United Nations

Framework Convention on Climate Change

FCCC/IDR.8/MLT–FCCC/TRR.5/MLT

Distr.: General
23 August 2023

English only

Report on the technical review of the eighth national communication and the technical review of the fifth biennial report of Malta

Parties included in Annex I to the Convention were requested by decision 6/CP.25 to submit their eighth national communication to the secretariat by no later than 31 December 2022. According to decision 15/CMP.1, Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol are required to include in their national communications supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. This report presents the results of the technical review of the eighth national communication and relevant supplementary information under the Kyoto Protocol of Malta, conducted by an expert review team in accordance with the "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" and the "Guidelines for review under Article 8 of the Kyoto Protocol".

Developed country Parties were requested by decision 6/CP.25 to submit their fifth biennial report to the secretariat by no later than 31 December 2022. This report presents the results of the technical review of the fifth biennial report of Malta, conducted by an expert review team in accordance with the "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".

The review of these submissions took place in Valetta, Malta, from 22 to 26 May 2023.

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Contents

Abbreviations and acronyms

AAU	assigned amount unit
AEA	annual emission allocation
Annex I Party	Party included in Annex I to the Convention
Annex II Party	Party included in Annex II to the Convention
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BR	biennial report
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
COVID-19	coronavirus disease 2019
CTF	common tabular format
ERT	expert review team
ESD	European Union effort-sharing decision
ESR	European Union effort-sharing regulation
EU	European Union
EU ETS	European Union Emissions Trading System
Eurostat	statistical office of the European Union
F-gas	fluorinated gas
GDP	gross domestic product
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
ICAO	International Civil Aviation Organization
IE	included elsewhere
IMO	International Maritime Organization
IPPU	industrial processes and product use
LCDS	Low Carbon Development Strategy of Malta
LULUCF	land use, land-use change and forestry
N_2O	nitrous oxide
NA	not applicable
NC	national communication
NE	not estimated
NF_3	nitrogen trifluoride
NMVOC	non-methane volatile organic compound
NO	not occurring
NO_X	nitrogen oxides
PaMs	policies and measures
PFC	perfluorocarbon
RCP	representative concentration pathway
reporting guidelines for supplementary information	“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol. Part II: Reporting of supplementary information under Article 7, paragraph 2”
RES	renewable energy source(s)
SF_6	sulfur hexafluoride
SO_X	sulfur oxides

UNFCCC reporting guidelines on BRs	"UNFCCC biennial reporting guidelines for developed country Parties"
UNFCCC reporting guidelines on NCs	"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications"
WAM	'with additional measures'
WEM	'with measures'
WOM	'without measures'

I. Introduction and summary

A. Introduction

1. This is a report on the in-country technical review of the NC8 and BR5 of Malta. The review was organized by the secretariat in accordance with the "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", particularly "Part IV: UNFCCC guidelines for the technical review of biennial reports from Parties included in Annex I to the Convention" and "Part V: UNFCCC guidelines for the technical review of national communications from Parties included in Annex I to the Convention" (annex to decision 13/CP.20), and the "Guidelines for review under Article 8 of the Kyoto Protocol" (annex to decision 22/CMP.1 and annex I to decision 4/CMP.1).

2. In accordance with decision 13/CP.20, a draft version of this report was transmitted to the Government of Malta, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

3. The review was conducted from 22 to 26 May 2023 in Valetta, Malta, by the following team of nominated experts from the UNFCCC roster of experts: Bernard Ayittah (Ghana), Adriana Cristina González Villalobos (Costa Rica), Hanna-Lii Kupri (Estonia), Dalia Streimikiene (Lithuania) and Samir Tantawi (Egypt). Hanna-Lii Kupri and Samir Tantawi were the lead reviewers. The review was coordinated by Marion Vieweg-Mersmann and Jamie Howland (secretariat).

B. Summary

4. The ERT conducted a technical review of the information reported in the NC8 of Malta in accordance with the UNFCCC reporting guidelines on NCs,[1] the reporting guidelines for supplementary information, in particular the supplementary information required under Article 7, paragraph 2, and on the minimization of adverse impacts under Article 3, paragraph 14, of the Kyoto Protocol[2] and of the information reported in the BR5 of Malta in accordance with the UNFCCC reporting guidelines on BRs.[3]

1. Timeliness

5. The NC8 was submitted on 23 December 2022, before the deadline of 31 December 2022 mandated by decision 6/CP.25. The NC8 was resubmitted on 9 June 2023 to address issues raised during the review. The resubmission included changes to the PaMs and GHG inventory system sections and additions to national circumstances, projections, Kyoto Protocol related information, vulnerability assessment, research and systematic observation, and education, training and public awareness. Detailed information on improvements related to the resubmission is provided in paragraph 11 below. Unless otherwise specified, the information and values from the latest submission are used in this report.

6. The BR5 was submitted on 28 December 2022, before the deadline of 31 December 2022 mandated by decision 6/CP.25. The CTF tables were also submitted on 28 December 2022. The CTF tables and BR5 were resubmitted on 9 June 2023 to address issues raised during the review. The resubmission included changes to the PaMs and GHG inventory system sections, changes to CTF tables 2(b), 2(f), 3, 5, 6(a) and 6(b), additions to national circumstances and changes to the section on progress towards the target. Detailed information on improvements related to the resubmission is provided in paragraph 11 below. Unless otherwise specified, the information and values from the latest submission are used in this report.

[1] Decision 6/CP.25, annex.
[2] Decision 15/CMP.1, annex, and decision 3/CMP.11, annex III.
[3] Decision 2/CP.17, annex.

2. Completeness, transparency of reporting and adherence to the reporting guidelines

7. Issues and gaps identified by the ERT related to the information reported by Malta in its NC8 are presented in tables 1–2. The information reported, including the supplementary information under the Kyoto Protocol, completely adheres to the UNFCCC reporting guidelines on NCs.

8. Malta made improvements to the reporting in its NC8 compared with that in its NC7, including by addressing many recommendations and encouragements from the previous review report. The ERT noted that the Party has improved:

(a) The timeliness of its reporting by submitting its NC8 on time;

(b) The transparency of the information reported on national circumstances relevant to GHG emissions and removals by explaining how national circumstances are relevant to factors affecting GHG emissions and removals;

(c) The transparency and completeness of the information reported on PaMs by providing information on how PaMs are modifying the longer-term trend in anthropogenic GHG emissions and removals; how PaMs are monitored; which PaMs are innovative and replicable; the cost of PaMs; PaMs that encourage activities that lead to greater levels of GHG emissions; methods used to quantify the effect of PaMs; PaMs at the local level; social and economic consequences of response measures; and the description of interministerial processes and bodies;

(d) The transparency and completeness of the information reported on projections and the total effects of PaMs by providing an explanation of why no sensitivity analysis could be provided; clarifying that emissions from fuel sold to ships and aircraft engaged in international transport were not included in the totals; providing key underlying assumptions and values of variables used for the projection of emissions; providing underlying factors and activities for emission trends; and reporting the total effect of PaMs in the NC8;

(e) The transparency and completeness of the information reported on research and systematic observation by providing information on opportunities for and barriers to free and open information exchange; summary information on Global Climate Observing System activities; and following the structure suggested by the UNFCCC reporting guidelines on NCs;

(f) The completeness of the information reported on education, training and public awareness by providing information on the extent of public participation in the preparation or domestic review of the NC;

(g) The completeness of the supplementary information related to the Kyoto Protocol reported by providing summary information on its national registry and information on the implementation of decisions of ICAO and IMO.

Table 1
Assessment of completeness and transparency of mandatory information reported by Malta in its eighth national communication

Section of NC	*Completeness*	*Transparency*	*Reference to description of recommendations*
Executive summary	Complete	Transparent	
National circumstances relevant to GHG emissions and removals	Complete	Transparent	
GHG inventory	Complete	Transparent	
PaMs	Complete	Transparent	
Projections and the total effect of PaMs	Complete	Transparent	
Vulnerability assessment, climate change impacts and adaptation measures	Complete	Transparent	

Section of NC	*Completeness*	*Transparency*	*Reference to description of recommendations*
Financial resources and transfer of technology[a]	NA	NA	NA
Research and systematic observation	Complete	Transparent	
Education, training and public awareness	Complete	Transparent	

Note: A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in annex I. The assessment of completeness and transparency by the ERT in this table is based only on the "shall" reporting requirements.

[a] Malta is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paras. 3–5, of the Convention.

Table 2

Assessment of completeness and transparency of mandatory supplementary information under the Kyoto Protocol reported by Malta in its eighth national communication

Supplementary information under the Kyoto Protocol	*Completeness*	*Transparency*	*Reference to description of finding(s)*
National system	Complete	Transparent	
National registry	Complete	Transparent	
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Complete	Transparent	
PaMs in accordance with Article 2	Complete	Transparent	
Domestic and regional programmes and/or arrangements and procedures	Complete	Transparent	
Information under Article 10[a]	NA	NA	NA
Financial resources[b]	NA	NA	NA
Minimization of adverse impacts in accordance with Article 3, paragraph 14	Complete	Transparent	

Note: A list of findings pertaining to the completeness and transparency issues identified in this table is included in annex I. The assessment of completeness and transparency by the ERT in this table is based only on the "shall" reporting requirements.

[a] The assessment refers to information provided by the Party on the provisions contained in Article 4, paras. 3, 5 and 7, of the Convention, as reported under Article 10 of the Kyoto Protocol, which is relevant to Annex II Parties only. An assessment of the information on the other provisions of Article 10 of the Kyoto Protocol is provided under the relevant substantive headings under the Convention, for example research and systematic observation.

[b] Malta is not an Annex II Party and is therefore not obliged to provide information on financial resources under Article 11 of the Kyoto Protocol, including on "new and additional" resources.

9. Issues and gaps identified by the ERT related to the information reported by Malta in its BR5 are presented in table 3. The information reported completely adheres to the UNFCCC reporting guidelines on BRs. The ERT notes that issues 1, 2 and 3 in table II.1 have been identified in three or more successive reviews.

10. Malta made improvements to the reporting in its BR5 compared with that in its BR4, including by addressing some recommendations and encouragements from the previous review report. The ERT noted that the Party has improved:

(a) The timeliness of its reporting by submitting its BR5 on time;

(b) The transparency and completeness of the information reported on progress in achievement of quantified economy-wide emission reduction targets and relevant information by basing projections for LULUCF on actual measures; clarifying that emissions from fuel sold to ships and aircraft engaged in international transport were not included in the totals; including historical data in projections graphs; clarifying differences in methodologies used compared with the last report; and reporting PaMs consistently in the text and CTF tables in the BR5;

(c) The transparency of the information reported on projections by presenting projections that include unadjusted historical data and by following the definition of the WEM scenario as defined in the UNFCCC reporting guidelines on BRs.

Table 3
Summary of completeness and transparency of mandatory information reported by Malta in its fifth biennial report

Section of BR	*Completeness*	*Transparency*	*Reference to description of finding(s)*
GHG emissions and removals	Complete	Transparent	
Quantified economy-wide emission reduction target and related assumptions, conditions and methodologies	Complete	Transparent	
Progress in achievement of targets	Complete	Transparent	
Provision of support to developing country Parties[a]	NA	NA	NA

Note: A list of findings pertaining to the completeness and transparency issues identified in this table is included in annex II. The assessment of completeness and transparency by the ERT in this table is based only on the "shall" reporting requirements.

[a] Malta is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paras. 3–5, of the Convention.

11. The NC8, BR5 and CTF tables resubmissions made during the review improved:

(a) The information reported on national circumstances relevant to GHG emissions and removals by including information on how national circumstances are affecting GHG emission trends;

(b) The GHG inventory information reported by including complete information on the roles and responsibilities of stakeholders and timelines for inventory preparation;

(c) The information reported on the Party's quantified economy-wide emission reduction target and related assumptions, conditions and methodologies by providing an explanation of the allocation of reported AAUs and making the information on LULUCF reported in CTF table 2(b) consistent with that reported in the BR5 text;

(d) The information reported on PaMs by providing information on the costs of PaMs and on which GHGs are affected by which PaMs, including the quantitative impact of individual PaMs, and by providing a clear distinction between implemented and adopted PaMs, and reporting them consistently across submitted documents. Malta included information on:

(i) PaMs that encourage activities that lead to greater levels of anthropogenic GHG emissions than would otherwise occur;

(ii) PaMs that are effectively replicable by other Parties;

(iii) How PaMs are monitored and evaluated over time;

(iv) Non-GHG mitigation benefits;

(v) The interaction of PaMs with other PaMs at the national level;

(vi) Progress made in the establishment of national rules for taking local action against domestic non-compliance with emission reduction targets;

(e) The information reported on progress in achievement of quantified economy-wide emission reduction targets and relevant information by clarifying the allocation of AAUs reported in CTF table 2(e)I;

(f) The information reported on projections and the total effects of PaMs by improving the description of models used; explaining changes in methods since the previous report; clarifying the reason for not reporting a sensitivity analysis; clarifying that emissions from fuel sold to ships and aircraft engaged in international transport are not included in the

projections; providing data on underlying assumptions made and values used for estimating projections; and including an overview of the total effects of PaMs;

(g) The information reported on vulnerability assessment, climate change impacts and adaptation measures by including some information on responsibilities for the monitoring of progress of adaptation measures;

(h) The information reported on research and systematic observation by providing summary information on the current status of national plans, programmes and support for ground- and space-based climate observing systems;

(i) The information reported on education, training and public awareness by clarifying the extent of public participation in the preparation or domestic review of the NC;

(j) The supplementary information related to the Kyoto Protocol reported by reporting information on:

(i) How the Party's use of the mechanisms is supplemental to domestic action;

(ii) How the Party promotes and implements the decisions of ICAO and IMO to limit emissions from aviation and marine bunker fuels;

(iii) How the Party strives to minimize adverse effects of measures;

(iv) The institutional arrangements and decision-making procedures that the Party has in place to coordinate activities relating to participation in the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol, including the participation of legal entities;

(v) How the national legislative arrangements and administrative procedures contribute to the conservation of biodiversity and sustainable use of natural resources.

II. Technical review of the information reported in the eighth national communication and fifth biennial report

A. National circumstances relevant to greenhouse gas emissions and removals

1. Technical assessment of the reported information

12. The NC8 contains key data on legislation, population trends, geography and land use, climate and climate change, economic developments, energy, transport, the buildings sector, industry, trade, the services sector, agriculture, forestry, resource efficiency and wastewater. Malta's population has increased rapidly over recent years and GDP has grown consistently around or above 5 per cent since 2013, with the exception of 2020. Economic growth is mainly driven by the low emission intensity services industry.

13. Malta is an archipelago consisting of the three inhabited islands of Malta, Gozo and Comino, along with a number of small uninhabited islands. It has a total area of 316 km^2 and a shoreline of slightly more than 271 km. It has a high population density with 1,633 people/km^2, compared with an EU average of 110 people/km^2.

14. Owing to its small size and it being an island, Malta is singular among Annex I Parties. It has a disproportionately higher marginal abatement cost than other Annex I Parties and virtually no carbon sinks exist in the country. Malta has limited opportunities to utilize different forms of transport and to implement cost-effective mitigation measures in the transport sector owing to its dependence on aviation and maritime transport, including for importing its basic needs, such as food. Its limited land mass results in land-use conflicts that make the implementation of some land-intense technologies (e.g. solar technologies) challenging.

15. In 2020, owing to the COVID-19 pandemic, Malta's economy saw a considerable contraction, with a rise in the number of people working remotely, resulting in a decrease in road transport emissions and a major improvement in air quality.

16. Malta's energy system and market are distinct owing to their small scale, reliance on a single electricity distributor/supplier, the absence of natural gas and district heating/cooling networks, and the limited size of petroleum distribution companies. These factors, combined with a growing population and GDP, have posed challenges in limiting energy consumption and implementing energy-saving measures. Nevertheless, Malta is dedicated to enhancing energy efficiency beyond 2020, with the goal of achieving energy savings proportional to the final energy consumption in different sectors. Malta is also committed to expanding its policy framework for RES up to 2030. The country aims to develop new initiatives tailored to its unique characteristics to fully utilize all technically and economically feasible indigenous sources of RES.

17. The ERT noted that the Party has improved the transparency of the reporting on the national circumstances by providing additional information in the climate profile and energy sections of the NC8. The ERT notes that some information, particularly information on power generation, which was reported only up to 2013, should be updated.

2. Assessment of adherence to the reporting guidelines

18. The ERT assessed the information reported in the NC8 of Malta and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs. There were no issues raised during the review relating to the topics discussed in this chapter of the review report.

B. Greenhouse gas inventory information[4]

1. Technical assessment of the reported information

19. Malta reported information in its BR5 and NC8 on its historical GHG emissions and inventory arrangements. Total GHG emissions[5] excluding emissions and removals from LULUCF decreased by 19.6 per cent between 1990 and 2020, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 19 per cent over the same period. Emissions peaked in 2012 and decreased thereafter until 2016, mostly owing to changes in power generation in the country, such as fuel switching from heavy fuel oil to gas and importing electricity after the establishment of a connection with the European electricity grid. The increase in local electricity generation since 2016 resulted in a slight increase in emissions from 2016 to 2019, which was followed by a slight decrease in 2020 owing to various restrictions and shutdowns during the COVID-19 pandemic. In 2021, owing to the economic recovery following the pandemic, total GHG emissions increased by 1 per cent without LULUCF and by 0.7 per cent with LULUCF compared with 2020. The highest increase was in energy consumption in the manufacturing industries and construction sector (8.8 per cent) and the transport sector (6.6 per cent), but the 4.7 per cent decrease in the energy industries sector counterbalanced this and total GHG emissions in the energy sector increased by 0.6 per cent.

20. Table 4 illustrates the emission trends by sector and by gas for Malta. The emissions reported in the 2023 annual submission differ from the data reported in CTF table 1 in that sectoral recalculations were made across the entire time series for all sectors in the 2023 annual submission owing to the revision of data on energy consumption and other statistical data on activity levels from Eurostat. For example, the recalculation of emissions resulted in an increase in total emissions without LULUCF of 1 per cent in 1990 and a decrease of 0.5 per cent in 2020. The largest differences can be seen in the IPPU sector for 2020 and the energy sector for 1990. Differences in emissions by sector and in total emissions are also influenced by the shift from the GWP values from the AR4 to those from the AR5 in the 2023 submission compared with the 2022 submission.

[4] GHG emission data in this section are based on Malta's 2023 annual submission, version 2, which has not yet been subject to review. All emission data in subsequent chapters are based on Malta's BR5 CTF tables unless otherwise noted.

[5] In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of CO_2 eq excluding LULUCF, unless otherwise specified.

Table 4
Greenhouse gas emissions by sector and by gas for Malta for 1990–2020

	GHG emissions (kt CO_2 eq)					*Change (%)*		*Share (%)*	
	1990	*2000*	*2010*	*2020*	*2021*	*1990–2020*	*2020–2021*	*1990*	*2021*
Sector									
1. Energy	2 434.94	2 477.85	2 611.85	1 599.60	1 609.14	–34.3	0.6	92.7	75.4
A1. Energy industries	1 765.01	1 607.39	1 867.88	810.82	772.50	–54.1	–4.7	67.2	36.2
A2. Manufacturing industries and construction	52.83	62.63	30.84	50.02	54.41	–5.3	8.8	2.0	2.6
A3. Transport	351.09	503.49	578.64	587.86	626.40	67.4	6.6	13.4	29.4
A4. and A5. Other	266.01	304.34	134.49	150.90	155.83	– 43.3	3.3	10.1	7.3
B. Fugitive emissions from fuels	NO	NO	NO	NO	NO	NO	NO	NO	NO
C. CO_2 transport and storage	NO	NO	NO	NO	NO	NO	NO	NO	NO
2. IPPU	7.50	12.64	141.62	232.21	235.83	2 994.5	1.6	0.3	11.1
3. Agriculture	108.77	105.23	85.05	89.27	87.71	–17.9	–1.8	4.1	4.1
4. LULUCF	–8.00	–4.94	11.20	8.28	0.64	203.5	–92.3	NA	NA
5. Waste	75.22	153.99	123.81	190.78	200.94	153.6	5.3	2.9	9.4
6. Other[a]	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gas[b]									
CO_2	2 427.40	2 468.15	2 602.79	1 597.20	1 606.73	–34.2	0.6	92.4	75.3
CH_4	139.73	212.91	166.07	232.56	241.70	66.4	3.9	5.3	11.3
N_2O	59.29	62.51	56.83	56.50	55.96	–4.7	–0.9	2.3	2.6
HFCs	NO, NE, IE, NA	4.63	134.80	225.19	228.80	NA	1.6	NA	10.7
PFCs	NO, NA	NO, NA	0.00	0.00	0.01	NA	862 058.4	NA	0.0
SF_6	0.01	1.54	1.84	0.41	0.41	3 683.9	0.0	0.0	0.0
NF_3	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total GHG emissions excluding LULUCF	**2 626.43**	**2 749.71**	**2 962.33**	**2 111.86**	**2 133.62**	**–19.6**	**1.0**	**100.0**	**100.0**
Total GHG emissions including LULUCF	**2 618.43**	**2 744.77**	**2 973.53**	**2 120.14**	**2 134.26**	**–19.0**	**0.7**	**100.0**	**100.0**

Source: GHG emission data: Malta's 2023 annual submission, version 2.
[a] Emissions and removals reported under the sector other (sector 6) are not included in total GHG emissions.
[b] Emissions by gas without LULUCF. The Party did not report indirect CO_2 emissions.

21. In brief, Malta's national inventory arrangements were established in accordance with legal notice 259 of 2015 (subsidiary legislation 543.01) on the national system for the estimation of anthropogenic GHG emissions by sources and removal by sinks. This legal notice identifies the minister responsible for climate change policy as the single national entity with overall responsibility for the national inventory system and provides for the designation of an inventory agency responsible for inventory preparation. The inventory agency is currently the Malta Resources Authority, which is responsible for planning, preparing and managing the national GHG inventory. There have been no changes in these arrangements since the BR4.

2. Assessment of adherence to the reporting guidelines

22. The ERT assessed the information reported in the NC8 and BR5 of Malta and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs and the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

3. National system for the estimation of anthropogenic emissions by sources and removals by sinks

(a) Technical assessment of the reported information

23. Malta provided in the NC8 a description of how its national system for the estimation of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol is performing the general and specific functions defined in the annex to decision 19/CMP.1 in conjunction with decisions 3/CMP.11 and 4/CMP.11. The description includes most of the elements mandated by paragraph 30 of the annex to decision 15/CMP.1.

24. The Party also reported information on legislation and the corresponding responsible entity for the development of the national system for the reporting of GHG inventories, which is the Malta Resources Authority. The ERT took note of the review of the changes to the national system reflected in the report on the individual review of the 2022 annual submission of Malta.

(b) Assessment of adherence to the reporting guidelines

25. The ERT assessed the information reported in the NC8 of Malta and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

4. National registry

(a) Technical assessment of the reported information

26. In its NC8 Malta provided information on how its national registry performs the functions in accordance with the annex to decision 13/CMP.1 in conjunction with decision 3/CMP.11 and the annex to decision 5/CMP.1 and complies with the requirements of the technical standards for data exchange between registry systems. The ERT took note of the review of the changes to the national registry reflected in the report on the individual review of the 2022 annual submission of Malta.

(b) Assessment of adherence to the reporting guidelines

27. The ERT assessed the information reported in the NC8 of Malta and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

C. Quantified economy-wide emission reduction target and related assumptions, conditions and methodologies

1. Technical assessment of the reported information

28. Malta reported information on its economy-wide emission reduction target in its BR5. For Malta the Convention entered into force on 15 June 1994. Under the Convention Malta committed to contributing to the achievement of the joint EU economy-wide emission reduction target of 20 per cent below the 1990 level by 2020.

29. Malta ratified the Kyoto Protocol in 2001 as a Party not included in Annex I to the Convention, without immediately taking on any quantified emission limitation or reduction obligations. Malta’s accession to the EU in 2004 meant that EU legislation relating to climate action became immediately applicable to Malta. Malta’s 2009 application to become a Party included in Annex I to the Convention was approved by the Conference of the Parties at its sixteenth session.

30. Malta became an integral part of the collective commitments of the EU for the second commitment period under the Doha Amendment to the Kyoto Protocol and is committed to

contributing to the achievement of the joint EU economy-wide emission reduction target of 20 per cent below the 1990 level by 2020.

31. The target for the EU and its member States is formalized in the EU 2020 climate and energy package. The legislative package regulates emissions of CO_2, CH_4, N_2O, HFCs, PFCs and SF_6 using GWP values from the AR4 to aggregate the GHG emissions of the EU until 2020. Emissions and removals from the LULUCF sector are not included in the quantified economy-wide emission reduction target under the Convention.

32. The EU-wide targets are primarily implemented through the EU ETS and ESD. The EU ETS covers mainly point emissions sources in the energy, industry and aviation sectors. An EU-wide emission cap was put in place for 2013–2020 for the EU ETS with the goal of reducing emissions by 21 per cent below the 2005 level by 2020. For 2030, a reduction target of 62 per cent below the 2005 level has been set for emissions covered by the EU ETS. The ESD became operational in 2013 and covers sectors outside the EU ETS, including transport (excluding aviation and international maritime transport), residential and commercial buildings, agriculture, small industry and waste. The ESD is regulated through targets for each member State that add up to a reduction at the EU level of 10 per cent below the 2005 level by 2020. The ESR, the successor to the ESD, was adopted in 2018 and amended in 2023 with the target of reducing emissions covered under the ESR by 40 per cent below the 2005 level by 2030.

33. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms for compliance purposes, subject to a number of restrictions in terms of origin and type of project and up to an established limit. Operators and airline operators can use such units to fulfil their requirements under the EU ETS, and member States can use such units for their national ESD targets, within specific limitations.

34. The European Commission set out its vision for a climate-neutral EU in November 2018, and in December 2019 presented the European Green Deal as a road map with actions for making the EU economy sustainable. The European Council endorsed in December 2019 the objective of making the EU climate-neutral by 2050. As part of the European Green Deal, the 2050 climate-neutrality target was made binding in the first European Climate Law, adopted in 2021. It also increased the ambition of the 2030 emission reduction target to at least 55 per cent below the 1990 level. Member States will set out any increased ambition in the update of their national energy and climate plans.

35. Malta has a national target of limiting its emission growth to 5 per cent above the 2005 level by 2020 for ESD sectors. This target has been translated into binding quantified AEAs for 2013–2020. Malta's AEAs change following a linear path from 1,168.51 kt CO_2 eq in 2013 to 1,171.95 kt CO_2 eq in 2020.[6] Under the ESR, Malta has a national target of reducing emissions from covered sectors to 19 per cent below the 2005 level by 2030. The EU regulation on LULUCF requires Malta to achieve a 'no debit' status; that is, by 2030 emissions from the LULUCF sector must be at least offset by removals from the same sector.

36. In the event that the national target cannot be domestically maintained within the limits set by the AEAs, EU member States may use the flexibility mechanisms available under the ESD to meet their target: namely, utilization of AEAs acquired from other member States and annual use of international credits from project activities up to a quantity equal to 3 per cent of the 2005 level for GHG emissions for sectors under the ESD.

37. Malta reported 2,000 kt CO_2 eq AAUs in CTF table 2(e)I from market-based mechanisms under the Convention, explaining that the AAUs attributed to Malta were from the mathematical surplus of AAUs of the EU given to Malta after its accession to the EU and its change in status to an Annex I Party. For practical purposes, Malta contributed to the joint effort of a 20 per cent reduction of overall EU GHG emissions by 2020 compared with the 1990 level.

[6] According to the EU transaction log.

2. Assessment of adherence to the reporting guidelines

38. The ERT assessed the information reported in the BR5 of Malta and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

D. Information on policies and measures

1. Technical assessment of the reported information

39. Malta provided in its NC8 and BR5 information on its PaMs[7] implemented and adopted to fulfil its commitments under the Convention. Malta's set of PaMs is different from that previously reported and include the PaMs that were adopted as part of the LCDS. Malta has not discontinued any measures since its last submission, but previously reported measures that have been implemented are now considered under the baseline.

40. Malta reported on its policy context and legal and institutional arrangements in place for implementing its commitments and monitoring and evaluating the effectiveness of its PaMs. Malta also provided information on changes to its institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of progress towards its target.

41. Malta has adopted a package of climate change policies, including:

(a) The Climate Action Act, which in 2015 set out the responsibility of the Government and citizens to respond to climate change (see para. 42 below);

(b) A climate emergency motion adopted by the Maltese Parliament in 2019, which reaffirmed Malta's commitment to continue the global fight against climate change;

(c) The National Energy and Climate Plan in 2019 (pursuant to the EU regulation on the governance of the Energy Union and climate action); this plan is currently being updated;

(d) The LCDS, which in 2021 paved the way towards carbon neutrality by 2050 as one of the five pillars of Malta's economic vision.

42. The Climate Action Act sets in law the following key duties: every person, together with the Government, is to protect the climate and assist in the taking of preventive and remedial measures to protect the climate; and the Government is to protect the climate for the present and future generations.

43. In January 2020, the Government established the Ministry for the Environment, Sustainable Development and Climate Change, which became, in a subsequent legislature, the Ministry for Environment, Energy and Enterprise, retaining the climate action policy portfolio. Malta's Climate Action Board, established under the Climate Action Act, is responsible for, among others, supervising the implementation of the Climate Acton Act, monitoring Malta's fulfilment of its obligations with respect to climate change action, facilitating the Government's adherence to the national climate change strategies and making recommendations to the minister responsible for climate action policy on matters relating to climate change.

44. All EU member States are mandated to report long-term strategies, which in the case of Malta is the LCDS adopted by the Government and which is subject to regular updating every five years under the Climate Action Act. Malta provided additional information that the LCDS and the National Energy and Climate Plan (reported to the European Commission) provide the policy basis for local action tracked by the Government.

45. Malta's assessment of the economic and social consequences of its response measures includes discussions between ministers during which the economic and social impact of each

[7] The UNFCCC reporting guidelines on BRs use the term "mitigation actions", whereas the UNFCCC reporting guidelines on NCs use the term "policies and measures". The terms are used interchangeably in this report to refer to the relevant information in either the NC or BR.

measure in the LCDS is analysed. During the review, Malta noted that the LCDS measures were assessed for their socioeconomic impacts, and that the LCDS includes a dedicated chapter identifying the impact of measures on vulnerable groups, on the aesthetics of cultural buildings, and on personal and family life. During the updating of the LCDS, additional measures could be considered. For implemented measures, this assessment was part of the corresponding sectoral development plans. In addition, the Climate Action Act sets out that the Government shall ensure that all sectors of society and the economy participate in national climate action, including in relevant decisions on climate action, and that climate action taken shall respect the interests of all sections of society, is non-discriminatory and, where relevant, promotes gender equality. The Government of Malta shall also respect and, to the extent possible, safeguard the interests of vulnerable sectors of society, including by taking climate actions that support the eradication of poverty.

46. Malta reported information on the identification of its own policies and practices that encourage activities that lead to greater levels of emissions than would otherwise occur. The increasing electrification of transport, for example, will lead to increased electricity demand, which will increase emissions from energy generation.

47. In its reporting on PaMs, Malta provided the estimated emission reduction impacts for most of its PaMs, relating to the adopted measures included in the LCDS, covering 28 PaMs in total, including 17 PaMs in the energy sector, 6 PaMs in the transport sector, 2 PaMs in the agriculture sector and 3 PaMs in the waste sector.

48. Malta reported estimated impacts for PaMs for 2030. Malta explained that the policy framework reported in past submissions would not have been expected to change substantially in terms of the impact on the GHG emission profile of the country.

49. Malta reported information on the estimated impacts of individual PaMs and the total abatement potential for the energy, transport, agriculture and waste sectors based on information in the LCDS, noting that the estimation was outsourced to a consultancy by the Ministry for the Environment, Sustainable Development and Climate Change. Impacts were assessed on the basis of a marginal abatement cost methodology, which is described in more detail in paragraph 77 below.

50. The key overarching related cross-sectoral policy in the EU is the 2020 climate and energy package, adopted in 2009, which includes the revised EU ETS and the ESD. The package is supplemented by renewable energy and energy efficiency legislation and legislative proposals on the 2020 targets for CO_2 emissions from cars and vans, the carbon capture and storage directive, and the general programmes for environmental conservation, namely the 7th Environment Action Programme and the clean air policy package. The 2021 European Climate Law, which forms part of the European Green Deal, made climate neutrality by 2050 legally binding and raised the EU-wide 2030 emission reduction target to at least 55 per cent compared with the 1990 level. In 2023, the European Parliament adopted a series of legislative proposals, collectively referred to as Fit for 55, intended to help achieve the new 2030 target. These new regulations strengthened both the ESR and EU ETS 2030 targets, extended the EU ETS to include maritime shipping in 2024 and established the Social Climate Fund to address equitability of mitigation impacts. The regulations also created the EU ETS 2 to cover at the point of distribution most fuel used in sectors not covered by the EU ETS, beginning in 2027.

51. The 2021–2030 EU-wide policies are operationalized through the national energy and climate plans of EU member States, which should set out national objectives for each of the five dimensions of the Energy Union, namely energy security; the internal energy market; energy efficiency; decarbonization; and research, innovation and competitiveness. The national energy and climate plans are periodically updated to reflect changes to EU policy, such as the implementation of the European Green Deal.

52. The ERT noted inconsistency between the PaMs reported in the NC8 and BR5 and the integrated national PaMs reported to the EU on 15 March 2023 under the EU regulation on the governance of the Energy Union and climate action. Two years after submitting the National Energy and Climate Plan to the EU, Malta adopted its first LCDS, which proposed an additional list of measures in the energy, transport, buildings, industry, agriculture, waste, water and agriculture sectors aimed at delivering a tangible shift in the country's GHG

emission trends. These measures also reflect the changing obligations incumbent on Malta under EU law, which will be included in the update of the National Energy and Climate Plan in 2023.

53. Malta introduced national-level policies to achieve its targets under the ESD and ESR. The key policies reported are an additional electricity interconnector, the electrification of 370 buses by 2030, the installation of solar photovoltaic panels, public transport measures, including additional electric buses, the promotion of active transport (particularly cycling) and the electrification of light-duty vehicles, with a target of 65,000 battery electric vehicles and plug-in hybrid electric vehicles in the total vehicle stock by 2030. The mitigation effect of installing an additional interconnector to the European grid is the most significant, as it will reduce the need for national power generation. The ERT identified transport sector related measures as of particular interest because of the high share of transport sector emissions. Road-based transport covers 99 per cent of transport (there is no railway system in Malta and domestic sea transport is minimal); journeys by passenger cars comprise 74 per cent of the total transport share. The aim of the measures is to promote a shift away from private car usage in Malta while simultaneously implementing additional measures to facilitate a rapid transition to electric vehicles. Since 2022, public transport in Malta has been free for all users. Malta is also promoting a shift from car use to active transport, teleworking and remote working, which involves investing in infrastructure over the next 30 years, including cycle tracks, bicycle parking facilities and pedestrianized areas, while also promoting the use of electric bicycles.

54. There are no planned measures reported by Malta. Measures included in the LCDS have all been adopted and it was reported that at present it is not possible to identify a start year of implementation for these measures. The start year of implementation will be provided in the next NC. Malta highlighted that the LCDS is revised every five years, which makes it possible to add domestic mitigation actions in order to align the LCDS with the more ambitious EU 2030 target to reduce domestic emissions by at least 55 per cent compared with the 1990 level. Table 5 provides a summary of the reported information on the PaMs of Malta.

Table 5
Summary of information on policies and measures reported by Malta

Sector	*Key PaMs*[a]	*Estimated mitigation impact in 2020 (kt CO_2 eq)*	*Estimated mitigation impact in 2030 (kt CO_2 eq)*
Policy framework and cross-sectoral measures	Climate Action Act	NA	NA
Energy	Additional Interconnector	NO	703.22
Energy efficiency	Energy-efficient Domestic Dishwashing	NO	34.48
	SME Energy Efficiency	NO	20.41
Energy supply and renewable energy	Solar PV	NO	72.16
	Floating Offshore Wind	NO	43.94
Transport	Electrification of 370 Buses by 2030	NO	58.90
	Public Transport (with additional EV buses)	NO	65.80
	Active Transport, teleworking and remote working	NO	59.26
	Electrification of light vehicles	NO	58.90
IPPU	EU F-gases Regulation	10.37	NE
Agriculture	Vaccination (Cattle)	NO	4.93
	Aquaponics	NO	NE
LULUCF	NA	NA	NA
Waste	High biowaste capture and biogas upgrade	NO	2.52
	Incineration pre-sorting	NO	21.97
	Waste prevention	NO	7.31
Other	NA	NA	NA

Note: The estimated mitigation impacts are estimates of emissions of CO_2 eq avoided in a given year as a result of the implementation of mitigation actions.

[a] Names of PaMs reproduced as submitted in Malta's BR5.

55. The measures for the energy sector are important for policymakers in Malta as this sector is the largest contributor towards GHG emissions. The LULUCF sector is the lowest contributor to the total profile of GHG emissions in Malta owing to the high population density and low land availability. The LCDS summarizes information on the funding sources and total capital investment for 2020–2050 that are needed to implement each policy and measure.

2. Assessment of adherence to the reporting guidelines

56. The ERT assessed the information reported in the NC8 and BR5 of Malta and identified issues relating to completeness and transparency, and thus adherence to the UNFCCC reporting guidelines on NCs and the UNFCCC reporting guidelines on BRs. The findings are described in table I.1.

3. Domestic and regional programmes and legislative arrangements and procedures related to the Kyoto Protocol

(a) Technical assessment of the reported information

57. In its NC8, Malta reported that the implementation of the Kyoto Protocol is underpinned by the Climate Action Act, which requires the elaboration of its LCDS and a national adaptation strategy and provides for regular review and updating of these strategies. It also established the Climate Action Board, which, among other things, supervises the implementation of the provisions of the Act and monitors the fulfilment by all relevant stakeholders of their respective duties under the Act. The Act also established the Climate Action Fund to support climate action in Malta. The overall responsibility for climate change policymaking lies with the Ministry for Environment, Energy and Enterprise, and a number of national institutions are involved in the implementation of policies according to the economic area impacted by a particular policy. The Malta Resources Authority is responsible for monitoring the implementation of PaMs and is also responsible for monitoring national progress towards achieving the Kyoto Protocol target through the implementation of relevant EU legislation.

58. For the second commitment period of the Kyoto Protocol, from 2013 to 2020, Malta committed to contributing to the joint EU effort to reduce GHG emissions by 20 per cent below the base-year level (see paras. 28–32 above).

59. Malta reported that it does not have legislative arrangements and administrative procedures in place to make information publicly accessible, apart from the publication of information in relevant EU reports[8] and in its NC. The ERT noted that Malta could publish all information related to its Kyoto Protocol commitment and PaMs implemented for the attainment of that target, as well as the progress achieved, on an existing website, such as that of the designated inventory authority under the Climate Change Act.

60. Although Malta is committed to reporting on mandatory activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, in practice such activities are not implemented, because neither deforestation nor afforestation occur, and the very limited forest coverage in Malta is managed for reasons other than the Party's commitments under the Kyoto Protocol (i.e. for ecological protection). Consequently, Malta did not report any information on the specific contribution of the Kyoto Protocol to the conservation of biodiversity and the sustainable use of natural resources.

61. Malta reported on policies that are crucial in ensuring that actions related to climate change adaptation and mitigation also contribute to the conservation of biodiversity and the sustainable use of natural resources, including:

(a) The National Strategy for the Environment;

(b) The National Biodiversity Strategy and Action Plan to 2030;

[8] Available at http://cdr.eionet.europa.eu/mt/eu/mmr/art04-13-14_lcds_pams_projections/colwkw8yg.

(c) Measures pertaining to the improvement of both the qualitative and quantitative status of groundwater and the good chemical and ecological status of inland surface waters and coastal waters.

62. During the review, Malta clarified that climate-proof action plans and comprehensive national policy frameworks with tailored measures to maintain or improve the conservation status of habitats and species are set to be established in the coming years, as called for in the National Biodiversity Strategy and Action Plan to 2030.

(b) Assessment of adherence to the reporting guidelines

63. The ERT assessed the information reported in the NC8 of Malta and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

4. Policies and measures in accordance with Article 2 and minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol

(a) Technical assessment of the reported information

64. In the NC8 Malta reported information on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts on other Parties, especially developing country Parties. Malta's assessment of the economic and social consequences of its response measures and its actions to identify and review its own policies and practices that encourage activities that lead to greater levels of emissions are described in paragraph 46 above.

65. During the review, Malta provided additional information on how it strives to implement its commitments under Article 3, paragraph 14, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties. This is effected mainly through the frameworks established under the EU, with the formal requirement for impact assessment for PaMs.

66. The NC8 includes information on how Malta promotes and implements the decisions of ICAO and IMO to limit emissions from aviation and marine bunker fuels. In its BR5, Malta reported that emissions from domestic and international aviation, to or from or within EU countries, had been incorporated into the EU ETS by an amendment to the EU ETS directive, and the EU later decided to limit the monitoring, reporting, verification and accounting obligations only to flights within the European Economic Area.

67. The Party reported that it participates in the EU ETS for aviation and CORSIA. Additionally, the Fit for 55 package includes the extension of the EU ETS to the shipping sector. Malta remains dependent on services that are largely provided by third countries.

68. Further information on how Malta strives to implement its commitments under Article 3, paragraph 14, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties was reported in the 2022 annual submission. Malta reported on direct action with developing countries for capacity-building and the transfer of technology and knowledge. Such action included financial support for the implementation of alternative technologies, adaptation, and capacity-building and education, the latter including the provision of postgraduate scholarships in climate action at a major Maltese tertiary education institution. The Party reported information on what it prioritized in implementing its commitments under Article 3, paragraph 14, including noting that since Malta is a small country, it would not be expected to have a major adverse impact on third countries due to any policy decisions it takes; the country's climate action policy strongly builds on policy and legislation enacted by the EU, which are subject to a formal process of impact assessment that also looks at the economic and social implications of what is proposed; and, to the extent possible, Malta engages in providing support at the international level, including to developing countries.

(b) Assessment of adherence to the reporting guidelines

69. The ERT assessed the information reported in the NC8 of Malta and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

E. Estimates of emission reductions and removals and the use of units from market-based mechanisms and land use, land-use change and forestry and progress in achieving the quantified economy-wide emission reduction target

1. Technical assessment of the reported information

70. During the review, Malta confirmed that it does not intend to use units from market-based mechanisms under the Convention to meet its commitment under the ESD. However, Malta confirmed that it used AEAs purchased from other member States to offset shortfalls in compliance with the ESD targets. Given that the contribution of LULUCF activities is not included in the joint EU target under the Convention, reporting thereon is not applicable to Malta. Table 6 illustrates Malta's ESD emissions and use of units from market-based mechanisms for achieving its ESD target.

Table 6
Summary of information on emissions covered by the European Union effort-sharing decision annual emission allocation and use of units from market-based mechanisms by Malta
(kt CO_2 eq)

Year	*ESD emissions*	*AEA*	*Use of units from market-based mechanisms*	*AEAs transferred to (–) or from (+) other Parties*	*Annual AEA surplus/deficit*	*Cumulative AEA surplus/deficit*
2013	1 250.78	1 168.51	NA	82.27	0.00	0.00
2014	1 291.39	1 166.79	NA	124.60	0.00	0.00
2015	1 300.74	1 165.06	NA	135.68	0.00	0.00
2016	1 330.00	1 163.33	NA	166.66	0.00	0.00
2017	1 428.48	1 174.52	NA	253.96	0.00	0.00
2018	1 383.37	1 173.67	NA	209.71	0.00	0.00
2019	1 427.26	1 172.81	NA	254.45	0.00	0.00
2020	1 311.23	1 171.95	NA	139.28	0.00	0.00

Sources: Malta's BR5 CTF table 4(b) and EU transaction log (AEAs).
Note: For a given year, a positive number (surplus) indicates that annual or cumulative ESD emissions were lower than the corresponding AEA or cumulative AEAs, while a negative number (deficit) indicates that annual or cumulative ESD emissions were higher than the corresponding AEA or cumulative AEAs.

2. Assessment of adherence to the reporting guidelines

71. The ERT assessed the information reported in the BR5 of Malta and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

3. Assessment of achievement of the quantified economy-wide emission reduction target

72. In assessing the Party's contribution towards achievement of the 2020 joint EU target on the basis of the information reported in its BR5, the ERT noted that, under the EU 2020 climate and energy package, Malta committed to limiting its emissions under the ESD to 5 per cent above the 2005 level by 2020 (see para. 35 above). This target has been translated into binding quantified AEAs for 2013–2020. In 2020 Malta's emissions were 10.6 per cent (193.28 kt CO_2 eq) above the AEA. Without taking into account the acquisition of additional AEAs from other EU member States, Malta has a cumulative deficit of 1,366.61 kt CO_2 eq

with respect to its AEAs between 2013 and 2020. The ERT noted that the Party did not make use of units from market-based mechanisms in 2020.

73. The ERT noted that the Party reported that the total GHG emissions excluding LULUCF of the EU and including the use of units from market-based mechanisms do not exceed the emission level corresponding to the target in 2020, and thus that the EU has achieved its joint target. See the report on the technical review of the BR5 of the EU for further details. Therefore, the ERT concluded that, on the basis of the information reported in the BR5, Malta has met its 2020 commitment under the Convention through its contribution to achieving the joint EU target. The ERT noted that the Party's ESD emissions in 2020 exceed the AEA for 2020. The ERT noted that, to achieve its target under the ESD, Malta purchased AEAs from EU member States that have overachieved their target under the flexibility allowed under the ESD to cover its AEA deficit.

F. Projections

1. Projections overview, methodology and results

(a) Technical assessment of the reported information

74. Malta reported in its BR5 and NC8 updated projections for 2030–2040 relative to actual inventory data for 2020 under the WEM scenario. The WEM scenario reported by Malta includes PaMs from the LCDS that start from 2020.

75. In addition to the WEM scenario, Malta reported the WOM scenario. The WOM scenario excludes all PaMs implemented after 2020, which is the base year assumed for all sectors. Malta provided a definition of its scenarios, explaining that its WEM scenario includes policies with an abatement potential included in the LCDS. Measures that were previously reported under the WEM scenario have been included under the WOM scenario. The definitions indicate that the scenarios were prepared in accordance with the UNFCCC reporting guidelines on BRs. Malta did not report a WAM scenario in its BR5 because there are no additional measures contained in the LCDS. Nevertheless, Malta indicated that it is considering presenting WAM projections in future submissions, acknowledging that further capacity-building is required in order to improve its assessment of the impacts of PaMs, with a particular emphasis on the ex ante assessment of planned measures.

76. The projections are presented on a sectoral basis, using the same sectoral categories as those used in the reporting on mitigation actions, and on a gas-by-gas basis for CO_2, CH_4, N_2O, PFCs, HFCs and SF_6 (treating PFCs and HFCs collectively in each case) for 2030–2040. The projections are also provided in an aggregated format for each sector and for a Party total using GWP values from the AR4. Malta reported on factors and activities affecting emissions for each sector.

(b) Methodology, assumptions and changes since the previous submission

77. The methodology used for the preparation of the projections is different from that used for the preparation of the emission projections for the NC7. Malta provided information on changes since the submission of its NC7 in the assumptions, methodologies, models and approaches used for the projection scenarios. The main changes are for the WEM scenario, which was developed on the basis of the abatement potential of measures derived from the modelling used in the compilation of the LCDS. The LCDS modelling is based on a process replacement approach, wherein each action seeks to replace one process (that is carbon-intensive) with another process (that is low(er)-carbon). Although previous methodologies were also based on a similar principle of replacement, these efforts, among other characteristics, gave less weight to the dynamic interaction between measures that replace or introduce electricity into the process (e.g. electrification of vehicles) and the available electricity generation mix of that point in time.

78. The WOM scenario projections presented are based on what was the WEM scenario in the BR4. The explanations of the methodological descriptions are discussed in the BR4.

79. To prepare its projections, Malta relied on key underlying assumptions relating to population, GDP growth rate, number of households, energy prices, number of livestock, nitrogen input to soil and waste generation. The assumptions were updated on the basis of the most recent economic developments known at the time of the preparation of the projections.

80. Malta did not report a quantitative sensitivity analysis and reported that the necessary data for conducting such an analysis were not available.

(c) Results of projections

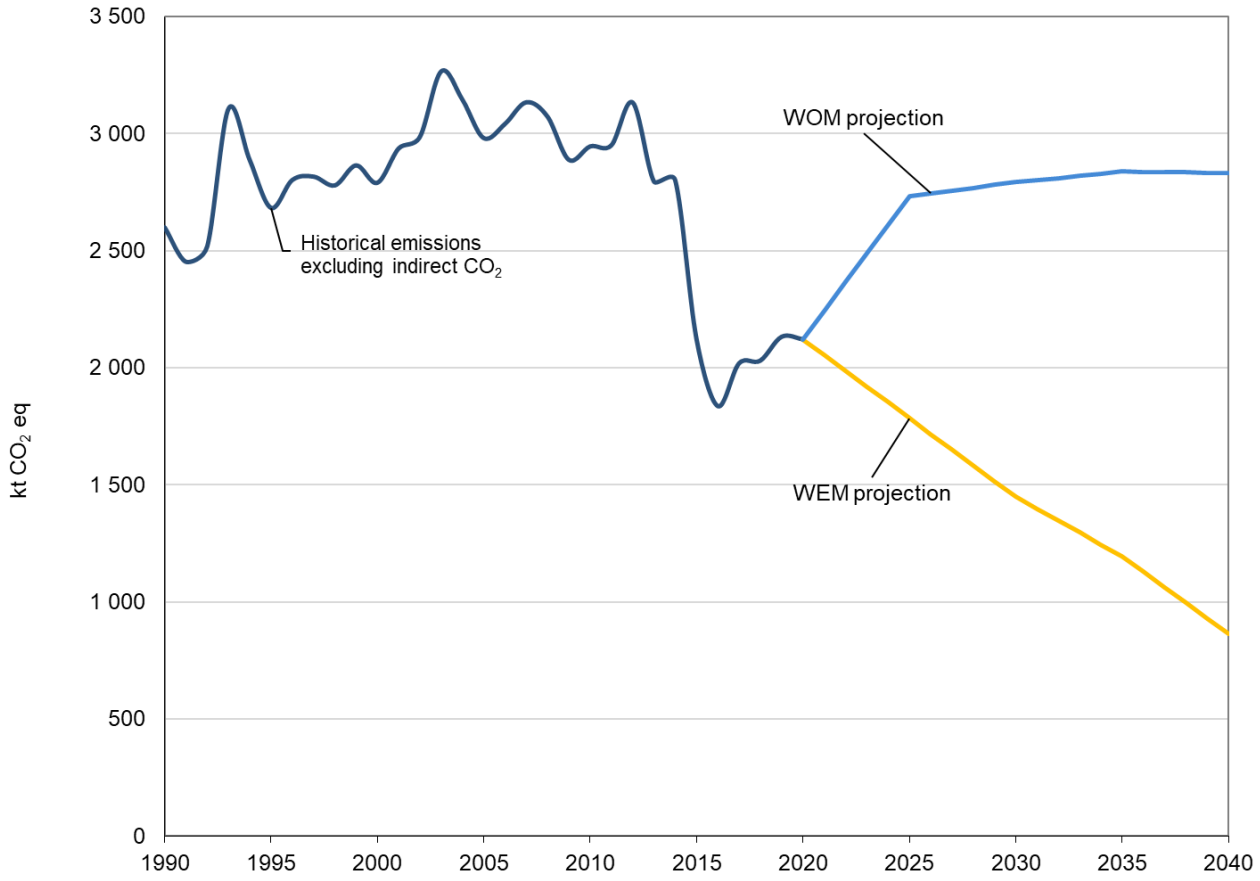
81. The projected emission levels under different scenarios and information on the quantified economy-wide emission reduction target are presented in table 7 and figure 1.

Table 7
Summary of greenhouse gas emission projections for Malta

	GHG emissions (kt CO_2 eq/year)	*Change in relation to 1990 level (%)*	*Change in relation to 2020 level (%)*
Inventory data 1990	2 599.28	NA	NA
Inventory data 2020	2 121.59	–18.4	NA
WOM projections for 2030	2 792.87	7.5	34.6
WEM projections for 2030	1 448.94	–44.3	–31.7
WOM projections for 2035	2 838.95	9.2	33.8
WEM projections for 2035	1 195.97	–54.0	–43.6

Sources: Malta's BR5 and BR5 CTF table 6. Updated projections for the WOM scenario were provided by Malta during the review.
Note: The projections are of GHG emissions excluding LULUCF and excluding indirect CO_2.

Figure 1
Greenhouse gas emission projections reported by Malta

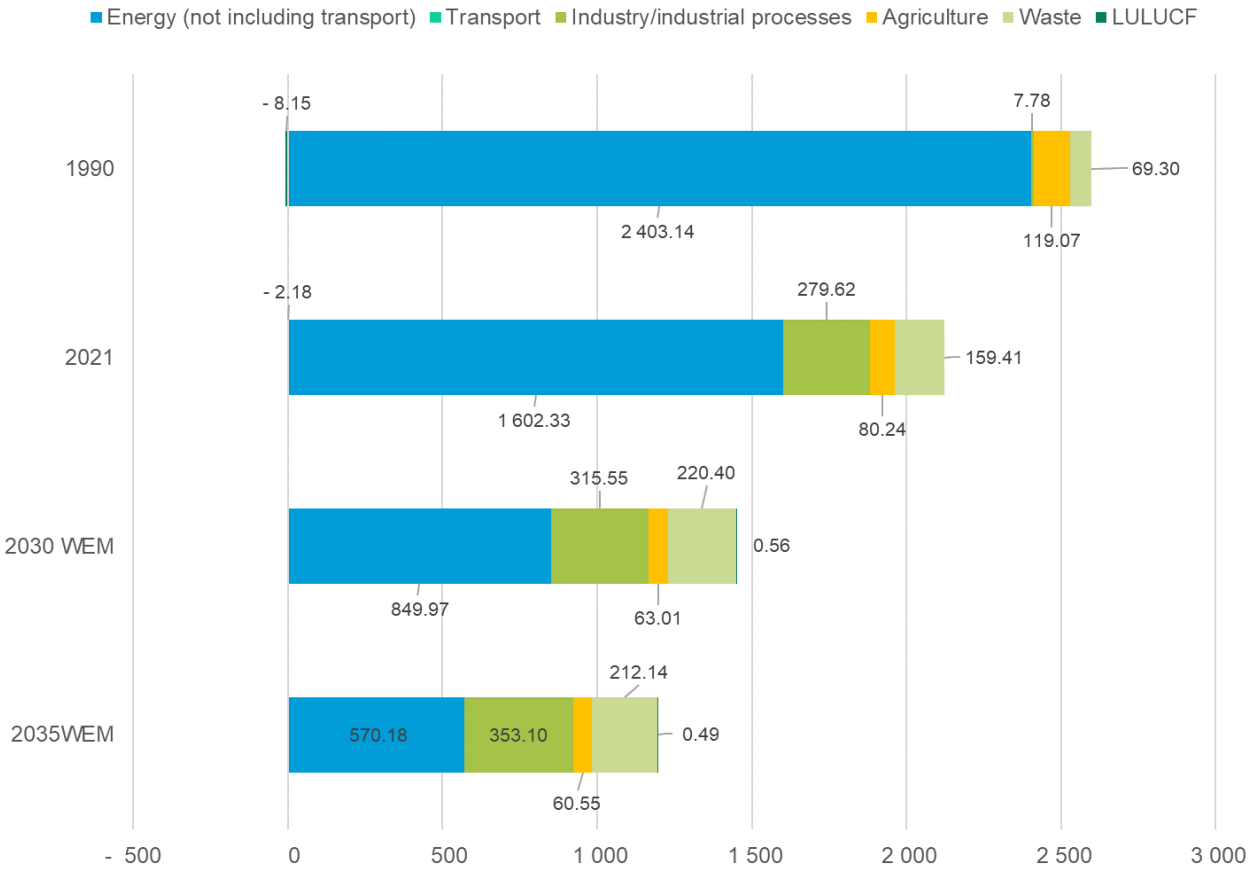


Sources: Malta's BR5 and BR5 CTF tables 1 and 6 (total GHG emissions excluding LULUCF).

82. Malta's total GHG emissions excluding LULUCF and excluding indirect CO_2 are projected under the WEM scenario to decrease by 44.3 and 54.0 per cent respectively below the 1990 level in 2030 and 2035. When including LULUCF, total GHG emissions excluding indirect CO_2 are projected under the WEM scenario to decrease by 44.1 and 54.0 per cent respectively below the 1990 level in 2030 and 2035. Projections for 2040 under the WEM show a further decrease in total GHG emissions of 66.8 per cent without LULUCF and 66.7 per cent with LULUCF.

83. Malta presented the WEM scenario by sector for 2030 and 2035, as summarized in figure 2 and table 8.

Figure 2
Greenhouse gas emission projections for Malta presented by sector
(kt CO_2 eq)



Source: Malta's BR5 CTF table 6.

Table 8
Summary of greenhouse gas emission projections for Malta presented by sector

	GHG emissions and removals (kt CO_2 eq)			*Change (%)*	
Sector	*1990*	*2030 WEM*	*2035 WEM*	*1990–2030 WEM*	*1990–2035 WEM*
Energy (not including transport)	2 084.68	450.53	398.5	–78.4	–80.9
Transport	318.45	399.44	172.14	25.4	–45.9
Industry/industrial processes	7.78	315.55	353.10	3 955.9	4 438.6
Agriculture	119.07	63.01	60.55	–47.1	–49.1
LULUCF	–8.15	0.56	0.49	106.9	106.0
Waste	69.30	220.40	212.14	218.0	206.1
Other	NA	NA	NA	NA	NA
Total GHG emissions excluding LULUCF	**2 599.28**	**1 448.93**	**1 195.97**	**–44.3**	**–54.0**

Source: Malta's BR5 CTF table 6.

84. According to the projections reported for 2030 under the WEM scenario, the most significant absolute emission reductions are expected to occur in the energy (not including transport) and agriculture sectors, amounting to 78.4 and 47.1 per cent respectively between 1990 and 2020. The pattern of projected emissions reported for 2035 under the WEM scenario remains the same, except for the transport sector, in which a 45.9 per cent reduction is foreseen compared with 1990. The reduction in emissions is largely due to the various electrification measures in the transport sector, the installation of an additional electricity interconnector, the increased use of RES and energy efficiency measures in both residential and non-residential buildings. Reductions are not expected to be significant in the agriculture sector. Under the WEM scenario, no further changes are expected in the IPPU and LULUCF sectors, since no measures were quantified in the LCDS for these two sectors. The large increase in IPPU emissions is a result of the increasing use of refrigeration and air conditioning, with population growth and increasing GDP and disposable income as the main drivers.

85. Malta presented the WEM scenario by gas for 2030 and 2035, as summarized in table 9.

Table 9
Summary of greenhouse gas emission projections for Malta presented by gas

	GHG emissions and removals (kt CO_2 eq)			*Change (%)*	
Gas[a]	*1990*	*2030 WEM*	*2035 WEM*[b]	*1990–2030 WEM*	*1990–2035 WEM*
CO_2	2 394.19	850.26	570.44	–64.5	–76.2
CH_4	125.19	247.74	236.94	97.9	89.3
N_2O	79.89	35.38	35.50	–55.7	–55.6
HFCs	0.00	315.55	353.10	NA	NA
PFCs	0.00	0.00	0.00	NA	0.0
SF_6	0.01	0.00	0.00	–100.0	–100.0
NF_3	0.00	0.00	NE	NA	NE
Total GHG emissions without LULUCF	**2 599.28**	**1 448.93**	**1 195.97**	**–44.3**	**–54.0**

Source: Malta's BR5 CTF table 6.
[a] Malta did not include indirect CO_2 emissions in its projections.
[b] Estimates of individual gases for 2035 do not add up to the total owing to rounding differences.

86. For 2030, the most significant reductions are projected for CO_2 and N_2O emissions: 64.5 and 55.7 per cent respectively. For 2035, the same trends in reductions are projected for CO_2 and N_2O emissions: 76.2 and 55.6 per cent respectively between 1990 and 2035. The projections take into account future GDP and population growth trends, electricity imports, number of households, number of livestock, municipal waste generated and landfilled, etc. The increase in CH_4 emissions is driven by increased waste generation owing to increasing population and disposable income. The reduction in N_2O emissions is mainly driven by the agricultural sector.

(d) Assessment of adherence to the reporting guidelines

87. The ERT assessed the information reported in the NC8 and BR5 of Malta and identified issues relating to completeness and transparency, and thus adherence to the UNFCCC reporting guidelines on NCs and the UNFCCC reporting guidelines on BRs. The findings are in tables I.1 and II.1.

2. Assessment of the total effect of policies and measures

(a) Technical assessment of the reported information

88. In its NC8 Malta presented the estimated and expected total effect of implemented and adopted PaMs and an estimate of the total effect of its PaMs compared with a situation without such PaMs. Information is presented in terms of GHG emissions avoided or

sequestered, by gas (on a CO_2 eq basis), in 2020, 2025, 2030, 2035 and 2040. It also presented relevant information on factors and activities for each sector for 1990–2020.

89. Malta reported that the total estimated effect of its implemented and adopted PaMs is 1,283.98 kt CO_2 eq in 2030 and 1,976.83 kt CO_2 eq in 2040. According to the information reported in its NC8, PaMs implemented in the energy sector will deliver the largest emission reductions. Table 10 provides an overview of the total effect of PaMs as reported by Malta.

Table 10
Projected effects of Malta's planned, implemented and adopted policies and measures in 2030 and 2040
(kt CO_2 eq)

	2030	*2040*
Sector	*Effect of implemented and adopted measures*	*Effect of implemented and adopted measures*
Energy (without transport)	981.91	1 227.66
Transport	270.24	711.46
Industry/industrial processes	NE	NE
Agriculture	0.00	4.93
Land-use change and forestry	NE	NE
Waste management	31.79	32.78
Total	**1 283.94**	**1 976.83**

Source: Malta's NC8 and BR5.
Note: The total effect of implemented and adopted PaMs is defined as the difference between the WOM and the WEM scenarios.

(b) Assessment of adherence to the reporting guidelines

90. The ERT assessed the information reported in the NC8 of Malta and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

3. Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol

(a) Technical assessment of the reported information

91. The ERT noted that Malta does not plan to use market-based mechanisms to meet its Kyoto Protocol target and that reporting on the supplementarity of such mechanisms is therefore not relevant for Malta. The Party reported that in the context of the joint approach to GHG emission reductions of the EU, domestic action is considered to be the collective domestic effort of the EU (European Council conclusions, October 2014 and December 2020) and that the distribution of effort among the EU member States is based on the principles of fairness and solidarity, under which all member States are set emission reduction targets under the ESR, which allows a combination of domestic effort by each member State complemented by support between the States to the extent that one State cannot fully achieve the set targets.

(b) Assessment of adherence to the reporting guidelines

92. The ERT assessed the information reported in the NC8 of Malta and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

G. Provision of financial, technological and capacity-building support to developing country Parties

93. Malta is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3–5, of the Convention. However, Malta provided information in its NC8 and BR5 on its provision of support to developing country

Parties. The ERT commends Malta for reporting this information and suggests that it continue to do so in future NCs.

94. Since 2013, Malta has provided financial support for climate action totalling EUR 926,694 through both bilateral and multilateral funding channels. From 2018 to 2020, EUR 100,000 per annum was contributed to the Green Climate Fund by Malta.

95. Malta has provided funding for scientists from developing countries working on global climate change research. The Party reported that between 2013 and 2020 it supported public finance projects related to climate change mitigation or adaptation activities. Developing countries, including Eritrea, Ethiopia, Guatemala and Uganda, benefited from grants and scholarships provided by Malta. The scholarships for postgraduate studies on climate action at the University of Malta funded by the Government of Malta for students from developing countries aim to provide support for capacity-building with a view to freeing developing countries from a dependence on external expertise. During the review, the Party clarified that since the NC7, two scholarships have been awarded under this scheme.

H. Vulnerability assessment, climate change impacts and adaptation measures

1. Technical assessment of the reported information

96. In its NC8 Malta provided information on the expected impacts of climate change in the country; the adaptation policies covering regional, sectoral and cross-sectoral vulnerabilities and considerations; and an outline of the action taken to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation. Malta provided a description of climate change vulnerability and impacts on water resources, infrastructure, transport, land use, buildings, natural ecosystems, agriculture, fisheries, health, civil protection and tourism and highlighted the adaptation response actions taken and planned at different levels of government. Water resources is noted as a significantly vulnerable sector in Malta owing to the limited availability of natural freshwater resources and a high population density that drives high demand. Climate change impacts on water resources have ripple effects on food security and human health. The focus of adaptation measures in this sector is to maintain a highly efficient water supply through policies and legal frameworks regulating water while exploring opportunities for the development of sustainable alternative water resources, as enshrined in Malta's water catchment management plans.

97. With a high concentration of important infrastructure, including for tourism, along its coastline, which is a significant driver of economic activity, Malta will be greatly impacted by sea level rise and coastal erosion. Malta seeks to address such infrastructure and economic vulnerability through mainstreaming climate considerations into infrastructure planning and design. Since the NC7, Malta has developed the LCDS, which identifies sectors at risk through a qualitative assessment of major risks and vulnerabilities using an impact-likelihood matrix approach and prioritizes them for a detailed economic vulnerability risk assessment, which is set to be completed in 2023. The vulnerability risk assessment will serve as a policy tool to identify the vulnerabilities of Malta's economic sectors.

98. Malta has addressed adaptation matters through the adoption of the Climate Action Act, which provided the basis for the development of the LCDS, which superseded the National Adaptation Strategy. Malta's Climate Action Act establishes a legal framework mandating the Government to develop and implement policies that address climate change impacts, enhance resilience and reduce vulnerabilities. It also established the Climate Action Board and Climate Action Fund and aims to integrate climate change considerations across all sectors and to facilitate cooperation in climate action.

99. Regarding the models used for the vulnerability assessment, Malta reported in the NC8 that the main model results were generated using 12 km EURO-CORDEX data averaged over all land points that correspond to the Maltese islands for two RCP scenarios (RCP 2.6 and 8.5). This differs from the global model (HadGEM2) and regional model (RegCM4) used in the NC7 (for RCP 2.6, 4.5 and 8.5) in that EURO-CORDEX has a higher resolution and is tailored for the Mediterranean region. Temperatures in Malta are expected

to keep rising. The Maltese islands are projected to become more arid under the RCP 8.5 scenario but may remain relatively stable under the RCP 2.6 scenario. However, sea level rise projections were not performed. The Party explained during the review that the version of the 12 km EURO-CORDEX regional climate model ensemble used comprises exclusively atmosphere-only models, and as a result it does not generate various oceanic parameters, including sea level rise for the Mediterranean region and subsequently the Maltese islands. For the time being, any decisions regarding expected sea level rise in the Mediterranean region can only be based on the global averages. Table 11 summarizes the information on vulnerability and adaptation to climate change presented in the NC8 of Malta.

Table 11
Summary of information on vulnerability and adaptation to climate change reported by Malta

Vulnerable area	*Examples/comments/adaptation measures reported*
Agriculture and food security	Vulnerability: The preliminary results of Malta's vulnerability risk assessment indicate that the agriculture sector will suffer most from hazards such as extreme temperatures, lower annual precipitation, increased heavy precipitation, aridity, agricultural and ecological drought, heavy rainfall and flooding, sea level rise resulting in soil salinity, emergence of pests and diseases, or a combination of these. These hazards will result in reductions in overall agricultural output, especially impacting vineyards and cereals. Livestock production is also at risk, as most farms in Malta are not equipped with cooling equipment and warmer temperatures would affect the behavioural or physiological well-being of livestock. Livestock farmers depend extensively on imported feed and are at risk of external factors stemming from a global reduction in the availability, quality and price of grain. Extreme events such as heavy rainfall will also destroy agriculture infrastructure, for example rubble walls and greenhouses. Adaptation: Malta plans an intensive revision of existing laws and policies in the coming years that aims to promote soil conservation and protection. The country is also about to finalize a new Common Agricultural Policy Strategic Plan 2023–2027, which seeks to promote a sustainable and resilient agricultural sector that enhances food security, protects the environment and biodiversity and fosters socioeconomic development in rural areas.
Land use and buildings	Vulnerability: The predicted sea level rise, increased extreme weather events and high coastal development pose a significant threat to coastal populations, especially those in low-lying areas susceptible to storm surges. Malta reported that a sea level rise of 50 cm would affect 1.11 km^2, which represents 0.36 per cent of the total land area. Coastal erosion will lead to more hazardous rocky coastal zones and loss of sandy beaches. Agricultural land, comprising half of the total land, would also be impacted through soil and nutrient loss from intense rainfall and extended droughts in dryland production areas. Adaptation: Malta is integrating climate change adaptation measures into development plans, land-use policies and legal instruments such as the Environment Impact Assessment and Strategic Environment Assessment. The NC8 also identified measures in the LCDS that address vulnerabilities in the sector. Such adaptation measures include the development of an integrated policy framework for coastal zones and beaches and updating building regulations and codes to ensure that buildings are climate-proof. Additionally, Malta initiated the development of the second Flood Risk Management Plan following the publication of the Preliminary Flood Risk Assessment Report in 2019. These plans and accompanying maps provide guidance for implementing measures to mitigate risks in Malta.
Human health	Vulnerability: Increased heavy rainfall events, storms, extreme temperature conditions and longer periods of drought are acknowledged in the NC8 as climate hazards that will affect many factors that affect human health, such as air quality, water quality and quantity, food quality, shelter and freedom from disease in the case of vector-borne diseases, for which the elderly, disabled people, children, ethnic communities and people on low incomes are the most vulnerable. A 2009 study showed that 25 per cent of cases of salmonellosis in Malta were associated with increased temperatures. High temperatures and reduced precipitation coupled with a densely built environment has human health implications, such as heat stroke, for which infants and young children are at a greater risk. Health infrastructure could also be damaged by extreme weather events and access to health infrastructure could be a challenge. Adaptation: Malta's health authorities, supported by the World Health Organization, are conducting research on climate and health, with a particular focus on strengthening

Vulnerable area	*Examples/comments/adaptation measures reported*
	surveillance of infectious diseases and vectors, conducting risk assessments and developing outbreak control plans to address climate change related vector-borne diseases. The health authorities also prioritize and enhance programmes to mitigate potential risks to food safety, establish or reinforce early warning systems for heatwaves, extreme weather events and flooding, and raise awareness and promote behaviour changes to enhance adaptation to climate change, particularly among vulnerable groups.
Infrastructure and transport	Vulnerability: Climate hazards such as sea level rise, changes in temperature and extreme weather events are expected to have a strong negative impact on energy, transport and telecommunication infrastructure and the built environment. Malta is densely populated, and land resources are scarce. A considerable portion of urban development in Malta is situated along the coast, accounting for 35 per cent of the coastal zone in Malta and 19 per cent in Gozo. Some major roads are in low-lying areas that are prone to flooding naturally and will be further impacted by sea level rise.
	Adaptation: The Malta Transport Strategy 2050 and Transport Masterplan 2025, published in 2017, incorporated the need to assess the impact of climate change and sea level rise on transport infrastructure and to incorporate climate change considerations at the planning and design stage in order to reduce retrofitting costs. The LCDS also identified a number of measures linked to the infrastructure and transport sectors, such as modified standards for road materials and technical standards for flood infrastructure.
Water resources	Vulnerability: Malta is ranked among the top 10 water-scarce countries globally, primarily owing to its reliance on underground aquifers with limited accessible freshwater sources. Currently, 60 per cent of Malta's drinking water needs are met through desalination. However, the combination of lower annual precipitation, increased heavy precipitation events, high evapotranspiration rates and rising water demand for irrigation will decrease the recharging of fresh groundwater resources, leading to a reduction in fresh water availability. Additionally, the anticipated sea level rise poses a significant threat by salt water potentially intruding into freshwater sources.
	Adaptation: Malta has adopted and is implementing regional and domestic policy and legal frameworks, such as the EU water framework directive and the Maltese water law, to manage and protect various water resources. Malta's water catchment management plans aim to implement water demand management measures and develop alternative water sources to supplement groundwater. Currently, desalination, groundwater extraction, rainwater harvesting and wastewater treatment are the main sources of fresh water.

100. Malta provided a detailed description of international adaptation activities, including the promotion of collaboration between the EU and Mediterranean countries in sharing data and studying observation systems, and committed to create opportunities for capacity-building in order to strengthen climate change resilience in the European Mediterranean region, particularly among States facing vulnerabilities similar to Malta's. Malta also provided information on bilateral cooperation with developing countries on adaptation, such as the construction of a borehole in Bouar, Central African Republic, through the St Jeanne Antide Foundation, to ensure access to safe water for the local inhabitants.

2. Assessment of adherence to the reporting guidelines

101. The ERT assessed the information reported in the NC8 of Malta and identified an issue relating to completeness and thus adherence to the UNFCCC reporting guidelines on NCs. The finding is described in table I.2.

I. Research and systematic observation

1. Technical assessment of the reported information

102. In its NC8 Malta provided information on its general policy and funding relating to research and systematic observation and both domestic and international activities, including contributions at the EU level through the Copernicus programme, which collects both satellite and non-satellite observation data. Malta also provided information on the identification of opportunities for and barriers to free and open international exchange of data

and information and on action taken to overcome such barriers. The Party reported that the lack of an institutional arrangement, the lack of direct funding for systematic observation and the lack of a repository for climate change data and information are the main barriers to free and open international exchange of data and information.

103. Malta has implemented and planned international and domestic policies and programmes on climate change research, systematic observation and climate modelling that aim to advance capabilities to predict and observe the physical, chemical, biological and human components of the Earth's system over space and time. Malta is a member of the Space Programme Committee – Copernicus Configuration and the Copernicus User Forum. The Party is also part of the Copernicus Relays network and the Copernicus Academy. The Oceanography Malta Research Group at the University of Malta contributes to the Copernicus Marine Environment Monitoring Service and its updating of data by local users.

104. Maltese institutions contribute to research efforts in climate process and climate system studies, including paleoclimate studies; modelling and prediction, including general circulation models; research on the impacts of climate change; socioeconomic analysis, including the impacts of climate change; and response options and research and development on mitigation and adaptation technologies. The University of Malta is the primary institution for developing and supporting research on climate change; the university's Institute for Climate Change and Sustainable Development has been established to provide an environment for better coordinated research activities within faculties, institutes and centres.

105. The Department of Geosciences of the University of Malta is an applied research institution and is involved in the C-COVER project (the coastal climate overall vulnerability and exposure risk projection strategy for the Maltese islands), which seeks to develop a nationally integrated instrument that will identify the full range of policy priorities in order to reduce coastal pressures, assess coastal risks and identify sustainable, suitable and effective protective solutions, the integrated management of water and land resources and land–sea interactions and to promote national harmonization among the various ministries and key stakeholders. The project is developed by the Public Works Department and the Malta Tourism Authority. The Department of Geosciences is also working on using satellite data for the monitoring of sediments at pocket beaches to evaluate cliff failures.

106. The Institute of Earth Systems of the University of Malta conducts research on climate and related trends at both the local and regional level. Some of the research topics it covers are improving and using climate and weather prediction models; documenting and assessing impacts from extreme weather events; modelling climate change projections; gauging climate change literacy and beliefs and communicating climate change impacts; and the long-term monitoring of phenological shifts of selected plant species in relation to climate change.

107. In terms of activities related to systematic observation, Malta reported on national plans, programmes and support for ground- and space-based climate observing systems, including satellite and non-satellite climate observation. Malta also reported on challenges related to the maintenance of a consistent and comprehensive observation system, including the lack of local data and information identified in the LCDS and the lack of direct funding and a repository for climate change data. The Party also reported on its research and systematic observations activities. The Met Office, which is part of the Global Climate Observing System, compiles data of meteorological importance and statistical data for internal research and shares the data with various local and international entities.

108. The NC8 reflects actions taken to support capacity-building and the establishment and maintenance of observation systems and related data and monitoring systems in developing countries.

2. Assessment of adherence to the reporting guidelines

109. The ERT assessed the information reported in the NC8 of Malta and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

J. Education, training and public awareness

1. Technical assessment of the reported information

110. In its NC8 Malta provided information on its actions relating to education, training and public awareness at the domestic and international level. The Party provided information on the general policy on education, training and public awareness; primary, secondary and higher education; public information campaigns; training programmes; education materials; resource or information centres; the involvement of the public and non-governmental organizations; and its participation in international activities.

111. Since the NC7, Malta has further consolidated its efforts aimed at providing education for sustainable development initiatives related to climate change. The formal sector has been the most active sector, with the non-formal and informal sectors registering an increase in initiatives, which have been rather sporadic and not part of an educational strategy.

112. The Party reported that sustainability is one of the main themes in the University of Malta's strategic plan for 2020–2025, with one of its principal commitments being to deliver training and research on sustainability. The number of educational programmes related to climate change is significantly increasing at the University of Malta and the Malta College of Arts, Science and Technology, mainly in scientific and technological fields.

113. Topics related to climate change have continued to feature in various formal educational programmes, from the pre-school level up to the tertiary level and in diverse subject areas. Since the NC7, EkoSkola has continued to develop into the largest education for sustainable development network on the island, with more than 84 per cent of the total student population involved, which is a 2 per cent increase in coverage since the NC7; the network empowers students to adopt an active role in environmental decision-making and action in their schools and communities. Activities undertaken by EkoSkola include giving lessons and holding information meetings; growing and planting trees; auditing the sustainability of community spaces and recommending improvements to them; and holding EkoSkola Parliament sessions, which bring students and policymakers together to debate ways to improve the quality of life in Malta and to discuss issues related to climate change.

114. Malta organized several programmes during the time frame covered by the NC8, including Pioneers into Practice, which provides practical tools to lead the transition to a zero carbon and climate-resilient society, connects professionals across Europe and provides a transformative learning experience around local climate mitigation and adaptation needs. The Climate Leadership Journey Summer School prepares master's degree students, postgraduates and young professionals to help to create a net zero and climate-resilient world by developing skills and capabilities. Other initiatives, such as the Young Innovators Malta, the Climathon and the ClimAccelerator, also offer opportunities for young people to get involved in climate action while developing technical and entrepreneurial skills.

115. Malta reported that there are few initiatives in the non-formal and informal education sector. The Energy and Water Agency offers activities for students aimed at raising awareness and promoting water conservation and energy efficiency. In May 2022, the Ministry for the Environment, Energy and Enterprise launched the second edition of the #ClimateOn campaign, which focuses on friendly practices in relation to sustainable energy use, mobility and financing. The Interdiocesan Environment Commission was set up to promote values conducive to sustainable lifestyles by providing training sessions in communities and support to parishes that wish to reduce their carbon footprint.

116. In its NC8 Malta reported that the EIT Climate-KIC Malta Hub was set up in 2016 and is coordinated by the Malta College of Arts, Science and Technology. It uses a systems transformation approach to accelerate the transition to a zero carbon and climate-resilient world. The hub collaborates with various stakeholders to achieve environmental and climate targets. During the review, the Party further explained that the hub contributes to informal education by providing workshops, newsletters, public awareness campaigns and engagement with community stakeholders.

117. Since the NC7, Malta has initiated a process to develop a holistic national strategy for education for sustainable development by identifying the rationale and guiding principles of

education for sustainable development activities through consultation with various interest groups and organizations. The next phase will entail further discussions with stakeholders to identify the specific targets and actions to be taken, set deadlines and list the actors responsible for the implementation. The action plan will include specific guidelines for periodic monitoring, evaluation and review of the strategy.

2. Assessment of adherence to the reporting guidelines

118. The ERT assessed the information reported in the NC8 of Malta and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

III. Conclusions and recommendations

119. The ERT conducted a technical review of the information reported in the NC8 of Malta in accordance with the UNFCCC reporting guidelines on NCs. The ERT concluded that the reported information completely adheres to the UNFCCC reporting guidelines on NCs and that the NC8 provides an overview of the national climate policy of Malta.

120. The information provided in the NC8 includes all elements of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. Malta reported on the national system, the national registry, supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol, PaMs in accordance with Article 2 of the Kyoto Protocol, domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures. Supplementary information under Article 7, paragraph 1, of the Kyoto Protocol on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol was provided by Malta in its 2022 annual submission.

121. The ERT conducted a technical review of the information reported in the BR5 and BR5 CTF tables of Malta in accordance with the UNFCCC reporting guidelines on BRs. The ERT concluded that the reported information completely adheres to the UNFCCC reporting guidelines on BRs and that the BR5 and its CTF tables provide an overview of emissions and removals related to the Party's quantified economy-wide emission reduction target; assumptions, conditions and methodologies related to the attainment of the target; and the progress of Malta towards achieving its target.

122. In its NC8 Malta reported on its key national circumstances related to GHG emissions and removals, including key data on legislation, population trends, geography and land use, climate and climate change, economic developments, energy, transport, the buildings sector, industry, trade, the services sector, agriculture, forestry, resource efficiency, wastewater, and the institutional structure to address climate change and implement relevant policies.

123. Total GHG emissions excluding emissions and removals from LULUCF decreased by 19.6 per cent between 1990 and 2020, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 19.0 per cent over the same period. Emissions peaked in 2012 and decreased thereafter until 2016, mostly owing to changes in power generation, such as the decommissioning of an old power plant, fuel switching from heavy fuel oil to gas and importing electricity after the establishment of a connection with the European electricity grid. The increase in local electricity generation since 2016 resulted in a slight increase in emissions from 2016 to 2019, which was followed by a slight decrease in 2020 owing to various restrictions and shutdowns during the COVID-19 pandemic. In 2021, owing to the economic recovery following the pandemic, total GHG emissions increased by 1 per cent without LULUCF and by 0.7 per cent with LULUCF. The highest increase was in energy consumption in the manufacturing industries and construction sector (8.8 per cent) and the transport sector (6.6 per cent), but the 4.7 per cent decrease in the energy industries sector counterbalanced this and total GHG emissions in the energy sector increased by 0.6 per cent.

124. As reported in the BR5, under the Convention Malta committed to contributing to the achievement of the joint EU quantified economy-wide target of a 20 per cent reduction in emissions below the 1990 level by 2020. The target covers all sectors and CO_2, CH_4, N_2O, HFCs, PFCs and SF_6, expressed using GWP values from the AR4. Emissions and removals from the LULUCF sector are not included. Under the ESD Malta has a target of limiting its emission growth to 5 per cent above the 2005 level by 2020. Malta has a cumulative deficit of 1,366.61 kt CO_2 eq with respect to its AEAs. In 2020, Malta's emissions covered by the ESD were 10.6 per cent (193.28 kt CO_2 eq) above the AEA under the ESD. Malta used AEAs purchased from other member States to offset shortfalls in compliance with the ESD targets.

125. The EU has a joint 2030 emission reduction target of at least 55 per cent below the 1990 level. This will be primarily implemented through the EU ETS and ESR, which have targets to reduce emissions by 2030 by 62 and 40 per cent respectively compared with the 2005 level. Under the ESR, Malta has a national target of reducing emissions from covered sectors to 19 per cent below the 2005 level by 2030. The Regulation on LULUCF requires Malta to achieve a 'no debit' status; that is, by 2030, emissions from the LULUCF sector must be at least offset by removals from the same sector

126. The ERT noted that the total GHG emissions of the EU excluding LULUCF and including the use of units from market-based mechanisms do not exceed the emission level corresponding to the target in 2020, and thus that the EU has achieved its joint target. The ERT therefore concluded that Malta has met its 2020 commitment under the Convention through its contribution to achieving the joint target of the EU. The ERT noted that the Party met its 2020 ESD target by using the flexibility allowed under the ESD to cover its AEA deficit to purchase surplus AEAs from EU member States that have overachieved their target.

127. The GHG emission projections provided by Malta in its NC8 and BR5 correspond to the WEM and WOM scenarios. Under the WEM scenario, emissions in 2030 are projected to be 44.3 per cent below the 1990 level and 31.7 per cent below the 2020 level. Under the WOM scenario, emissions in 2030 are projected to be 7.5 per cent above the 1990 level and 34.6 per cent above the 2020 level.

128. Malta's main policy framework relating to energy and climate change is based on the Climate Action Act and implementation of the LCDS. The LCDS sets out a set of attainable measures, designed with Malta's specificities in mind, to achieve significant reductions by 2050 and to meet the current ESR target in 2030. The Party described the mitigation actions that it has implemented to help it achieve its 2020 and longer-term targets, which include building an additional electricity interconnector; the electrification of buses; installing solar photovoltaic panels; a number of transport sector measures for public transport, including active transport (particularly cycling) and the electrification of light-duty vehicles; and regulating the use of F-gases. Building an additional electricity interconnector will have the most significant impact on decarbonizing the electricity grid.

129. Malta is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3–5, of the Convention. However, it provided information in its BR5 and NC8 on its provision of support to developing country Parties. Since 2013, Malta has provided financial support for climate action totalling EUR 926,694. Support was mainly provided in the form of grants for projects on promoting access to water, renewable energy and capacity-building. Malta also provided climate change related scholarships for students from developing countries.

130. In its NC8 Malta provided information on the expected impacts of climate change in the country; the adaptation policies covering regional, sectoral and cross-sectoral vulnerabilities and considerations; and an outline of the action taken to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation. Temperatures in Malta are expected to keep rising. The Maltese islands are projected to become more arid under the RCP 8.5 scenario but may remain relatively stable under the RCP 2.6 scenario. Climate hazards and risks identified to impact Malta are lower annual precipitation, increased heavy precipitation events, extreme temperatures, reduced recharging of fresh groundwater resources, sea level rise and longer periods of drought. A preliminary assessment in the LCDS identified the following sectors that will be affected: water resources; infrastructure and transport; land use and buildings; natural ecosystems, agriculture and fisheries; health issues;

and civil protection and tourism. The LCDS also requires that a detailed vulnerability risk assessment be conducted to quantify the economic impacts of climate change on the various sectors and the prioritization of appropriate adaptation actions. The vulnerability risk assessment is ongoing and is scheduled to be completed in 2023. Malta has improved its climate projections by using the 12 km EURO-CORDEX model, which has a higher resolution and is tailored for the Mediterranean region. However, challenges with sea level rise projection are still unresolved and the country relies on the AR6 global projection for sea level rise.

131. In its NC8 Malta provided information on its activities relating to research and systematic observation, including its participation in the EU Copernicus programme, which collects both satellite and non-satellite observation data. The interest in climate research and its effects has been steadily increasing and numerous research groups within the University of Malta are leading this development in cooperation with the Met Office, the Malta College of Arts, Science and Technology and government entities such as the National Statistics Office.

132. In its NC8 Malta provided information on its actions relating to education, training and public awareness. Malta has further consolidated its efforts aimed at providing education for sustainable development initiatives related to climate change. Initiatives and programmes such as EkoSkola, Pioneers into Practice and the Climate Leadership Journey Summer School are successful examples of initiatives that address education, training and public awareness around climate change topics.

Annex I

Assessment of adherence to the reporting guidelines for the eighth national communication of Malta

Tables I.1–I.2 summarize the ERT assessment of adherence to the UNFCCC reporting guidelines on NCs for Malta's NC8.

Table I.1
Findings on projections including aggregate effects of policies and measures reported in the eighth national communication of Malta

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 25 Issue type: completeness Assessment: encouragement	Malta did not report a WAM scenario in its NC8. During the review, Malta explained that it elected not to report additional measures in its WAM scenario. All measures in its adopted strategies are included in the WEM scenario. The ERT reiterates the encouragement from the previous review report for Malta to include a WAM scenario in its next NC.
2	Reporting requirement specified in paragraph 32 Issue type: completeness Assessment: encouragement	Malta did not provide projections for the indirect GHGs CO, NO_X, NMVOCs or SO_X in its NC8. During the review, Malta explained that projections of indirect emissions of CO, NO_X, NMVOCs and SO_X are not included in the NC8 because such projections are based upon different measures and methodologies from those used for the purposes of GHG projections reported in the NC8, which would lead to inconsistencies in reporting. Moreover, based upon the current mode of projections and data availability, the provision of projections of indirect emissions is not possible. Nonetheless, the Party will strive to report projections from indirect emissions in future submissions, subject to their availability. The ERT reiterates the encouragement from the previous review report for Malta to provide projections for indirect GHGs in its next NC.
3	Reporting requirement specified in paragraph 40 Issue type: completeness Assessment: encouragement	Malta did not include a summary of the strengths and weaknesses of the models used and it did not explain how the models used account for any overlap or synergies that may exist among different PaMs in its reports. During the review, Malta explained that the LCDS uses a marginal abatement cost curve, a world-renowned methodology that prioritizes cost-effectiveness for measures for reducing emissions; however, many unexplained models were applied to develop the WEM scenario and their strengths and weaknesses were not summarized. The ERT reiterates the encouragement from the previous review report for the Party to include a summary of the strengths and weaknesses of each model or approach used for the various sectors.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. The reporting on the requirements not included in this table is considered to be complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs.

Table I.2
Findings on vulnerability assessment, climate change impacts and adaptation measures from the review of the eighth national communication of Malta

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 47	Malta did not provide information on how it monitors and evaluates the implementation of adaptation strategies or plans and on progress and outcomes of adaptation action in line with paragraph 47(e) and (f) of the UNFCCC guidelines for the preparation of NCs. During the review, Malta explained that the monitoring of progress in terms of PaMs is coordinated through an interministerial committee set up for the purpose with the

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
	Issue type: completeness	support of the ministry responsible for climate. Malta will be developing its monitoring and evaluation capabilities to ensure that these elements are reported in future submissions.
	Assessment: encouragement	The ERT encourages Malta to enhance the completeness of its reporting by providing information on how it monitors and evaluates the implementation of adaptation strategies or plans and on progress and outcomes of adaptation action in its next NC.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. The reporting on the requirements not included in this table is considered to be complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs.

Annex II

Assessment of adherence to the reporting guidelines for the fifth biennial report of Malta

The BR5 of Malta is the final BR under the measurement, reporting and verification system established under the Convention.[1] Nevertheless, ERTs continue to provide recommendations and encouragements to the Parties on completeness, transparency and adherence to the UNFCCC reporting guidelines on BRs. Parties may find these recommendations and encouragements relevant, as appropriate, when preparing their initial biennial transparency report under the enhanced transparency framework of the Paris Agreement. Table II.1 summarizes the ERT assessment of adherence to the UNFCCC reporting guidelines on BRs for Malta's BR5.

Table II.1
Findings on projections reported in the fifth biennial report of Malta

No.	*Reporting requirement and issue type*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement[a] specified in paragraph 25 Issue type: completeness Assessment: encouragement	Malta did not report a WAM scenario in its BR5. During the review, Malta explained that it elected not to report additional measures in its WAM scenario. All measures in its adopted strategies are included in the WEM scenario. The ERT reiterates the encouragement from the previous review report for Malta to include a WAM scenario.
2	Reporting requirement[a] specified in paragraph 32 Issue type: completeness Assessment: encouragement	Malta did not provide projections for the indirect GHGs CO, NO_X, NMVOCs or SO_X in its BR5. During the review, Malta explained that projections of indirect emissions of CO, NO_X, NMVOCs and SO_X are not included in the BR5 because the projections for indirect GHG emissions are based upon different measures and methodologies from those used for the purposes of GHG projections reported in the NC8, which would lead to inconsistencies in reporting. Moreover, based upon the current mode of projections and data availability, the provision of projections of indirect emissions is not possible. Nonetheless, the Party will strive to report projections from indirect emissions in future submissions, subject to their availability. The ERT reiterates the encouragement from the previous review report for Malta to provide projections for indirect GHGs.
3	Reporting requirement[a] specified in paragraph 40 Issue type: completeness Assessment: encouragement	Malta did not include a summary of the strengths and weaknesses of the models used and it did not explain how the models used account for any overlap or synergies that may exist among different PaMs in its reports. During the review, Malta explained that the LCDS uses a marginal abatement cost curve, a world-renowned methodology that prioritizes cost-effectiveness for measures for reducing emissions; however, many unexplained models were applied to develop the WEM scenario and their strengths and weaknesses were not summarized. The ERT reiterates the encouragement from the previous review report for the Party to include a summary of the strengths and weaknesses of each model or approach used for the various sectors.

Note: The reporting on the requirements not included in this table is considered to be complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs and on BRs.

[a] Item listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs, as per para. 11 of the UNFCCC reporting guidelines on BRs.

[1] The COP, by decision 1/CP.24, decided that the final BRs shall be those submitted to the secretariat no later than 31 December 2022 and reaffirmed that, for Parties to the Paris Agreement, following the submission of the final BR, the modalities, procedures and guidelines contained in the annex to decision 18/CMA.1 will supersede the measurement, reporting and verification system established under decision 1/CP.16, paras. 40–47 and 60–64, and decision 2/CP.17, paras. 12–62.

Annex III

Documents and information used during the review

A. Reference documents

2022 GHG inventory submission of Malta. Available at https://unfccc.int/ghg-inventories-annex-i-parties/2022.

2023 GHG inventory submission of Malta. Available at https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/national-inventory-submissions-2023.

BR4 of Malta. Available at https://unfccc.int/BR4.

BR5 CTF tables of Malta. Available at https://unfccc.int/BR5.

BR5 of the EU. Available at https://unfccc.int/BR5.

BR5 of Malta. Available at https://unfccc.int/BR5.

"Common tabular format for 'UNFCCC biennial reporting guidelines for developed country Parties'". Annex to decision 19/CP.18. Available at https://unfccc.int/resource/docs/2012/cop18/eng/08a03.pdf.

"Compilation of economy-wide emission reduction targets to be implemented by Parties included in Annex I to the Convention". FCCC/SBSTA/2014/INF.6. Available at http://unfccc.int/resource/docs/2014/sbsta/eng/inf06.pdf.

European Green Deal. European Commission document COM(2019) 640 final. Available at https://ec.europa.eu/info/files/communication-european-green-deal_en.

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications". FCCC/CP/2019/13/Add.1. Available at https://unfccc.int/documents/210471.

"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol". Annex to decision 15/CMP.1. Available at https://unfccc.int/documents/4253.

"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol". Annex III to decision 3/CMP.11. Available at https://unfccc.int/documents/9101.

"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". Annex to decision 13/CP.20. Available at http://unfccc.int/resource/docs/2014/cop20/eng/10a03.pdf.

National energy and climate plans of Malta. Available at https://energy.ec.europa.eu/system/files/2020-01/mt_final_necp_main_en_0.pdf.

NC8 of Malta. Available at https://unfccc.int/NC8.

NC8 of the EU. Available at https://unfccc.int/NC8.

Report on the technical review of the BR4 of Malta. FCCC/TRR.4/MLT. Available at https://unfccc.int/documents/232050.

Report on the technical review of the NC7 of Malta. FCCC/IDR.7/MLT. Available at https://unfccc.int/documents/183922.

Report on the technical review of the NC8 and the technical review of the BR5 of the EU. FCCC/IDR.8/EU–FCCC/TRR.5/EU. Available at https://unfccc.int/documents/630393.

"UNFCCC biennial reporting guidelines for developed country Parties". Annex I to decision 2/CP.17. Available at http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf.

B. Additional information provided by the Party

Responses to questions during the review were received from Saviour Vassallo (Malta Resources Authority). The following reference was provided by Malta and may not conform to UNFCCC editorial style as it has been reproduced as received:

Ministry for the Environment, Climate Change and Planning. 2021. *Malta Low Carbon Development Strategy*. Available at https://unfccc.int/documents/311041.