

Final Review Report

2017 annual review of national greenhouse gas inventory data

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

Cyprus

30 June 2017

European Environment Agency



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Conclusions from the 2017 annual ESD review

This Final Review Report presents the findings from the 2017 annual review of the GHG emission inventory of Cyprus, pursuant to Article 19(2) of Regulation (EU) No 525/2013, with a view to monitoring Cyprus' achievement of its greenhouse gas emission reduction or limitation target pursuant to Article 3 of Decision No 406/2009/EC (the 'Effort Sharing Decision', ESD) in 2015.

The reviewers carried out checks to verify the transparency, accuracy, consistency, comparability and completeness of the national greenhouse gas inventory for the year 2015 submitted in 2017 by Cyprus pursuant to Article 7(3) of Regulation (EU) No 525/2013.

The review consisted in two steps:

1. The EU inventory team (European Environment Agency (EEA), European Topic Centre on Air Pollution and Climate Change Mitigation (ETC/ACM), 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 2017 annual ESD review.

More information on the Effort Sharing Decision and the procedures for the 2017 annual ESD review is presented in the annexes to this review report.

Step 1 conclusions

The EU inventory team could not fully perform the Step 1 checks because Cyprus provided the inventory on 22 February 2017, which is later than the date set out in Annex XVI of the Commission Implementing Regulation (EU) 749/2014. Therefore Cyprus was subject to the second step of the 2017 annual ESD review.

Step 2 conclusions

1. The reviewers raised 40 issues with Cyprus during the first and the second step of the review 2017 (see Table 1). The TERT provided recommendations for 14 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 underestimates or overestimates exceeding the threshold of significance pursuant to Article 31 of Commission Implementing Regulation (EU) No 749/2014.
3. Cyprus provided four revised estimates. The TERT agreed to all of these revised estimates. Table 2 below summarises the revised estimates and further information is provided at the end of this report.
4. On that basis, the TERT did not deem necessary any technical corrections in the meaning of Article 19(3)(c) of Regulation (EU) No 525/2013 in consultation with Cyprus.
5. The TERT identified non-binding recommendations in order to improve the national inventory data of Cyprus (see Table 4).
6. The TERT considers that it received a response from Cyprus that was sufficient in order to undertake the annual review appropriately.

Table 1: Issues raised with Cyprus during the first and the second step

	Issues raised	Recommendations	Revised estimates ¹	Technical corrections ²
Total	40	14	4	-
Energy	11	4	1	-
IPPU	7	3	-	-
Agriculture	17	5	1	-
Waste	4	2	2	-
Cross-cutting	1	-	-	-

¹ Revised estimates: changes in inventory estimates triggered by the review and provided by the Member State.

² 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
		2015
Total greenhouse gas emissions, including indirect CO ₂ , without land use, land-use change and forestry as reported by Cyprus pursuant to Article 7(3) of Regulation (EU) No 525/2013.	CYP_2017_10032017	8 394.471
Difference between original estimates and revised estimates provided by Cyprus and accepted by the TERT²		
1.A.2.g Other (manufacturing industries and construction), CO ₂	CY-1A2g-2017-0001	3.092
3.D.1 Direct N ₂ O emissions from managed soils, N ₂ O	CY-3D1-2017-0003	79.864
5.A Solid waste disposal, CH ₄	CY-5A-2017-0001	- 6.729
5.D Wastewater treatment and discharge, CH ₄	CY-5D-2017-0002	- 39.848
Total greenhouse gas emissions including any accepted revised estimates provided by Cyprus		8 430.850
CO ₂ emissions from 1.A.3.a Domestic aviation	CYP_2017_10032017	0.903
NF ₃ emissions	CYP_2017_10032017	-

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
		2015
Total greenhouse gas emissions including accepted revised estimates provided by Cyprus	<i>See Table 2 above</i>	8 430.850
Total verified emissions from stationary installations under Directive 2003/87/EC	Extracted by the European Commission from EUTL on 8 March 2017 (as agreed at the Working Group I of the Climate Change Committee on 18 May 2015) ²	4 369.326
CO ₂ emissions from 1.A.3.a Domestic aviation	<i>See Table 2 above</i>	0.903
NF ₃ emissions	<i>See Table 2 above</i>	-
Total ESD emissions		4 060.621

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 Cyprus on the conclusions presented by the TERT

Cyprus agrees with the aggregated GHG emission inventory estimates presented in Table 2.

Revised estimates provided the MS and accepted by TERT

ESD Review Tool ID:	CY-1A2g-2017-0001
ESD Review Tool URL:	https://emrt.eea.europa.eu/2017/CY-1A2g-2017-0001
Member State:	Cyprus
Sector:	1.A.2.g Other (manufacturing industries and construction)
Gases:	CO ₂
Fuel	Liquid fuels
Completed by (SE):	Graham Anderson
Reviewed by (Counterpart):	Julien Vincent
Reviewed by (LR):	Klaus Radunsky
1	
The underlying problem:	1.A.2.g.viii - liquid fuels - CO ₂ IEF 2015 is a low outlier. The TERT noted that the IEF for the year 2015 is very low (50.61 t/TJ) while for other years the IEFs are between 75.3 and 77 t/TJ.
The rationale for the corrected estimate:	Cyprus responded that the IEF was very low due to an incorrect formula that was used in an excel file and sent a revised estimate.
Summarise the methodology used:	The formula was corrected. The 2015 emissions estimate of 6.376594 kt was replaced by 9.4686 kt. The resulting IEF from this revision is 75.15 which is within the range for other years.
References to other workbooks:	

Details of the corrected estimate								
		Original estimate (Gg CO₂eq)						Notes
	Year	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	
	CY-1A2g-2017-0001-OE	2015	6.377					
Was a Revised Estimate received from the MS?		yes						
		Revised Estimate received from MS (Gg CO₂eq)						Notes
	Year	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	
2	CY-1A2g-2017-0001-RE	2015	9.469					
Was the Revised Estimate accepted by the TERT?		yes						
		Technical Correction calculated by TERT (Gg CO₂eq)						Notes
	Year	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	
	CY-1A2g-2017-0001-TC	2015						
Was the Technical Correction accepted by the MS?		-						

ESD Review Tool ID:	CY-3D1-2017-0003
ESD Review Tool URL:	https://emrt.eea.europa.eu/2017/CY-3D1-2017-0003#tab-qa
Member State:	Cyprus
Sector:	3.D Agricultural soils
Gases:	N ₂ O
Fuel	
Completed by (SE):	Katalin Lovas
Reviewed by (Counterpart):	Steen Gyldenkaerne
Reviewed by (LR):	Anke Herold
1	
The underlying problem:	Emissions for category of 3.D.a.2.a Animal manure applied to soils were omitted from the inventory, and the related cells were blank in the CRF Table 3D. Additionally, organic N fertilizers were not considered as a source of indirect N ₂ O emissions from managed soils.
The rationale for the corrected estimate:	Underestimation of direct N ₂ O emissions from Animal manure applied to soils and indirect N ₂ O emissions from Organic N fertilizers
Summarise the methodology used:	Cyprus has provided revised estimates in accordance with the 2006 IPCC Guidelines and corrected CRF Tables for the year 2015.
References to other workbooks:	

Details of the corrected estimate								
		Original estimate (Gg CO ₂ eq)						Notes
	Year	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	
CY-3D1-2017-0003-OE	2015			52.540				
Was a Revised Estimate received from the MS?		yes						
		Revised Estimate received from MS (Gg CO ₂ eq)						Notes
	Year	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	
CY-3D1-2017-0003-RE	2015			132.404				
Was the Revised Estimate accepted by the TERT?		yes						
		Technical Correction calculated by TERT (Gg CO ₂ eq)						Notes
	Year	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	
CY-3D1-2017-0003-TC	2015							
Was the Technical Correction accepted by the MS?		-						
2								

ESD Review Tool ID:	CY-5A-2017-0001
ESD Review Tool URL:	https://emrt.eea.europa.eu/2017/CY-5A-2017-0001
Member State:	Cyprus
Sector:	5.A Solid waste disposal
Gases:	CH ₄
Fuel:	
Completed by (SE):	Hans Oonk
Reviewed by (Counterpart):	Kaat Jaspers
Reviewed by (LR):	Anke Herold
1	<p>The underlying problem:</p> <p>For the sector 5.A and the gas CH₄, the TERT noticed that Cyprus calculates methane emissions from managed landfills, assuming no oxidation in the top-layer. Assuming that Cypriot landfills comply with EU legislation, landfills will be covered with a temporary cover of sand and the workface will be covered by a daily cover. As a result, the default IPCC oxidation factor of 0.1 seems justified. In the paragraph on recalculation, the assumption of 10% oxidation is mentioned as one of the recalculations in the 2017 submission. However, the oxidation factor has not been included in the calculations. The TERT therefore proposes a technical correction.</p> <p>The rationale for the corrected estimate:</p> <p>In the corrected estimate, emissions from managed landfills are calculated, assuming 10% oxidation.</p> <p>Summarise the methodology used:</p> <p>The revised emissions are based on the information as specified in the NIR. Emissions from managed landfills are specified separately and reduced by 10%. The total emissions refer to both emissions from managed and unmanaged landfills.</p> <p>References to other workbooks:</p>

Details of the corrected estimate								
		Original estimate (Gg CO₂eq)						Notes
	Year	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	
CY-5A-2017-0001-OE	2015		465.052					
Was a Revised Estimate received from the MS?		yes						
		Revised Estimate received from MS (Gg CO₂eq)						Notes
	Year	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	
CY-5A-2017-0001-RE	2015		458.324					
Was the Revised Estimate accepted by the TERT?		yes						
		Technical Correction calculated by TERT (Gg CO₂eq)						Notes
	Year	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	
CY-5A-2017-0001-TC	2015							
Was the Technical Correction accepted by the MS?		-						
2								

ESD Review Tool ID:	CY-5D-2017-0002
ESD Review Tool URL:	https://emrt.eea.europa.eu/2017/CY-5D-2017-0002
Member State:	Cyprus
Sector:	5.D Waste water treatment and discharge
Gases:	CH ₄
Fuel:	
Completed by (SE):	Hans Oonk
Reviewed by (Counterpart):	Kaat Jespers
Reviewed by (LR):	Anke Herold
1	<p>The underlying problem: For the category 5.D and the gas methane and the year 2015, the TERT noted that Cyprus calculates emissions from managed waste water treatment plants (WWTP), assuming all WWTP are not well managed and assuming an MCF of 0.3 in line with 2006 IPCC Guidelines. This was based on a recommendation by the UNFCCC ERT where due to a lack of evidence that all WWTP are well managed, this MCF was requested. In response to questions raised during the review, convincing documentation was provided that all WWTP actually are well managed. As a result an MCF of zero should be applied.</p> <p>The rationale for the corrected estimate: In the corrected estimate, emissions from collected waste water are calculated, assuming MCF for collected waste water is 0. I=1.25 (in agreement with IPCC 2006 GL) is set to 1.25 but, since MCF=0, this has no effect on calculations.</p> <p>Summarise the methodology used: The revised emissions are calculated based on information extracted from the Cypriot calculation sheet. For calculation, the 2006 IPCC Guidelines (chapter 6, eq. 6.1 and 6.3) are used.</p> <p>References to other workbooks:</p>

Details of the corrected estimate								
		Original estimate (Gg CO ₂ eq)						Notes
	Year	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	
CY-5D-2017-0002-OE	2015		46.355					
Was a Revised Estimate received from the MS?		yes						
		Revised Estimate received from MS (Gg CO ₂ eq)						Notes
	Year	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	
CY-5D-2017-0002-RE	2015		6.507					
Was the Revised Estimate accepted by the TERT?		yes						
		Technical Correction calculated by TERT (Gg CO ₂ eq)						Notes
	Year	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	
CY-5D-2017-0002-TC	2015							
Was the Technical Correction accepted by the MS?		-						
2								

Recommendations from the TERT, considering revised estimates and technical corrections deemed necessary by the TERT

Table 4: Recommendations from the TERT

EMRT - ID	Key category	Category, gas, year	Conclusion step 2 note	Revised estimate	Technical correction
CY-1-2017-0001	No	1 Energy, CO ₂ , 2015	Cyprus did not report Annex V 'Format for reporting information on consistency of reported emissions with emissions trading scheme (ETS) data pursuant to Article 10'. In response to a question raised during the review, Cyprus explained that Annex V will be submitted together with the final inventory submission in May. The TERT noted that this issue does not directly relate to an over- or underestimate and recommends that Cyprus submits this Annex by 15 January in future years as required under the MMR to allow consideration of this information as part of the ESD review.	No	No
CY-1A2g-2017-0001	No	1.A.2.g Other (manufacturing industries and construction), CO ₂ , 2015	For 1.A.2.g Other (manufacturing industries and construction), CO ₂ , liquid fuels and the year 2015, the TERT noted that the CO ₂ IEF was an outlier and lower compared to other MS. In response to a question raised during the review, Cyprus explained that the IEF was very low due to an incorrect formula that was used in the calculation file. Cyprus provided a revised estimate for CO ₂ emissions from 1.A.2.g Other - liquid fuels for the year 2015 and stated that it will be included in the next submission. The TERT agreed with the revised estimate provided by Cyprus and attached to the annex of the review report. The TERT recommends that Cyprus include the revised estimate in its next submission.	Yes	No
CY-1A3b-2017-0002	No	1.A.3.b Road transportation, N ₂ O, 1990-2015	For category 1.A.3.b Road Transportation and gas N ₂ O for the years 1990-2015, the TERT noted that Cyprus is using a default EF for diesel oil (3.9 t N ₂ O/TJ) which is a high outlier compared to other MS using country-specific EFs. In response to a question raised during the review, Cyprus explained that it does not plan to develop country-specific EFs for N ₂ O from diesel oil that are representative of the diesel oil used for road transport in Cyprus. The 2006 IPCC Guidelines require country-specific EFs for key categories, therefore the TERT believes Cyprus should engage in efforts to collect such EFs. A technical correction would be based on default EFs for diesel oil and would result in no change of emissions. The TERT recommends that Cyprus engages with fuel suppliers to derive country-specific EFs for future submissions.	No	No
CY-1A3b-2017-0003	No	1.A.3.b Road transportation, CH ₄ , N ₂ O, 1990-2015	For category 1.A.3.b Road Transportation and gases CH ₄ , N ₂ O for the years 1990-2015, the TERT noted that Cyprus is using default EFs for gasoline (CH ₄ IEF of gasoline is 25.0 t CH ₄ /TJ and the N ₂ O IEF of gasoline is 8.0 t N ₂ O/TJ) which are high outliers compared other MS using country-specific EFs. In response to a question raised during the review, Cyprus explained that it does not plan to develop country-specific EFs for CH ₄ and N ₂ O from gasoline that are representative of the gasoline used for road transport in Cyprus. The 2006 IPCC Guidelines require country-specific EFs for key categories, therefore the TERT believes Cyprus should engage in efforts to get such EFs. A technical correction would be based	No	No

			on default EFs for gasoline and would result in no change of emissions. The TERT recommends that Cyprus engages with fuel suppliers to derive country-specific EFs for future submissions.		
CY-2F-2017-0001	No	2.F Product uses as substitutes for ozone depleting substances, HFCs, 1990-2015	<p>For category 2.F (including 2.F.1, 2.F.2, 2.F.3 and 2.F.4) and HFCs the TERT noted that Cyprus has applied a methodology which uses the weighted emissions (based on population) from Malta, Greece, Italy and Spain as an approximation to estimate the emissions for Cyprus. It was already found in 2016 that this methodology is not in line with the 2006 IPCC Guidelines and the TERT confirmed this view again. In response to a question raised during the review, Cyprus explained that they have established a system for data collection (inspections, questionnaires and exchange meetings) which will result in empirical data to be included in the next submission.</p> <p>The TERT noted that the issue is most likely above the threshold of significance for technical correction, but the TERT concluded that the approach it would use for a technical correction would be the same as the approach used by Cyprus for its estimates submitted in 2016 and 2017. The TERT strongly recommends that Cyprus makes use of the new data to estimate emissions from 2.F based on national information and include the revised estimates in its next submission. The TERT recommends Cyprus to make efforts to improve the activity data, and use methods presented in the 2006 IPCC Guidelines volume 1, chapter 5 to create a consistent time series.</p>	No	No
CY-2G-2017-0001	No	2.G Other product manufacture and use, SF ₆ , 1990-2015	<p>For category 2.G.1 Electrical Equipment and SF₆ for the years 1990-2015 the TERT noted that the general approach used for emission estimates from 2.G.1 relies on data from Italy, Greece and Spain and uses the weighted emissions based on population data as an approximation. The TERT noted that this methodology is not in line with the 2006 IPCC Guidelines and does also not represent a country-specific method. In the absence of country-specific data, it cannot be determined whether the chosen approach results in an over- or underestimation of emissions and whether an over- or underestimation would be below or above the threshold for significance. The only method available in the absence of country-specific data for the calculation of a technical correction would be the approach chosen by Cyprus and result in the emissions currently reported. Therefore the TERT did not continue with a technical correction in this situation where the methodology is not consistent with 2006 IPCC Guidelines. In response to a question raised during the review, Cyprus confirmed that measures to improve the application of an appropriate methodology will be taken.</p> <p>The TERT recommends that Cyprus carries out appropriate research for SF₆ emissions from electrical equipment. The TERT further recommends Cyprus to provide revised estimates in its next submission.</p>	No	No
CY-2G-2017-0002	No	2.G Other product manufacture and use, N ₂ O, 1990-2015	<p>For category 2.G.3 and gas N₂O for the years 1990-2015 the TERT noted that the general approach used for emission estimates from 2.G.3 relies on data from Greece. The NIR states, that 'The implied emission factor per capita from Greece NIR2013 was used, since the necessary activity data for Cyprus is not available to apply the IPCC methodologies. More specifically, for medical applications it was used 0.0222 kg N₂O/capita and for Propellant for Pressure and Aerosol Products (Aerosol cans) it was used (0.214 kg N₂O/capita)'. The TERT noted that this methodology is not in line with the 2006 IPCC Guidelines and does also not</p>	No	No

			represent a country-specific method. In response to a question raised during the review, Cyprus confirmed that measures to improve the application of an appropriate methodology will be taken. The quantitative impact of such revised method on the emissions from this category is likely to be below the threshold for significance. Nevertheless, the TERT recommends that Cyprus carry out appropriate research for N ₂ O used in medical applications and for N ₂ O in Propellant for Pressure and Aerosol Products in order to be able to apply the 2006 IPCC methodology and the TERT further recommends Cyprus to include revised estimates in its next submission.		
CY-3B-2017-0003	No	3.B Manure management, N ₂ O, 2015	For category 3.B.2.4 Manure Management - Mules and Asses and N ₂ O for the year 2015, the TERT noted that the N ₂ O IEF (1.92 kg N ₂ O/head/yr) is an outlier. In response to a question raised during the review, Cyprus explained that the IEF was a data entry error and will be corrected in the March submission. However, the IEF was not corrected in this submission. The TERT noted that the issue is below the threshold of significance for technical correction (resulting underestimation amounts to 0.2 kt CO ₂ eq). The TERT recommends that Cyprus corrects the IEF for direct N ₂ O emissions in its next submission.	No	No
CY-3B-2017-0008	No	3.B Manure management, N ₂ O, 2015	For 3.B.b N ₂ O Emissions from Manure Management, all animal categories, and the year 2015, the TERT noted discrepancies in the total amounts of N excreted and the sum of N excretion per manure management system. The TERT noted that the overall impact of the errors in the calculations for the total N excretion is below the threshold of significance for a technical correction related to a mandatory category. The TERT strongly recommends that Cyprus thoroughly checks the total amount of the N-excreted by animals; documents the animal masses in the CRF and their rationale in the NIR; checks the allocation of the amounts of N excreted to the manure management systems and implements QC checks for rounding and transcription errors between the calculation sheet and the CRF tables. In addition Cyprus should take into account the fraction of N losses from the manure management systems due to volatilisation (FracGasMS) in accordance with the 2006 IPCC Guidelines.	No	No
CY-3D1-2017-0003	No	3.D.1 Direct N ₂ O emissions from managed soils, N ₂ O, 1990-2015	For category 3.D Agricultural soils, the gas N ₂ O and the year 2015 the TERT noted that there were blank cells in the CRF Table 3.D which would lead to an underestimation of direct and indirect N ₂ O emissions from the category 3.D.a.2.a Animal Manure Applied to Soils. Additionally, organic N fertilizers were not considered as a source of indirect N ₂ O emissions from managed soils. In response to a question raised during the review, Cyprus provided a revised estimate for year 2015 and stated that it will be included in the next submission. The TERT agreed with the revised estimate provided by Cyprus and attached to the annex of the review report. The TERT recommends that Cyprus include the revised estimate in its next submission.	Yes	No
CY-3D1-2017-0004	No	3.D.1 Direct N ₂ O emissions from managed soils, N ₂ O, 1990-2015	For category 3.D.1 Direct N ₂ O emissions from managed soils, N ₂ O and the years 1990-2015, the TERT noted an unresolved issue from the 2016 ESD review (CY-3D1-2016-0006). In the waste sector Cyprus calculated emissions from composting activities (p.159 of the 2016 NIR). However, the TERT noted that the notation key 'NO' was reported for N ₂ O emissions in the sub-category 3.D.1.2.c Agriculture soils "other organic fertilizers applied to soils". The TERT noted	No	No

			that this is a small source included in the 2006 IPCC Guidelines and the impact of the inclusion of the corresponding N ₂ O emissions are expected to be below the threshold of significance (if all compost reported under 5.B in the waste sector was used in the agriculture, the underestimate would amount to 4.1 kt CO ₂ eq). Cyprus replied to the TERT that efforts are ongoing to calculate these emissions. The TERT recommends that Cyprus makes efforts for its next submissions to calculate an emission estimate for the category 3.D.1.2.c Agriculture soils "other organic fertilizers applied to soils" taking into account the compost applied to soils.		
CY-3D2-2017-0001	No	3.D.2 Indirect N ₂ O emissions from managed soils, N ₂ O, 2005-2015	For category 3.D.2 Indirect N ₂ O emissions from Managed Soils for the year 2015 the TERT noted that Cyprus indicated in CRF Table 3.D a fraction of nitrogen leached and runoff (FracLEACH) which is 0.3. The TERT noted that Table 11.3 of the 2006 IPCC Guidelines indicates that FracLEACH equals 0.3 under specific soil conditions relating to water content, and otherwise is zero. This was already an issue in the 2016 ESD Review (CY-3D2-2016-0002). In response to a question raised during the review, Cyprus explained that it used the FracLEACH of zero in its calculation as recommended by the ESD review in 2016. Thus, only the additional information in the CRF table has to be corrected in line with the calculation. The TERT recommends that Cyprus corrects the fraction of nitrogen leached and runoff in CRF table 3D in its next submission.	No	No
CY-5A-2017-0001	No	5.A Solid waste disposal, CH ₄ , 2015	For the category 5.A and the gas methane and the year 2015, the TERT noted that Cyprus calculates emissions from managed landfills assuming zero oxidation, where an oxidation factor of 10 % seems applicable according to the 2006 IPCC Guidelines. In response to a question raised during the review, Cyprus provided a revised estimate for the year 2015 that used an oxidation factor of 10 % and stated that the revised estimate will be included in the next submission. The TERT agreed with the revised estimate provided by Cyprus attached to the annex of the review report and noted that the change is above the threshold for significance. The TERT recommends that Cyprus includes the revised estimate in its next submission.	Yes	No
CY-5D-2017-0002	No	5.D Wastewater treatment and discharge, CH ₄ , 2015	For the category 5.D and the gas methane and the year 2015, the TERT noted that Cyprus calculates emissions from managed waste water treatment plants (WWTP), assuming all WWTP are not well managed and assuming an MCF of 0.3 in line with 2006 IPCC Guidelines. This was based on a recommendation by the UNFCCC ERT where due to a lack of evidence that all WWTP are well managed, this MCF was requested. In response to questions raised during the review, convincing documentation was provided that all WWTP actually are well managed. As a result an MCF of zero should be applied. Cyprus provided a revised estimate for the year 2015 and stated that it will be included in the next submission. The TERT agreed with the revised estimate provided by Cyprus which is above the threshold of significance and attached to the annex of the review report. The TERT recommends that Cyprus include the revised estimate in its next submission.	Yes	No

Annex I: Legal background and procedures of the 2017 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 2017 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 2015 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 2017 annual ESD review of national greenhouse gas (GHG) inventory data was carried out for the compliance year 2015 pursuant to Article 19 of the MMR. The EEA review secretariat (consisting of Melanie Sporer, John van Aardenne and Emma Salisbury) coordinated the 2017 annual ESD review as foreseen in Article 28 of the Commission Implementing Regulation (EU) No 749/2014.

The scope of the 2017 annual ESD review is presented in Table A.1.1. The checks carried out during the 2017 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 (ETC/ACM, JRC, Eurostat). 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 2017 annual ESD review was performed by a Technical Expert Review Team (TERT) under service contract 34.0201/2016/743206/SER/CLIMA.C2 of the Directorate General for Climate Action of the European Commission. The TERT consisted of the following experts:

- Lead Reviewers: Anke Herold, Suvi Monni, Klaus Radunsky
- Energy: Julien Vincent, Ralph Harthan, Graham Anderson
- IPPU F-gases: Barbara Gschrey, Domenico Gaudioso
- IPPU excluding F-gases: Daniela Romano, Eva Krtkova
- Agriculture: Steen Gyldenkaerne, Rocio Condor, Chris Dore, Katalin Lovas
- Waste: Hans Oonk, Kaat Jespers, Juraj Farkas
- Quality controller: Justin Goodwin
- Co-ordinator: Bernd Guegle

The lead reviewers and sector review experts 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 2017 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 2015.

Table A.1.1: Scope of the 2017 annual ESD review

Element	Scope	Further information
Member States	EU geographical coverage of the Member States	
Years	2015	
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, 2017	

Annex II: Checks carried out during the 2017 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, accuracy, 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.