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Climate Change

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## **Report on the individual review of the annual submission of Malta submitted in 2019\***

**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 inventory review of the 2019 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 9 to 14 September 2019 in Bonn.

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\* In the symbol for this document, 2019 refers to the year in which the inventory was submitted, not to the year of publication.

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## Abbreviations and acronyms

2006 IPCC Guidelines	<i>2006 IPCC Guidelines for National Greenhouse Gas Inventories</i>
AAU	assigned amount unit
AD	activity data
Annex A source	source category included in Annex A to the Kyoto Protocol
AR	afforestation and reforestation
Article 8 review guidelines	“Guidelines for review under Article 8 of the Kyoto Protocol”
AWMS	animal waste management system(s)
CER	certified emission reduction
CH <sub>4</sub>	methane
CM	cropland management
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> 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
DECC	Department of Energy and Climate Change of the United Kingdom of Great Britain and Northern Ireland
DOC	degradable organic carbon
DOC <sub>f</sub>	fraction of degradable organic carbon that decomposes
EF	emission factor
ERT	expert review team
ERU	emission reduction unit
EU ETS	European Union Emissions Trading System
EUROCONTROL	European Organisation for the Safety of Air Navigation
F-gas	fluorinated gas
FM	forest management
FMRL	forest management reference level
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
k	methane generation rate constant
KP-LULUCF activities	activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol
KP reporting adherence	adherence to the reporting guidelines under Article 7, paragraph 1, of the Kyoto Protocol
LULUCF	land use, land-use change and forestry
MCF	methane correction factor
N	nitrogen
NA	not applicable
NCV	net calorific value

NE	not estimated
Nex	nitrogen excretion rate
NF <sub>3</sub>	nitrogen trifluoride
NH <sub>3</sub>	ammonia
NIR	national inventory report
NO	not occurring
NR	not reported
N <sub>2</sub> O	nitrous oxide
PFC	perfluorocarbon
QA/QC	quality assurance/quality control
RMU	removal unit
RV	revegetation
SEF	standard electronic format
SF <sub>6</sub>	sulfur hexafluoride
UNFCCC Annex I inventory reporting guidelines	“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories”
UNFCCC review guidelines	“Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”
WDR	wetland drainage and rewetting
Wetlands Supplement	<i>2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands</i>

## I. Introduction<sup>1</sup>

1. This report covers the review of the 2019 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” (decision 13/CP.20). The review took place from 9 to 14 September 2019 in Bonn and was coordinated by Lisa Hanle and Jongikhaya Witi (secretariat). Table 1 provides information on the composition of the ERT that conducted the review of Malta.

Table 1

### Composition of the expert review team that conducted the review of Malta

<i>Area of expertise</i>	<i>Name</i>	<i>Party</i>
Generalist	Kristina Saarinen	Finland
	John David Watterson	United Kingdom of Great Britain and Northern Ireland
Energy	Veronica Eklund	Sweden
	Renata Patricia Soares Grisoli	Brazil
	Kaleem Anwar Mir	Pakistan
	Dingane Sithole	Zimbabwe
IPPU	Menouer Boughedaoui	Algeria
	Pia-Kristiina Forsell	Finland
	Erhan Unal	Turkey
Agriculture	Sorin Deaconu	Romania
	Joel Allan Gibbs	New Zealand
	Bernard Hyde	Ireland
LULUCF and KP-LULUCF activities	Esther Mertens	Belgium
	Dinh Hung Nguyen	Viet Nam
	Valentyna Slivinska	Ukraine
Waste	Pavel Gavrilita	Republic of Moldova
	Excellent Hachileka	Zambia
	Veronica Jakarasi	Zimbabwe
Lead reviewers	Menouer Boughedaoui	
	John David Watterson	

2. The basis of the findings in this report is the assessment by the ERT of the Party’s 2019 annual submission in accordance with the UNFCCC review guidelines and the Article 8 review guidelines. The ERT notes that the individual inventory review of Malta’s 2018 annual submission did not take place in 2018 owing to insufficient funding for the review process.

<sup>1</sup> At the time of publication of this report, Malta had submitted its instrument of ratification of the Doha Amendment; however, the Amendment had not yet entered into force. The implementation of the provisions of the Doha Amendment is therefore considered in this report in the context of decision 1/CMP.8, para. 6, pending the entry into force of the Amendment.

3. The ERT has made recommendations that Malta resolve the findings related to issues,<sup>2</sup> including issues designated as problems.<sup>3</sup> Other findings, and, if applicable, the encouragements of the ERT to Malta to resolve them, are also included.

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 shows annual GHG emissions for Malta, including totals excluding and including the LULUCF sector, indirect CO<sub>2</sub> emissions, and emissions by gas and by sector. Annex I also contains background data related to emissions and removals from KP-LULUCF activities, if elected by Malta, 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 2019 annual submission

7. Table 2 provides the assessment by the ERT of the 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 inventory of Malta

<i>Assessment</i>	<i>Issue or problem ID#(s) in table 3 and/or 5<sup>a</sup></i>
Dates of submission	Original submission: 17 April 2019 (NIR), 10 May 2019 (CRF tables), 12 April 2019 (SEF tables)
Review format	Centralized
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.20, E.22, E.34, I.5, A.25, A.26, L.11, W.14
	(c) Development and selection of EFs? Yes E.18, E.24, E.36, A.5, A.18, A.20, W.19
	(d) Collection and selection of AD? Yes E.19, E.36, I.9, I.17, A.3, A.15, A.17, A.21, L.2, L.6, W.10, W.15, W.22
	(e) Reporting of recalculations? Yes E.36
	(f) Reporting of a consistent time series? Yes E.21, I.3, A.2
	(g) Reporting of uncertainties, including methodologies? Yes G.10, G.11, G.12, G.18
	(h) QA/QC QA/QC procedures were assessed in the context of the national system (see supplementary information under the Kyoto Protocol below)

<sup>2</sup> Issues are defined in decision 13/CP.20, annex, para. 81.

<sup>3</sup> Problems are defined in decision 22/CMP.1, annex, paras. 68–69, as revised by decision 4/CMP.11.

Assessment			<i>Issue or problem ID#(s) in table 3 and/or 5<sup>a</sup></i>
	(i) Missing categories/completeness? <sup>b</sup>	Yes	G.6, I.2, I.16, A.25, L.8
	(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	G.6
Description of trends	Did the ERT conclude that the description in the NIR of the trends for the different gases and sectors is reasonable?	Yes	
Supplementary information under the Kyoto Protocol	Have any issues been identified related to the following aspects of the national system:		
	(a) Overall organization of the national system, including the effectiveness and reliability of the institutional, procedural and legal arrangements?	No	
	(b) Performance of the national system functions?	No	
	Have any issues been identified related to the national registry:		
	(a) Overall functioning of the national registry?	No	
	(b) Performance of the functions of the national registry and the technical standards for data exchange?	No	
	Have any issues been identified related to reporting of information on AAUs, CERs, ERUs and RMUs and on discrepancies reported in accordance with decision 15/CMP.1, annex, chapter I.E, in conjunction with decision 3/CMP.11, taking into consideration any findings or recommendations contained in the standard independent assessment report?	Yes	G.15
	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 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?	Yes	G.2
	Have any issues been identified related to the following reporting requirements for KP-LULUCF activities:		
	(a) Reporting requirements of decision 2/CMP.8, annex II, paragraphs 1–5?	Yes	KL.1, KL.4
(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 and 34?	NA		
CPR	Was the CPR reported in accordance with the annex to decision 18/CP.7, the annex to decision 11/CMP.1 and decision 1/CMP.8, paragraph 18?	Yes	

<i>Assessment</i>			<i>Issue or problem ID#(s) in table 3 and/or 5<sup>a</sup></i>
Adjustments	Has the ERT applied an adjustment under Article 5, paragraph 2, of the Kyoto Protocol?	No	
	Did the Party submit 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 the assessment of conformity with the UNFCCC Annex I inventory reporting guidelines and any further guidance adopted by the Conference of the Parties?	Yes	
Recommendation for an exceptional in-country review	On the basis of the issues identified, does the ERT recommend that the next review be conducted as an in-country review?	No	
Questions of implementation	Did the ERT list any questions of implementation?	No	

<sup>a</sup> The ERT identified additional issues and/or problems in the general, energy, IPPU, agriculture, LULUCF and waste sectors as well as issues and/or problems related to reporting on KP-LULUCF activities that are not listed in this table but are included in table 5.

<sup>b</sup> 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 issues and/or problems raised in the previous review report

8. Table 3 compiles all the recommendations made in previous review reports that were included in the previous review report, published on 25 January 2018.<sup>4</sup> For each issue and/or problem, the ERT specified whether it believes the issue and/or problem has been resolved by the conclusion of the review of the 2019 annual submission and provided the rationale for its determination, which takes into consideration the publication date of the previous review report and national circumstances.

Table 3

#### Status of implementation of issues and/or problems raised in the previous review report of Malta

<i>ID#</i>	<i>Issue and/or problem classification<sup>a, b</sup></i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
General			
G.1	Annual submission (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.	Addressing. The NIR and the CRF tables of the 2019 submission were submitted after the reporting deadlines; however, the submissions were made less than six weeks after the deadlines. The SEF tables were submitted on 12 April 2019. See ID# G.13 in table 5.
G.2	Article 3, paragraph 14, of the Kyoto Protocol (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.	Not resolved. The ERT noted that further information could be included in the NIR on the minimization of adverse impacts in accordance with decision 15/CMP.1, annex, paragraphs 23–24. Malta could include references to its biennial report or information from that report on specific projects undertaken with developing countries. Malta did not include a statement on whether any changes have occurred since the last report.

<sup>4</sup> FCCC/ARR/2017/MLT. The ERT notes that the report on the individual inventory review of Malta's 2018 annual submission has not been published yet. As a result, the latest previously published annual review report reflects the findings of the review of the Party's 2017 annual submission.



<i>ID#</i>	<i>Issue and/or problem classification<sup>a, b</sup></i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
G.3	CPR (G.14, 2017) (G.23, 2016) (G.23, 2015) KP reporting adherence	Report, in the NIR (chap. 12, titled “Information on accounting of Kyoto units”), the CPR and the method used to calculate it.	Resolved. The Party reported on the CPR and the method used to calculate it in chapter 12 of the NIR.
G.4	National registry (G.20, 2017) KP reporting adherence	Implement changes in the procedures related to the national registry to ensure the timely submission of the SEF tables, and ensure that those changes are reported in the 2018 NIR in accordance with decision 15/CMP.1, annex, paragraph 22.	Resolved. The SEF tables were submitted on 12 April 2019. The Party reported changes related to its national registry in chapter 14 of the NIR.
G.5	Notation keys (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 did not provide any information in CRF table 9 on the reporting of “NE” (see ID# G.14 in table 5), but did include explanations for most cases of “IE” being reported.
G.6	Other (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.	Not resolved. Malta continued to report as “NE” HFC-32 emissions from manufacturing and from disposal in transport refrigeration (2.F.1.d) for 2005 onward, HFC emissions from disposal of closed cell foams (2.F.2.a) for 2000 onward and CO <sub>2</sub> emissions from urea application (category 3.H) for all years of the time series. Malta stated in the NIR (section 1.7) that it did not knowingly fail to report on any emissions or removals on account of their being considered insignificant, and that, if estimating emissions or removals was not possible, the reasons for this were duly identified and “NE” reported in the relevant CRF tables (e.g. CRF table 3.G-I). However, the ERT noted that the 2006 IPCC Guidelines include methods and EFs for the categories reported as “NE” and 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 also noted that, where the Party considered that activities did not occur in the country, it should report “NO”. The ERT believes that this issue should be raised again in future reviews to ensure that emissions are not underestimated.
G.7	QA/QC and verification (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. Malta has been working on developing a national QA/QC system. During the review, the Party submitted its operations and quality manual to the ERT and indicated that further efforts were being made to develop overarching and sector-specific QA/QC and improvement plans. See ID# G.17 in table 5.
G.8	QA/QC and verification (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. See ID# G.7 above.

<i>ID#</i>	<i>Issue and/or problem classification<sup>a, b</sup></i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
G.9	QA/QC and verification (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.	Addressing. See ID# G.7 above.
G.10	Uncertainty analysis (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. As part of its ongoing capacity-building project on technical support for emissions inventories, the Malta Resources Authority (the national inventory agency) is currently looking at updating its method of determining sector-specific and overall inventory and trend uncertainties, which Malta will report in subsequent submissions. The transparency of the NIR regarding the uncertainty analysis has not improved. See ID# G.18 in table 5.
G.11	Uncertainty analysis (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.	Not resolved. The Party did not explain its use of the results of the uncertainty analysis in the NIR. See ID# G.17 in table 5.
G.12	Uncertainty analysis (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.	Addressing. As part of its ongoing capacity-building project on technical support for emissions inventories, the Malta Resources Authority is updating the uncertainty analysis, including by determining sector-specific uncertainties. The transparency of the NIR regarding the uncertainty analysis has not improved. See ID# G.17 in table 5.
Energy			
E.1	1. General (energy sector) (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. During the review, the Party stated that it is making efforts to collect disaggregated data. The Party also reported in the NIR (section 3.2.5.6) that more systematic data collection is needed to enable further disaggregation of category 1.A.2, but did not indicate how and when such data collection would take place. See ID# E.14 below.
E.2	1. General (energy sector) (E.2, 2017) (E.5, 2016) (E.5, 2015) (17, 2013) (31, 2012) Convention reporting adherence	Elaborate a QA/QC plan for the energy sector (which accounts for almost 90 per cent of total GHG emissions in the country) as required by the UNFCCC Annex I inventory reporting guidelines.	Resolved. The Party presented its QA/QC plan for the energy sector in NIR table 3-3 (pp.73–74). During the review, the Party indicated that the Malta Resources Authority was in the process of documenting a quality management system for the preparation of national GHG inventories (NIR, p.39).
E.3	1. General (energy sector) (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. Detailed information on QA/QC activities regarding links to the EU ETS, energy balances and international data sources such as IEA was not provided. Malta reported on some QA/QC activities performed in the NIR (table 3-3, section 3.1.2). Category-specific QA/QC activities covered, for example, categories 1.A.1 (section 3.2.4.4), 1.A.2 (section 3.2.5.4) and 1.A.3.a (section 3.2.7.4).
E.4	1. General (energy sector)	Include copies of the national energy balance for the latest	Resolved. The national energy balance was presented in the NIR (table 17-15).

<i>ID#</i>	<i>Issue and/or problem classification<sup>a, b</sup></i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
	(E.4, 2017) (E.7, 2016) (E.7, 2015) (18, 2013) Transparency	reported year, outlining the final energy consumption by sector.	
E.5	Fuel combustion – reference approach (E.5, 2017) (E.11, 2016) (E.11, 2015) (23, 2013) (33, 2012) (33, 2011) Convention reporting adherence	Estimate CO <sub>2</sub> emissions using the reference approach for all years of the time series.	Addressing. The Party reported CO <sub>2</sub> emissions using both the reference and the sectoral approach for the whole time series. For gaseous fuels, the reference approach covers 2011 onward. The reference approach for non-biomass waste was not used for the whole time series. During the review, the Party indicated that efforts were being made to cover the other years in the time series (NIR, p.325).
E.6	Fuel combustion – reference approach (E.6, 2017) (E.12, 2016) (E.12, 2015) (23, 2013) Transparency	Explain differences in CO <sub>2</sub> emissions that are above 2 per cent.	Not resolved. For example, the difference between liquid fuels reported using the reference and sectoral approaches was –8.3 per cent in 2017, but Malta did not provide any explanations for such differences in the NIR. The Party cited a lack of data as one of the challenges resulting in the differences between the reference and sectoral approaches (see NIR section 3.2.1.2). During the review, the Party indicated that it is making efforts to identify the source of the discrepancies in the data.
E.7	Fuel combustion – reference approach (E.7, 2017) (E.34, 2016) (E.34, 2015) Convention reporting adherence	Correct the discrepancies between CRF table 1.A(c) and the NIR for the differences in energy consumption between the reference and sectoral approach.	Resolved. For 2017, apparent energy consumption for gaseous and liquid fuels was reported as 10.12 and 13.28 PJ, respectively, in NIR table 3-6 and CRF table 1.A(c).
E.8	Fuel combustion – reference approach (E.8, 2017) (E.35, 2016) (E.35, 2015) Transparency	Estimate the apparent energy consumption (excluding non-energy use, reductants and feedstocks) for solid, gaseous and other fossil fuels using the reference approach and report the estimates in CRF table 1.A(c).	Resolved. Apparent energy consumption (excluding non-energy use, reductants and feedstocks) was estimated for liquid fuels for the whole time series. For gaseous fuels, it was estimated for 2017 only, since gaseous fuels were not used before that in Malta. Solid fuels and non-biomass waste are not being used in the country.
E.9	Fuel combustion – reference approach (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 and CRF table 1.A(c).	Addressing. Apparent consumption for solid fuels was reported as “NO” and “NE” in NIR table 3-6. However, for other fossil fuels, the apparent consumption was reported as 36.25 PJ in the CRF tables for 2017, while in NIR table 3-6 it was reported as “NO” or “NE”.
E.10	Feedstocks, reductants and other non-energy use of fuels (E.10, 2017) (E.18, 2016) (E.18, 2015) (28, 2013) Transparency	Increase the transparency of the reporting of feedstocks and non-energy use of fuels, both in the CRF tables and in the NIR, by providing verifiable information that lubricants in transport (including disposal) and bitumen for road paving are not used in the country.	Resolved. The Party reported in the NIR (section 3.2.3) that bitumen is not used and lubricants are used in the country. Emissions from non-energy use of lubricants were reported in CRF tables 1.A(d) and 2(I).A-Hs2. See ID# E.32 in table 5.
E.11	1.A Fuel combustion – sectoral approach – gaseous and liquid fuels – CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O	Report the consumption of and emissions from propane as a liquid fuel (liquefied petroleum gas).	Resolved. The Party indicated that AD and emissions for propane were included under liquids in the CRF tables (NIR section 3.2.1.2). Malta reported in the NIR (section 3.2.4) that propane was covered under category 1.A.2.

ID#	Issue and/or problem classification <sup>a, b</sup>	Recommendation made in previous review report	ERT assessment and rationale
	(E24, 2017) Comparability		
E.12	1.A.1.a Public electricity and heat production – liquid fuels – CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O (E.11, 2017) (E.20, 2016) (E.20, 2015) (29, 2013) Accuracy	For the only two power plants, use the plant-specific EFs as well as the NCVs available from the annual EU ETS reports as far back as possible.	Resolved. The Party used plant-specific AD, EFs, oxidation factors and NCVs (see NIR section 3.2.4.2 and table 3-7). The Party reported in the NIR (section 3.2.4.5) that the EU ETS reports for 2010–2017 were also used and that corrections were made to the EFs for the previous years.
E.13	1.A.1.a Public electricity and heat production – liquid fuels – CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O (E.12, 2017) (E.22, 2016) (E.22, 2015) (29, 2013) Consistency	Consider using the averages of NCV factors for 1990–2004, while duly considering the fuel mix.	Resolved. The Party presented in the NIR emission estimates calculated from AD, EFs and NCVs obtained from the Delimara and Marsa power plants (table 3-7) and recalculations (table 3-8). There were no differences in the CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O estimates for 1990–2004. The Party reported in the NIR (section 3.2.4.2) that annual emissions for until 2004 were calculated using a country-specific calorific value for each of the fuels used at each power station.
E.14	1.A.1.a Public electricity and heat production – liquid fuels – CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O (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. AD, EFs, oxidation factors and NCVs used for estimating emissions for the base year to 2004 were reported in the NIR (section 3.2.4.2 and table 3-7). The Party reported in the NIR (section 3.2.4.5) that data for 2010–2017 were obtained from the EU ETS. The Party also reported in the NIR (p.326) that the EU ETS data included EFs and NCVs. During the review, the Party further reported that, for 2005–2017, fuel-use data reported by Enemalta energy services provider pursuant to European Union directive 2003/87/EC were used. The data provided by Enemalta were not reported in the NIR.
E.15	1.A.1.a Public electricity and heat production – solid fuels – CH <sub>4</sub> (E.25, 2017) Accuracy	Justify in the NIR the use of a country-specific EF or use the IPCC default EF (1 kg/TJ) until a country-specific EF is developed.	Resolved. The Party used a country-specific EF based on data obtained from two power plants (Delimara and Marsa) for up to 2004 and for 2005 onward, as well as the NCVs and oxidation factors identified in the verified emission reports submitted pursuant to European Union directive 2003/87/EC (see NIR section 3.2.4.2). The Party justified its use of the above.
E.16	1.A.2 Manufacturing industries and construction – liquid fuels – CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O (E.14, 2017) (E.24, 2016) (E.24, 2015) (30, 2013) (41, 2012) (39, 2011) Comparability	Allocate the AD and emissions to the appropriate subcategories, in line with the UNFCCC Annex I reporting guidelines, in order to improve comparability with other Parties included in Annex I to the Convention.	Resolved. The Party indicated in the NIR (section 3.2.5.2) that surveys were conducted by the Malta Resources Authority and the National Statistics Office in order to categorize energy-use data according to economic sector.
E.17	1.A.3.a Domestic aviation – liquid fuels – CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O (E.16, 2017) (E.27, 2016) (E.27, 2015)	Make use of additional sources of information, such as EUROCONTROL, which is based on higher-tier methods, as a supplementary QA activity to	Addressing. The Party reported in its NIR (section 3.2.7.2) that AD for domestic aviation were obtained from the EUROCONTROL model for 2005–2017, meaning that EUROCONTROL data can no longer be used for QA purposes. While Malta did not report on the verification of the data used in the model, it reported that it may

ID#	Issue and/or problem classification <sup>a, b</sup>	Recommendation made in previous review report	ERT assessment and rationale
	(38, 2013) Accuracy	verify the fuel allocation for domestic and international uses.	use data from other international sources, such as IEA, for performing QA on EUROCONTROL data.
E.18	1.A.3.a Domestic aviation – liquid fuels – N <sub>2</sub> O (E.26, 2017) Accuracy	Use an IPCC default EF or justify in the NIR the use of a country-specific EF.	Addressing. The Party carried out a recalculation for aviation gasoline and jet kerosene and explained in the NIR (section 3.2.7) that the data for the whole time series were obtained from the EUROCONTROL model. The IEF (1.94 kg N <sub>2</sub> O/TJ) for 2008–2017 for aviation gasoline and for 2005–2017 for jet kerosene is close to the IPCC default EF of 2 kg N <sub>2</sub> O/TJ. However, the IEF for aviation gasoline for 2007 is 2,337.55kg/TJ, which would appear to be an error, while the IEFs for the remaining years for aviation gasoline and jet kerosene are the same as the ones used for the previous submission (i.e. 0.6 kg/TJ). During the review, the Party stated that the low EFs could be attributed to a change in the methodology used when disaggregating fuels between domestic and international aviation. The Party also stated that the issue was being investigated and followed up with EUROCONTROL (see NIR section 3.2.7.2) and would be corrected for the next annual submission.
E.19	1.A.3.b Road transportation – liquid fuels – CO <sub>2</sub> (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 <sub>2</sub> emissions from gasoline; if such data are not available, use the default CO <sub>2</sub> EF from the 2006 IPCC Guidelines that is applicable to European gasoline passenger cars.	Not resolved. During the review, the Party reported that emissions for all years from 2005 onward were estimated using the COPERT V model, while default EFs (from the 2006 IPCC Guidelines, vol. 2, table 3.2.5) were used for estimating emissions for 1990–2004. The Party indicated that it was also working on including pre-2005 data in COPERT V. The Party did not clarify which NCVs and carbon content were used in the COPERT V model.
E.20	1.A.3.b Road transportation – liquid fuels – CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O (E.20, 2017) (E.37, 2016) (E.37, 2015) Consistency	Ensure the time-series consistency of the CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O 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. During the review, the Party reported that emissions for all years from 2005 onward were estimated using the COPERT V model, while default EFs were used for estimating emissions for 1990–2004. The Party indicated that it was also working on including pre-2005 data in the COPERT V model.
E.21	1.A.3.b Road transportation – liquid fuels – CO <sub>2</sub> and N <sub>2</sub> O (E.21, 2017) (E.39, 2016) (E.39, 2015) Consistency	Review the CO <sub>2</sub> and N <sub>2</sub> O 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.	Not resolved. During the review, the Party provided the explanation given for ID# E.17 above.
E.22	1.A.3.b Road transportation – liquid fuels – CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O (E.27, 2017) Accuracy	Calculate CO <sub>2</sub> 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	Addressing. The Party reported in the NIR (section 3.2.8.2) that the figures for fuel sold for transport in 2017 were obtained from a survey by two local authorities. It indicated that these figures were too low to be used for GHG emission estimates, and

ID#	Issue and/or problem classification <sup>a, b</sup>	Recommendation made in previous review report	ERT assessment and rationale
		the data if necessary, before estimating CH <sub>4</sub> and N <sub>2</sub> O emissions using the COPERT V model, and describe this procedure and the results in the NIR.	that the emissions for 2017 were calculated using the COPERT V model.
E.23	1.A.3.b.i Cars – liquid fuels – CO <sub>2</sub> and CH <sub>4</sub> (E.28, 2017) Transparency	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.	Not resolved. The Party did not explain how biodiesel is dealt with in the COPERT V model. In addition, the discrepancies were not corrected. For instance, figure 3-4 of the NIR indicates that total emissions from road transport were less than 600 Gg CO <sub>2</sub> eq, while the total emissions reported in CRF table 1.A(a)s3 amount to 11,668.42 Gg CO <sub>2</sub> eq for liquid fuels only. The Party reported in the NIR (section 3.2.8.6) that a working group for transport is being set up in order to update input values to the COPERT V model.
E.24	1.A.3.b.i Cars – liquid fuels – N <sub>2</sub> O (E.29, 2017) Transparency	Justify in the NIR the use of the country-specific N <sub>2</sub> O EF for biodiesel.	Not resolved. The Party did not justify the use of the country-specific EF for N <sub>2</sub> O for biodiesel in the NIR.
E.25	1.A.3.d Domestic navigation – liquid fuels – CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O (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 reported in the NIR (section 3.2.9.2) that the data used for domestic navigation were obtained from a survey and that they were inconsistent. The Party also reported in the NIR (section 3.2.9.3) that it will make further improvements to the data.
E.26	1.A.3.d Domestic navigation – liquid fuels – CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O (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 Party reported in the NIR (section 3.2.9.2) that the data used for domestic navigation were obtained from a survey and were inconsistent. The inter-annual variation in the consumption of residual fuel oil was not explained.
E.27	1.A.5 Other (fuel combustion activities) – liquid fuels – CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O (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 <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O emissions from fuel use in the military (both stationary and mobile combustion) for the entire time series since 1990.	Addressing. The Party provided details on methodology in NIR table 3-1 and sources of AD, EFs and assumptions used for estimating emissions for category 1.A.5 in table 3-2. However, AD were provided in CRF table 1.A(a)s4. The Party indicated that data for the military have not yet been gathered.
E.28	1.A.5 Other (fuel combustion activities) – liquid fuels – CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O (E.23, 2017) (E.41, 2016) (E.41, 2015) Comparability	Disaggregate emissions between stationary and mobile combustion.	Resolved. The Party reported emissions for category 1.A.5.a (stationary combustion) as “NA” in CRF table 1.A(a)s4 for 2017. Emissions from mobile combustion from military operations were reported under category 1.A.5.b.
IPPU			
I.1	2. General (IPPU) (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. The data received from data providers is checked and compared with the trend in the specific AD over the previous years. Any variations and outliers are brought to the attention of and discussed with the data providers. These discussions occasionally lead to the revision of the data that would have been submitted. In

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			addition, Malta is working on identifying alternative sources of data, where possible, to enable more robust QA/QC checks (see NIR section 4.1, p.96).
I.2	2.A.4 Other process uses of carbonates – CO <sub>2</sub> (I.2, 2017) (I.5, 2016) (I.5, 2015) (48, 2013) Completeness	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.	Not resolved. In the NIR (section 4.2.4.2.6), Malta states that it plans to determine whether the production process in the local ceramics industry leads to emissions or whether products are imported. The ERT notes that, according to a preliminary assessment carried out by the previous ERT 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 guidelines. However, Malta did not report such an assessment in the NIR.
I.3	2.D.3 Other (non-energy products from fuels and solvent use) – CO <sub>2</sub> (I.4, 2017) (I.10, 2016) (I.10, 2015) (51, 2013) (60, 2012) Consistency	Investigate the time-series inconsistency of the estimates of CO <sub>2</sub> emissions from road paving with asphalt, recalculate the emissions, if appropriate, and report on the findings in the NIR.	Addressing. Malta extrapolated AD for before 2011 in line with the 2006 IPCC Guidelines (vol. 1) by using data for 2011–2014 to ensure time-series consistency, as the Party did not have any consistent data for prior to 2011. However, the time-series consistency of the AD is being analysed.
I.4	2.F Product uses as substitutes for ozone-depleting substances – HFCs and PFCs (I.5, 2017) (I.11, 2016) (I.11, 2015) (43, 2013) Transparency	Collect the necessary data to complete the background information tables for the reporting of F-gases (CRF table 2.II.F) in accordance with the UNFCCC Annex I inventory reporting guidelines.	Resolved. The Party completed all fields in CRF table 2(II)B-Hs2 and used notation keys where the relevant background tables were not completed.
I.5	2.F.1 Refrigeration and air conditioning – HFCs and PFCs (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. Malta conducted a project to improve AD for ozone-depleting substance substitutes and estimated emissions from refrigeration and air conditioning using tier 1 instead of tier 2 methods, as suggested by previous ERTs. However, some minor improvements (see ID# I.13 below) are still pending (see NIR section 4.7, p.123).
I.6	2.F.1 Refrigeration and air conditioning – HFCs and PFCs (I.7, 2017) (I.13, 2016) (I.13, 2015) (45, 2013) Completeness	As part of the planned project to develop a better methodology for estimating emissions from refrigeration and air conditioning, consider the importation of F-gases in products and report on this in the NIR.	Resolved. In response to the list of potential problems raised by the ERT during the review, Malta used the best available information and data on F-gases used in the country, the average lifetime of pre-charged equipment (16.8 years) and the average fill of pre-charged equipment per refrigerant (1 kg) to recalculate emissions from refrigeration and air conditioning. On the basis of these key assumptions, the mass of charge in pre-charged equipment was estimated by taking the total estimated stock of split units from the Energy and Water Agency heat pump model rounded up to the nearest integer and multiplying this by the average fill. The ERT agreed with the assumptions made by Malta, including the methodological assumptions used for reporting on stock accumulated from stationary air conditioning. As a result of recalculations made

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			by Malta, the difference in the reported total F-gas emissions between the April 2019 submission and the latest revised submission is 18.75 per cent for 2017, with the highest difference observed for 2016 (20.47 per cent).
I.7	2.F.1 Refrigeration and air conditioning – commercial refrigeration – HFCs (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” and for “remaining in products and decommissioning” (“NE”) and the associated emissions (reported as “NO”).	Addressing. The notation keys were not changed. However, the ERT noted that Malta reported AD “from disposal” as “IE” for 2016–2017 for HCF-134a.
I.8	2.F.1 Refrigeration and air conditioning – transport refrigeration and stationary air conditioning – HFCs (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 notation keys were not changed. However, for transport refrigeration, HFC-134a emissions from disposal were reported for 2001–2017.
I.9	2.F.2 Foam blowing agents – HFCs (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. Malta gathered AD from limited companies registered with the Regulator for Energy and Waste Services. However, the AD obtained are assumed to cover the vast majority of the local market. The ERT concluded that, since the bulk of HFC consumption for foam blowing is monitored by the Regulator for Energy and Water Services, the missing emissions are below the threshold of significance established in paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines.
I.10	2.F.2 Foam blowing agents – HFCs (I.15, 2017) (I.19, 2016) (I.19, 2015) Transparency	Explain in the NIR that HFC emissions from foam blowing agents do not occur and ensure that the notation key “NO” is used, where appropriate, in the NIR and in the CRF tables for emissions and AD that are not occurring.	Resolved. Malta reported HFC emissions and AD for 1990–1999 as “NO” in CRF table 2(II)B-Hs2 and specified in the category description (section 4.7.2.1) that the earliest import of HFCs was in 2000 and there is no national production.
I.11	2.F.3 Fire protection – HFCs (I.16, 2017) (I.20, 2016) (I.20, 2015) Transparency	Report HFC-227ea emissions from manufacturing, stocks and disposal for 1990–2003 as “NO” in CRF table 2(II)B-H and explain in the NIR that non-HFC halons were used prior to 2004.	Resolved. Malta reported HFC-227ea emissions from manufacturing, stocks and disposal for 1990–2003 as “NO” in CRF table 2(II)B-H and explained in the NIR (section 4.7.3.1) that non-HFC halons were used prior to 2004.
I.12	2.F.3 Fire protection – HFCs (I.17, 2017) (I.21, 2016) (I.21, 2015) Transparency	Report recovery of HFC-227ea emissions for 1990–2003 as “NO” in CRF table 2(II).B-H and explain the use of the notation key “NO” in the NIR.	Resolved. Malta reported the recovery of HFC-227ea emissions for 1990–2003 as “NO” in CRF table 2(II)B-H and explained in the NIR (section 4.7.3.1) that non-HFC halons were used prior to 2004.
I.13	2.F.1 Refrigeration and air conditioning – HFCs (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. Malta reported in CRF table 2(II)B-Hs2 emissions from mobile air conditioning under emissions from transport refrigeration, and reported “IE” in CRF table 9 to explain the allocation of emissions from mobile air conditioning.



<i>ID#</i>	<i>Issue and/or problem classification<sup>a, b</sup></i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
I.14	2.G.1 Electrical equipment – SF <sub>6</sub> (I.20, 2017) Transparency	Collect information on incidents that may lead to spikes in emissions and report on them in the NIR.	Resolved. Malta reported in the NIR (section 4.8.1.2) that specific incidents in 2003 and 2011 and maintenance activities in 2013 led to spikes in emissions.
I.15	2.G.1 Electrical equipment – SF <sub>6</sub> (I.20, 2017) Transparency	Include checks (e.g. with the data suppliers) in the QC procedures in case of variations and outliers and report on the outcome of those checks in the NIR.	Resolved. As indicated in the NIR (section 4.1), checking the data received with the respective data suppliers and comparing it with the trend in the specific AD over the previous years is a QA/QC procedure for the IPPU sector.
<b>Agriculture</b>			
A.1	3. General (agriculture) (A.1, 2017) (A.3, 2016) (A.3, 2015) (55, 2013) (66, 2012) Convention reporting adherence	Provide information on the uncertainty of the agriculture sector.	Resolved. Information on uncertainties is provided in the agriculture chapter of the NIR for all categories of CH <sub>4</sub> and N <sub>2</sub> O emissions (e.g. in section 5.3.3).
A.2	3. General (agriculture) (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 made some improvements to the estimation of livestock population data on the basis of discussions with national experts (e.g. for proportion of mature female cattle, as explained in NIR section 5.2.5); however, the characterization of livestock is still largely reliant on expert judgment. The Party reported on recalculations for each subcategory (e.g. in NIR section 5.2.5).
A.3	3. General (agriculture) (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 for the development of a consistent time series of AD.	Addressing. Malta continues to review animal population statistics (see NIR section 5.2.3); however, the characterization of livestock is still largely reliant on expert judgment for the full time series. Appropriate techniques from the 2006 IPCC Guidelines (vol. 1, chap. 5) were used to develop a consistent time series of AD.
A.4	3.A.2 Sheep – CH <sub>4</sub> (A.31, 2017) Transparency	Explain in the NIR that the net energy to produce wool is excluded from the calculation of CH <sub>4</sub> emissions from enteric fermentation for sheep and how the coefficient for pregnancy was derived.	Addressing. The Party reported in the NIR (section 5.2.2 and table 5.10) that the net energy to produce wool is excluded from gross energy calculations but did not provide a rationale for this (see also ID# A.17 in table 5). Malta discussed in detail in the NIR (table 5.10 and section 5.2.2) how the coefficient for pregnancy was derived.
A.5	3.A.4 Other livestock – CH <sub>4</sub> (A.4, 2017) (A.5, 2016) (A.5, 2015) (57, 2013) (67, 2012) Accuracy	Justify the applicability of the Italian CH <sub>4</sub> EF for rabbits to the national circumstances of Malta.	Not resolved. The Party provided information in the NIR (section 5.2.2 and table 5-12) on the source of the EF used (a report by the Italian Agency for the Protection of the Environment); however, the Party did not specifically discuss the applicability of the EF to its national circumstances. During the review, Malta explained that, following discussions with national experts, it chose to use the EF developed by the Italian Agency for the Protection of the Environment because production practices in Italy were similar to those in Malta.

<i>ID#</i>	<i>Issue and/or problem classification<sup>a, b</sup></i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
A.6	3.B Manure management – N <sub>2</sub> O (A.12, 2017) (A.11, 2016) (A.11, 2015) (62, 2013) Accuracy	Compare the country-specific Nex values for all animal types with the IPCC defaults and explain the differences.	Resolved. Malta used IPCC default Nex rates from the 2006 IPCC Guidelines (vol. 4, table 10.19) for most livestock categories. Country-specific Nex rates were used for poultry and a comparison was made with the IPCC default values in the NIR (section 5.3.2.2.1).
A.7	3.B.1 Cattle – CH <sub>4</sub> (A.14, 2017) (A.28, 2016) (A.28, 2015) Transparency	Explain in the NIR the tier 2 methodology, assumptions and parameters (including volatile solids and maximum CH <sub>4</sub> -producing potential) used in the estimates of CH <sub>4</sub> emissions from manure management and demonstrate that these estimates are consistent with the estimates for enteric fermentation.	Resolved. The Party provided the relevant information in NIR table 5-15.
A.8	3.B.1 Cattle and 3.D.a.2.a Animal manure applied to soils – N <sub>2</sub> O (A.15, 2017) (A.29, 2016) (A.29, 2015) Transparency	Explain in the NIR how N <sub>2</sub> O emissions from manure management for dairy cattle, including the Nex used, and N <sub>2</sub> O emissions from animal manure applied to soils are estimated, and how these estimates are consistent with the tier 2 approach used to estimate CH <sub>4</sub> emissions from enteric fermentation for dairy cattle.	Not resolved. Malta used the default Nex values for Western Europe from the 2006 IPCC Guidelines (vol. 4, table 10.19) for cattle, and the tier 2 approach for CH <sub>4</sub> emissions from enteric fermentation using country-specific information. However, Malta was unable to directly compare N <sub>2</sub> O emissions from manure management with CH <sub>4</sub> emissions from enteric fermentation as it did not have sufficient information to estimate Nex values using equation 10.32 from the 2006 IPCC Guidelines.
A.9	3.B.1 Cattle – CH <sub>4</sub> and N <sub>2</sub> O (A.32, 2017) Accuracy	Update the factors and apply Western European default values to better reflect the circumstances of Malta.	Resolved. The Party discussed the matter in the NIR (section 5.3.2.1.1).
A.10	3.B.1 Cattle – N <sub>2</sub> O (A.32, 2017) Accuracy	Provide in the NIR the justification for the use of the updated Nex values.	Resolved. Malta provided a justification for the use of Nex values in the NIR (section 5.3.2.2).
A.11	3.B.3 Swine – CH <sub>4</sub> (A.33, 2017) Transparency	Provide further clarification in the NIR on how the two manure management systems were applied to the different proportions of manure and how the reported value was derived.	Resolved. Malta clarified how the two manure management systems were applied to the different proportions of manure and how the reported value was derived in the NIR (section 5.3.2.1.2).
A.12	3.B.4 Other livestock – N <sub>2</sub> O (A.22, 2017) (A.34, 2016) (A.34, 2015) Transparency	Provide a rationale in the NIR for the use of the default value for N loss due to volatilization of NH <sub>3</sub> and nitrogen oxides from manure management for poultry in the estimation of indirect N <sub>2</sub> O emissions from manure management for rabbits.	Resolved. Malta provided in the NIR (section 5.3.2.3) a rationale for using the default value for N loss due to the volatilization of NH <sub>3</sub> and nitrogen oxides from manure management for poultry in its estimation of indirect N <sub>2</sub> O emissions from manure management for rabbits.
A.13	3.D.a Direct N <sub>2</sub> O emissions from managed soils – N <sub>2</sub> O (A.23, 2017) (A.16, 2016) (A.16, 2015) (66, 2013) (77, 2012) Consistency	Review the consistency of the time series and explain the trend in the use of synthetic fertilizers in the NIR.	Resolved. Malta included in the NIR (section 5.5.2) an assessment of the consistency of the time series with regard to applying synthetic fertilizers. Malta revised its methodology, enabling the estimation of an average application rate per ha, which, when combined with estimates of the usable agricultural area, allows a consistent time series to be established, which

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			provides a clear assessment of the trend in fertilizer use.
A.14	3.D.a Direct N <sub>2</sub> O emissions from managed soils – N <sub>2</sub> O (A.24, 2017) (A.17, 2016) (A.17, 2015) (66, 2013) Accuracy	Investigate the quality of the statistical data reported on the N content of the imported fertilizers and describe the corrections made to the statistical data in the NIR.	Resolved. Malta included in the NIR (section 5.5.2.1.1) an assessment of the quality of the AD on the application of synthetic fertilizers. Malta revised its methodological approach as described in ID# A.9 above.
A.15	3.D.a.2.a Animal manure applied to soils – N <sub>2</sub> O (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.	Addressing. The characterization of livestock AWMS remains largely reliant on expert judgment (see NIR section 5.5.2.1.2). However, Malta recently commissioned a study aimed at improving the AD and estimation methodologies for the agriculture sector.
A.16	3.D.a.4 Crop residues – N <sub>2</sub> O (A.34, 2017) Consistency	Include the revised AD for crop residues in the annual submission and ensure the time-series consistency of the estimates made.	Resolved. The revised AD were presented in table 5-27 and discussed in section 5.5.2.1.1 of the NIR. The emissions were recalculated accordingly.
<b>LULUCF</b>			
L.1	4. General (LULUCF) (L.3, 2017) (L.8, 2016) (L.8, 2015) (77, 2013) (80, 2012) Convention reporting adherence	Report the sources of the uncertainty values.	Resolved. The sources of the uncertainties for the AD and parameters were reported in the NIR (sections 6.1, 6.5, 6.6, 6.8 and 6.9).
L.2	4. General (LULUCF) – CO <sub>2</sub> (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.	Not resolved. The total areas for each land-use category in CRF tables 4.B, 4.C, 4.E and 4.F are not consistent with the data in the land transition matrix in CRF table 4.1.
L.3	Land representation (L.9, 2017) (L.15, 2016) (L.15, 2015) Transparency	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).	Not resolved. Malta did not report necessary information on how the two different data sets (CORINE land cover and national statistics) were used to report consistent land representation in the NIR. The Party stated in the NIR (p.192) and during the review that it was planning to update this information in the next annual submission on the basis of capacity-building support received.
L.4	Land representation (L.10, 2017) (L.16, 2016) (L.16, 2015) Transparency	Report a confusion matrix between the CORINE land cover and land-use categories and the IPCC land-use categories, including the two grassland subdivisions: woody grassland and non-woody grassland.	Resolved. The Party provided this information in NIR table 6-8 (section 6.3), in which land-use categories were compared between CORINE land cover and the 2006 IPCC Guidelines, including the grassland subdivisions.
L.5	4.A.1 Forest land remaining forest land – CO <sub>2</sub> (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. Malta provided information on the absence of logging and harvesting in the NIR (section 6.4) together with a reference to the Rural Development Programme for Malta 2007–2013. However, during the review, Malta informed the ERT that the new Rural Development Programme for Malta 2014–2020

ID#	Issue and/or problem classification <sup>a, b</sup>	Recommendation made in previous review report	ERT assessment and rationale
			does not include the required information. Malta stated, however, that the National Forestry Accounting Plan (submitted at the end of 2018) consists of information proving the absence of logging and harvesting. The ERT considers that including the above information in the next annual submission would contribute to resolving the issue.
L.6	4.B Cropland – CO <sub>2</sub> (L.14, 2017) (L.20, 2016) (L.20, 2015) Accuracy	Report information in the NIR to justify the selected age of maturity (26 years) for perennial crops.	Resolved. The Party provided a justification for the selected age of maturity in the NIR (section 6.5.2.1).
L.7	4.E.2.3 Grassland converted to settlements – N <sub>2</sub> O (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.	Addressing. The Party did not include information in CRF table 9 regarding reporting of “IE” for grassland converted to settlements. However, some information was presented in the documentation box of CRF table 4.E explaining that the values are included under the other two subcategories.
L.8	4(III) Direct N <sub>2</sub> O emissions from N mineralization/ immobilization and 4(IV) Indirect N <sub>2</sub> O emissions from managed soils – N <sub>2</sub> O (L.17, 2017) (L.22, 2016) (L.22, 2015) Completeness	Estimate direct and indirect N <sub>2</sub> O emissions associated with soil organic carbon losses in mineral soils and report under the LULUCF sector the N <sub>2</sub> O 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 <sub>2</sub> O emissions.	Not resolved. The Party reported “NO” or “IE” for direct N <sub>2</sub> O emissions from N mineralization or immobilization resulting from a change in land use or management in mineral soils in CRF table 4(III). It reported “IE” for N <sub>2</sub> O emissions from land converted to cropland, specifying that the emissions are included under the agriculture sector. However, the ERT noted that only N <sub>2</sub> O emissions from cropland remaining cropland should be reported under the agriculture sector. No AD or emissions were reported in CRF table 4(III) for any other land uses. However, the areas of land-use conversion were reported for land converted to grassland, land converted to settlements and land converted to other land in CRF tables 4.C, 4.E and 4.F as 0.26, 0.18 and 0.11 kha, respectively, for 2017.  In CRF table 4(IV), “IE” was reported for atmospheric deposition and N leaching and run-off, with a description in the documentation box that the emissions are reported under the agriculture sector. However, there is no description in CRF table 4(IV) or in the NIR of the land-use category under which these emissions are reported.
L.9	4(IV).1 Atmospheric deposition – N <sub>2</sub> O (L.20, 2017) Transparency	Report in CRF table 9 that the N <sub>2</sub> O emissions were included under the agriculture sector.	Resolved. The required information is reported in CRF table 9 and the documentation box of CRF table 4(IV).
Waste			
W.1	5. General (waste) (W.1, 2017) (W.1, 2016) (W.1, 2015) (83, 2013) (99, 2012) Convention reporting adherence	Develop QA/QC procedures for the waste sector and report them in the NIR.	Resolved. NIR table 7-4 (p.237) presents QA/QC procedures performed for the waste sector.

ID#	Issue and/or problem classification <sup>a, b</sup>	Recommendation made in previous review report	ERT assessment and rationale
W.2	5. General (waste) – CH <sub>4</sub> and N <sub>2</sub> O (W.13, 2017) Transparency	Ensure all uses of the notation key “IE” in the waste sector are fully explained in CRF table 9.	Not resolved. Malta did not provide information on CH <sub>4</sub> flared and recovered from unmanaged solid waste disposal sites, reported as “IE” in CRF table 9.
W.3	5.A Solid waste disposal on land – CH <sub>4</sub> (W.3, 2017) (W.3, 2016) (W.3, 2015) (86, 2013) (102, 2012) Transparency	Provide detailed information in the NIR on CH <sub>4</sub> recovery for all years in which recovery is reported (e.g. the quantity of CH <sub>4</sub> recovered and method used to quantify CH <sub>4</sub> ).	Addressing. In the NIR (section 7.2.2.14, p.246), Malta provided some information on the method used to estimate CH <sub>4</sub> recovery for 2013, 2014 and 2016. However, this information lacked clarity as to how the actual amounts of CH <sub>4</sub> recovered were obtained (e.g. whether they were directly measured or calculated on the basis of energy production).
W.4	5.A Solid waste disposal on land – CH <sub>4</sub> (W.4, 2017) (W.10, 2016) (W.10, 2015) Accuracy	Justify, in accordance with the 2006 IPCC Guidelines, estimates of CH <sub>4</sub> recovered, or use the assumption that no recovery occurs.	Addressing. The Party has continued to report CH <sub>4</sub> flared and used for energy but did not provide sufficient justification or documentation for CH <sub>4</sub> recovery. The ERT believes that future ERTs should give further consideration to this issue to ensure that emissions are not underestimated. See ID# W.2 above.
W.5	5.A Solid waste disposal on land – CH <sub>4</sub> (W.5, 2017) (W.4, 2016) (W.4, 2015) (87, 2013) Transparency	Include the DOC content per type of degradable waste material in the NIR.	Resolved. The Party provided default values for the DOC content of waste (weight fraction, wet basis) from the 2006 IPCC Guidelines (vol. 5, chap. 2, table 2.4, p.2.14) in NIR table 7-8.
W.6	5.A Solid waste disposal on land – CH <sub>4</sub> (W.6, 2017) (W.5, 2016) (W.5, 2015) (88, 2013) Transparency	Include information on the k values and half-lives of the waste fractions in the NIR.	Resolved. The k values for the waste fractions provided in NIR table 7-8 for the CH <sub>4</sub> generation rate for food, garden, paper, wood, straw, textile and disposable nappy, sewage sludge and industrial waste were taken from the 2006 IPCC Guidelines (vol. 5, chap. 3, table 3.3, p.3.17). These waste materials were not all included in the estimates of emissions from solid waste and no half-life values were provided in the NIR. The ERT noted that this is not an issue as the Party used the bulk waste method to estimate CH <sub>4</sub> emissions from solid waste disposal.
W.7	5.A Solid waste disposal on land – CH <sub>4</sub> (W.7, 2017) (W.9, 2016) (W.9, 2015) Transparency	Provide information on the waste composition, DOC content and k value for each waste type in the NIR.	Resolved. Information on the waste composition, DOC content and k values for each type of waste were provided in NIR table 7-8.
W.8	5.A Solid waste disposal on land – CH <sub>4</sub> (W.8, 2017) (W.11, 2016) (W.11, 2015) Convention reporting adherence	Correct the DOC value reported for 2004 in CRF table 5.A.	Resolved. The DOC value reported in CRF table 5.A for 2004 was corrected from 4.84 per cent to 7.07 per cent.
W.9	5.A.2 Unmanaged waste disposal sites – CH <sub>4</sub> (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	Addressing. During the review, the Party explained that the variability in the MCFs for unmanaged waste disposal sites observed can be attributed to the use of a regenerative treatment oxidizer at the Maghtab landfill, the operation of which is explained in two studies (Wilson, 2004; Wilson, 2010), which were carried out following

<i>ID#</i>	<i>Issue and/or problem classification<sup>a, b</sup></i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
		measured landfill gas composition from the Maghtab landfill.	the installation of the plant. The findings of these studies are in line with those of a study by Oonk (2012), in which the collection efficiency of the regenerative treatment oxidizer varies between 45 and 75 per cent. However, the time series of adjusted MCF values and the measured landfill gas composition from the Maghtab landfill were not provided in the NIR.
W.10	5.A.2 Unmanaged waste disposal sites – CH <sub>4</sub> (W.15, 2017) Transparency	Replace the “IE” notation key for unmanaged waste disposal reported in CRF table 5.A with actual MCF and DOC <sub>f</sub> values.	Not resolved. The Party did not replace “IE” reported for unmanaged waste disposal in CRF table 5.A with actual MCF and DOC <sub>f</sub> values in NIR table 7-8.
W.11	5.B.2 Anaerobic digestion at biogas facilities – CH <sub>4</sub> (W.11, 2017) Convention reporting adherence	Investigate and correct the descriptions in NIR table 7-2, and the method used to estimate CH <sub>4</sub> emissions from anaerobic digestion.	Addressing. The title of NIR table 7-11 (table 7-2 in the previous NIR) has been corrected. A description of the method used to estimate CH <sub>4</sub> emissions from anaerobic digestion was provided during the review, but the calculation was not presented in the NIR.
W.12	5.B.2 Anaerobic digestion at biogas facilities – CH <sub>4</sub> (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.	Addressing. Malta replaced “NO” with “IE” in CRF table 5.B, as the IPCC default EF of 0.8 g CH <sub>4</sub> /kg was applied. However, the Party did not provide information in CRF table 9 on the fact that recovery is included in the estimate of net emissions. The Party did not explain in CRF table 9 where the CH <sub>4</sub> emissions were included.
W.13	5.C Incineration and open burning of waste – CH <sub>4</sub> and N <sub>2</sub> O (W.11, 2017) Convention reporting adherence	Correct the CH <sub>4</sub> and N <sub>2</sub> O EFs for municipal solid waste and clinical and industrial waste reported in CRF table 5.C.	Not resolved. CH <sub>4</sub> and N <sub>2</sub> O EFs for municipal solid waste and clinical and industrial waste reported in CRF table 5.C were not corrected.
W.14	5.D Wastewater treatment and discharge – N <sub>2</sub> O (W.10, 2017) (W.13, 2016) (W.13, 2015) Transparency	Explain in the NIR the methodology, assumptions, AD and EFs used to estimate N <sub>2</sub> O emissions from pig slurry entering wastewater treatment plants.	Resolved. The NIR (section 7.5.2 on methodological issues) refers to quantities of N from agricultural sources received at wastewater treatment plants, and NIR table 7-16 provides AD on swine manure N going to sewers as N (in kt). It was noted in the 2016 annual review report that, once added to the system, the additional N is assumed to behave in the same way as N from human or industrial sources, and therefore the same EFs are applied. If this assumption is still valid, and the Party transparently explains in the NIR that the N from pig slurry is treated as N additional to that from domestic and industrial sources, the ERT considers the issue to have been resolved.
W.15	5.D Wastewater treatment and discharge – CH <sub>4</sub> and N <sub>2</sub> O (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.	Not resolved. Waste disposal data reported in CRF table 5.A were not corrected.
W.16	5.D.1 Domestic wastewater – CH <sub>4</sub>	Include AD in the NIR on the quantities of N from agricultural sources received at wastewater	Resolved. The Party included in NIR table 7-16 (p.261) AD for swine manure N going to sewers.

ID#	Issue and/or problem classification <sup>a, b</sup>	Recommendation made in previous review report	ERT assessment and rationale
	(W.17, 2017) Transparency	treatment plants. The quantity of N in effluent reported in CRF table 5.D should include the amount of N from agricultural sources.	
W.17	5.D.1 Domestic wastewater – N <sub>2</sub> O (W.17, 2017) Transparency	Include in the quantity of N from agricultural sources the quantity of N in effluent reported in CRF table 5.D.	Resolved. The Party reported that the quantity of N in effluent (5.77 kt N/year in 2017) reported in CRF table 5.D includes the quantity of N from agricultural sources.
W.18	5.D.1 Domestic wastewater – N <sub>2</sub> O (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 reported in the NIR (section 7.5.2, p.260) that the N removal efficiency of wastewater treatment plants was 70 per cent, as suggested to the inventory agency by European Union expert reviewers in 2016. However, the Party did not provide any further quantitative or qualitative information on the N removal efficiency factor, including any justification for the value used or a time series of the values applied. The ERT believes that this issue should be given further consideration in future reviews to ensure that emissions are not underestimated.
<b>KP-LULUCF activities</b>			
KL.1	General (KP-LULUCF activities) (KL.1, 2017) (KL.1, 2016) (KL.1, 2015) Transparency	Report for each KP-LULUCF activity 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.	Addressing. Malta reported additional information in the NIR (section 11.1.3) on how the definition of the activity has been implemented and applied consistently over time. In addition, Malta reported in the NIR (section 11.5.1) information on the assumption used for calculating carbon stock changes and GHG emissions and removals, as well as on the consideration of indirect and natural GHG emissions and removals for the purpose of its most recent submission. The Party reported in the NIR (section 11.4) that no activities under Article 3, paragraph 3, of the Kyoto Protocol are occurring in the country. However, during the review, the Party stated that it had obtained new information when reporting on and updating the forest land and management categories as a result of the capacity-building support received for establishing the National Forestry Accounting Plan and the forest reference level. The Party stated that this updated information will be presented in its next annual submission.
KL.2	General (KP-LULUCF activities) (KL.2, 2017) (KL.1, 2016) (KL.1, 2015) Transparency	Report information in the NIR on conversion of natural forest to planted forest.	Addressing. Malta reported in the NIR (section 11.1.1) that no conversions from natural to planted forest have occurred to date. However, Malta stated that it had acquired new information when reporting on and updating the forest land category as a result of the capacity-building support received for establishing the National Forestry Accounting Plan and the forest reference level. The Party stated that this updated information will be reported in its next annual submission.
KL.3	Deforestation (KL.3, 2017) (KL.3,	Justify in the NIR the absence of deforestation since 1990.	Resolved. Malta reported relevant information in the NIR (chap. 11), particularly on the conservation of trees and woodland sites in

<i>ID#</i>	<i>Issue and/or problem classification<sup>a, b</sup></i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
	2016) (KL.3, 2015) Transparency		accordance with its trees and woodland protection regulations.
KL.4	FM (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 activity and report on the impact of such exclusion on the accounting.	Not resolved. As described in the 2016 annual review report (ID# KL.5), Malta explained that some land with trees that may meet the forest definition was excluded from the reporting because it is predominantly used for urban purposes. This information was not provided in the NIR. However, during the review, the Party stated that it had acquired new information when reporting on and updating the forest land and management categories as a result of capacity-building support received for establishing the National Forestry Accounting Plan and the forest reference level. The Party reported that this updated information will be presented in its next annual submission.
KL.5	FM (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 provided information on the management of certain parts of the Buskett woodland, one of two woodland areas, in the NIR (section 11.1). Information on the other woodland area, Mizieb, was not provided in the NIR. During the review, the Party reported that updated information will be presented in its next annual submission.
KL.6	FM – CO <sub>2</sub> (KL.8, 2017) Transparency	Report AD for FM in CRF table 4(KP-I)B.1.	Resolved. The Party reported AD for FM in CRF table 4(KP-I)B.1.

<sup>a</sup> References in parentheses are to the para(s). and the year(s) of the previous review report(s) in which the issue and/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.

<sup>b</sup> The report on the review of the 2018 annual submission of Malta was not available at the time of the 2019 review. Therefore, the previous recommendations reflected in table 3 are taken from the 2017 annual review report. For the same reason, 2018 is excluded from the list of review years in which the issue could have been identified. Malta was not subject to an individual inventory review in 2014. Therefore, 2014 is excluded from this table.

#### IV. Issues identified in three 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 included in table 4 have been identified in three successive reviews, including the review of the 2019 annual submission of Malta, and have not been addressed by the Party.

Table 4

##### Issues and/or problems identified in three successive reviews and not addressed by Malta

<i>ID#</i>	<i>Previous recommendation for the issue identified</i>	<i>Number of successive reviews issue not addressed<sup>a</sup></i>
General		
G.2	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	3 (2015/2016–2019)



<i>ID#</i>	<i>Previous recommendation for the issue identified</i>	<i>Number of successive reviews issue not addressed<sup>a</sup></i>
G.7	Develop a QA/QC plan, in particular tier 1 QC procedures, and provide information on the QA/QC plan in the NIR	6 (2011–2019)
G.8	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	3 (2015/2016–2019)
G.9	Complete the quality manual and standard QC operating procedures and implement them to ensure consistent reporting between the CRF tables and the NIR	3 (2015/2016–2019)
G.10	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	5 (2012–2019)
G.11	Provide information to explain how the uncertainty analysis is used to prioritize further inventory improvements	5 (2012–2019)
G.12	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	3 (2015/2016–2019)
<b>Energy</b>		
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	5 (2012–2019)
E.3	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	4 (2013–2019)
E.5	Estimate CO <sub>2</sub> emissions using the reference approach for all years of the time series	6 (2011–2019)
E.6	Explain differences in CO <sub>2</sub> emissions that are above 2 per cent	4 (2013–2019)
E.8	Estimate the apparent energy consumption (excluding non-energy use, reductants and feedstocks) for solid, gaseous and other fossil fuels using the reference approach and report the estimates in CRF table 1.A(c)	3 (2015/2016–2019)
E.9	Correct the notation keys for the AD for solid and other fossil fuels in NIR table 3-1 and CRF table 1.A(c)	3 (2015/2016–2019)
E.14	Report estimates, including any relevant information such as NCVs, oxidation factors, EFs and AD used for the estimation of emissions, in the NIR	4 (2013–2019)
E.17	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	4 (2013–2019)
E.19	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 <sub>2</sub> emissions from gasoline; if such data are not available, use the default CO <sub>2</sub> EF from the 2006 IPCC Guidelines that is applicable to European gasoline passenger cars	4 (2013–2019)
E.20	Ensure the time-series consistency of the CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O 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	4 (2013–2019)

<i>ID#</i>	<i>Previous recommendation for the issue identified</i>	<i>Number of successive reviews issue not addressed<sup>a</sup></i>
	two different methodologies does not introduce inconsistencies in the time series	
E.21	Review the CO <sub>2</sub> and N <sub>2</sub> O 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	3 (2015/2016–2019)
E.27	Explain in the NIR the methodology, assumptions and sources of AD and EFs used to estimate and report CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O emissions from fuel use in the military (both stationary and mobile combustion) for the entire time series since 1990	3 (2015/2016–2019)
IPPU		
I.1	Develop and implement QA/QC procedures for the IPPU sector	5 (2012–2019)
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	4 (2013–2019)
I.3	Investigate the time-series inconsistency of the estimates of CO <sub>2</sub> emissions from road paving with asphalt, recalculate the emissions, if appropriate, and report on the findings in the NIR	5 (2012–2019)
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	(2013–2019)
I.7	Ensure consistency between the notation keys used to report AD for “filled into new manufactured products” and for “remaining in products and decommissioning” (“NE”) and the associated emissions (reported as “NO”)	3 (2015/2016–2019)
I.8	Review the notation keys reported for disposal emissions in CRF table 2(II).B-H to ensure that the correct notation keys are used	3 (2015/2016–2019)
I.9	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	3 (2015/2016–2019)
Agriculture		
A.2	Review the population data for all livestock categories, ensure time-series consistency and report on any recalculations	5 (2012–2019)
A.3	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	3 (2015/2016–2019)
A.5	Justify the applicability of the Italian CH <sub>4</sub> EF for rabbits to the national circumstances of Malta	5 (2012–2019)
A.8	Explain in the NIR how N <sub>2</sub> O emissions from manure management for dairy cattle, including the Nex used, and N <sub>2</sub> O emissions from animal manure applied to soils are estimated, and how these estimates are consistent with the tier 2 approach used to estimate CH <sub>4</sub> emissions from enteric fermentation for dairy cattle	3 (2015/2016–2019)

<i>ID#</i>	<i>Previous recommendation for the issue identified</i>	<i>Number of successive reviews issue not addressed<sup>a</sup></i>
A.15	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	3 (2015/2016–2019)
LULUCF		
L.3	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)	3 (2015/2016–2019)
L.5	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	3 (2015/2016–2019)
L.8	Estimate direct and indirect N <sub>2</sub> O emissions associated with soil organic carbon losses in mineral soils and report under the LULUCF sector the N <sub>2</sub> O 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 <sub>2</sub> O emissions	3 (2015/2016–2019)
Waste		
W.3	Provide detailed information in the NIR on CH <sub>4</sub> recovery for all years in which recovery is reported (e.g. the quantity of CH <sub>4</sub> recovered and method used to quantify CH <sub>4</sub> )	5 (2012–2019)
W.4	Justify, in accordance with the 2006 IPCC Guidelines, estimates of CH <sub>4</sub> recovered, or use the assumption that no recovery occurs	3 (2015/2016–2019)
KP-LULUCF activities		
KL.1	Report for each KP-LULUCF activity 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	3 (2015/2016–2019)
KL.2	Report information in the NIR on conversion of natural forest to planted forest	3 (2015/2016–2019)
KL.4	Identify the areas that meet the forest definition and that are not reported under any KP-LULUCF activity and report on the impact of such exclusion on the accounting	3 (2015/2016–2019)
KL.5	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	3 (2015/2016–2019)

<sup>a</sup> The report on the review of the 2018 annual submission of Malta has not yet been published. In addition, Malta was not subject to an individual inventory review in 2014. Therefore, 2014 and 2018 were not included when counting the number of successive years in table 4. As the reviews of the Party's 2015 and 2016 annual submissions were conducted together, they are not considered successive and 2015/2016 is considered as one year.

**V. Additional findings made during the individual review of the 2019 annual submission**

10. Table 5 contains findings made by the ERT during the individual review of the 2019 annual submission of Malta that are additional to those identified in table 3.

Table 5

**Additional findings made during the individual review of the 2019 annual submission of Malta**

<i>ID#</i>	<i>Finding classification</i>	<i>Description of the finding with recommendation or encouragement</i>	<i>Is finding an issue and/or a problem?<sup>a</sup></i>
General			
G.13	Annual submission	<p>Malta submitted its NIR and CRF tables after the deadline of 15 April 2019 (see ID# G.9 in table 3). In response to a question raised by the ERT during the review, Malta acknowledged that improvements are required to ensure the timeliness of its submissions and stated that delays were primarily caused by a combination of capacity and technical reasons (e.g. the delay between the submission of the NIR and the submission of CRF tables in 2019 was due to operations in the submission module not being concluded properly, resulting in the CRF tables not being uploaded correctly, which the Party only realized after receiving a notification from the secretariat). Malta also stated that all of the relevant materials were ready by the time the submission was due. The Party further stated that due consideration will be given to improving internal procedures to ensure that submissions are not delayed in the future. Malta confirmed that timeliness was identified as one of the quality performance indicators by the inventory agency (Malta Resources Authority) in the country's operations and quality manual, and assessed during the inventory agency's management review meetings. Planned improvements include ensuring adequate capacity for the inventory team in the Malta Resources Authority and taking additional procedural steps, including a four-eye check of the completeness of uploaded information and a detailed internal timeline for each submission cycle.</p> <p>The ERT recommends that Malta implement all necessary improvements to ensure the timely submission of all parts of the inventory.</p>	Yes. KP reporting adherence
G.14	Inventory planning	<p>Malta identified areas for further improvement of its inventory, specifying levels of importance (from p.342 of the NIR). Under each sector chapter of the NIR, there are subsections on recalculations and improvements. However, the NIR does not include information on planned improvements with clear targets, responsibilities and schedules. In response to a question raised by the ERT, Malta stated that it is enhancing its improvement plans, and sent to the ERT an extract from its planned inventory improvement documentation system, the aim of which is to manage prioritization, time frames and coordination with the national air pollutant emissions inventory compilation team.</p> <p>The ERT recommends that Malta 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.</p>	Yes. Transparency
G.15	National registry	<p>The ERT noted that, according to the standard independent assessment report assessor, not all necessary information related to the national registry was reported in the annual submission. In particular, the Party did not provide details of publicly available information (in accordance with decision 13/CMP.1, annex, paras. 45 and 47–48) or of actions and changes to address discrepancies (in accordance with decision 15/CMP.1, annex, para. 17).</p> <p>The ERT recommends that the Party include in its annual submission information on actions and changes to address discrepancies in accordance with decision 15/CMP.1, annex, paragraph 17. The ERT also recommends</p>	Yes. KP reporting adherence

<i>ID#</i>	<i>Finding classification</i>	<i>Description of the finding with recommendation or encouragement</i>	<i>Is finding an issue and/or a problem?<sup>a</sup></i>
		that the Party include in its annual submission details of publicly available information (in accordance with decision 13/CMP.1, annex, paras. 45 and 47–48).	
G.16	Notation keys	<p>The ERT noted that Malta needs to correct the use of notation keys in some cases and provide complete information on the use of notation keys, specifically for the cases mentioned in ID#s I.7, I.8, L.8, W.11, W.13 and W.14 in table 3. In response to a question raised by the ERT during the review regarding missing information on the use of “NE” in CRF table 9, Malta stated that it intends to improve the completeness and clarity of its CRF tables regarding the use of “NE” in future submissions.</p> <p>The ERT recommends that Malta 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) and include the previously missing information on the use of “NE” both in CRF table 9 and in the NIR.</p>	Yes. Convention reporting adherence
G.17	QA/QC and verification	<p>Malta is developing its inventory QA/QC system (see NIR, p.324). At the request of the ERT during the review, Malta provided a copy of its operations and quality manual. The ERT observed that the manual contains QA procedures but does not contain sector-specific QA/QC procedures. The ERT noted that the Party did not document the results of the annual checks for each chapter of the NIR.</p> <p>The ERT recommends that Malta implement the QA/QC procedures contained in the operations and quality manual and complete the descriptions of sector-specific QA/QC procedures, and encourages the Party to document the results of the annual checks for each chapter of the NIR.</p> <p>The ERT also recommends that Malta 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 below.</p>	Yes. Convention reporting adherence
G.18	Uncertainty analysis	<p>Malta is conducting a capacity-building project (see NIR section 1.6), in which the inventory agency is currently evaluating its method of determining category-specific uncertainties and overall inventory and trend uncertainties for reporting in its future submissions. In response to a question raised by the ERT on the timeline for this, Malta explained that for the energy sector categories it plans to make improvements over the course of the next three reporting cycles, starting with industry and road transport. In terms of the waste category 5.B.1, further information will be provided in its next submission.</p> <p>The ERT recommends that Malta complete the capacity-building project for estimating uncertainties for all source and sink categories, especially for key categories, for its next annual submission if possible, or provide information on the progress and timeline in its NIR. The ERT also recommends that Malta 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. The ERT further recommends that Malta 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.</p>	Yes. Convention reporting adherence
Energy			
E.29	Fuel combustion – reference approach – gaseous, liquid	Apparent energy consumption (excluding non-energy use, reductants and feedstocks) reported in the IEA data is greater than the apparent energy consumption reported in CRF table 1.A(b) for solid fuels and other fossil fuels for 2015. Further, for 1990–1995, data on total apparent consumption differ between the CRF tables and IEA data. Other bituminous coal is, however, reported as “NE” for the entire time series. The ERT noted that	Yes. Accuracy

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and/or a problem? <sup>a</sup>
	and solid fuels – CO <sub>2</sub>	<p>the difference is almost entirely caused by the importation of bituminous coal, which is reported in the IEA data but not in the CRF tables. During the review, the Party stated that the issue was under investigation. The ERT believes that future ERTs should give further consideration to this issue to ensure that emissions from this activity are not underestimated.</p> <p>The ERT recommends that the Party 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.</p>	
E.30	Comparison with international data – liquid fuels – CO <sub>2</sub>	<p>The ERT noted some inconsistencies between data in the CRF tables and those reported to IEA. For example, the stock change figures for liquid fuels in CRF table 1.A(b) are systematically identical, but opposite in sign, to the IEA figures (for 1990–2014, whereas the figures reported for 2015 are similar). The main cause of the discrepancy was the difference in figures for the trade of fuel oil and gas and diesel oil as imports and exports.</p> <p>During the review, the Party highlighted that an investigation was being carried out with the National Statistics Office to identify the reasons for the discrepancies noted between the CRF tables and IEA data, and to reconcile the figures, where applicable.</p> <p>The ERT recommends that Malta investigate and address the inconsistencies 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 under the reference approach and provide related explanations in the NIR, if appropriate. The ERT encourages the Party to report on any discrepancies between the IEA data and the reference approach data in the NIR.</p>	Yes. Transparency
E.31	Comparison with international data – liquid fuels – CO <sub>2</sub>	<p>The ERT noted some inconsistencies between the data reported in CRF table 1.A(b) and those reported to IEA. Exports of gasoline for 2012 were reported to IEA but do not appear in the CRF tables. Although data for aviation gasoline were reported in the CRF tables for all years, data were reported to IEA for 2011 onward only. The figures in the CRF tables are up to 25 per cent higher for 2011–2014 and 40 per cent lower for 2015 than those reported to IEA. Data for aviation gasoline were reported as “NO” for 2005, 2006 and 2010. During the review, the Party reported that an extensive investigation is being carried out with the National Statistics Office to identify the reasons for the discrepancies noted between the CRF tables and IEA data, and to reconcile the figures, where applicable.</p> <p>The ERT recommends that Malta investigate and address the inconsistencies 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 under the reference approach and provide related explanations in the NIR, if appropriate. The ERT encourages the Party to report on any discrepancies between the IEA data and the reference approach data in the NIR.</p>	Yes. Transparency
E.32	Feedstocks, reductants and other non-energy use of fuels –	<p>In CRF table 1.A(d) Malta reported on the quantity of bitumen and lubricants for non-energy use, but did not report on the quantity of CO<sub>2</sub> emissions (“IE” was reported). In the NIR (section 3.2.3), the Party reported that emissions from bitumen or lubricants are reported under the IPPU sector as “IE”. During the review, the Party stated that, according to the National Statistics Office, bitumen and lubricants used locally are used for non-energy purposes, and therefore they will be reported accordingly in the next annual submission. However, the</p>	Yes. Comparability

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and/or a problem? <sup>a</sup>
	bitumen, lubricants – CO <sub>2</sub>	<p>ERT noted that in CRF table 2(I).A-Hs2 CO<sub>2</sub> emissions from lubricants and road paving with asphalt were already reported.</p> <p>The ERT recommends that Malta report in CRF table 1.A(d) CO<sub>2</sub> emissions from the non-energy use of fuels for bitumen and lubricants.</p>	
E.33	International bunkers and multilateral operations – liquid fuels – CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O	<p>The ERT noted some discrepancies between CRF tables 1.D and 1.A(b) for jet kerosene (international aviation bunkers), gas and diesel oil (international marine bunkers) and residual fuel oil (international marine bunkers) for all years. For example, for jet kerosene in international aviation bunkers in 2017, Malta reported 5,836.40 TJ in CRF table 1.A(b) but 5,985.13 TJ in CRF table 1.D. During the review, the Party stated that the National Statistics Office is investigating the discrepancies between the data in the CRF tables, and that the data will be reconciled, where applicable.</p> <p>The ERT recommends that Malta 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. The ERT encourages the Party to transparently report the outcome of the investigation in the NIR in the next annual submission.</p>	Yes. Accuracy
E.34	1.A.3.b.i Cars – diesel – CO <sub>2</sub> and CH <sub>4</sub>	<p>The ERT noted several issues related to the application of the COPERT V model by the Party (see ID#s E.19–20 and E.22–23 in table 3). The ERT also noted that, in accordance with decision 24/CP.19, paragraph 41, Parties that prepare their estimates of emissions using higher-tier (tier 3) methods and models should provide in the NIR verification information consistent with the 2006 IPCC Guidelines.</p> <p>The ERT recommends that Malta 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 (see decision 24/CP.19, para. 41).</p>	Yes. Convention reporting adherence
E.35	1.A.3.b.iv Motorcycles – lubricants – CO <sub>2</sub>	<p>CO<sub>2</sub> emissions from lubricants used as fuel in two-stroke engines were reported under category 2.D (NIR section 4.5.1 and CRF table 2(I)-Hs2 for 2017) and not under subcategory 1.A.3.b.iv as required by the 2006 IPCC Guidelines (vol. 2, chap. 3.2, box 3.2.4). During the review, the Party stated that CO<sub>2</sub> emissions from lubricants used in motorcycles were actually reported in CRF table 1.A.(a)s3 under subcategory 1.A.3.b.iv, but that this information was not reported in the NIR. During the review, the Party also stated that more information will be included in its next NIR.</p> <p>The ERT recommends that the Party transparently explain in the NIR how it reported CO<sub>2</sub> emissions from lubricants used as fuel in two-stroke engines.</p>	Yes. Transparency
E.36	1.A.4.a Commercial/institutional – biomass – CH <sub>4</sub>	<p>Malta carried out significant recalculations for biomass use in the commercial/institutional category that were not transparently explained in the NIR. In the 2017 submission “NO” was reported for biomass use in 1990–2003, and use of less than 1 TJ/year was reported for 2004–2009. In the 2019 submission, biomass use was reported as 108.96–154.01 TJ in 1990–2009. For 2010–2015, the recalculations resulted in changes of –43.2 to 46.8 per cent increases in biomass use. The CH<sub>4</sub> IEF increased from 5–10 kg/TJ in 2003–2015 in the 2017 submission to on average 152.53 kg/TJ for 1990–2016 in the 2019 submission. However, the CH<sub>4</sub> IEF for biomass for 2017 was significantly lower (5 kg/TJ). The ERT noted that the types of biomass fuel were not transparently described in the NIR. However, in the NIR (section 3.2.10.1) fuels listed as being used in the commercial/institutional category included biodiesel and biogas. The ERT also noted that the IPCC default EFs</p>	Yes. Transparency



ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and/or a problem? <sup>a</sup>
		<p>(2006 IPCC Guidelines, vol. 2, table 2.4) for liquid and gaseous biofuels vary between 5 and 10 kg CH<sub>4</sub>/TJ. During the review, Malta provided an Excel worksheet containing the time series of AD for biomass used in the commercial/institutional category, with the figure for 2017 reported as 25.2 TJ, but the types of biomass fuel were not given. Furthermore, the biomass figure reported in CRF table 1.A(a)s4 for the commercial/institutional category in 2017 was 49.2 TJ, but the types of fuel covered by this figure were not given.</p> <p>The ERT recommends that Malta 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. The ERT also recommends that the Party transparently report the CH<sub>4</sub> EFs applied for each biomass type and any recalculations for this category.</p>	
IPPU			
I.16	2.D.3 Other (non-energy products from fuels and solvent use) – CO <sub>2</sub>	<p>Malta stated in its NIR (section 4.5.3.3.6) that including emissions from the use of urea in road transportation is among the Party's planned improvements, and that the data needed to report these emissions are being analysed. During the review, Malta explained that AD for total urea solution consumption for use in selective catalytic reduction in the transport sector in Malta are not available. The inventory agency (Malta Resources Authority) has requested the assistance of an expert on the effort-sharing decision review team to establish a methodology for estimating emissions from urea-based catalyst systems with the data available.</p> <p>The ERT recommends that Malta report emissions from the use of urea in road transportation in order to ensure completeness.</p>	Yes. Completeness
I.17	2.F.1 Refrigeration and air conditioning – HFCs	<p>Malta reported in its NIR (section 4.7.1.3) that, since most vehicles are imported from the United Kingdom, the average charge of 3.9 kg used for mobile refrigeration is the same as that reported for the United Kingdom's 2013 NIR (DECC, 2013). However, in the NIR (section 4.7.1.4.2.1), the average charge for buses and coaches of 12 kg is three times higher than for refrigerated vehicles. This value is also higher than the IPCC default value of 0.5&lt;kg&lt;1.5 (2006 IPCC Guidelines, vol. 3, table 7.9). During the review, Malta explained that these AD were chosen as part of the project for improving the NIR methodology for substitutes for ozone-depleting substances. The ERT noted that the description provided by Malta does not explain the rationale for the AD chosen and the average charge used. The ERT also noted that the average charge for mobile refrigeration vehicles used by Malta results in an overestimation of emissions for this category.</p> <p>The ERT recommends that Malta explain why the average charge factor for buses and coaches is higher than for mobile refrigeration vehicles.</p>	Yes. Transparency
Agriculture			
A.17	3. General (agriculture) – CH <sub>4</sub> and N <sub>2</sub> O	<p>The ERT noted that there appears to be an error in the population statistics for horses for 2008–2009, as entered in CRF tables 3.As1 and 3.B(b), with the population of horses in these years reported as fewer than one animal. In response to a question raised by the ERT during the review, Malta provided the correct population statistics for the above-mentioned years. The ERT noted that this error does not have an impact on the reported emissions.</p>	Yes. Convention reporting adherence

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and/or a problem? <sup>a</sup>
A.18	3.A.2 Sheep – CH <sub>4</sub>	<p>The ERT recommends that Malta correct the number of horses for 2008–2009 reported in CRF tables 3.As1 and 3.B(b) and enhance its QA/QC procedures for the agriculture sector to minimize transcription errors in the reporting of data in the CRF tables.</p> <p>In the footnote to NIR table 5-10, Malta stated that net energy associated with wool production is excluded from the estimation of gross energy for sheep, but did not provide any further rationale in the NIR (see ID# A.12 in table 3). Information on net energy associated with wool production is required to estimate gross energy, as stated in the 2006 IPCC Guidelines (vol. 4, chap. 10, equation 10.16). In response to a question raised by the ERT during the review, Malta stated that wool is no longer used by local weavers and is nowadays largely discarded, and was thus excluded from the calculation. The ERT noted that production of wool annually by sheep is a natural process and whether or not the wool is used does not affect its inclusion in the net energy required for its production when estimating the gross energy requirements for sheep. The ERT also noted that the omission of net energy for wool leads to an underestimation of emissions, although this underestimation is below the threshold of significance established in paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines, and therefore below the level of significance for including this issue in the list of potential problems and further questions raised by the ERT in accordance with decision 22/CMP.1 in conjunction with decision 4/CMP.11, annex, paragraph 80(b).</p> <p>The ERT recommends that Malta include the net energy associated with wool production in the gross energy estimates when deriving EFs for CH<sub>4</sub> emissions from enteric fermentation associated with sheep livestock.</p>	Yes. Accuracy
A.19	3.A.3 Swine – CH <sub>4</sub>	<p>In estimating CH<sub>4</sub> emissions from swine, Malta reported both tier 1 and tier 2 approaches in the methodological description in CRF table summary 3s2 for 2017, and for the remaining years of the time series (1990–2016) it reported a tier 1 approach in the methodological description. Further, in the NIR (section 5.3.2.1.2), Malta stated that a tier 2 approach was used. In response to a question raised by the ERT during the review, Malta clarified that a tier 2 approach was used for the entire time series and that it will correct the CRF tables in its next annual submission.</p> <p>The ERT recommends that Malta correct the information on the method used for this category in CRF table summary 3s2 and enhance its 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.</p>	Yes. Convention reporting adherence
A.20	3.A.4 Other livestock – CH <sub>4</sub>	<p>In NIR table 5-12, Malta referred to the <i>Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories</i> as the source of the EF (0.01 kg/head/year) associated with CH<sub>4</sub> emissions from enteric fermentation for poultry. The ERT noted that Malta is one of a small number of Parties that report CH<sub>4</sub> emissions from enteric fermentation for poultry. In addition, the ERT was unable to find the reference to the EF in either the <i>Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories</i>, the <i>Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories</i> or the 2006 IPCC Guidelines, in which CH<sub>4</sub> emissions from poultry are always stated as “NE”. In response to a question raised by the ERT during the review, Malta explained that it could not verify the reference to the EF used.</p> <p>The ERT recommends that Malta review the EFs reported by the small number of Parties that report CH<sub>4</sub> emissions from enteric fermentation for poultry, choose an EF that best represents poultry production practices</p>	Yes. Accuracy

<i>ID#</i>	<i>Finding classification</i>	<i>Description of the finding with recommendation or encouragement</i>	<i>Is finding an issue and/or a problem?<sup>a</sup></i>
		in Malta, revise its estimates, if appropriate, and provide an appropriate rationale and reference for the choice of EF in the NIR.	
A.21	3.B Manure management – N <sub>2</sub> O	<p>The ERT noted that the sum of N excretion per head multiplied by livestock population does not equal the total reported N excreted by AWMS in CRF table 3.B(b) for the livestock species bulls, goats, horses, poultry and rabbits. In response to a question raised by the ERT during the review, Malta explained that this is due to rounding errors. The ERT partly agreed with the explanation provided by Malta but noted that, while this may be the case for bulls, goats and horses, the population statistics for rabbits are for breeding females only and the population of poultry does not include other poultry subcategories, which means that they are not representative of the total population on which the estimates of N excreted are based.</p> <p>The ERT recommends that Malta include the appropriate population numbers in CRF tables 3.As1 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.As1 and 3.B(b).</p>	Yes. Convention reporting adherence
A.22	3.B.1 Cattle – CH <sub>4</sub>	<p>Malta reported both country-specific and tier 2 approaches as the methodological approach for CH<sub>4</sub> emissions from manure management for cattle in CRF table summary 3s2 for 1991, 1992, 1993, 1995 and 2013, and reported a tier 2 approach only for the remaining years. Further, in the NIR (section 5.3.2.1), Malta stated that it used a tier 2 approach with country-specific inputs. In response to a question raised by the ERT during the review, Malta stated that a tier 2 approach should be reported for each year of the time series and that the correct methodology will be reported in its next annual submission.</p> <p>The ERT recommends that Malta report the correct method used to estimate emissions for this category in CRF table summary 3s2 and enhance its 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.</p>	Yes. Convention reporting adherence
A.23	3.B.1 Cattle – N <sub>2</sub> O	<p>In CRF table 3.B(b) Malta reported that the AWMS used for bulls is solid storage and dry lot. However, in NIR table 5-24 Malta reported a value of 40 per cent for the proportion of N from manure management that volatilizes as NH<sub>3</sub> and is lost through leaching for bulls. The ERT noted that the default value for other cattle presented in the 2006 IPCC Guidelines (vol. 4, table 10.22), which includes bulls, is 45 per cent. In response to a question raised by the ERT during the review, Malta explained that a typographical error had occurred and that the value of 45 per cent refers to broilers, and that this will be corrected in its next annual submission.</p> <p>The ERT recommends that Malta correct the value in NIR table 5-24 regarding the proportion of N from manure that volatilizes as NH<sub>3</sub> and is lost through leaching for bulls, and enhance its 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).</p>	Yes. Convention reporting adherence
A.24	3.B.2 Sheep – CH <sub>4</sub>	<p>Malta reported both tier 1 and tier 2 approaches in the methodological description in CRF table summary 3s2 for 2016 and 2017, and reported a tier 1 approach for the remaining years. Further, in the NIR (section 5.3.2.1.4), Malta stated that it used a tier 1 approach. In response to a question raised by the ERT during the review, Malta explained that it used a tier 1 approach and that the correct methodology will be reported in its next annual submission.</p>	Yes. Convention reporting adherence

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and/or a problem? <sup>a</sup>
A.25	3.B.4 Other livestock – N <sub>2</sub> O	<p>The ERT recommends that Malta report the correct method used to estimate emissions for this category in CRF table summary 3s2 and enhance its 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.</p> <p>In NIR table 5-21 Malta provided Nex values per head and total N excretion for three types of poultry; however, a value of 0.00 was reported for the total N excretion for other poultry. The population statistics on poultry reported in CRF table 3.B(a)s1 refer to the total poultry population and no further information was provided in either the CRF tables or the NIR on the population of the three types of poultry discussed in NIR table 5-21 (broilers, layers and other poultry). In response to a question raised by the ERT during the review, Malta stated that other poultry includes turkeys, for which the National Statistics Office only provides population statistics every three years using the results from the national farm structure survey, which is why they are not included in the population statistics for the intervening years. The ERT is of the view that not including turkeys in the other poultry category for intervening years (such as 2017) leads to emissions being underestimated. However, this underestimation is below the threshold of significance established in paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines and therefore below the level of significance for including this issue in the list of potential problems and further questions raised by the ERT in accordance with decision 22/CMP.1 in conjunction with decision 4/CMP.11, annex, paragraph 80(b). The ERT noted that appropriate techniques, such as interpolation and extrapolation, are presented in the 2006 IPCC Guidelines (vol. 1, chap. 5) for deriving population statistics where data do not exist for a given year.</p> <p>The ERT recommends that Malta 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.</p>	Yes. Completeness
A.26	3.D.a.2 Organic N fertilizers – N <sub>2</sub> O	<p>Malta reported that the application of animal manure to soils was the only application of organic N fertilizers to soils and that applications of untreated sewage sludge to soils do not occur in Malta in accordance with the European Union directive on nitrates (directive 91/676/EEC). However, the ERT is of the view that this does not preclude the application of treated sewage sludge or wastewater to agricultural land. Furthermore, the 2006 IPCC Guidelines (vol. 4, chap. 11, equation 11.3) include other organic N fertilizers such as N from compost and other amendments such as rendering waste, guano, brewery waste and other waste. In response to a question raised by the ERT during the review, Malta stated that no other sources of organic N are applied to land in Malta and that it will further investigate this issue with national experts as part of wider improvements to emission estimates in the agriculture sector.</p> <p>The ERT recommends that Malta explain in its 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.</p>	Yes. Transparency
A.27	3.D.a.4 Crop residues – N <sub>2</sub> O	<p>Malta reported in CRF table summary 3s2 that it used a tier 1 method for this category for 2016 and 2017, whereas for the remaining years (1990–2015) the tier 2 method was reported as the methodological approach. Malta used default values from the 2006 IPCC Guidelines (vol. 4, chap. 11, table 11.2) as described in the NIR (section 5.5.2.1.1). In response to a question raised by the ERT during the review, Malta clarified that it used a</p>	Yes. Convention reporting adherence

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and/or a problem? <sup>a</sup>
		<p>tier 1 approach and will correct the methodological description for category 3.D.a.4 in its next annual submission.</p> <p>The ERT recommends that Malta report the correct method used to estimate emissions for this category in CRF table summary 3s2 and enhance its 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.</p>	
A.28	3.G Liming – CO <sub>2</sub>	<p>In the NIR (p.174), Malta reported that 27 per cent of the Maltese land area is lime-rich calcisols and that, in accordance with the 2004 Maltese soil information system, lime application in Malta was reported as “NO”. However, the ERT noted that this does not preclude the application of lime to the remaining 73 per cent of land in Malta. In response to a question raised by the ERT during the review, Malta provided a breakdown of the other soil types present in the country. Upon investigating the findings of the Maltese soil information system, the ERT ascertained further information with respect to the pH value of soils in Malta, which are largely alkaline in nature and thus unlikely to require lime application.</p> <p>The ERT recommends that Malta enhance the transparency of its reporting by providing information in its 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.</p>	Yes. Transparency
LULUCF			
L.10	4. General (LULUCF) – CO <sub>2</sub> and N <sub>2</sub> O	<p>Malta reported in the NIR (section 6.1) that it will use the results of the UNFCCC in-country review and in-country capacity-building support on the forest reference level to update its reporting on the forest land category in its next annual submission. During the review, Malta informed the ERT that, as a result of the capacity-building support for establishing the National Forestry Accounting Plan, it obtained new information when reporting on and updating the forest land and FM categories. Also, as part of the implementation of the European Union LULUCF regulation, Malta received support from the European Commission for improving the LULUCF sector inventory. During the review, Malta explained that it will use the results of the support received to develop a land-use matrix and address some of the recommendations from the previous annual review report.</p> <p>The ERT encourages Malta to include in its improvement plan the recommendations that it is unable to address for its next submission, if any.</p>	Not an issue/problem
L.11	4.F.2 Land converted to other land – CO <sub>2</sub>	<p>Malta did not report in the NIR (section 6.9.2) which methodological tier from the 2006 IPCC Guidelines it used when calculating biomass losses from land converted to other land. However, for the calculation of biomass stock changes, Malta reported in the NIR (p.228) that it used equations 2.15 and 2.16 from the 2006 IPCC Guidelines (vol. 4). The results of the calculation of carbon stock changes in living biomass for land converted to other land – namely maquis grassland converted to other land, presented in kha – for the entire time series were reported in the NIR (table 6-27) in Gg carbon. For instance, in 2017, 0.006 kha maquis grassland converted to other land resulted in 0.000024 Gg carbon of carbon stock change in biomass, equivalent to 0.004 t carbon/ha. The ERT noted that these results are much lower than the default values for biomass stock presence on grassland provided in the 2006 IPCC Guidelines (chap. 6). The ERT also noted that</p>	Yes. Accuracy

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and/or a problem? <sup>a</sup>
		<p>the values given in NIR table 6-27 are the same as those reported in CRF table 4.F. During the review, Malta provided a calculation sheet with an assessment of carbon stock changes in biomass from grassland converted to other land, which were obtained by multiplying the area converted by carbon biomass stock in t dry matter ha<sup>-1</sup>. The ERT noted that this is not in line with the 2006 IPCC Guidelines.</p> <p>The ERT recommends that Malta 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 its next annual submission.</p>	
L.12	4(III) Direct N <sub>2</sub> O emissions from N mineralization/ immobilization – N <sub>2</sub> O	<p>Malta reported in CRF table 4(III) 2.67 kha land converted to cropland for 2017, which is not equal to the area reported for land converted to cropland in CRF table 4.B (2.61 kha). In addition, Malta reported “IE” for direct N<sub>2</sub>O emissions from mineralization or immobilization for land converted to cropland, explaining that the emissions were reported under the agriculture sector (see ID# L.6 in table 3). In response to a question raised by the ERT during the review, Malta stated that the area under land converted to cropland (2.67 kha) in CRF table 4(III) also includes conversion within cropland remaining cropland, namely annual cropland to perennial cropland, which is equal to 0.06 kha according to CRF table 4.B. Direct N<sub>2</sub>O emissions from N mineralization or immobilization associated with loss of soil organic matter resulting from a change in land use or management of mineral soils should be reported in CRF table 4(III) and estimated using the methodology provided in the 2006 IPCC Guidelines (section 11.2.1); however, N<sub>2</sub>O emissions from cropland remaining cropland should be included under the agriculture sector.</p> <p>The ERT recommends that Malta, when estimating direct N<sub>2</sub>O emissions from N mineralization or immobilization as recommended under ID# L.6 in table 3, 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.</p>	Yes. Accuracy
Waste			
W.19	5.A.1.a Anaerobic – CH <sub>4</sub>	<p>Malta reported in the NIR (table 7-2, p.235) that the EFs for category 5.A.1.a are plant specific. However, the Party did not explain how the plant-specific EFs were determined. During the review, the ERT requested that the Party provide an explanation of how the plant-specific EFs were determined. The Party responded that it would provide an explanation in its next submission.</p> <p>The ERT recommends that Malta clearly report on the methodology used to determine the EFs in its next annual submission.</p>	Yes. Transparency
W.20	5.D Wastewater treatment and discharge – CH <sub>4</sub> and N <sub>2</sub> O	<p>In the NIR (p.259), Malta stated that its estimation of emissions from domestic wastewater treatment and discharge did not include emissions from uncollected wastewater. CH<sub>4</sub> emissions from uncollected wastewater are negligible as the share of the population not connected to a sewer system is very low (around 400 dwellings, whose wastewater is stored in buffer tanks emptied every one to two weeks). The Party did not specify the actual volumes of uncollected wastewater or provide a quantitative justification that CH<sub>4</sub> emissions from uncollected wastewater do not meet the significance threshold. The ERT therefore asked the Party to provide the actual volume of uncollected wastewater for the share of the population not connected to the sewer system and explain how it is accounted for in the emission estimates. In response to a question raised by the</p>	Yes. Transparency

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue and/or a problem? <sup>a</sup>
		<p>ERT on estimating CH<sub>4</sub> emissions from uncollected wastewater for the 400 or so dwellings mentioned above, the Party stated that all agglomerations are served by a collection system. In the exceptional case that remote hamlets are served by communal and individual cesspits, the local water and wastewater utility company periodically collects the wastewater from these cesspits using a tanker system and the water is subsequently discharged to the sewer network at designated discharge points and received for treatment at the urban wastewater treatment plants.</p> <p>The ERT recommends that Malta revise the description in the NIR regarding wastewater from dwellings not connected to the sewer system. More specifically, the ERT recommends that the Party 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.</p>	
W.21	5.D Wastewater treatment and discharge – CH <sub>4</sub> and N <sub>2</sub> O	<p>In the NIR, Malta did not provide a clear indication of how sludge from wastewater treatment systems is reflected in the emission estimates. In response to a request from the ERT to provide a clear indication of how and in what quantity sludge from wastewater treatment systems in Malta is reflected in estimates of emissions from wastewater treatment, Malta stated that aerobically and anaerobically stabilized sludge is currently disposed of at solid waste disposal sites. The ERT noted that information on emissions from solid waste disposal sites was included in the NIR (p. 246). Malta also provided a spreadsheet with AD for wastewater treatment, which shows that no sludge is assumed to be removed from wastewater treatment systems. The ERT noted that, according to the 2006 IPCC Guidelines (vol. 5, p.6.9), the default value for sludge removal is zero where the quantities of sludge removed are unknown.</p> <p>The ERT recommends that Malta explain in the NIR section on wastewater treatment that sludge is disposed of at solid waste disposal sites. The ERT encourages Malta to investigate whether sufficiently accurate data on sludge removal from wastewater treatment is available to consider sludge removal in its emission estimates.</p>	Yes. Transparency
W.22	5.D.1 Domestic wastewater – CH <sub>4</sub> and N <sub>2</sub> O	<p>Malta stated in the NIR (p.259) that its treatment and discharge system recently underwent major upgrades, with three new sewage treatment plants coming into operation in 2008 and 2011, and that close to 100 per cent of sewage was treated via formal wastewater treatment systems. However, according to a spreadsheet on wastewater treatment and discharge, provided to the ERT by Malta and containing the AD used for estimating emissions of CH<sub>4</sub> and N<sub>2</sub>O, only 85 per cent of the wastewater generated is treated. The Party clarified that the remaining 15 per cent is accounted for by some 400 dwellings whose wastewater is stored in buffer tanks that are emptied every two weeks. The ERT noted that there was a discrepancy between the AD used and the narrative in the NIR, and that the treatment method for this uncollected wastewater results in negligible GHG emissions.</p> <p>The ERT recommends that Malta correct the information in the NIR and the AD time series used for the emission estimates and make it consistent with that presented in the spreadsheet.</p>	Yes. Convention reporting adherence

<i>ID#</i>	<i>Finding classification</i>	<i>Description of the finding with recommendation or encouragement</i>	<i>Is finding an issue and/or a problem?<sup>a</sup></i>
KP-LULUCF activities			
KL.7	General (KP-LULUCF activities)	Malta reported “IE”, “NO” and “NR” in CRF table NIR-1 for activities not elected under Article 3, paragraph 4, of the Kyoto Protocol, such as CM, GM, RV and WDR, instead of “NA”. The ERT recommends that Malta report “NA” for activities not elected under Article 3, paragraph 4, of the Kyoto Protocol in CRF table NIR-1.	Yes. Comparability
KL.8	Deforestation – CO <sub>2</sub>	The ERT noted that the definition of deforestation reported in the NIR (section 11.1.3) is not in line with that 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. However, Malta reported in the NIR that no deforestation occurs in the country. During the review, Malta confirmed that deforestation does not occur in the country, because its trees and woodland protection regulations ensure the conservation of trees and woodland sites. This information is also presented in the National Forestry Accounting Plan of Malta. The ERT recommends that Malta increase the transparency of its reporting by including the definition of deforestation applied in line with decision 16/CMP.1, annex, paragraph 1(d), in its next annual submission.	Yes. Transparency

<sup>a</sup> 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 to the 2019 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 has elected commitment period accounting and therefore the issuance and cancellation of units for KP-LULUCF activities is not applicable to the 2019 review.

## **VIII. Questions of implementation**

13. No questions of implementation were identified by the ERT during the individual review of the Party's 2019 annual submission.

## Annex I

## Overview of greenhouse gas emissions and removals for Malta for submission year 2019 and data and information on activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, as submitted by Malta in its 2019 annual submission

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

Table 1  
**Total greenhouse gas emissions for Malta, base year<sup>a</sup>–2017**  
 (kt CO<sub>2</sub> eq)

	<i>Total GHG emissions excluding indirect CO<sub>2</sub> emissions</i>		<i>Total GHG emissions including indirect CO<sub>2</sub> emissions<sup>b</sup></i>		<i>Land-use change (Article 3.7 bis as contained in the Doha Amendment)<sup>c</sup></i>	<i>KP-LULUCF activities (Article 3.3 of the Kyoto Protocol)<sup>d</sup></i>	<i>KP-LULUCF activities (Article 3.4 of the Kyoto Protocol)</i>		
	<i>Total including LULUCF</i>	<i>Total excluding LULUCF</i>	<i>Total including LULUCF</i>	<i>Total excluding LULUCF</i>			<i>CM, GM, RV, WDR</i>	<i>FM</i>	
FMRL									–49.00
Base year	2 106.14	2 103.18	NA	NA	NA		NA		
1990	2 106.14	2 103.18	NA	NA					
1995	2 678.94	2 675.87	NA	NA					
2000	2 770.83	2 767.68	NA	NA					
2010	2 911.94	2 909.94	NA	NA					
2011	2 999.70	2 997.46	NA	NA					
2012	3 189.86	3 187.40	NA	NA					
2013	2 862.74	2 860.04	NA	NA			NO	NA	NE, NO
2014	2 877.87	2 874.93	NA	NA			NO	NA	NE, NO
2015	2 191.34	2 188.16	NA	NA			NO	NA	NE, NO
2016	1 899.10	1 895.68	NA	NA			NO	NA	NO, NE
2017	2 155.24	2 151.59	NA	NA			NO	NA	NO, NE

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

<sup>a</sup> “Base year” refers to the base year under the Kyoto Protocol, which is 1990 for all gases except NF<sub>3</sub>, 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.

<sup>b</sup> The Party did not report indirect CO<sub>2</sub> emissions in CRF table 6.

<sup>c</sup> The value reported in this column refers to 1990.

<sup>d</sup> Activities under Article 3, para. 3, of the Kyoto Protocol, namely AR and deforestation.

Table 2

**Greenhouse gas emissions by gas for Malta, excluding land use, land-use change and forestry, 1990–2017**(kt CO<sub>2</sub> eq)

	<i>CO<sub>2</sub></i> <sup>a</sup>	<i>CH<sub>4</sub></i>	<i>N<sub>2</sub>O</i>	<i>HFCs</i>	<i>PFCs</i>	<i>Unspecified mix of HFCs and PFCs</i>	<i>SF<sub>6</sub></i>	<i>NF<sub>3</sub></i>
1990	1 943.29	105.27	54.61	NO, NE, IE, NA	NO, NA	NA, NO	0.01	NA, NO
1995	2 476.81	137.28	60.34	0.00	NO, NA	NA, NO	1.44	NA, NO
2000	2 525.72	174.91	58.88	6.70	NO, NA	NA, NO	1.47	NA, NO
2010	2 532.35	180.26	50.06	145.49	0.00	NA, NO	1.79	NA, NO
2011	2 611.54	168.63	43.59	169.02	0.00	NA, NO	4.69	NA, NO
2012	2 771.33	169.59	44.91	201.03	0.00	NA, NO	0.54	NA, NO
2013	2 438.18	158.90	43.88	216.32	0.00	NA, NO	2.77	NA, NO
2014	2 426.13	173.86	43.49	230.77	0.00	NA, NO	0.68	NA, NO
2015	1 717.60	181.65	42.26	246.37	0.00	NA, NO	0.28	NA, NO
2016	1 413.36	183.87	41.73	256.58	0.00	NO, NA	0.14	NO, NA
2017	1 608.67	187.49	43.51	310.93	0.00	NO, NA	0.99	NO, NA
<b>Per cent change 1990–2017</b>	<b>-17.2</b>	<b>78.1</b>	<b>-20.3</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>9 201.1</b>	<b>NA</b>

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

<sup>a</sup> Malta did not report indirect CO<sub>2</sub> emissions in CRF table 6.

Table 3

**Greenhouse gas emissions by sector for Malta, 1990–2017**(kt CO<sub>2</sub> eq)

	<i>Energy</i>	<i>IPPU</i>	<i>Agriculture</i>	<i>LULUCF</i>	<i>Waste</i>	<i>Other</i>
1990	1 950.00	7.78	76.60	2.96	68.79	NA
1995	2 485.50	9.29	77.08	3.07	104.00	NA
2000	2 535.50	14.99	77.38	3.15	139.81	NA
2010	2 540.26	152.37	68.10	2.00	149.21	NA
2011	2 619.24	179.23	64.96	2.23	134.04	NA
2012	2 778.69	208.82	66.56	2.47	133.32	NA
2013	2 438.58	231.59	66.08	2.71	123.78	NA
2014	2 426.55	243.20	65.79	2.94	139.39	NA
2015	1 717.33	256.73	67.86	3.18	146.24	NA

	<i>Energy</i>	<i>IPPU</i>	<i>Agriculture</i>	<i>LULUCF</i>	<i>Waste</i>	<i>Other</i>
2016	1 414.24	266.00	66.64	3.41	148.80	–
2017	1 617.86	317.31	65.13	3.65	151.29	–
<b>Per cent change 1990–2017</b>	<b>–17.0</b>	<b>3 978.4</b>	<b>–15.0</b>	<b>23.1</b>	<b>119.9</b>	<b>NA</b>

Notes: (1) Emissions/removals reported in the sector other (sector 6) are not included in the total GHG emissions. (2) Malta did not report indirect CO<sub>2</sub> emissions in CRF table 6.

Table 4

**Greenhouse gas emissions/removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol by activity, base year<sup>a</sup>–2017, for Malta**  
(kt CO<sub>2</sub> eq)

	<i>Article 3.7 bis as contained in the Doha Amendment<sup>b</sup></i>	<i>Activities under Article 3, paragraph 3, of the Kyoto Protocol</i>		<i>FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol</i>				
	<i>Land-use change</i>	<i>AR</i>	<i>Deforestation</i>	<i>FM</i>	<i>CM</i>	<i>GM</i>	<i>RV</i>	<i>WDR</i>
FMRL				–49.00				
Technical correction				49.00				
Base year	NA				NO, NE	NO	NO	NO
2013		NO	NO	NE, NO	NO, NE	NO	NO	NO
2014		NO	NO	NE, NO	NO, NE	NO	NO	NO
2015		NO	NO	NE, NO	NO, NE	NO	NO	NO
2016		NO	NO	NO, NE	NO, NE	NO	NO	NO
2017		NO	NO	NO, NE	NO, NE	NO	NO	NO
<b>Per cent change base year–2017</b>					<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>

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

<sup>a</sup> 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.

<sup>b</sup> The value reported in this column refers to 1990.

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

Table 5

**Key relevant data for Malta under Article 3, paragraphs 3 and 4, of the Kyoto Protocol in the 2019 annual submission**

<i>Key parameters</i>	<i>Values</i>
Periodicity of accounting	(a) AR: commitment period accounting (b) Deforestation: commitment period accounting (c) FM: commitment period accounting (d) CM: not elected (e) GM: not elected (f) RV: not elected (g) WDR: not elected
Election of activities under Article 3, paragraph 4	None
Election of application of provisions for natural disturbances	No
3.5% of total base-year GHG emissions, excluding LULUCF	69.115 kt CO <sub>2</sub> eq (552.898 kt CO <sub>2</sub> eq for the duration of the commitment period)
Cancellation of AAUs, CERs and ERUs and/or issuance of RMUs in the national registry for:	
1. AR	NA
2. Deforestation	NA
3. FM	NA
4. CM	NA
5. GM	NA
6. RV	NA
7. WDR	NA

## Annex II

### Information to be included in the compilation and accounting database

Tables 1–5 include the information to be included in the compilation and accounting database for Malta. Data shown are from the original annual submission of the Party, including the latest revised estimates submitted, adjustments (if applicable) and the final data to be included in the compilation and accounting database.

Table 1

#### Information to be included in the compilation and accounting database for 2017, including on the commitment period reserve, for Malta

(t CO<sub>2</sub> eq)

	<i>Original submission</i>	<i>Revised estimate</i>	<i>Adjustment</i>	<i>Final</i>
<b>CPR</b>	<b>8 369 793</b>	<b>8 369 793</b>	–	<b>8 369 793</b>
<b>Annex A emissions for 2017</b>	–	–	–	–
CO <sub>2</sub> <sup>a</sup>	1 608 666	1 608 666	–	1 608 666
CH <sub>4</sub>	187 492	187 492	–	187 492
N <sub>2</sub> O	43 510	43 510	–	43 510
HFCs	310 933	369 161	–	369 161
PFCs	0	0	–	0
Unspecified mix of HFCs and PFCs	NO, NA	NO, NA	–	NO, NA
SF <sub>6</sub>	988	988	–	988
NF <sub>3</sub>	NO, NA	NO, NA	–	NO, NA
<b>Total Annex A sources</b>	<b>2 151 589</b>	<b>2 209 817</b>	–	<b>2 209 817</b>
<b>Activities under Article 3, paragraph 3, of the Kyoto Protocol for 2017</b>	–	–	–	–
AR	NO	NO	–	NO
Deforestation	NO	NO	–	NO
<b>FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol for 2017</b>	–	–	–	–
FM	NO, NE	NO, NE	–	NO, NE

<sup>a</sup> The Party did not report indirect CO<sub>2</sub> emissions in CRF table 6.

Table 2

#### Information to be included in the compilation and accounting database for 2016 for Malta

(t CO<sub>2</sub> eq)

	<i>Original submission</i>	<i>Revised estimate</i>	<i>Adjustment</i>	<i>Final</i>
<b>Annex A emissions for 2016</b>	–	–	–	–
CO <sub>2</sub> <sup>a</sup>	1 413 357	1 413 357	–	1 413 357
CH <sub>4</sub>	183 875	183 875	–	183 875
N <sub>2</sub> O	41 731	41 731	–	41 731
HFCs	256 585	309 077	–	309 077
PFCs	0	0	–	0
Unspecified mix of HFCs and PFCs	NO, NA	NO, NA	–	NO, NA
SF <sub>6</sub>	138	138	–	138
NF <sub>3</sub>	NO, NA	NO, NA	–	NO, NA
<b>Total Annex A sources</b>	<b>1 895 685</b>	<b>1 948 177</b>	–	<b>1 948 177</b>

	<i>Original submission</i>	<i>Revised estimate</i>	<i>Adjustment</i>	<i>Final</i>
<b>Activities under Article 3, paragraph 3, of the Kyoto Protocol for 2016</b>	–	–	–	–
AR	NO	NO	–	NO
Deforestation	NO	NO	–	NO
<b>FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol for 2016</b>	–	–	–	–
FM	NO, NE	NO, NE	–	NO, NE

<sup>a</sup> The Party did not report indirect CO<sub>2</sub> emissions in CRF table 6.

Table 3

**Information to be included in the compilation and accounting database for 2015 for Malta**
(t CO<sub>2</sub> eq)

	<i>Original submission</i>	<i>Revised estimate</i>	<i>Adjustment</i>	<i>Final</i>
<b>Annex A emissions for 2015</b>	–	–	–	–
CO <sub>2</sub> <sup>a</sup>	1 717 604	1 717 604	–	1 717 604
CH <sub>4</sub>	181 651	181 651	–	181 651
N <sub>2</sub> O	42 259	42 259	–	42 259
HFCs	246 368	292 557	–	292 557
PFCs	0	0	–	0
Unspecified mix of HFCs and PFCs	NA, NO	NA, NO	–	NA, NO
SF <sub>6</sub>	280	280	–	280
NF <sub>3</sub>	NA, NO	NA, NO	–	NA, NO
<b>Total Annex A sources</b>	<b>2 188 162</b>	<b>2 234 351</b>	–	<b>2 234 351</b>
<b>Activities under Article 3, paragraph 3, of the Kyoto Protocol for 2015</b>	–	–	–	–
AR	NO	NO	–	NO
Deforestation	NO	NO	–	NO
<b>FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol for 2015</b>	–	–	–	–
FM	NE, NO	NE, NO	–	NE, NO

<sup>a</sup> The Party did not report indirect CO<sub>2</sub> emissions in CRF table 6.

Table 4

**Information to be included in the compilation and accounting database for 2014 for Malta**
(t CO<sub>2</sub> eq)

	<i>Original submission</i>	<i>Revised estimate</i>	<i>Adjustment</i>	<i>Final</i>
<b>Annex A emissions for 2014</b>	–	–	–	–
CO <sub>2</sub> <sup>a</sup>	2 426 133	2 426 133	–	2 426 133
CH <sub>4</sub>	173 862	173 862	–	173 862
N <sub>2</sub> O	43 489	43 489	–	43 489
HFCs	230 768	272 031	–	272 031
PFCs	0	0	–	0
Unspecified mix of HFCs and PFCs	NA, NO	NA, NO	–	NA, NO
SF <sub>6</sub>	676	676	–	676
NF <sub>3</sub>	NA, NO	NA, NO	–	NA, NO
<b>Total Annex A sources</b>	<b>2 874 929</b>	<b>2 916 192</b>	–	<b>2 916 192</b>
<b>Activities under Article 3, paragraph 3, of the Kyoto Protocol for 2014</b>	–	–	–	–
AR	NO	NO	–	NO

	<i>Original submission</i>	<i>Revised estimate</i>	<i>Adjustment</i>	<i>Final</i>
Deforestation	NO	NO	–	NO
<b>FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol for 2014</b>	–	–	–	–
FM	NE, NO	NE, NO	–	NE, NO

<sup>a</sup> The Party did not report indirect CO<sub>2</sub> emissions in CRF table 6.

Table 5

**Information to be included in the compilation and accounting database for 2013 for Malta**(t CO<sub>2</sub> eq)

	<i>Original submission</i>	<i>Revised estimate</i>	<i>Adjustment</i>	<i>Final</i>
<b>Annex A emissions for 2013</b>	–	–	–	–
CO <sub>2</sub> <sup>a</sup>	2 438 178	2 438 178	–	2 438 178
CH <sub>4</sub>	158 895	158 895	–	158 895
N <sub>2</sub> O	43 879	43 879	–	43 879
HFCs	216 318	252 385	–	252 385
PFCs	0	0	–	0
Unspecified mix of HFCs and PFCs	NA, NO	NA, NO	–	NA, NO
SF <sub>6</sub>	2 768	2 768	–	2 768
NF <sub>3</sub>	NA, NO	NA, NO	–	NA, NO
<b>Total Annex A sources</b>	<b>2 860 037</b>	<b>2 896 104</b>	–	<b>2 896 104</b>
<b>Activities under Article 3, paragraph 3, of the Kyoto Protocol for 2013</b>	–	–	–	–
AR	NO	NO	–	NO
Deforestation	NO	NO	–	NO
<b>FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol for 2013</b>	–	–	–	–
FM	NE, NO	NE, NO	–	NE, NO

<sup>a</sup> The Party did not report indirect CO<sub>2</sub> emissions in CRF table 6.



## Annex III

### Additional information to support findings in table 2 in this report

#### Missing categories that may affect completeness

The categories for which 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 reporting in the Party’s inventory are the following:

- (a) Other (CO<sub>2</sub>) (see ID# G.6 in table 3 of this report);
- (b) 2.A.4 Other process uses of carbonates (CO<sub>2</sub>) (see ID# I.2 in table 3 of this report);
- (c) 2.D.3 Other (non-energy products from fuels and solvent use) (CO<sub>2</sub>) (see ID# I.16 in table 5 of this report);
- (d) 3.B.4 Other livestock (N<sub>2</sub>O) (see ID# A.25 in table 5 of this report);
- (e) 4(III) Direct N<sub>2</sub>O emissions from N mineralization/immobilization (N<sub>2</sub>O) (see ID# L.8 in table 3 of this report);
- (f) 4(IV) Indirect N<sub>2</sub>O emissions from managed soils (N<sub>2</sub>O) (see ID# L.8 in table 3 of this report).

## Annex IV

### Reference documents

#### A. Reports of the Intergovernmental Panel on Climate Change

IPCC. 1997. *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*. JL Houghton, LG Meira Filho, B Lim, et al. (eds.). Paris: IPCC/Organisation for Economic Co-operation and Development/International Energy Agency. Available at <https://www.ipcc-nggip.iges.or.jp/public/gl/invs1.html>.

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

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

IPCC. 2014. *2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol*. T Hiraishi, T Krug, K Tanabe, et al. (eds.). Hayama, Japan: Institute for Global Environmental Strategies. Available at <http://www.ipcc-nggip.iges.or.jp/public/kpsg>.

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 <http://www.ipcc-nggip.iges.or.jp/public/wetlands/>.

#### B. UNFCCC documents

##### Annual review reports

Reports on the individual reviews of the 2011, 2012, 2013, 2015, 2016 and 2017 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 and FCCC/ARR/2017/MLT, respectively.

##### Other

Aggregate information on GHG 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%202019.pdf>.

Annual status report for Malta for 2019. Available at [https://unfccc.int/sites/default/files/resource/asr2019\\_MLT.pdf](https://unfccc.int/sites/default/files/resource/asr2019_MLT.pdf).

#### C. Other documents used during the review

Responses to questions during the review were received from David Muscat (Ministry for the Environment, Sustainable Development and Climate Change of Malta), including additional material on the methodology and assumptions used. The following references are reproduced as received:

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/>.

Environment and Resources Authority. 2018. *The State of Environment Report of 2018*. Available at [https://era.org.mt/en/Documents/Chapter6\\_ResourcesWaste-14Jan2019.pdf](https://era.org.mt/en/Documents/Chapter6_ResourcesWaste-14Jan2019.pdf).

Malta Resources Authority. 2018. *Operations & Quality Manual*. Climate Change Unit. CCU-OQM-Rev02-94.2018, 51 pages (in English).

Oonk, H. 2012. *Efficiency of landfill gas collection for methane emission reduction*. Greenhouse Gas Measurement and Management, 2(2-3), 129-145. DOI: 10.1080/20430779.2012.730798.

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](https://uk-air.defra.gov.uk/assets/documents/reports/cat07/1305301238_ukghgi-90-11_main_chapters_Issue3.pdf).

Wilson, S. 2004. *Development of Rehabilitation Strategies: Maghtab, Qortin and Wied Fulija Landfills*. Summary report Final. (Derbyshire, UK).

Wilson, S. 2010. *Rehabilitation of Maghtab, Qortin and Wied Fulija Landfills in Malta - Aerial Emissions Control Works CT2586/2004*, Final Report. (Derbyshire, UK).

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