

# Final Review Report

## 2017 annual review of national greenhouse gas inventory data

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

### Spain

30 June 2017

European Environment Agency



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## Contents

Conclusions from the 2017 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 Spain on the conclusions presented by the TERT .....	7
Technical corrections deemed necessary by the TERT.....	8
Recommendations from the TERT, considering revised estimates and technical corrections deemed necessary by the TERT .....	9
Annex I: Legal background and procedures of the 2017 annual ESD review .....	11
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 .....	13

## List of tables

Table 1: Issues raised with Spain 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 .....	9

## 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 Spain, pursuant to Article 19(2) of Regulation (EU) No 525/2013, with a view to monitoring Spain'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 Spain 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, four significant issues. Therefore Spain 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 reviewers raised 51 issues with Spain during the first and the second step of the review 2017 (see Table 1). The TERT provided recommendations for two 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 an underestimate exceeding the threshold of significance pursuant to Article 31 of Commission Implementing Regulation (EU) No 749/2014.
3. The TERT therefore 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 Spain. 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, Spain stated that it agreed with the technical correction.
4. The TERT identified non-binding recommendations in order to improve the national inventory data of Spain (see Table 4).
5. The TERT considers that it received a response from Spain that was sufficient in order to undertake the annual review appropriately.

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

	Issues raised	Recommendations	Revised estimates <sup>1</sup>	Technical corrections <sup>2</sup>
<b>Total</b>	<b>51</b>	<b>2</b>	<b>-</b>	<b>1</b>
Energy	13	-	-	-
IPPU	12	1	-	1
Agriculture	21	-	-	-
Waste	5	1	-	-
Cross-cutting	-	-	-	-

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

<sup>2</sup> 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 <sub>2</sub> equivalent) <sup>1</sup>
		2015
Total greenhouse gas emissions, including indirect CO <sub>2</sub> , without land use, land-use change and forestry as reported by Spain pursuant to Article 7(3) of Regulation (EU) No 525/2013.	ESP_2016_14032017	335 661.517
<b>Difference between original estimate and technical correction deemed necessary by the TERT<sup>2</sup></b>		
2.F.1 Refrigeration and air conditioning, HFCs	ES-2F1-2017-0002	265.561
Total greenhouse gas emissions including technical correction deemed necessary by the TERT		335 927.078
CO <sub>2</sub> emissions from 1.A.3.a Domestic aviation	ESP_2016_14032017	2 503.851
NF <sub>3</sub> emissions	ESP_2016_14032017	-

<sup>1</sup> 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.

<sup>2</sup> 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 <sub>2</sub> equivalent) <sup>1</sup>
		2015
Total greenhouse gas emissions including technical correction deemed necessary by the TERT	<i>See Table 2 above</i>	335 927.078
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) <sup>2</sup>	137 270.031
CO <sub>2</sub> emissions from 1.A.3.a Domestic aviation	<i>See Table 2 above</i>	2 503.851
NF <sub>3</sub> emissions	<i>See Table 2 above</i>	-
<b>Total ESD emissions</b>		<b>196 153.196</b>

<sup>1</sup> 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.

<sup>2</sup> 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 Spain on the conclusions presented by the TERT

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

## Technical corrections deemed necessary by the TERT

1	ESD Review Tool ID:	ES-2F1-2017-0002
	ESD Review Tool URL:	<a href="https://emrt.eea.europa.eu/2017/ES-2F1-2017-0002#tab-ga">https://emrt.eea.europa.eu/2017/ES-2F1-2017-0002#tab-ga</a>
	Member State:	Spain
	Sector:	2F1 Refrigeration and air conditioning
	Gases:	HFCs
	Fuel	
	Completed by (SE):	Domenico Gaudio
	Reviewed by (Counterpart):	Barbara Gschrey
	Reviewed by (LR):	Klaus Radunsky
	The underlying problem:	In order to estimate HFC emissions from refrigeration and air conditioning, Spain adopted a mass-flow approach, which uses as activity data the amount of refrigerant charge consumed every year. In order to take into account the amount of chemicals used in the initial charge, the figures available for the chemicals consumed in 2015 were already increased by 0.6 %. The TERT considered that this approach does not take into account the amount of substance contained in imported prefilled equipment (which may expected to be particularly relevant for air conditioning systems).
The rationale for the corrected estimate:	During the review, Spain explained that, in order to take into account the emissions from any new equipment that is not refilled, the annual consumption of chemicals has been increased by 0.6 %. The ERT considered that this approach is acceptable for systems which are manufactured in Spain, but is not able to consider any leakages from equipment manufactured elsewhere and imported by Spain (as it may be the case for refrigerators and air conditioners).	
Summarise the methodology used:	The TERT considered that, in the absence of specific information for Spain, the overall amount of fluorinated chemicals contained in imported prefilled products can be reasonably estimated on the basis of EU average data provided by the EEA report "Fluorinated greenhouse gases 2015". According to this report, in 2015 imports of F-gases in products and equipment were 6.59 % of the total charge of HFCs. This correction was only applied to national sales data for HFC-32, HFC-125 and HFC-134a, which together represented 95 % of F-gases contained in imported systems.	
References to other workbooks:		

2	<b>Details of the corrected estimate</b>								
			<b>Original estimate (Gg CO<sub>2</sub>eq)</b>						<b>Notes</b>
		Year	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	
	ES-2F1-2017-0002-OE	2015				5 741.280			Commercial refriger., stock emissions
	<b>Was a Revised Estimate received from the MS?</b>		<b>no</b>						
			<b>Revised Estimate received from MS (Gg CO<sub>2</sub>eq)</b>						<b>Notes</b>
		Year	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	
	ES-2F1-2017-0002-RE	2015							
	<b>Was the Revised Estimate accepted by the TERT?</b>		<b>-</b>						
			<b>Technical Correction calculated by TERT (Gg CO<sub>2</sub>eq)</b>						<b>Notes</b>
	Year	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>		
ES-2F1-2017-0002-TC	2015				6 006.841				
<b>Was the Technical Correction accepted by the MS?</b>		<b>yes</b>							

## 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
ES-2F1-2017-0002	No	2.F.1 Refrigeration and air conditioning, HFCs, 2015	<p>For category 2.F.1 HFC emissions from refrigeration and air conditioning, the TERT observed a strong decrease in emissions in 2015. In response to questions raised by the TERT Spain acknowledged that the Spanish emission estimates do not take fully into account the gases contained in new imported prefilled refrigeration and air conditioning equipment. In consultation with Spain the TERT considered that the overall amount of fluorinated chemicals contained in imported prefilled products can be reasonably estimated on the basis of EU average data provided by the EEA report “Fluorinated greenhouse gases 2015”. According to this report, in 2015 imports of F-gases in products and equipment were 6.59 % of the total charge of HFCs. This correction was only applied to national sales data for HFC-32, HFC-125 and HFC-134a, which together represented 95 % of F-gases contained in imported systems.</p> <p>The estimates demonstrate that the issue is above the threshold of significance. The TERT recommends that Spain include a revised estimate in its next submission, and that Spain collect data on the country-specific situation regarding imports of pre-charged equipment.</p>	No	Yes
ES-5D-2017-0003	Yes	5.D Wastewater treatment and discharge, CH <sub>4</sub> , N <sub>2</sub> O, 1990-2014	<p>For category 5.D.2 and CH<sub>4</sub> for years 1990-2015, the TERT noted that Spain substantially reduced the MCF for treatment of part of the industrial waste water without robust justification. In response to a question raised during the review, Spain explained that its new estimates with reduced MCF assume the implementation of industrial waste water treatment, following the council directive 96/61/EC on integrated pollution prevention and control. The underlying assumptions are that prior to 1996 no industrial waste water was treated and all waste water was directly discharged in open water, resulting in a MCF of 0.1; from 1996 onwards all waste water has been treated and a MCF of 0.075 has been chosen. Additional assumptions are that since 2007 the quality of waste water treatment has been further improved and the MCF has been further reduced to 0.05 for the period 2007 - 2015.</p> <p>The TERT appreciates the efforts Spain is making to develop country specific methods and to use expert judgement. However, the TERT are concerned that, as the change in emissions is significant, the assumptions need further transparent substantiation (evidence from field testing and consultation with industry) to be used for country specific methods. It is the view of the TERT that it is unlikely that waste water treatment was completely absent prior to 1996. It is also unlikely that MCF of individual waste water treatment plants decreases incrementally over time. MCFs of individual plants might also increase due to increased loading or insufficient maintenance. Therefore the TERT has the view, that the reduction in MCF should be underpinned by a substantiation of the development of implementation and quality of industrial waste water treatment in time based on a field study, similar to analysis undertaken for other country specific parameter in the inventory.</p>	No	No

			<p>When such a study is not possible, an alternative for Spain might be to assume more conservative assumptions on MCF in time (i.e. a less steep decrease in MCF).</p> <p>The TERT feels that it is more likely that the MCF in 1990 is overestimated, than that the MCF in 2015 is underestimated and that the current calculations are conservative for 2015. Since the focus of this review is the 2015 inventory, the TERT decided not to make a technical correction. The TERT thus recommends Spain to develop and present additional justification for its assumptions on the change of MCF or assume a more conservative assumption on MCF in time (i.e. a less steep decrease in MCF).</p>		
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## 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 <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, HFCs, PFCs, SF <sub>6</sub>	NF <sub>3</sub> 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 <sub>2</sub> 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.