculate carbon stock changes in living biomass for land converted to other land.
L.6	4(III) Direct N_2O emissions from N mineralization/immobilization and 4(IV) Indirect N_2O emissions from managed soils – N_2O (L.8, 2019) (L.17, 2017) (L.22, 2016) (L.22, 2015) Completeness	Estimate direct and indirect N_2O emissions associated with soil organic carbon losses in mineral soils and report under the LULUCF sector the N_2O emissions originating from land categories that do not need to be reported under the agriculture sector (category 3.D (managed soils)) to avoid the double counting of N_2O emissions.	Resolved. The Party reported in CRF table 4(III) direct N_2O emissions associated with soil organic carbon losses in mineral soils under the LULUCF sector originating from land categories that do not need to be reported under the agriculture sector. The Party reported in CRF table 4(IV) indirect N_2O emissions from managed soils as "IE" and reported the emissions in CRF table 3.D under the agriculture sector. The Party included information in the CRF table 9 and its documentation box.
L.7	4(III) Direct N_2O emissions from N mineralization/ immobilization – N_2O (L.12, 2019) Accuracy	When estimating direct N_2O emissions from N mineralization or immobilization as recommended under ID# L.8 in table 3 of document FCCC/ARR/2019/MLT, ensure that the area included as land converted to cropland (and reported in CRF table 4(III)) is determined in line with the 2006 IPCC Guidelines, that is, excluding conversions within cropland remaining cropland.	Resolved. The Party reported in CRF table 4(III) the direct N_2O emissions from N mineralization or immobilization for land converted to cropland, and direct N_2O emissions for cropland remaining cropland were reported under the agriculture sector (CRF table 3.D).
Waste			
W.1	5. General (waste) – CH_4 and N_2O (W.2, 2019) (W.13, 2017) Transparency	Ensure all uses of the notation key "IE" in the waste sector are fully explained in CRF table 9.	Addressing. The Party did not provide information on all uses of "IE" in the waste sector in CRF table 9, including for CH_4 flared and recovered from unmanaged SWDS, except in some cases explanations were added (see ID#W.8 below). During the review, the Party clarified that all uses of "IE" will be fully explained in both CRF table 9 and its NIR in future annual submissions.
W.2	5.A Solid waste disposal on land – CH_4 (W.3, 2019) (W.3, 2017) (W.3, 2016) (W.3, 2015) (86, 2013) (102, 2012) Transparency	Provide detailed information in the NIR on CH_4 recovery for all years in which recovery is reported (e.g. the quantity of CH_4 recovered and method used to quantify CH_4).	Addressing. The Party provided detailed information in its NIR (p.312) on CH_4 recovery, including the estimation method, for the latest inventory year. However, the Party did not provide detailed information for all years in which recovery is reported. During the review, the Party clarified that it will report information on CH_4 recovery for all years (at least 2013, 2014, 2017, 2018 and 2019) in which recovery is reported in future annual submissions.
W.3	5.A Solid waste disposal on land – CH_4 (W.4, 2019) (W.4, 2017)	Justify, in accordance with the 2006 IPCC Guidelines, estimates of CH_4	Addressing. The Party reported in detail the estimation method for CH_4 recovery for the latest inventory year in its NIR (p.312). However, the Party did not provide detailed information on how it obtained the oxidized value from the FOD managed model and the

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	(W.10, 2016) (W.10, 2015) Accuracy	recovered, or use the assumption that no recovery occurs.	amount of CH_4 oxidized from the FOD unmanaged model (reported in the NIR under section 7.2.5.14). During the review, the Party clarified that the oxidized value from the FOD managed model and the amount of CH_4 oxidized from the FOD unmanaged model were directly measured and provided by Wasteserv Malta Ltd.
W.4	5.A.1.a Anaerobic – CH_4 (W.19, 2019) Transparency	Clearly report on the methodology used to determine the EFs for category 5.A.1.a Anaerobic in its next annual submission.	Resolved. The Party replaced "PS (Plant specific)" with "M (Model)" in the NIR (table 7-2, p.293) and CRF table Summary 3 (sheet 2) and provided the underlying methodological information (use of FOD model) in the NIR (p.316).
W.5	5.A.2 Unmanaged waste disposal sites – CH_4 (W.9, 2019) (W.15, 2017) Transparency	Provide further quantitative information in the NIR regarding the country-specific MCF value applied, such as the time series of adjusted MCF values and the measured landfill gas composition from the Maghtab landfill.	Addressing. The Party reported the country-specific MCF applied in both the unmanaged and managed models in the NIR (table 7-14, p.310). However, the Party did not provide information on the time series of adjusted MCF values and the measured landfill gas composition from the Maghtab landfill. During the review, the Party clarified that further information on the MCF value will be reported in future annual submissions.
W.6	5.A.2 Unmanaged waste disposal sites – CH_4 (W.10, 2019) (W.15, 2017) Transparency	Replace the "IE" notation key for unmanaged waste disposal reported in CRF table 5.A with actual MCF and DOC_f values.	Resolved. The Party replaced "IE" for unmanaged waste disposal reported in CRF table 5.A with actual MCF and DOC_f values.
W.7	5.B.2 Anaerobic digestion at biogas facilities – CH_4 (W.11, 2019) (W.11, 2017) Convention reporting adherence	Investigate and correct the descriptions in NIR table 7-2, and the method used to estimate CH_4 emissions from anaerobic digestion.	Resolved. The Party corrected the information in NIR table 7-2 (p.293) for the method used for anaerobic digestion as tier 1 with default EF and reported in its NIR (p.321) a description of the method used to estimate CH_4 emissions from anaerobic digestion.
W.8	5.B.2 Anaerobic digestion at biogas facilities – CH_4 (W.12, 2019) (W.16, 2017) Transparency	Replace "NO" with "IE" if the IPCC default EF is applied, and include information in CRF table 9 on the fact that recovery is included in the estimate of net emissions.	Resolved. The Party replaced "NO" with "IE" in CRF table 5.B and explained in CRF table 9 that recovery is included in the estimate of net emissions.
W.9	5.C Incineration and open burning of waste – CH_4 and N_2O (W.13, 2019) (W.11, 2017) Convention reporting adherence	Correct the CH_4 and N_2O EFs for MSW and clinical and industrial waste reported in CRF table 5.C.	Addressing. The ERT checked for inconsistencies between the EFs reported in the NIR and the CH_4 and N_2O IEFs for MSW, clinical and industrial waste reported in CRF table 5.C and noted that the Party corrected the CH_4 and N_2O IEFs for clinical and industrial waste in CRF table 5.C. However, Malta did not correct the CH_4 and N_2O IEFs for MSW in CRF table 5.C (e.g. the NIR (p.384) indicates a CH_4 IEF of 6500 g/t waste and an N_2O IEF of 221 g/t waste for 1990 to 2003, whereas in the corresponding values reported in CRF table 5.C were 43.33 kg/t waste and 1.47 kg/t waste, respectively). During the review, the Party clarified that the EF for non-biogenic waste for MSW and clinical and industrial waste is a

ID#	Issue/problem classification[a, b]	Recommendation made in previous review report	ERT assessment and rationale
			default value from the 2006 IPCC Guidelines (vol. 5, chap. 5, pp.5.20–5.22). The EFs in the CRF table were reported as default values. The EFs are explained in NIR annex 3. However, the text will be further updated in future annual submissions.
W.10	5.D Wastewater treatment and discharge – N_2O (W.14, 2019) (W.10, 2017) (W.13, 2016) (W.13, 2015) Convention reporting adherence	Explain in the NIR the methodology, assumptions, AD and EFs used to estimate N_2O emissions from pig slurry entering wastewater treatment plants.	Resolved. The Party transparently explained in the NIR (pp.334–336) that the N from pig slurry is treated as N additional to that from domestic and industrial sources.
W.11	5.D Wastewater treatment and discharge – CH_4 and N_2O (W.15, 2019) (W.11, 2017) Convention reporting adherence	Correct the waste disposal data reported in CRF table 5.A and the values reported in CRF table 5.D for the fraction of non-consumed protein added to wastewater and the fraction of industrial and commercial protein co-discharged into the sewer system.	Resolved. The Party corrected the values reported in CRF table 5.D for the fraction of non-consumed protein added to the wastewater (1.40) and the fraction of industrial and commercial protein co-discharged into the sewer system (1.25) using default values from the 2006 IPCC Guidelines (vol. 5, chap. 6, table 6.11). The Party also corrected the waste disposal data reported in CRF table 5.A and made it consistent with the data reported in figure 17-3 of the NIR.
W.12	5.D Wastewater treatment and discharge – CH_4 and N_2O (W.20, 2019) Transparency	Revise the description in the NIR regarding wastewater from dwellings not connected to the sewer system. More specifically, remove references to uncollected wastewater and explain that where remote hamlets are served by communal and individual cesspits, the local water and wastewater utility company periodically collects the wastewater from the cesspits using tankers and discharges it into the sewer network at designated discharge points for treatment at urban wastewater treatment plants, and that related emissions are thus included in the inventory.	Not resolved. The Party did not revise the description in the NIR regarding wastewater from dwellings not connected to the sewer system. During the review, the Party clarified that the revision will be made in future annual submissions.
W.13	5.D Wastewater treatment and discharge – CH_4 and N_2O (W.21, 2019) Transparency	Explain in the NIR section on wastewater treatment that sludge is disposed of at SWDS.	Resolved. The Party reported that sludge from the treatment of urban wastewater is disposed of at SWDS and included in the FOD managed model in both sections 7.2.5.13 (category 5.A Solid waste disposal) and 7.5.2 (category 5.D Wastewater treatment and discharge) of its NIR (pp.311 and 333, respectively).

ID#	*Issue/problem classification*[a, b]	*Recommendation made in previous review report*	*ERT assessment and rationale*
W.14	5.D.1 Domestic wastewater – N_2O (W.18, 2019) (W.18, 2017) Accuracy	Include in the NIR further quantitative and qualitative information on the N removal efficiency factor, including the source and justification for the value used and a time series of the values applied.	Not resolved. The Party continues to use removal capacity of plant as 70 per cent (NIR, p.333), but did not provide further quantitative and qualitative information on the N removal efficiency factor, including the source and justification for the value used and a time series of the values applied, in the NIR. During the review, the Party explained that the N removal efficiency factor (70 per cent) is a ballpark figure and wastewater treatment plants in Malta have a 70 per cent N removal capacity on average, and clarified that it will further consult with the operator of the urban wastewater treatment system to determine whether the 70 per cent value remains applicable to the situation in Malta or whether it should be revised.
W.15	5.D.1 Domestic wastewater – CH_4 and N_2O (W.22, 2019) Convention reporting adherence	Correct the information in the NIR (p.259) and the AD time series used for the emission estimates and make it consistent with that presented in the spreadsheet on wastewater treatment and discharge provided to the ERT.	Resolved. The Party corrected the information in its NIR (p.331), including data on untreated wastewater, and made it consistent with the information contained in the spreadsheet on wastewater treatment and discharge, provided to the previous ERT.
KP-LULUCF			
KL.1	General (KP-LULUCF) (KL.1, 2019) (KL.1, 2017) (KL.1, 2016) (KL.1, 2015) Transparency	Report for all KP-LULUCF the following information in the NIR: (1) A description of how the definition of the activity has been implemented and applied consistently over time; (2) The methods used to calculate the carbon stock changes and GHG emission and removal estimates for each activity; (3) Information on whether indirect and natural GHG emissions and removals have been factored out of the calculations; and (4) Information that demonstrates that the activity has occurred since 1 January 1990 and is human induced.	(1) Resolved. The Party reported in its NIR (p.355) a description of how the definition of the activity has been implemented and applied consistently over time; (2) Addressing. The Party reported information on the assumptions used for calculating carbon stock changes and GHG emissions and removals for activities under Article 3, paragraph 4, of the Kyoto Protocol (pp.358–359); emissions and removals were considered to be zero, and this information will be updated in future annual submissions in view of new information received and the updates to be performed for the forest land sector; (3) Not resolved. The Party did not report information on whether indirect and natural GHG emissions and removals were factored out of the calculations; nevertheless, the Party did not report estimates of emissions and removals; (4) Addressing. Malta reported in the NIR (p.358) that no activities under Article 3, paragraph 3, of the Kyoto Protocol occur in the country, and this information will be updated in future annual submissions to reflect estimates to be carried out for these activities. During the review, the Party clarified that efforts are ongoing to address and complete the information in the KP-LULUCF chapter by the next annual submission.
KL.2	General (KP-LULUCF) (KL.2, 2019) (KL.2, 2017) (KL.1, 2016) (KL.1, 2015) Transparency	Report information in the NIR on conversion of natural forest to planted forest.	Addressing. The Party reported in its NIR (p.348) the definitions of planted forest and natural forest, but there is no additional information about applying the definitions consistently throughout the commitment period. However, the Party explained in its NIR (p.348) that it will update its KP-LULUCF sector reporting according to information obtained from the National Forestry Accounting Plan. During the review, the Party clarified that the conversion of natural forest to planted forest does not occur in Malta. The few natural remnants of forest are protected, managed and conserved and are not converted to planted forest. Planted forests generally occur on bare or derelict land earmarked for

ID#	Issue/problem classification[a, b]	Recommendation made in previous review report	ERT assessment and rationale
			afforestation. The Party will update the relevant section of its NIR in future annual submissions. The ERT considers that the recommendation has not yet been fully addressed and that including the clarification provided by the Party in future annual submissions would improve the transparency of reporting; in addition, it would be possible for the Party to report information in future annual submissions on conversion of natural forest to planted forest based on new data obtained from the National Forestry Accounting Plan.
KL.3	General (KP-LULUCF) (KL.7, 2019) Comparability	Report "NA" for activities not elected under Article 3, paragraph 4, of the Kyoto Protocol in CRF table NIR-1.	Addressing. The Party reported "NA" in CRF table NIR-1 for activities not elected under Article 3, paragraph 4, of the Kyoto Protocol (e.g. for CM, GM, RV and WDR). However, there is inconsistency with the reporting in the accounting table: for example, "NO" is reported in CRF tables 4(KP-I)B.3, 4(KP-I)B.4 and 4(KP-I)B.5.
KL.4	Deforestation – CO_2 (KL.8, 2019) Transparency	Increase the transparency of reporting by including the definition of deforestation applied in line with decision 16/CMP.1, annex, paragraph 1(d), in the next annual submission.	Not resolved. The Party reported in its NIR (p.355) the definition of deforestation as "units of land that did comply with the forest definition on or after 1 January 1990 but ceased to comply later on". This definition is not in line with the one provided in decision 16/CMP.1, annex, paragraph 1(d), which states that deforestation is the direct human-induced conversion of forested land to non-forested land. During the review the Party clarified that deforestation does not occur in Malta and indicated that it will include this information and the definition in its NIR in future annual submissions. The ERT considers that the recommendation has not yet been addressed because the Party did not include the definition of deforestation applied in line with decision 16/CMP.1, annex, paragraph 1(d).
KL.5	FM (KL.4, 2019) (KL.5, 2017) (KL.5, 2016) (KL.5, 2015) Accuracy	Identify the areas that meet the forest definition and that are not reported under any KP-LULUCF and report on the impact of such exclusion on the accounting.	Not resolved. The Party reported in its NIR (p.348) the definition of forest. In addition, the Party included a paragraph about other tree lands in its NIR (p.356), which states that other tree lands that meet the forest definition were excluded from the reporting because those lands are predominantly urban use. The ERT did not find additional information about land with trees that may meet the forest definition or on how the Party identified and excluded these areas from the report under any KP-LULUCF. During the review, the Party clarified that the statement was based on an assumption, noting that the woodlands reported under forest land fall under the definition of forest land, and the other tree lands are assumed to fall under settlements, that is, in urban areas. The ERT noted that it is necessary to complement the information on the assumptions with new data in order to correctly classify forest land and other tree lands because only using assumptions as a basis could result in misclassification of both land uses.
KL.6	FM (KL.5, 2019) (KL.7, 2017) (KL.7, 2016) (KL.7, 2015) Transparency	Report in the NIR information on the entities involved in the implementation of the FM plan, including surveillance, and information on the entities involved in the monitoring of forest land, so that anthropogenic sources and sinks are identified, and the associated emissions and removals are reported when they actually occur.	Addressing. The Party reported in its NIR (p.353) information on the management of the remaining woodland area – the Mizieb site, which is a woodland area managed by an organizing committee of the Federation for Hunting and Conservation since 1985. Information on the Mizieb site has not yet been provided to the LULUCF inventory compilers by the Federation for Hunting and Conservation. The Party indicated in the NIR that this forest reserve would be considered and updated under the LULUCF sector reporting accordingly in future annual submissions on the basis of any information that may be received in future. During the review, the Party clarified that further information will be presented in future annual submissions, in addition to the information that is already

ID#	Issue/problem classification[a, b]	Recommendation made in previous review report	ERT assessment and rationale
			reported in the NIR in relation to woodland areas, to reflect the reporting of estimates for this category.

[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 report on the review of the 2020 annual submission of Malta 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 Malta, 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 Malta

ID#	Previous recommendation for issue	Number of successive reviews issue not addressed[a]
General		
G.3	Include, as appropriate, information on the minimization of adverse impacts in accordance with decision 15/CMP.1, annex, paragraphs 23–24, including any changes since the previous annual submission.	4 (2015/2016–2021)
G.7	Provide relevant explanations in CRF table 9 for all cases of the notation keys “NE” and “IE” being reported.	3 (2017–2021)
G.9	Provide emission estimates for the missing categories. If these emissions are considered insignificant in accordance with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines, provide reporting information on emissions sources in the inventory that are considered insignificant, including their likely emission levels.	3 (2017–2021)
G.10	Develop a QA/QC plan, in particular tier 1 QC procedures, and provide information on the QA/QC plan in the NIR.	7 (2011–2021)
G.11	Elaborate an inventory QA/QC plan, implement general inventory QC procedures in accordance with the QA/QC plan and report information on these issues in the NIR.	4 (2015/2016–2021)
G.15	Improve the transparency of the uncertainty analysis by including information on the assumptions used to calculate the uncertainty of AD and EFs at the category level.	6 (2012–2021)
G.16	Provide information to explain how the uncertainty analysis is used to prioritize further inventory improvements.	6 (2012–2021)
G.17	Discuss qualitatively the uncertainty of the data used for all source and sink categories in a transparent manner in the NIR, in particular for categories identified as key categories.	4 (2015/2016–2021)

ID#	*Previous recommendation for issue*	*Number of successive reviews issue not addressed*[a]
Energy		
E.1	Allocate AD and emissions to the appropriate subcategories in order to improve the comparability of the emission estimates with those of other Parties included in Annex I to the Convention.	6 (2012–2021)
E.2	Improve the description in the NIR of the category-specific QA/QC activities performed on the AD, with the objective of better understanding the links between the EU ETS, the energy balances and the data reported in the CRF tables.	5 (2013–2021)
E.3	Estimate CO_2 emissions using the reference approach for all years of the time series.	7 (2011–2021)
E.4	Explain differences in CO_2 emissions that are above 2 per cent.	5 (2013–2021)
E.11	Report estimates, including any relevant information such as NCVs, oxidation factors, EFs and AD used for the estimation of emissions, in the NIR.	5 (2013–2021)
E.12	Make use of additional sources of information, such as EUROCONTROL, which is based on higher-tier methods, as a supplementary QA activity to verify the fuel allocation for domestic and international uses.	5 (2013–2021)
E.13	Use an IPCC default EF or justify in the NIR the use of a country-specific EF.	3 (2017–2021)
E.14	Obtain data on the NCVs and carbon content from the fuel suppliers in order to develop and use a more accurate EF when estimating CO_2 emissions from gasoline; if such data are not available, use the default CO_2 EF from the 2006 IPCC Guidelines that is applicable to European gasoline passenger cars.	5 (2013–2021)
E.15	Ensure the time-series consistency of the CO_2, CH_4 and N_2O emission estimates for liquid fuels in road transportation by using the same methodology (COPERT IV model) for the entire time series, or demonstrate in the NIR that the use of two different methodologies does not introduce inconsistencies in the time series.	4 (2015/2016–2021)
E.16	Review the CO_2 and N_2O IEFs for cars for gasoline, diesel oil and liquefied petroleum gas and explain any significant inter-annual changes and how the consistency of the time series is ensured.	4 (2015/2016–2021)
E.17	Calculate CO_2 emissions from fuel sold in accordance with the 2006 IPCC Guidelines and apply the procedure for validating vehicle kilometres travelled with fuel statistics data, and correct the data if necessary, before estimating CH_4 and N_2O emissions using the COPERT V model, and describe this procedure and the results in the NIR.	3 (2017–2021)
E.18	Correct the discrepancies between the NIR and the CRF tables and add a description in the NIR of the treatment of biodiesel in the COPERT V model.	3 (2017–2021)
E.19	Justify in the NIR the use of the country-specific N_2O EF for biodiesel.	3 (2017–2021)
E.22	Document the changes in data sources and methodology in the NIR and also describe in the NIR how the consistency of the time series is maintained.	3 (2017–2021)
E.23	Describe in the NIR the factors contributing to the significant inter-annual variation in the consumption of residual fuel oil.	3 (2017–2021)
E.26	Explain in the NIR the methodology, assumptions and sources of AD and EFs used to estimate and report CO_2, CH_4 and N_2O emissions from fuel use in the military (both stationary and mobile combustion) for the entire time series since 1990.	4 (2015/2016–2021)

ID#	*Previous recommendation for issue*	*Number of successive reviews issue not addressed*[a]
IPPU		
I.1	Develop and implement QA/QC procedures for the IPPU sector.	6 (2012–2021)
I.2	Investigate the extent of the use of carbonates in the production of ceramics (at least one company seems to produce ceramic products in Malta), calculate the emissions, if appropriate, and report on the results in the NIR.	5 (2013–2021)
I.3	Investigate the time-series inconsistency of the estimates of CO_2 emissions from road paving with asphalt, recalculate the emissions, if appropriate, and report on the findings in the NIR.	6 (2012–2021)
I.5	Proceed with the project to develop a better methodology for estimating emissions from refrigeration and air conditioning and report on the status in the NIR.	5 (2013–2021)
I.6	Ensure consistency between the notation keys used to report AD for “filled into new manufactured products” (“NO”) and for “remaining in products at decommissioning” (“NE”) and the associated emissions (“NO”).	4 (2015/2016–2021)
I.7	Review the notation keys reported for disposal emissions in CRF table 2(II).B-H to ensure that the correct notation keys are used.	4 (2015/2016–2021)
I.8	Report emissions from mobile air conditioning separately in subcategory 2.F.1.e mobile air conditioning in order to ensure transparency and comparability.	3 (2017–2021)
I.10	Review the AD and ensure that there is a robust and consistent approach to collecting AD for this category in a way that eliminates any possibility of data gaps from some of the importers, and explain any significant inter-annual changes in emissions.	4 (2015/2016–2021)
Agriculture		
A.1	Review the population data for all livestock categories, ensure time-series consistency and report on any recalculations.	6 (2012–2021)
A.2	Undertake a detailed review of the AD (animal populations) for the agriculture sector in order to identify the most appropriate data source, including for the base year, and use appropriate techniques as detailed in the 2006 IPCC Guidelines for the development of a consistent time series of AD.	4 (2015/2016–2021)
A.12	Explain in the NIR how N_2O emissions from manure management for dairy cattle, including the Nex used, and N_2O emissions from animal manure applied to soils are estimated, and how these estimates are consistent with the tier 2 approach used to estimate CH_4 emissions from enteric fermentation for dairy cattle.	4 (2015/2016–2021)
A.16	Undertake a representative survey of AWMS for all livestock species as part of future improvements to the inventory and include in the NIR information on the AWMS used in the country.	4 (2015/2016–2021)
LULUCF		
L.2	Report all information, including assumptions, on the method applied to construct a consistent land representation while using two different data sets (national statistics for cropland and forest land and CORINE land-cover data for all other land uses).	4 (2015/2016–2021)

ID#	*Previous recommendation for issue*	*Number of successive reviews issue not addressed*[a]
L.3	Report any information collected from the surveillance system on any disturbance that has occurred on forest land and report the associated GHG emissions and subsequent removals.	4 (2015/2016–2021)
Waste		
W.1	Ensure all uses of the notation key "IE" in the waste sector are fully explained in CRF table 9.	3 (2017–2021)
W.2	Provide detailed information in the NIR on CH_4 recovery for all years in which recovery is reported (e.g. the quantity of CH_4 recovered and method used to quantify CH_4).	6 (2012–2021)
W.3	Justify, in accordance with the 2006 IPCC Guidelines, estimates of CH_4 recovered, or use the assumption that no recovery occurs.	4 (2015/2016–2021)
W.5	Provide further quantitative information in the NIR regarding the country-specific MCF value applied, such as the time series of adjusted MCF values and the measured landfill gas composition from the Maghtab landfill.	3 (2017–2021)
W.9	Correct the CH_4 and N_2O EFs for MSW and clinical and industrial waste reported in CRF table 5.C.	3 (2017–2021)
W.14	Include in the NIR further quantitative and qualitative information on the N removal efficiency factor, including the source and justification for the value used and a time series of the values applied.	3 (2017–2021)
KP-LULUCF		
KL.1	Report for all KP-LULUCF the following information in the NIR: (1) A description of how the definition of the activity has been implemented and applied consistently over time; (2) The methods used to calculate the carbon stock changes and GHG emission and removal estimates for each activity; (3) Information on whether indirect and natural GHG emissions and removals have been factored out of the calculations; (4) Information that demonstrates that the activity has occurred since 1 January 1990 and is human induced.	4 (2015/2016–2021)
KL.2	Report information in the NIR on conversion of natural forest to planted forest.	4 (2015/2016–2021)
KL.5	Identify the areas that meet the forest definition and that are not reported under any KP-LULUCF and report on the impact of such exclusion on the accounting.	4 (2015/2016–2021)
KL.6	Report in the NIR information on the entities involved in the implementation of the FM plan, including surveillance, and information on the entities involved in the monitoring of forest land, so that anthropogenic sources and sinks are identified, and the associated emissions and removals are reported when they actually occur.	4 (2015/2016–2021)

[a] Reports on the reviews of the 2018 and 2020 annual submissions of Malta have not yet been published, and Malta was not subject to an individual inventory review in 2014. Therefore, 2014, 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 reviews and 2015/2016 is counted as one year.

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

10. Table 5 presents findings made by the ERT during the individual review of the 2021 annual submission of Malta that are additional to those identified in table 3.

Table 5
Additional findings made during the individual review of the 2021 annual submission of Malta

ID#	*Finding classification*	*Description of finding with recommendation or encouragement*	*Is finding an issue/problem?*[a]
General			
		No general findings additional to those included in table 3 were made by the ERT during the review.	
Energy			
E.27	1.A.5. Other (not specified elsewhere) – gas, liquid and solid fuels – CO_2, CH_4, N_2O	The Party reported in its NIR (section 3.2.8.3) that for years prior to 2019, category 1.A.5 Other sources includes emissions from marine military activities and military road vehicles, which are included under their respective categories; that is, emissions from military road vehicles are reported under subcategory 1.A.3.b Road transportation and emissions from marine military activities are reported under subcategory 1.A.3.d Domestic navigation. The ERT noted that this is not in accordance with the 2006 IPCC Guidelines (vol. 2, chap. 2, table 2.1), which define category 1.A.5 as including emissions from fuel delivered to the military in the country. During the review, the Party confirmed that any emissions derived from fuel used by the military for 1990–2018 are included under category 1.A.5. For 2019, any emissions derived from fuel combustion for military purposes are included under subcategories 1.A.3.b Road transportation and 1.A.3.d Domestic navigation. However, emissions from fuel used for aviation purposes by the military are included under subcategory 1.A.5.b. The Party indicated that it plans to recalculate emissions for 1990–2019 using a similar methodology to the one used for the 2019 inventory year, although with emissions from military aviation allocated to subcategory 1.A.3.a Domestic aviation. The ERT recommends that the Party report CO_2, CH_4 and N_2O emissions from fuel delivered to the military under category 1.A.5 in accordance with the definitions provided in the 2006 IPCC Guidelines (vol. 2, chap. 2, table 2.1), or provide a transparent justification for their allocation to another category. The ERT also recommends that the Party allocate emissions from the military to the same category for all years in the time series.	Yes. Consistency
E.28	1.A.3.b Road transportation – gas and liquid fuels – CO_2	Significant inter-annual variation can be observed for CO_2 emissions for subcategory 1.A.3.b Road transportation – fossil fuels in 2000–2001 (–20.64 per cent), 2008–2009 (–12.11 per cent) and 2018–2019 (27.92 per cent). During the review, the Party clarified that the AD on fuel consumption for 2004 onward were taken from Eurostat. However, the fuel consumption data do not match the Eurostat data for 2017 and 2018 owing to a data entry error during the preparation of emission estimates for 2017 and 2018. The Party indicated that it will correct the error for its next annual submission. The ERT requested the corrected data for CO_2 emissions for subcategory 1.A.3.b Road transportation – fossil fuels, which were provided by the Party. By comparing the corrected estimates with the estimates from Malta's 2021 submission, the ERT identified potential underestimates of 7.47 kt CO_2 eq for 2017 and 69.80 kt CO_2 eq for 2018, and noted that these underestimations exceed the threshold of significance for Malta (0.05 per cent of national total GHG emissions, excluding LULUCF, equal to 1 kt CO_2 eq). The potential underestimates	Yes. Transparency

ID#	*Finding classification*	*Description of finding with recommendation or encouragement*	*Is finding an issue/problem?*[a]
		identified by the ERT were confirmed by the Party. Malta corrected the CO_2 emission estimates and fuel consumption AD for subcategory 1.A.3.b road transportation for 2017 and 2018 in the resubmission of its 2021 CRF tables. The ERT recommends that the Party reflect, in the next NIR, the corrected the CO_2 emission estimates and fuel consumption AD for subcategory 1.A.3.b road transportation for 2017 and 2018 as they are in the resubmitted 2021 CRF tables.	
IPPU			
		No findings for the IPPU sector additional to those included in table 3 were made by the ERT during the review.	
Agriculture			
A.19	3. General (agriculture)	The Party reported in its NIR (p.179 and tables 5-11–5-15) the difference between the emission estimates obtained using the 2006 IPCC Guidelines and the recalculations made using the 2019 Refinement to the 2006 IPCC Guidelines. In most cases, the EFs sourced from the 2019 Refinement to the 2006 IPCC Guidelines are better suited for Malta's agriculture sector and there are more options at a disaggregated level, making the new EFs more specific. Methodologies and EFs from the 2019 Refinement to the 2006 IPCC Guidelines were not used for all the categories and subcategories under the agriculture sector, as more research has to be conducted by the inventory compiler to assess the applicability of the remaining methodologies and EFs to the Maltese situation. NIR table 5-9 contains a list of revisions, which include the application of the 2019 Refinement to the 2006 IPCC Guidelines, but it is unclear whether the comparison of the estimates obtained using the different guidelines was carried out after the other revisions were made (points 1–6 in NIR table 5-9). During the review, the Party clarified that the revisions listed in NIR table 5-9 were made before it shifted to the 2019 Refinement to the 2006 IPCC Guidelines. The ERT is of the view that the methodologies and EFs taken from the 2019 Refinement to the 2006 IPCC Guidelines are well documented in the NIR. The Party demonstrated that the EFs used from the 2019 Refinement to the 2006 IPCC Guidelines better represent the national circumstances and justified their use in its NIR. Further, emission estimates are accurate and time-series consistency has been maintained in accordance with the 2006 IPCC Guidelines. The ERT encourages Malta to improve its QA/QC procedures in order to ensure that revisions to data are clearly described in the NIR.	Not an issue/problem
A.20	3. General (agriculture) – CH_4 and N_2O	The Party reported six swine categories in CRF table 3.A (sheet 1). In the NIR, however, there is no description of these categories although used in some NIR tables (e.g. table 5-27). During the review, the Party clarified that Maltese swine are characterized by their weight and whether they are breeding or fattening swine. Fattening swine include piglets (<20 kg), young pigs (20–50 kg) and fattening pigs (>50 kg), whereas breeding swine include breeding sows (175 kg), breeding gilts (120 kg) and breeding boars (250 kg). This classification is used by the National Statistics Office when collecting population data and by national experts on swine, such as the cooperative for swine producers. The ERT recommends that the Party include details of all livestock subcategories in the NIR consistently with the reporting in the CRF table 3.A.	Yes. Transparency
A.21	3.A.1 Cattle – CH_4	The Party reported in its NIR (p.185) the method used to estimate CH_4 emissions from enteric fermentation for cattle. An equation for estimating digestibility was given, but Malta did not provide the source of this equation or a description of all its parameters. During the review, the Party clarified that the equation used for the estimation of DE	Yes. Transparency

ID#	Finding classification	Description of finding with recommendation or encouragement	Is finding an issue/problem?[a]
		is as follows: DE% = (Fowf/F* FD%LQF)+(Fowc/F*FD%>85), where F is the feed, Fowf is the amount/proportion of feed that is forage (country-specific), Fowc is the amount/proportion of the feed that is concentrate (country-specific), FD%LQF is the feed digestibility of animals fed low-quality forage diet and FD%>85 is the feed digestibility for feedlot animals fed more than 85 per cent concentrate or high-grain diet, sourced from table 10.2 of the 2019 Refinement to the 2006 IPCC Guidelines (vol. 4, chap. 10, p.10.21). The exact values used can be found in the NIR (pp.189–190). Further, the Party stated that since there is no calculation for DE in the guidelines, and since Maltese cattle are given a mixture of feed, it used this country-specific equation to calculate DE in accordance with the information and guidance provided in the 2019 Refinement to the 2006 IPCC Guidelines (vol. 4, chap. 10, pp.10.19–10.21), which states that the portion of gross energy in the feed not excreted as faeces is known as DE, and the feed digestibility is commonly expressed as a percentage of GE or total digestible nutrients (which in Malta's case is the feed, the amount/proportion of feed that is forage, and the amount/proportion of the feed that is concentrate).	
		The ERT recommends that the Party ensure that the methodologies and assumptions taken from the 2019 Refinement to the 2006 IPCC Guidelines are well documented in the NIR, demonstrate that they better represent the national circumstances and justify their use in its NIR and emission estimates are accurate and time-series consistency has been maintained in accordance with the 2006 IPCC Guidelines.	
A.22	3.A.1 Cattle – CH_4	The Party reported in its NIR (p.192) that milk production data since 1995 are available, and the previous five years were estimated using a five-year average. During the review, the Party clarified that the values for total cow milk are available for 1990 (33,852.00 t) from the Food and Agriculture Organization of the United Nations and 1995 (42,313.47 t) from the National Statistics Office, and thus there are data gaps for 1991–1994. The Party explained that it used the five-year average method to fill the data gap because the value for 1995 is higher than the value for 1990, indicating an increasing trend in milk production. In addition, even though the population of dairy cattle was larger in 1990 compared with 1995, milk production was higher in 1995 since feeds were changed to increase cows' milk production. Therefore, it was not possible in this case to fill the gap for milk production using the trend in population as a predictor.	Yes. Transparency
		The ERT recommends that the Party include in its NIR a description of the gap-filling methods it used for milk production data across the time series.	
A.23	3.A.1 Cattle – CH_4	The Party reported in its NIR (p.192) that feed intake for non-lactating cows was reduced in consultation with local experts without providing additional information on the data compilation process. During the review, the Party clarified that it gathers cattle feed data and other characterizing data from the cooperative for milk producers. These data do not change on an annual basis. The Party holds in-person meetings every five years with the same experts, who go through the data that they are currently using and identify any changes during the five-year period as a means of validation. They revise the data every five years, a period that is long enough to enable the experts to innovate changes in the diets of their livestock. The experts carry out the research necessary to show farmers what needs to change in the diets of their animals to achieve a better milk yield. Since the meetings are held in-person, no official documentation is published, but meeting notes in the form of tables may be shared with the ERT, if necessary. The ERT noted that the data collection is not in accordance with the 2006 IPCC Guidelines (vol. 1, chap. 2, p.2.6) because it is unclear whether the data are a representative sample and what methods are used to analyse the data.	Yes. Transparency
		The ERT recommends that in the future annual submission the Party provide details of the sample size, describe the data analyses carried out and justify why the values used are representative of the country.	

ID#	*Finding classification*	*Description of finding with recommendation or encouragement*	*Is finding an issue/problem?*[a]
A.24	3.B.1 Cattle – CH_4	The Party reported in its NIR (p.159) IEF values for cattle between 1.00 and 15.01 kg CH_4/head/year. In CRF table 3.B(a) (sheet 1), however, the IEF reported for cattle is 8.23 kg CH_4/head/year. During the review, the Party explained that it seems to have reported the wrong values in the NIR, and the IEF values in CRF table 3.B(a) (sheet 1) are correct. The ERT recommends that the Party correct the IEF values for cattle reported in the NIR to ensure consistency between the NIR and CRF tables in terms of the information reported.	Yes. Convention reporting adherence
A.25	3.B.3 Swine – CH_4	The Party reported in its NIR (p.159) the methodology applied to estimate CH_4 emissions from manure in swine. In NIR equation 5.2, emissions were calculated using a correction for the amount of manure that went to sewers. The NIR gives two values for the fraction applied to soils (0.10 and 0.05), but it is unclear where these values come from and what they represent. Further, in NIR equation 5.2 the correction is multiplied by 25, but it is unclear what this represents. During the review, the Party clarified that the values 0.05 (2011 onward) and 0.10 (1990–2010) are the maximum allowable fractions of slurry that can be applied to Maltese soils. These values are taken from the EU nitrates directive (directive 91/676/EEC), Malta's Nitrates Action Programme (law 321 of 2011) and the Code of Good Agriculture Practice, since Malta was designated a nitrate vulnerable zone in 2004. The value was revised down to 0.05 in 2011 in line with the more recent directive. The Party further stated that even though one could speculate that this value is only an assumption, given that it is taken from directives, it should be noted that any instance of non-adherence to this directive (and thus presently to the 0.05 value) would be captured in field analysis, and to date, no illegalities on this issue have been found, revealing adherence to this limit. The Party explained that the multiplication by 25 at the end of the equation represents the global warming potential of CH_4, for converting the estimates to CO_2 eq. However, the unit of the resulting emissions was not provided in equation 5.2. The ERT recommends that the Party clarify the unit of the resulting emissions in NIR equation 5.2 and explain and justify the values for the amount of slurry applied to soils across the time series.	Yes. Accuracy
A.26	3.B.4 Other livestock – N_2O	The Party reported in its NIR (p.198) that it applied a conservative value for Nex from poultry of 0.82 kg N/1,000 kg animal mass/day based on a national study, which is lower than the default value of 1.1 kg N/1,000 kg animal mass/day given in the 2006 IPCC Guidelines (vol. 4, chap. 10.5.2, table 10.19). During the review, the Party clarified that it previously used 0.585 kg N/1,000 kg animal mass/day, which is an average of the range of values (0.35–0.82) provided in a national study (Sustech, 2008). However, following reviews, it was decided to use the highest value of 0.82 given that it is closer to the IPCC default value of 1.1 kg N/1,000 kg animal mass/day. The Party is aware that the selected value is slightly lower than the IPCC default value but noted that it is a country-specific value referencing Maltese poultry in Maltese conditions. The ERT recommends that the Party include background information in the NIR to justify the Nex values used.	Yes. Transparency
A.27	3.D Direct and indirect N_2O emissions from agricultural soils – N_2O	The Party reported in its NIR (p.177) that there are no available data on application rates of inorganic N fertilizer, and a new methodology is being developed to estimate this. The Party did not describe the data source, type of data used to develop this methodology and how the rates will be estimated. During the review, the Party clarified that at present, no data are readily available describing the rate of inorganic N fertilizer application to Maltese fields. A new methodology is being developed to estimate the N fertilizer application rate on the basis of consumption and application data, but the methodology is dependent on the yearly variation in the agricultural area used. The Party provided an Excel file containing the method it used to estimate these values. Further, the Party stated that the	Yes. Accuracy

ID#	Finding classification	Description of finding with recommendation or encouragement	Is finding an issue/problem?[a]
		Department of Agriculture within the Ministry for Agriculture, Fisheries, Food and Animal Rights will conduct a survey to determine the amount of N fertilizers applied to agricultural soils on the basis of the fertilizer plans filled in by farmers on a yearly basis. This exercise was planned to take place in 2021, and although no exact completion date was provided, Malta assumes that it will be completed by the end of 2021. The ERT recommends that the Party obtain data on consumption and application of inorganic N fertilizer and provide the estimates for application rates of inorganic N fertilizer.	
A.28	3.D.b Indirect N_2O emissions from managed soils – N_2O	The Party reported in its NIR (table 5-30) values for N loss due to volatilization of NH_3+NO_X fraction of total N excreted for sheep, goats and horses of 40, 40 and 12 per cent, respectively, and of 48 per cent for rabbits. The 2019 Refinement to the 2006 IPCC Guidelines (vol. 4, chap. 10.5.4, table 10.22) provides default values for "other animals": 12 per cent for solid storage and 30 per cent for dry lot. Further, in the 2006 IPCC Guidelines, "other animals" includes sheep, horses and fur-bearing animals (vol. 4, chap. 10.5.4, table 10-22); no values are given for rabbits. During the review, the Party clarified that the N loss due to volatilization of NH_3+NO_X fraction of total N excreted values for sheep, goats, horses and rabbits were taken from the 2019 Refinement to the 2006 IPCC Guidelines (table 10.22). The MMS of sheep and goats in Malta is deep bedding. Since only cattle and swine deep bedding appears in table 10.22 of the 2019 Refinement to the 2006 IPCC Guidelines, Malta used the value given under cattle and swine deep bedding – other animals for sheep and goats (0.40). The MMS for horses in Malta is solid storage; in this case 0.12 was used (table 10.22 of the 2019 Refinement to the 2006 IPCC Guidelines). The MMS for rabbits in Malta can be characterized as that of poultry manure without litter, since the same MMS (caging method) is used. Thus, the value 0.48 was used (table 10.22 of the 2019 Refinement to the 2006 IPCC Guidelines), and also because there is no value for other animals under this MMS. The Party stated that even though there are no default or country-specific values for rabbits, this livestock category is an important one for Malta, where rabbit rearing for food is widespread, and thus failure to calculate any of the emissions from rabbits would lead to a significant underestimate. The ERT is of the view that the Party demonstrated that the values used for N loss due to volatilization sourced from the 2019 Refinement to the 2006 IPCC Guidelines better represent the national circumstances and justified their use in its NIR. Further, emission estimates are accurate and time-series consistency has been maintained in accordance with the 2006 IPCC Guidelines. The ERT recommends that the Party include in the NIR details of the values used for N loss due to volatilization, including their sources and any assumption used.	Yes. Transparency
LULUCF			
L.8	4. General (LULUCF) – CO_2	The changes in biomass carbon stocks reported by the Party in CRF tables 4.B, 4.E and 4.F were very low for land converted to cropland (e.g. 0.008486 kt C in 2019), land converted to settlements (e.g. –0.000019 kt C in 2019) and land converted to other land (e.g. –0.000113 kt C in 2019), respectively. During the review, the Party provided the calculation sheets for biomass for all conversions of land. The ERT found a calculation error; when the Party calculated the initial change in biomass carbon stocks on land converted to another land category using the 2006 IPCC Guidelines (vol. 4, chap. 2.3.1.2, equation 2.16), the parameter should be in t C/year, and this value should be multiplied by the area expressed in ha. However, the Party converted the change in biomass to kt C by dividing by 1,000, and the resulting value was multiplied by the area expressed in kha. Because of the error in changing of units, a lower EF was calculated.	Yes. Accuracy

ID#	*Finding classification*	*Description of finding with recommendation or encouragement*	*Is finding an issue/problem?*[a]
		The ERT recommends that the Party check and correct the calculation of carbon stock change in biomass for all conversions of land.	
Waste			
W.16	5.A.2 Unmanaged waste disposal sites – CH_4	The Party reported a significant inter-annual change in CH_4 emissions for subcategory 5.A.2 unmanaged waste disposal sites between 2007 (4.89 kt) and 2008 (1.18 kt) in CRF table 5.A (–75.9 per cent). During the review, the Party provided the ERT with a spreadsheet containing estimates of CH_4 emissions for subcategory 5.A.2 Unmanaged waste disposal sites and clarified that the aeration factor was applied instead of the oxidation factor, because the oxidation factor had a high oxidation rate of landfills with a value of 0.6 (60 per cent), as explained in its NIR (section 7.2.5.15), for the subcategory for 1950–2019. The Party explained that the aeration factor decreased from 1.0 (2007) to 0.3868 (2008). The ERT recommends that the Party clearly report the reasons for the significant decrease in CH_4 emission estimates for subcategory 5.A.2 unmanaged waste disposal sites by providing the aeration factors used for all years of the time series and CH_4 recovery applied, in addition to the CH_4 and CO_2 percentages used to estimate the aeration factor, to improve transparency. The ERT also recommends that the Party provide the reference for the methodology used to estimate the aeration factor.	Yes. Transparency
W.17	5.C.1 Waste incineration – CH_4, N_2O	The Party reported in the NIR (p.288) that an incinerator treats abattoir waste, clinical waste, refuse-derived fuel and other waste-like industrial sludge. However, the NIR (p.326) also states that incineration of paper waste at a local industrial establishment was reported under this category for the inventory years. The ERT noted the discrepancy between the two statements. During the review, the Party clarified that all sludge was disposed of at SWDS and was not incinerated. The ERT recommends that the Party correct the description in the NIR (p.288) and ensure consistent reporting of the information on the category within the NIR.	Yes. Convention reporting adherence
W.18	5.C.1 Waste incineration – CO_2	The Party reported in its NIR (p.256) that municipal waste (shipboard kitchen waste) incineration was reported for 1990–2003, and for 2008, emissions from the incineration of some 0.1 t paper and cardboard, at a thermal treatment facility, were included in the estimates. The Party also reported in its NIR (p.383) that it applied the same CO_2 EF for incineration of MSW for all years since 1990. The Party also reported in its NIR (p.384) that the CF for MSW was 0.38 (food waste, 2006 IPCC Guidelines (vol. 5, chap. 2, table 2.4)); the FCF was 0.15; dm content in % of wet waste was 0.40 (food waste, 2006 IPCC Guidelines (vol. 5, chap. 2, table 2.4)); and the CO_2 EF was 0.08 Gg CO_2/t. The ERT questioned the applicability of the same EF across the time series and noted that its application is not in accordance with the 2006 IPCC Guidelines (vol. 5, chap. 5, equation 5.2, and chap. 2, table 2.4) because: (1) The Party did not calculate CO_2 emissions for waste incineration by separately applying different CO_2 EFs for each waste type; (2) The Party inappropriately selected the default CF and dm values for food waste as the CO_2 EFs for different types of MSW (shipboard kitchen waste, and paper and cardboard). During the review, the Party clarified that: (1) The characteristics of shipboard kitchen waste incinerated from 1990 to 2003 and paper and cardboard incinerated from 2008 onward were different, and the same CO_2 EF was applied owing to the minimal amounts of waste incinerated in the period; further disaggregation was considered unnecessary;	Yes. Accuracy

ID#	Finding classification	Description of finding with recommendation or encouragement	Is finding an issue/problem?[a]
		(2) The share of non-biogenic MSW equated to the European Waste Catalogue codes 20 01 13 (0.04 per cent), 20 01 27 (94.52 per cent) and 20 01 32 (5.44 per cent) in 2015, and its characteristics were similar to those of industrial waste in the 2006 IPCC Guidelines (vol. 5, chap. 5, table 5.2). The ERT provisionally estimated the underestimated emissions to be approximately 0.008 kt CO_2 in 2015 by applying the default CF (0.50) for industrial waste in accordance with the 2006 IPCC Guidelines (vol. 5, chap. 5.4.1, table 5.2). The ERT recommends that the Party revise the estimates by applying appropriate CO_2 EFs for each MSW type in accordance with the 2006 IPCC Guidelines (vol. 5, chap. 5, equation 5.2 and table 5.2, and chap. 2, table 2.4) to improve accuracy.	
W.19	5.C.1 Waste incineration – CO_2, N_2O	The Party reported in its NIR (p.384) that the N_2O EF for incineration of MSW for 2008 was 8 g N_2O/t waste. In addition, in CRF table 5.C, the N_2O EFs for incineration of MSW (non-biogenic) for 2007 and 2008 were reported as "NO" and 60 g N_2O/t waste, respectively. However, the N_2O EF for incineration of MSW for 2007 onward was 60 g N_2O/t waste according to a spreadsheet used to estimate GHG emissions from waste incineration provided by the Party to the ERT during the review. The Party also reported in its NIR (p.384) that the FCF of MSW was 0.15. However, the FCF of MSW was 1.0 according to the above-mentioned spreadsheet. The ERT noted that there are discrepancies among the description in the NIR, CRF table 5.C and the spreadsheet. During the review, the Party clarified that 60 g N_2O/t waste was applied as the N_2O EF for incineration of MSW (non-biogenic) for 2007 onward and the FCF of MSW was 1.0. The ERT recommends that the Party correct the descriptions of the N_2O EF for incineration of MSW (non-biogenic) for 2007 onward and indicate the correct FCF of MSW in its NIR.	Yes. Convention reporting adherence
W.20	5.C.2 Open burning of waste – CO_2, CH_4 and N_2O	The Party reported in its NIR (p.305) that regular fires used to take place in the Maghtab landfill since air was trapped between rocks and other inert waste. However, the Party reported open burning as "NO" in CRF table 5.C and in section 7.4.8 (p.330) of the NIR, causing a discrepancy in the information provided in the NIR and the CRF table. During the review, the Party clarified that the regular fires relate to past instances of spontaneous, accidental fires caused by the waste mass disposed of, as reported in the NIR (section 7.2.2). The Party further clarified that owing to requirements under EU law, waste deposition in unmanaged landfills was stopped in 2004, and all solid waste began to be deposited in engineered landfills. A regenerative treatment oxidizer gas compound has been used since 2008, and regular fires have not occurred since then. The Party also clarified that there were no AD for unintentional open burning of waste at SWDS. The ERT recommends that the Party provide estimates of CO_2, CH_4, N_2O for subcategory 5.C.2 open burning of waste, or provide, in its NIR, justification for reporting open burning of waste as "NO" in CRF table 5.C. The ERT also encourages the Party to estimate GHG emissions from unintentional open burning of waste in accordance with the 2006 IPCC Guidelines (vol. 5, chap. 5, section 5.2) for future annual submissions, providing its calculations for open burning of waste to confirm that the significance threshold has been met in accordance with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines, or report "NO".	Yes. Completeness
W.21	5.D.1 Domestic wastewater – CH_4	The Party explained in its NIR (p.332) that CH_4 emissions from domestic wastewater were reported as "NO" for 2012 because all wastewater generated in that year was treated in wastewater treatment plants and there was no direct discharge of untreated wastewater to the sea. However, the Party reported in its NIR (p.334) that the MCF for	Yes. Convention reporting adherence

ID#	*Finding classification*	*Description of finding with recommendation or encouragement*	*Is finding an issue/problem?*[a]
		wastewater treatment plants was 0.29. CH_4 emissions from wastewater treatment at wastewater treatment plants were not reported in the NIR or the CRF tables. During the review, the Party clarified that the MCF for wastewater treatment plants is 0.0 because all four aerobic wastewater treatment plants in the country are well managed, CH_4 emissions from wastewater treatment at wastewater treatment plants has been zero since 1990, and the reporting in CRF table 5.D is correct. The ERT recommends that the Party correct the description of the MCF for wastewater treatment plants in its NIR.	
KP-LULUCF			
		No findings for KP-LULUCF additional to those included in table 3 were made by the ERT during the review.	

[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

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

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

12. Malta 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

13. 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 Malta in its 2021 annual submission

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

Table I.1
Total greenhouse gas emissions and removals for Malta, base year–2019
(kt CO_2 eq)

	Total GHG emissions excluding indirect CO_2 emissions		*Total GHG emissions and removals including indirect CO_2 emissions*[a]		*Land-use change (Article 3.7 bis as contained in the Doha Amendment)*[b]	*KP-LULUCF (Article 3.3 of the Kyoto Protocol)*[c]	*KP-LULUCF (Article 3.4 of the Kyoto Protocol)*	
	Total including LULUCF	*Total excluding LULUCF*	*Total including LULUCF*	*Total excluding LULUCF*			*CM, GM, RV, WDR*	*FM*
FMRL								–49.00
Base year[d]	2 602.98	2 595.50	NA	NA	NA		NA, NO	
1990	2 602.98	2 595.50	NA	NA				
1995	2 694.45	2 685.61	NA	NA				
2000	2 821.02	2 813.23	NA	NA				
2010	2 971.72	2 968.46	NA	NA				
2011	2 975.01	2 972.04	NA	NA				
2012	3 184.16	3 181.48	NA	NA				
2013	2 873.99	2 871.60	NA	NA		NO	NA, NO	NO
2014	2 907.29	2 905.19	NA	NA		NO	NA, NO	NO
2015	2 221.90	2 220.08	NA	NA		NO	NA, NO	NO
2016	1 904.01	1 902.48	NA	NA		NO	NA, NO	NO
2017	2 067.87	2 066.62	NA	NA		NO	NA, NO	NO
2018	2 109.65	2 108.69	NA	NA		NO	NA, NO	NO
2019	2 175.37	2 174.72	NA	NA		NO	NA, NO	NO

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 CO_2 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 all gases except NF_3, for which the base year is 1995. Malta 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 Malta, excluding land use, land-use change and forestry, 1990–2019
(kt CO_2 eq)

	CO_2[a]	*CH_4*	*N_2O*	*HFCs*	*PFCs*	*Unspecified mix of HFCs and PFCs*	*SF_6*	*NF_3*
1990	2 408.46	125.64	61.38	IE, NA, NE, NO	NA, NO	NA, NO	0.01	NA, NO
1995	2 460.27	158.06	65.84	0.00	NA, NO	NA, NO	1.44	NA, NO
2000	2 545.52	193.40	66.14	6.70	NA, NO	NA, NO	1.47	NA, NO
2010	2 579.52	182.92	55.75	148.48	0.00	NA, NO	1.79	NA, NO
2011	2 576.84	169.63	48.54	172.35	0.00	NA, NO	4.69	NA, NO
2012	2 760.50	166.88	48.72	204.83	0.00	NA, NO	0.54	NA, NO
2013	2 444.30	156.04	48.04	220.45	0.00	NA, NO	2.77	NA, NO
2014	2 448.40	171.92	48.63	235.56	0.00	NA, NO	0.68	NA, NO
2015	1 740.99	179.30	48.25	251.27	0.00	NA, NO	0.28	NA, NO
2016	1 405.39	187.30	46.91	262.73	0.00	NA, NO	0.14	NA, NO
2017	1 566.89	184.02	43.08	271.64	0.00	NA, NO	0.99	NA, NO
2018	1 608.12	192.02	43.80	264.45	0.00	NA, NO	0.30	NA, NO
2019	1 669.15	201.80	46.21	257.29	0.00	NA, NO	0.27	NA, NO
Percentage change 1990–2019	**–30.7**	**60.6**	**–24.7**	**NA**	**NA**	**NA**	**2 426.4**	**NA**

Note: Emissions and removals reported in the sector other (sector 6) are not included in this table.
[a] Malta did not report indirect CO_2 emissions in CRF table 6.

Table I.3
Greenhouse gas emissions and removals by sector for Malta, 1990–2019
(kt CO_2 eq)

	Energy	*IPPU*	*Agriculture*	*LULUCF*	*Waste*	*Other*
1990	2 417.35	7.78	101.06	7.48	69.32	NA
1995	2 470.29	9.29	101.49	8.85	104.54	NA
2000	2 557.30	14.99	100.72	7.80	140.22	NA
2010	2 590.10	155.37	81.56	3.26	141.43	NA
2011	2 586.45	182.61	77.62	2.97	125.36	NA

	Energy	*IPPU*	*Agriculture*	*LULUCF*	*Waste*	*Other*
2012	2 769.72	212.68	79.10	2.68	119.98	NA
2013	2 446.71	235.79	78.14	2.39	110.95	NA
2014	2 451.07	248.06	77.97	2.11	128.09	NA
2015	1 742.96	261.74	78.22	1.82	137.16	NA
2016	1 408.07	272.27	76.69	1.53	145.45	–
2017	1 569.39	278.27	75.26	1.25	143.70	–
2018	1 610.13	271.20	76.61	0.96	150.75	–
2019	1 675.00	263.70	76.34	0.65	159.68	–
Percentage change 1990–2019	**–30.7**	**3 289.2**	**–24.5**	**–91.3**	**130.4**	**NA**

Notes: (1) Malta did not report emissions or removals in the sector other (sector 6); (2) Malta did not report indirect CO_2 emissions 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 Malta

(kt CO_2 eq)

	Article 3.7 bis as contained in the Doha Amendment[a]	*Activities under Article 3.3 of the Kyoto Protocol*		*FM and elected activities under Article 3.4 of the Kyoto Protocol*				
	Land-use change	*AR*	*Deforestation*	*FM*	*CM*	*GM*	*RV*	*WDR*
FMRL				–49.00				
Technical correction				49.00				
Base year[b]	NA				NA	NO	NO	NO
2013		NO	NO	NO	NA	NO	NO	NO
2014		NO	NO	NO	NA	NO	NO	NO
2015		NO	NO	NO	NA	NO	NO	NO
2016		NO	NO	NO	NA	NO	NO	NO
2017		NO	NO	NO	NA	NO	NO	NO
2018		NO	NO	NO	NA	NO	NO	NO
2019		NO	NO	NO	NA	NO	NO	NO
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.

[b] Malta has not elected to report on 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.

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

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

Parameter	*Data values*
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	No
3.5% of total base-year GHG emissions, excluding LULUCF	69.112 kt CO_2 eq (552.898 kt CO_2 eq for the duration of the commitment period)
Cancellation of assigned amount units, certified emission reductions and emission reduction units and/or issuance of removal units in the national registry for:	
1. AR	NA
2. Deforestation	NA
3. FM	NA

Note: Values in this table reflect the difference in the accounting quantities for activities under Article 3, para. 3, and FM and any elected activities under Article 3, para. 4, of the Kyoto Protocol as reported in table I.5 between this report and the previously published review report for the Party.

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 Malta. 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 Malta
(t CO_2 eq)

	Original submission	*Revised submission*	*Adjustment*	*Final value*
CPR	**8 369 793**	–	–	**8 369 793**
Annex A emissions				
CO_2	1 669 145	–	–	1 669 145
CH_4	201 801	–	–	201 801
N_2O	46 214	–	–	46 214
HFCs	257 290	–	–	257 290
PFCs	0	–	–	0
Unspecified mix of HFCs and PFCs	NO, NA	–	–	NO, NA
SF_6	268	–	–	268
NF_3	NO, NA	–	–	NO, NA
Total Annex A sources	**2 174 718**	–	–	**2 174 718**
Activities under Article 3, paragraph 3, of the Kyoto Protocol				
AR	NO	–	–	NO
Deforestation	NO	–	–	NO
FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol				
FM	NO	–	–	NO

Table II.2
Information to be included in the compilation and accounting database for 2018 for Malta
(t CO_2 eq)

	Original submission	*Revised submission*	*Adjustment*	*Final value*
Annex A emissions				
CO_2	1 538 318	1 608 119	–	1 608 119
CH_4	192 176	192 023	–	192 023
N_2O	45 923	43 796	–	43 796
HFCs	264 453	–	–	264 453
PFCs	0	–	–	0
Unspecified mix of HFCs and PFCs	NO, NA	–	–	NO, NA
SF_6	299	–	–	299
NF_3	NO, NA	–	–	NO, NA
Total Annex A sources	**2 041 169**	**2 108 689**	–	**2 108 689**
Activities under Article 3, paragraph 3, of the Kyoto Protocol				
AR	NO	–	–	NO
Deforestation	NO	–	–	NO
FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol				

	Original submission	*Revised submission*	*Adjustment*	*Final value*
FM	NO	NO	–	NO

Table II.3
Information to be included in the compilation and accounting database for 2017 for Malta
(t CO_2 eq)

	Original submission	*Revised submission*	*Adjustment*	*Final value*
Annex A emissions				
CO_2	1 559 427	1 566 892	–	1 566 892
CH_4	184 159	184 016	–	184 016
N_2O	44 663	43 084	–	43 084
HFCs	271 643	–	–	271 643
PFCs	0	–	–	0
Unspecified mix of HFCs and PFCs	NO, NA	–	–	NO, NA
SF_6	988	–	–	988
NF_3	NO, NA	–	–	NO, NA
Total Annex A sources	**2 060 880**	**2 066 624**	–	**2 066 624**
Activities under Article 3, paragraph 3, of the Kyoto Protocol				
AR	NO	–	–	NO
Deforestation	NO	–	–	NO
FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol				
FM	NO	–	–	NO

Table II.4
Information to be included in the compilation and accounting database for 2016 for Malta
(t CO_2 eq)

	Original submission	*Revised submission*	*Adjustment*	*Final value*
Annex A emissions				
CO_2	1 405 395	–	–	1 405 395
CH_4	187 304	–	–	187 304
N_2O	46 911	–	–	46 911
HFCs	262 733	–	–	262 733
PFCs	0	–	–	0
Unspecified mix of HFCs and PFCs	NO, NA	–	–	NO, NA
SF_6	138	–	–	138
NF_3	NO, NA	–	–	NO, NA
Total Annex A sources	**1 902 480**	–	–	**1 902 480**
Activities under Article 3, paragraph 3, of the Kyoto Protocol				
AR	NO	–	–	NO
Deforestation	NO	–	–	NO
FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol				
FM	NO	–	–	NO

Table II.5
Information to be included in the compilation and accounting database for 2015 for Malta
(t CO_2 eq)

	Original submission	*Revised submission*	*Adjustment*	*Final value*
Annex A emissions				
CO_2	1 740 986	–	–	1 740 986
CH_4	179 296	–	–	179 296
N_2O	48 248	–	–	48 248
HFCs	251 271	–	–	251 271

	Original submission	*Revised submission*	*Adjustment*	*Final value*
PFCs	0	–	–	0
Unspecified mix of HFCs and PFCs	NA, NO	–	–	NA, NO
SF_6	280	–	–	280
NF_3	NA, NO	–	–	NA, NO
Total Annex A sources	**2 220 081**	–	–	**2 220 081**
Activities under Article 3, paragraph 3, of the Kyoto Protocol				
AR	NO	–	–	NO
Deforestation	NO	–	–	NO
FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol				
FM	NO	–	–	NO

Table II.6
Information to be included in the compilation and accounting database for 2014 for Malta
(t CO_2 eq)

	Original submission	*Revised submission*	*Adjustment*	*Final value*
Annex A emissions				
CO_2	2 448 395	–	–	2 448 395
CH_4	171 921	–	–	171 921
N_2O	48 631	–	–	48 631
HFCs	235 563	–	–	235 563
PFCs	0	–	–	0
Unspecified mix of HFCs and PFCs	NA, NO	–	–	NA, NO
SF_6	676	–	–	676
NF_3	NA, NO	–	–	NA, NO
Total Annex A sources	**2 905 186**	–	–	**2 905 186**
Activities under Article 3, paragraph 3, of the Kyoto Protocol				
AR	NO	–	–	NO
Deforestation	NO	–	–	NO
FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol				
FM	NO	–	–	NO

Table II.7
Information to be included in the compilation and accounting database for 2013 for Malta
(t CO_2 eq)

	Original submission	*Revised submission*	*Adjustment*	*Final value*
Annex A emissions				
CO_2	2 444 297	–	–	2 444 297
CH_4	156 045	–	–	156 045
N_2O	48 036	–	–	48 036
HFCs	220 454	–	–	220 454
PFCs	0	–	–	0
Unspecified mix of HFCs and PFCs	NA, NO	–	–	NA, NO
SF_6	2 768	–	–	2 768
NF_3	NA, NO	–	–	NA, NO
Total Annex A sources	**2 871 599**	–	–	**2 871 599**
Activities under Article 3, paragraph 3, of the Kyoto Protocol				
AR	NO	–	–	NO
Deforestation	NO	–	–	NO
FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol				
FM	NO	–	–	NO

Annex III

Additional information to support findings in table 2

Missing categories that may affect completeness

The categories for which estimation methods are included in the 2006 IPCC Guidelines that were reported as "NE" or for which the ERT otherwise determined that there may be an issue with the completeness of the reporting in the Party's inventory are the following:

(a) 2.F.1.d – emissions from disposal in transport refrigeration (F-gases), 2.F.2.a – disposal of closed-cell foams (F-gases) and 3.H – urea application (CO_2) (see ID# G.9 in table 3);

(b) 2.A.4 Other process uses of carbonates (CO_2) (see ID# I.2 in table 3);

(c) 2.D.3 Other (non-energy products from fuels and solvent use) (CO_2) (see ID# I.4 in table 3);

(d) 5.C.2 Open burning of waste (CO_2, CH_4 and N_2O) (see ID# W.20 in table 5).

Annex IV

Reference documents

A. Reports of the Intergovernmental Panel on Climate Change

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

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

IPCC. 2019. *2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories*. E Calvo, K Tanabe, A Kranjc, J Baasansuren, M Fukuda, S Ngarize, A Osako, Y Pyrozhenko, P Shermanau, S Federici (eds). Hayama, Japan: Institute for Global Environmental Strategies. Available at https://www.ipccnggip.iges.or.jp/public/2019rf/index.html.

B. UNFCCC documents

Annual review reports

Reports on the individual reviews of the 2011, 2012, 2013, 2015, 2016, 2017 and 2019 annual submissions of Malta, contained in documents FCCC/ARR/2011/MLT, FCCC/ARR/2012/MLT, FCCC/ARR/2013/MLT, FCCC/ARR/2015/MLT, FCCC/ARR/2016/MLT, FCCC/ARR/2017/MLT and FCCC/ARR/2019/MLT, 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 Malta for 2021. Available at https://unfccc.int/sites/default/files/resource/asr2021_MLT.pdf.

EEA. 2016. *EMEP/EEA air pollutant emission inventory guidebook 2016*. Luxembourg: Publications Office of the European Union. Available at https://www.eea.europa.eu/publications/emep-eea-guidebook-2016.

C. Other documents used during the review

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

Agency for Environmental Protection and Technical Services (Agenzia per la protezione dell'ambiente e per I servizi tecnici (APAT)) 2005. Methodologies used in Italy for the estimation of air emission inventory in the agriculture sector. Available at http://www.isprambiente.gov.it/contentfiles/00003700/3741-r64-2005.pdf/.

Department of Energy and Climate Change (DECC) 2013. *UK Greenhouse Gas Inventory 1990 to 2011: Annual Report for submission under the Framework Convention on Climate Change*. ISBN 978-0-9573549-1-3, Issue 3. Available at https://uk-air.defra.gov.uk/assets/documents/reports/cat07/1305301238_ukghgi-90-11_main_chapters_Issue3.pdf.

Sustech 2008. *Agricultural Waste Management Plan for the Maltese Islands* Report.

Valletta, P.P. 2011. *The establishment of the Local Sheep Population as a Breed*, unpublished diploma dissertation. University of Malta, Malta.