

Final Review Report

2019 annual review of national greenhouse gas inventory data

pursuant to Article 19(2) of Regulation (EU) No 525/2013

Malta
28 June 2019

European Environment Agency



Reference: 340201/2018/790329/SER/CLIMA.C
Umweltbundesamt GmbH
Spittelauer Lände 5
1090 Vienna Austria

Contents

Conclusions from the 2019 annual ESD review	3
Step 1 conclusions	3
Step 2 conclusions	3
National totals	5
Greenhouse gas emissions covered by Decision 406/2009/EC.....	6
Statement from Malta on the conclusions presented by the TERT	7
Revised estimates provided by Malta and accepted by the TERT	8
Recommendations from the TERT including revised estimates and technical corrections	10
Annex I: Legal background and procedures of the 2019 annual ESD review	12
Annex II: Checks carried out during the 2019 annual ESD review in line with Art.29 and 32 of the Commission Implementing Regulation (EU) No 749/2014	14

List of tables

Table 1: Overview of issues raised with Malta during the first and the second step	4
Table 2: National totals	5
Table 3: Greenhouse gas emissions covered by Decision 406/2009/EC.....	6
Table 4: Recommendations from the TERT	10
Table A.1.1: Scope of the 2019 annual ESD review	13

Conclusions from the 2019 annual ESD review

This Final Review Report presents the findings from the 2019 annual review of the greenhouse gas (GHG) emission inventory of Malta, pursuant to Article 19(2) of Regulation (EU) No 525/2013, with a view to monitoring Malta's achievement of its GHG emission reduction or limitation target pursuant to Article 3 of Decision No 406/2009/EC (the 'Effort Sharing Decision', ESD) in 2017.

The reviewers carried out checks to verify the transparency, accuracy, consistency, comparability and completeness of the national GHG inventory for the year 2017 submitted in 2019 by Malta pursuant to Articles 7(1) and 7(3) of Regulation (EU) No 525/2013.

The review consisted of two steps:

1. The EU inventory team (European Environment Agency (EEA), European Topic Centre on Climate Change Mitigation and Energy (ETC/CME), Joint Research Centre (JRC) and Eurostat) performed the initial checks under Step 1.
2. A Technical Expert Review Team (TERT) performed Step 2 of the 2019 annual ESD review.

More information on the ESD legislation and the procedures for the 2019 annual ESD review is presented in the annexes to this review report.

Step 1 conclusions

The EU inventory team identified 5 significant issues through the checks performed in Step 1. Therefore, Malta was subject to a second step of the 2019 annual ESD review. Only significant issues were subject to the second step review checks.

Step 2 conclusions

1. The reviewers raised 35 issues with Malta during the first and the second step of the 2019 annual ESD review (see Table 1). The TERT provided recommendations for 4 of these issues. Other issues raised during the annual review were clarified and are considered resolved.
2. The TERT identified cases where inventory data were prepared in a manner which is inconsistent with UNFCCC guidance documentation or Union rules. In particular, the TERT identified a number of under- or over-estimates exceeding the threshold of significance pursuant to Article 31 of Commission Implementing Regulation (EU) No 749/2014.
3. Malta provided 2 revised estimates. Table 2 below summarises the revised estimates and further information is provided in the respective chapter of this report. The TERT agreed with these revised estimates.
4. On that basis, the TERT did not deem necessary any technical corrections within the meaning of Article 19(3)(c) of Regulation (EU) No 525/2013 in consultation with Malta.
5. The TERT identified non-binding recommendations in order to improve the national inventory data of Malta (see Table 4).
6. The TERT considers that it received a response from Malta that was sufficient in order to undertake the annual review appropriately.

Table 1: Overview of issues raised with Malta during the first and the second step

	Issues raised ¹	Recommendations	Revised estimates ²	Technical corrections ³
Total	35	4	2	-
Energy	23	3	1	-
IPPU	2	-	-	-
Agriculture	8	-	-	-
Waste	2	1	1	-
Cross-cutting	-	-	-	-

¹ Excluding findings related to Land use, land use change and forestry (LULUCF) and Kyoto Protocol (KP) LULUCF.

² Revised estimates: changes in inventory estimates triggered by the review and provided by the Member State.

³ Technical corrections: changes in inventory estimates triggered by the review and provided by the TERT.

National totals

Table 2: National totals

Data / Source category	Reference	Emission estimates (kt CO ₂ equivalent) ¹ 2017
Total greenhouse gas emissions, including indirect CO ₂ , without land use, land-use change and forestry as reported by Malta pursuant to Article 7(4) of Regulation (EU) No 525/2013, taking into account any resubmission to the Commission	MLT_2019_1_29032019	2 151.468
Difference between original estimates and revised estimates provided by Malta and accepted by the TERT²		
1.A.3.b Road transportation, CH ₄	MT-1A3b-2019-0005	-2.941
5.A Solid waste disposal, CH ₄	MT-2019-5A-0001	4.376
Total greenhouse gas emissions including revised estimates provided by Malta		2 152.903
CO ₂ emissions from 1.A.3.a Domestic aviation	MLT_2019_1_29032019	0.426
NF ₃ emissions	MLT_2019_1_29032019	-

¹ The tables presented in this report show numbers rounded to three decimal places, although most numbers are available with greater precision. For all calculations (in particular of total GHG emissions and total ESD emissions), all available decimal places were used. Therefore, the totals shown may slightly differ from calculation results where only three decimals would be taken into account.

² A positive difference indicates an increase compared to reported emissions. A negative difference indicates a decrease compared to reported emissions.

Greenhouse gas emissions covered by Decision 406/2009/EC

Table 3: Greenhouse gas emissions covered by Decision 406/2009/EC

Data	Reference	Emissions (kt CO ₂ equivalent) ¹ 2017
Total greenhouse gas emissions including accepted revised estimates provided by Malta	<i>See Table 2 above</i>	2 152.903
Total verified emissions from stationary installations under Directive 2003/87/EC	Extracted by the European Commission from EUTL on 8 March 2019 (as agreed at the Working Group I of the Climate Change Committee on 18 May 2015) ²	723.997
CO ₂ emissions from 1.A.3.a Domestic aviation	<i>See Table 2 above</i>	0.426
NF ₃ emissions	<i>See Table 2 above</i>	-
Total ESD emissions		1 428.480

¹ The tables presented in this report show numbers rounded to three decimal places, although most numbers are available with greater precision. For all calculations (in particular of total GHG emissions and total ESD emissions), all available decimal places were used. Therefore, the totals shown may slightly differ from calculation results where only three decimals would be taken into account.

² The emissions of ETS stationary installations were independently verified and recorded in the EU Transaction Log (EUTL). These emissions do not derive from the national greenhouse gas emission inventory data and therefore the TERT was not tasked to review them.

Statement from Malta on the conclusions presented by the TERT

Malta agrees with the aggregated GHG emission inventory estimates presented in Table 3.

Revised estimates provided by Malta and accepted by the TERT

1	ESD Review Tool ID:	MT-1A3b-2019-0005
	ESD Review Tool URL:	https://emrt-esd.eionet.europa.eu/2019/MT-1A3b-2019-0005
	Member State:	Malta
	Sector:	1.A.3.b Road transportation
	Gases:	CH ₄
	Fuel	Liquid fuels
	Completed by Sector Expert:	Graham Anderson
	Reviewed by Counterpart:	Eva Krtkova
	Reviewed by Lead Reviewer:	Ralph Harthan
	Reviewed by Quality Controller:	Bernd Guegle
	The underlying problem:	For category 1.A.3.b, gasoline and gas CH ₄ for the year 2017 the value of the emissions and the IEF were many times higher than the values of 2016 (see the Timeseries sheet as communicated during the review). In communication with Malta the TERT identified a problem with the outputs from the COPERT software for 1A3b Road transportation iv. Motorcycles Gasoline CH ₄ .
	Summarise the methodology used:	The TERT suggested that the easiest way to address this would be to use the 2016 IEF from the current 2019 submission as the emission factor for 2017 as the best way to achieve a consistent emission estimate. The TERT outlined the proposed revised calculation using 2017 activity data and the 2016 IEF as the emission factor in the Calculations sheet included in the file communicated during the review. Malta agreed with this approach and provided the calculations and results shown in the Methodology sheet (included in file communicated during the review).

2

Details of the corrected estimate									
		Original estimate (kt CO ₂ e)							Notes
	Year	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	Mixed GHG	
MT-1A3b-2019-0005-OE		2017		3.135					
Was a Revised Estimate received from the MS?		yes							
		Revised Estimate received from MS (kt CO ₂ e)							Notes
	Year	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	Mixed GHG	
MT-1A3b-2019-0005-RE		2017		0.194					
		Difference between RE and OE (kt CO ₂ e)							
			-2.941						
Was a Revised Estimate accepted by the TERT?		yes							
		Technical Correction calculated by TERT (kt CO ₂ e)							Notes
	Year	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	Mixed GHG	
MT-1A3b-2019-0005-TC		2017							
		Difference between TC and OE (kt CO ₂ e)							
Was the Technical Correction accepted by the MS?									

ESD Review Tool ID:	MT-2019-5A-0001
ESD Review Tool URL:	https://emrt-esd.eionet.europa.eu/2019/MT-5A-2019-0001
Member State:	Malta
Sector:	5.A Solid waste disposal
Gases:	CH ₄
Fuel	-
Completed by Sector Expert:	Hans Oonk
Reviewed by Counterpart:	Juraj Farkas
Reviewed by Lead Reviewer:	Ralph Harthan
Reviewed by Quality Controller:	Justin Goodwin

1	<p>The underlying problem:</p> <p>During Step 1 a significant recalculation was observed for the year 2016 in methane emissions from unmanaged SWDS in Malta. During the 2016 ESD review the TERT and Malta agreed, that the unmanaged landfill in Malta is best described as an aerobic landfill, taking into account a site-specific MCF, equal to an aeration factor. This aeration factor is annually recalculated on well-documented concentrations of methane and CO₂ in the extracted gas. The methodology is described in the Maltese NIR, page 244. After Q&A it appeared that Malta made a mistake in calculating the aeration factor: (i) in the NIR (page 244), the aeration factor is described as $2 * \text{CH}_4 / (\text{CO}_2 + \text{CH}_4)$. Instead Malta calculated the aeration factor, being $\text{CH}_4 / (\text{CO}_2 + \text{CH}_4)$, resulting in an underestimation of the aeration factor of 50%.</p> <p>Summarise the methodology used:</p> <p>The recalculation for 2017 was provided by Malta, using their spreadsheet model for unmanaged landfills and using the correct algorithm for the aeration factor.</p>
---	--

Details of the corrected estimate									
		Original estimate (kt CO ₂ e)							Notes
	Year	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	Mixed GHG	
MT-2019-5A-0001-OE	2017		3.524						
Was a Revised Estimate received from the MS?		yes							
		Revised Estimate received from MS (kt CO ₂ e)							Notes
	Year	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	Mixed GHG	
MT-2019-5A-0001-RE	2017		7.900						
		Difference between RE and OE (kt CO ₂ e)							
			4.376						
Was a Revised Estimate accepted by the TERT?		yes							
		Technical Correction calculated by TERT (kt CO ₂ e)							Notes
	Year	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	Mixed GHG	
MT-2019-5A-0001-TC	2017								
		Difference between TC and OE (kt CO ₂ e)							
Was the Technical Correction accepted by the MS?									

Recommendations from the TERT including revised estimates and technical corrections

Table 4: Recommendations from the TERT

EMRT - ID	Key category	Category, gas, year	Conclusion step 2 note	Revised estimate	Technical correction
MT-1A3b-2019-0005	No	1.A.3.b Road transportation , 2017, CH ₄	For 1.A.3.b Road transportation iv. Motorcycles Gasoline CH ₄ in 2017 the TERT noted a potential over-estimate exceeding the threshold of significance. In response to a question raised during the review, Malta provided a revised estimate for the year 2017. The TERT agreed with the revised estimate provided by Malta. The TERT recommends that Malta include the revised estimate in its next submission.	Yes	No
MT-5A-2019-0001	Yes	5.A Solid waste disposal, 2016, CH ₄	For unmanaged Solid Waste Disposal (5.A), CH ₄ and the year 2016, the TERT noted a recalculation of emissions between the 2018 and 2019 submissions. Upon further inspection, the TERT noted that Malta calculated the aeration factor in estimating emissions from an aerated landfill as $\%CH_4/(\%CO_2+\%CH_4)$ instead of $2*\%CH_4/(\%CO_2+\%CH_4)$, as specified in the Maltese NIR (page 244). In response to a question raised during the review, Malta provided a revised estimate for the year 2017 and stated that it will be included in the next submission. The TERT agreed with the revised estimate provided by Malta. The TERT recommends that Malta include the revised estimate in its next submission.	Yes	No

EMRT - ID	Key category	Category, gas, year	Conclusion step 2 note	Revised estimate	Technical correction
MT-1A3b-2019-0004	Yes	1.A.3.b Road transportation , 2017, CO ₂	For category 1.A.3.b Road transportation and gas CO ₂ for the year 2017, the TERT noted that the fossil part of the biofuels might not be considered while preparing the inventory. During the review Malta did not provide a clear response to questions on this matter. The TERT noted that (based on analysis of data submitted under Article 7a of the Fuel Quality Directive) that the issue is below the threshold of significance for a technical correction. However, the TERT also notes that analysis of other Member State estimates of fossil content of biofuels, the "Note on fossil carbon content in biofuels" and the data provided by Malta under Article 7a of the Fuel Quality Directive, indicates that there may be a fossil component of some of the biofuels listed. The TERT recommends that the country include in its next inventory submission CO ₂ emissions from fossil carbon in biofuels. The Member State may use reported data on the Article 7a of the Fuel Quality Directive which may be available at the EIONET. The TERT considers that this data could be used in combination with the information included in the "Note on fossil carbon content in biofuels" to estimate the fossil carbon emissions from biofuels. The TERT recommends reporting these emissions under 1.A.3.b, "Other fossil fuels". The TERT notes that the CRF Reporter software provides the option to specify the type of fossil fuel (e.g. it can be named "fossil part of biodiesel or biogasoline"). The related activity data associated to the fossil part of biofuels should be also reported under "Other fossil fuels". They can be estimated by multiplying the amount of biofuel by the fossil part of the carbon content (%). Finally, the TERT recommends including a description of the method applied in the next NIR.	No	No
MT-1AB-2019-0004	No	1.A.B Reference approach, 2017, CO ₂	For category 1.A.B Reference and sectoral approach comparison for 2017, the TERT noted that the correlation between RA/SA had deteriorated in comparison to 2016. In response to a question raised during the review, Malta explained that emissions from Natural Gas are missing from the Reference Approach. Inclusion of Natural Gas in the Reference Approach improved the correlation considerably. The TERT notes that this issue does not relate to an over- or underestimate and recommends that Malta continue efforts to address the ongoing reference approach inconsistencies that have also been observed in MT-1AB-2016-0003, MT-1AB-2017-0001 and MT-1AB-2018-0002.	No	No

Annex I: Legal background and procedures of the 2019 annual ESD review

The Effort Sharing Decision No 406/2009/EC (ESD) sets national emission limits for greenhouse gas (GHG) emissions in the sectors outside the EU's Emission Trading System (ETS) for the period 2013-2020. The ESD and the Monitoring Mechanism Regulation (EU) 525/2013 (MMR) lay down annual reporting obligations, compliance checks and a Union review process to ensure that the compliance with annual GHG emission limits is assessed in a credible, consistent, transparent and timely manner. The requirements for the Union review of the national inventory data submitted by Member States are set out in Article 19 of the MMR.

The details concerning the review process, such as the timing and steps of conducting the annual and comprehensive reviews are set out in Chapter III and Annex XVI of the Commission Implementing regulations (EU) No 749/2014.

The objectives of the 2019 annual ESD review of Member States' GHG emission inventories are:

- a) to support the European Commission by ensuring it has accurate, reliable and verified information on annual GHG emissions for determining compliance with ESD targets for the year 2017 in a credible, consistent, transparent and timely manner, according to Article 19 (2) of the MMR;
- b) to assist Member States in improving the quality of their GHG inventories.

The 2019 annual ESD review of national GHG inventory data was carried out for the compliance year 2017 pursuant to Article 19 of the MMR. The EEA review secretariat (consisting of Melanie Sporer, Claire Qoul and Kirsten May) coordinated the 2019 annual ESD review as foreseen in Article 28 of the Commission Implementing Regulation (EU) No 749/2014.

The scope of the 2019 annual ESD review is presented in Table A.1.1. The checks carried out during the 2019 annual ESD review are presented in Annex II.

The review consisted of 2 steps. Step 1 was combined with the 'EU QA/QC procedures' (i.e. initial checks) and was carried out by the EU inventory team (EEA, ETC/CME, JRC, Eurostat). The EU inventory team consisted of the following experts:

- ETC/CME task manager: Nicole Mandl, Marion Pinterits (ETC/CME)
- Energy: Julien Vincent, Coralie Jeannot, Beata Ondrusova, Eva Krtkova, Marion Pinterits, Matina Kastori (ETC/CME), Michael Goll (Eurostat)
- IPPU: Barbara Gschrey, Steffi Osterheld, Lorenz Moosmann, Graham Anderson (ETC/CME)
- Agriculture: Adrian Leip, Janka Szemesova, Gema Carmona (JRC)
- Waste: Celine Gueguen (ETC/CME)
- LULUCF: Raul Abdas-Vinas (JRC)
- Quality coordinators: Adrian Leip, Giacomo Grassi (JRC), Bernd Guegle, Nicole Mandl, Maria Purzner, Julien Vincent, Giorgos Mellios, Ils Moorkens, Kaat Jespers (ETC/CME)
- Cross-cutting: Nicole Mandl (ETC/CME)

All findings from the initial checks that were relevant for the ESD and that were not resolved within the initial check phase were followed up in the second step of the annual review.

Step 2 of the 2019 annual ESD review was performed by a Technical Expert Review Team (TERT) under service contract 340201/2018/790329/SER/CLIMA.C of the Directorate General for Climate Action of the European Commission. The TERT consisted of the following experts:

- Lead Reviewers: Suvi Monni, Ralph Harthan
- Energy: Graham Anderson, Stephan Poupa, Eva Krtkova
- IPPU: Kristina Kaar, Jolanta Merkeliene
- Agriculture: Etienne Mathias, Steen Gyldenkaerne

- Waste: Hans Oonk, Juraj Farkas
- Quality controller: Justin Goodwin
- Co-ordinator: Bernd Guegele

The TERT did not review emission inventories of Member States where these individuals have themselves contributed to the compilation of that inventory, or presently are or have been any part of the decision-making process related to the compilation of that inventory. Reviewers who are nationals of the Member State whose inventory is concerned, did not take part in the review of that inventory.

Step 2 of the review was performed on the basis of GHG emission data and the national inventory report (NIR) officially reported by Member States by 15 March 2019 under the MMR. Where relevant, the TERT calculated technical corrections for over- or underestimates identified in a mandatory category in the Member States' GHG inventories that exceed the threshold of significance. Technical corrections were calculated for the year 2017.

Table A.1.1: Scope of the 2019 annual ESD review

Element	Scope	Further information
Member States	EU geographical coverage of the Member States	
Years	2017	
Gases	CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, SF ₆	NF ₃ is not covered by the ESD
Sectors	All emission source sectors excluding LULUCF	National totals exclude emissions from LULUCF and emissions reported under memo items
Indirect CO ₂ emissions	Included in national total	
Inventory Submission	Submissions received by 15 March 2019	

Annex II: Checks carried out during the 2019 annual ESD review in line with Art.29 and 32 of the Commission Implementing Regulation (EU) No 749/2014

As part of the EU's effort to assist Member States in improving the quality of the GHG inventories, the checks to verify the transparency, consistency, comparability and completeness of the greenhouse gas inventory included:

First step review checks:

1. Assessment whether all emission source categories and gases required under Regulation (EU) No 525/2013 are reported;
2. Assessment whether emissions data time series are consistent;
3. Assessment whether implied emission factors across Member States are comparable taking the IPCC default emission factors for different national circumstances into account;
4. Assessment of the use of 'Not Estimated' notation keys where IPCC tier 1 methodologies exist and where the use of the notation key is not justified in accordance with paragraph 37 of the UNFCCC reporting guidelines on annual greenhouse gas inventories as included in Annex I to Decision 24/CP.19;
5. Analysis of recalculations performed for the inventory submission, in particular if the recalculations are based on methodological changes;
6. Comparison of the verified emissions reported under the Union's Emissions Trading System with the greenhouse gas emissions reported pursuant to Article 7 of Regulation (EU) No 525/2013 with a view of identifying areas where the emission data and trends as submitted by the Member State under review deviate considerably from those of other Member States;
7. Comparison of the results of Eurostat's reference approach with the Member States' reference approach;
8. Comparison of the results of Eurostat's sectoral approach with the Member States' sectoral approach;
9. Assessment whether recommendations from earlier Union or UNFCCC reviews, not implemented by the Member State could lead to a technical correction;
10. Assessment whether there are potential overestimations or underestimations relating to a key category in a Member State's inventory.

Second step review checks:

1. Detailed examination of the inventory estimates including methodologies used by the Member State in the preparation of inventories;
2. Detailed analysis of the Member State's implementation of recommendations related to improving inventory estimates as listed in its most recent UNFCCC annual review report made available to that Member State before the submission under review or in the final review report pursuant to Article 35(2) of this Regulation; where recommendations have not been implemented a detailed analysis of the justification provided by the Member State for not implementing them;
3. Detailed assessment of the time series consistency of the greenhouse gas emissions estimates;
4. Detailed assessment whether the recalculations made by a Member State in the given inventory submission as compared to the previous one are transparently reported and made in accordance with the 2006 IPCC Guidelines for National Greenhouse Gas Inventories;
5. Follow-up on the results of the checks referred to in Article 29 of the Commission Implementing Regulation (EU) No 749/2014 and on any additional information submitted by the Member State under review in response to questions from the technical experts review team and other relevant checks.