

Final Review Report

2017 annual review of national greenhouse gas inventory data

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

Italy

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 Italy, pursuant to Article 19(2) of Regulation (EU) No 525/2013, with a view to monitoring Italy's 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 Italy 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 identified, through the checks performed in Step 1, one significant issue. Therefore Italy was subject to a second step of the 2017 annual ESD review. Only significant issues were subject to the second step review checks.

Step 2 conclusions

1. The TERT raised 42 issues with Italy during the first and the second step of the review 2017 (see Table 1). The TERT provided a recommendation for one of these issues. Other issues raised during the annual review were clarified and are considered resolved.
2. The TERT identified a case where inventory data were prepared in a manner which is inconsistent with UNFCCC guidance documentation or Union rules. In particular, the TERT identified an overestimate exceeding the threshold of significance pursuant to Article 31 of Commission Implementing Regulation (EU) No 749/2014.
3. Italy provided one revised estimate. The TERT did not agree with the revised estimate.
4. Therefore, the TERT deemed necessary one technical correction in the meaning of Article 19(3)(c) of Regulation (EU) No 525/2013 and calculated such technical correction in consultation with Italy. Table 2 below summarises the technical correction and further information is provided at the end of this review report. In its response to the draft technical correction, Italy stated that it agreed with the technical correction.
5. The TERT identified non-binding recommendations in order to improve the national inventory data of Italy (see Table 4).
6. The TERT considers that it received a response from Italy that was sufficient in order to undertake the annual review appropriately.

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

	Issues raised	Recommendations	Revised estimates ¹	Technical corrections ²
Total	42	1	-	1
Energy	14	-	-	-
IPPU	12	-	-	-
Agriculture	10	-	-	-
Waste	5	1	-	1
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 Italy pursuant to Article 7(3) of Regulation (EU) No 525/2013.	ITA_2017_14032017	433 024.539
Difference between original estimate and technical correction deemed necessary by the TERT²		
5.A Solid waste disposal, CH ₄	IT-5A-2017-0001	-1 448.102
Total greenhouse gas emissions including technical correction deemed necessary by the TERT		431 576.437
CO ₂ emissions from 1.A.3.a Domestic aviation	ITA_2017_14032017	2 052.124
NF ₃ emissions	ITA_2017_14032017	28.417

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 technical correction deemed necessary by the TERT	<i>See Table 2 above</i>	431 576.437
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	156 213.214
CO ₂ emissions from 1.A.3.a Domestic aviation	<i>See Table 2 above</i>	2 052.124
NF ₃ emissions	<i>See Table 2 above</i>	28.417
Total ESD emissions		273 282.682

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 Italy on the conclusions presented by the TERT

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

Italy appreciates the discussion on the landfill issue in the perspective of improving the estimates of emissions but, as mentioned during the review, cannot share the technical correction applied by the TERT that seems not to be appropriate. Applying the same k values (default for dry zone) to the whole time series reduces the accuracy of emission estimate as compared the actual ones, because it does not consider the changes in waste management characteristics during the period and does not properly reflect either the national territory or the landfills characteristics. However, as it is not able to provide an updated estimate yet, we accept the technical correction until the next submission of data.

Technical corrections deemed necessary by the TERT

1	ESD Review Tool ID:	IT-5A-2017-0001
	ESD Review Tool URL:	https://emrt.eea.europa.eu/2017/IT-5A-2017-0001
	Member State:	Italy
	Sector:	5A
	Gases:	CH ₄
	Fuel	
	Completed by (SE):	Hans Oonk
	Reviewed by (Counterpart):	Kaat Jespers
	Reviewed by (LR):	Suvi Monni
	The underlying problem:	Italy calculates emissions from solid waste disposal, assuming k-values that are insufficiently justified. k-values are from the Andreottola-Cossu model from 1998, but are based on R&D by Bob Ham in USA in the late 70s. The TERT notes that awareness on methane generation in landfills, started in the early 80s. For design of the landfill gas projects, a first generation of models was developed by pioneers like Bob Ham and Prof Cossu, but based on lab-experiments. On full scale however, methane generation proved to be significantly inhibited. Therefore second and third generation of models were developed, in which full case experiences were taken into account. The IPCC-model can be considered as a third generation model, and has to be considered more reliable than the first generation models. In a reaction to this observation, Italy provided a revised estimate, based on the use of default values of k for wet temperate regions. The amount of methane flared and utilised in this calculation differed from the amounts specified in the CRF tables. The TERT thinks that most waste in Italy is landfilled under dry, temperate conditions and TERT decided to prepare a technical correction, based on the application of default k-values for dry, temperate regions and the amount of methane flared and utilised as specified in the CRF tables (15 March 2017 submission).
	The rationale for the corrected estimate:	See above
	Summarise the methodology used:	Emissions are calculated using the Italian model, as provided during the review week. 2006 IPCC Guidelines default k-values for dry, temperate regions are used (see table 3.4 in the 2006 IPCC Guidelines). t _{1/2} used for rapidly degradable waste is 12 years, for moderately degradable waste 14 years and for slowly degradable waste 26 years, which is the average value for paper and wood.
	References to other workbooks:	

2	Details of the corrected estimate							
		Original estimate (Gg CO₂eq)						Notes
		Year	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	
	IT-5A-2017-0001-OE	2015		14 112.737				
	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	
	IT-5A-2017-0001-RE	2015		14 165.620				
	Was the Revised Estimate accepted by the TERT?		no					
		Technical Correction calculated by TERT (Gg CO₂eq)						Notes
		Year	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	
	IT-5A-2017-0001-TC	2015		12 664.635				
	Was the Technical Correction accepted by the MS?		yes					

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
IT-5A-2017-0001	Yes	5.A Solid waste disposal, CH ₄ , 1990-2015	For category 5.A and gas CH ₄ for the year 2015, the TERT noted that Italy calculates methane emissions from solid waste disposal using country-specific model parameters that were insufficiently justified. In response to questions raised during the review Italy provided a revised estimate. The TERT disagreed with the revised estimate, because Italy applied IPCC default values for wet, temperate climates, while large part of Italian waste is landfilled under dry, temperate conditions; and also because the amount of methane flared and recovered in the revised estimate was different from the amount reported in the CRF tables. The TERT decided to calculate a technical correction for the year 2015. Italy noted that it does not fully agree with the assumptions made in the technical correction but that it can accept the technical correction, because it is not yet able to provide a new estimate. The estimates demonstrate that the issue is above the threshold of significance. The TERT recommends that Italy include a revised estimate in its next submission.	Yes	Yes

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 Guegele

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.