

Final report of the 2012 technical
review of the greenhouse gas emission
inventory of Spain
to support the determination of annual emission
allocations under Decision 406/2009/EC

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Introduction

Pursuant to Article 3.2 of Decision 406/2009/EC⁽¹⁾ (the 'Effort Sharing Decision' – ESD), the European Commission shall determine the annual emission allocations (maximum allowed greenhouse gas emissions) of Member States for the period from 2013 to 2020 in tonnes of carbon dioxide equivalent (CO₂ eq.), using reviewed and verified emission data.

Complete sets of greenhouse gas (GHG) emission estimates for the reference years (2005, 2008, 2009 and 2010) were submitted by each Member State by the 15th of May, 2012 as part of the 2012 national inventory submission under Decision 280/2004/EC (the 'Monitoring Mechanism Decision' – MMD). These estimates must have been reviewed to allow the determination in 2012 of the annual emission allocations for the period from 2013 to 2020.

The 'Guidelines for the 2012 technical review of greenhouse gas emission inventories to support the determination of Member States' annual emission allocations under Decision 406/2009/EC' were endorsed by the Climate Change Committee on 19 May 2011 and published as a European Commission Staff Working Document on 26 April 2012⁽²⁾. The 2012 greenhouse gas emission inventory of Spain was reviewed in accordance with these guidelines.

This report presents the findings of the 2012 technical review of the greenhouse gas emission inventory of Spain to support the determination of annual emission allocations under Decision 406/2009/EC.

Review Objectives

The purpose of the technical review of Member States' GHG inventories is to support the determination of the annual emission allocations by:

- a) ensuring that the European Commission has accurate, reliable and verified information on annual GHG emissions for the years 2005, 2008, 2009 and 2010 to determine the annual emission allocations under Decision 280/2004/EC;
- b) providing the European Commission and its Member States with a consistent, transparent, thorough and comprehensive technical assessment of GHG emissions, with a focus on data for the years 2005, 2008, 2009 and 2010 reported in 2012;
- c) examining, in a facilitative and open manner, the reported inventory information for consistency with the 'Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories', with the 2000 'Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories', and with the requirements of Decision 280/2004/EC (the 'Greenhouse Gas Monitoring Mechanism' Decision)⁽³⁾;

⁽¹⁾ Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020. OJ L 140, 5.06.2009, p. 136.

⁽²⁾ Commission Staff Working Document of 26 April 2012: Guidelines for the 2012 technical review of greenhouse gas emission inventories to support the determination of Member States' annual emission allocations under Decision 406/2009/EC. SWD(2012) 107 final.

⁽³⁾ Decision No 280/2004/EC of the European Parliament and of the Council of 11 February 2004 concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto protocol. OJ L 140, 5.06.2009, p. 136.

- d) assisting Member States in improving the quality of their GHG inventories.

Review approach and scope

The technical review of the 2012 GHG inventory estimates of Spain for the years 2005, 2008, 2009 and 2010 was performed by a Technical Expert Review Team (TERT) under service contract 2011/S 234-378130 to the Directorate General for Climate Action of the European Commission. The review was conducted by the following experts: Kristien Aernouts & Tomas Gustafson for Stationary combustion (CRF categories 1.A.1, 1.A.2, 1.A.4, 1.A.5) + Reference approach; Maria Liden & Tinus Pulles for CRF categories 1.A.3 Transport + 1.C International bunkers; Ralph Harthan & John Watterson for CRF category 1.B Fugitive; Anke Herold & IIs Moorkens for CRF categories 2.A Mineral products + 2.B Chemical industry + CRF sector 3 Solvents; Kristina Saarinen & Dusan Vacha for CRF categories 2.C Metal production + 2.D Other production + 2.G Other; Maria Jose Lopez & Karin Kindbom for CRF categories 2.E Production of Halocarbons and SF₆ + 2.F Consumption of Halocarbons and SF₆; Michael Anderl & Steen Gyldenkaerne for CRF categories 4.A Enteric fermentation + 4.B Manure management; Sorin Deaconu & Etienne Mathias for CRF categories 4.C Rice cultivation + 4.D Agricultural soils, 4.E Prescribed burning of savannas, 4.F Field burning of agricultural residues; Juraj Farkas & Celine Gueguen for CRF sector 6 Waste. Ole-Kenneth Nielsen, Suvi Monni, Klaus Radunsky and Tatiana Tugui acted as lead reviewers. The review was coordinated by Bernd Gugele and Justin Goodwin. The TERT acknowledges the support of the EEA review secretariat Martin Adams, Francois Dejean and Melanie Sporer.

This technical review was performed on the basis of GHG emission data and the national inventory report (NIR) officially reported by Member States by the 15th of April, 2012 under the MMD. Resubmissions reported by Member States were taken into account until the 15th of May, consistent with the reporting practice for resubmissions under Decision 280/2004/EC. Emissions from international transport and land use, land-use change and forestry (LULUCF) were not reviewed. The review was performed with a focus on data for the years 2005, 2008, 2009 and 2010, reported in 2012.

The technical review process for GHG inventories comprised three stages, each of which considered different aspects of the inventories in such a way that the purposes described above were achieved by the end of the process. The three stages were:

- Stage 1, completed by 15 April 2012 – initial completeness checks of each Member State GHG inventory (submitted by 15 January and by 15 March);
- Stage 2, completed by 15 April 2012 – initial consistency and comparability checks of each Member State GHG inventory (submitted by 15 January and by 15 March);
- Stage 3, to be completed by the end of August 2012 – detailed *technical review* of each Member State GHG inventory (submitted by 15 May).

The detailed timeline of the review, including a summary of the correspondence with Spain, is presented in Annex 4.

ESD 2012 technical review conclusions

Table 1. Main conclusions from the TERT

Findings
1. The TERT considers that the GHG emission inventory estimates of Spain for the years 2005, 2008, 2009 and 2010 submitted in 2012 under the MMD included emission overestimates .
2. The TERT identified inconsistency issues between the reported GHG emission inventory estimates and verified emission data under the EU ETS (see Table 3).
3. During the course of the technical review, the TERT received revised GHG emission inventory estimates from Spain in response to its initial findings (see Table 2).
4. The TERT considers that the aggregated revised GHG emission inventory estimates from Spain for the years 2005, 2008, 2009 and 2010 still include emission overestimates .
5. The TERT therefore suggests that it is necessary to implement technical corrections to the GHG emission inventory estimates and to amend the reported GHG total (see Table 2).
6. As stated beneath Table 1, Spain does not accept the aggregated GHG emission inventory estimates presented in Table 2 including any revised estimate received from Spain and accepted by the TERT, and technical corrections as proposed by the TERT.
7. The TERT identified non-binding recommendations for improvements of Spain's GHG inventory (see Table 3 in Annex 1).
8. The TERT considers that it received a response from Spain that was sufficient in order to undertake the review appropriately.
9. The TERT recommends that Spain adapts the national inventory system so that the Spanish inventory team has full access to all EU ETS data (including background data).

Statement from Spain on the conclusions of the TERT

Spain agrees with the general conclusions of the TERT but it does not accept the aggregated GHG emission inventory estimates presented in Table 2 because Spain does not accept the technical correction for the category 1.A.2.b Non-ferrous metals, proposed by TERT.

Table 2. Summary of national totals, including any revised estimates or technical corrections identified during the review

Data / Category	Reference	Status of GHG emission revision or correction	2005 Gg CO ₂ eq.	2008 Gg CO ₂ eq.	2009 Gg CO ₂ eq.	2010 Gg CO ₂ eq.
Total GHG emissions as reported in the 2012 submission under the MMD	15 March 2012, ESP-2012-v1.4		435 428.417	403 818.576	366 266.171	355 897.710
Revised estimates provided by Spain⁽⁴⁾						
1.A.2.a Iron and steel, 2.C.2 Ferroalloys production, CO ₂	26 July 2012 Spain reply to technical correction 1A2a.xls	Accepted by TERT	-552.677	-601.267	-227.917	-527.854
6.B.2 Domestic and commercial waste water, CH ₄	26 July 2012 Spain reply to technical correction to 6B2 domestic-commercial waste water.xls	Accepted by TERT	-1 388.375	-1 557.227	-1 606.624	-1 638.904
Technical correction proposed by the TERT ⁽⁵⁾						
1.A.2.b Non-ferrous metals, Liquid fuels, CO ₂ CH ₄ N ₂ O	See technical correction 1A2b sheet, ES-1A1, 1A2, 1A4, 1A5-8	Not accepted by MS	-1 569.412	-1 006.305	-959.313	-1 030.312
Total GHG emissions including any accepted revised estimate received from Spain and/or technical correction as			431 917.953	400 653.777	363 472.317	352 700.640

⁴ Difference: revised estimates – original estimates. A positive difference indicates an increase compared to reported emissions. A negative difference indicates a decrease compared to reported emissions. For more information on revised estimates, see Annex 1.

⁵ Difference: technical correction – original estimates. A positive difference indicates an increase compared to reported emissions. A negative number indicates a decrease compared to reported emissions. For more information on technical corrections, see Annex 2

proposed by the TERT						
CO₂ emissions from 1.A.3.a Civil aviation	15 March 2012, ESP-2012-v1.4		4 144.665	4 159.348	3 628.766	3 513.287

Note: National totals exclude emissions from LULUCF and emissions reported under memo items (e.g. international aviation and maritime transport).

Annex 1 – Recommendations, revised estimates and technical corrections

Table 3. Recommendations of the TERT

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁶⁾	Technical correction ⁽⁷⁾
Yes	1.A.1.b. Petroleum refining CO ₂ /Liquid 2005–2010	There is a large variation in the CO ₂ EF for refinery gas in Spain which is not explained properly in the NIR. Spain provided descriptive information during the review.	The TERT recommends that Spain reports the CO ₂ EF for refinery gas more transparently in the NIR and describes the reasons for the large variations, including information on how the CO ₂ EFs are derived.	No	No
Yes	1.A. 2. B Non-Ferrous Metals Liquid 2005–2010	Please see technical correction reference ES-1.A.1., 1.A.2., 1.A.4., 1.A.5-8. in Annex II.	The TERT recommends that the inventory is revised to address the issues raised in the technical correction. Furthermore, the TERT recommends that time series consistency is ensured by implementing the revision for all relevant years of the time series.	No	Yes
No	1.A.3.e. Other transportation All gases 2007–2010	Emissions from 1.A.3.e. other transportation are identical for the years 2007–2010. During the review Spain responded that activity data was maintained constant for the years 2007–2010 because the original source from where the information had been taken has not been available anymore after 2007 (latest	The TERT recommends that Spain continues with efforts to collect activity data for pipeline compressors for 2007 and later years and produces a consistent time series covering all years.	No	No

⁶ The GHG emission estimate for this category was revised by Spain during the technical review.

⁷ The GHG emission estimate for this category is subject to a technical correction proposal by the TERT.

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁶⁾	Technical correction ⁽⁷⁾
		available year).			
Yes	2.A.1. Cement production CO ₂ All years	In response to a question concerning the CO ₂ IEF trend from cement production raised by the TERT during the technical review, Spain confirmed that the background information on CaO and MgO content and cement kiln dust factors at plant level is not yet available to the emission inventory unit (Directorate-General for Environmental Quality and Assessment) despite of previous ERT recommendations to collect these data for this key category. Action is underway to gather the referred background information from the competent regional governmental authorities.	The TERT recommends that Spain collects plant-specific information on the CaO and MgO content and the cement kiln dust (CKD) factor in order to report a time series of emissions from cement production that is consistent with EU ETS data.	No	No
No	2.B. Chemical industry CO ₂ , CH ₄ , N ₂ O All years	The previous UNFCCC review recommended finding alternative ways to report AD and IEF for confidential data in the industrial processes sector. Spain answered to the TERT that action has been taken regarding the concerned companies to get the permission to disclose some of the confidential data.	The TERT recommends that Spain continues efforts in order to obtain the permission to disclose some of the confidential data. Where this permission cannot be obtained the TERT recommends that Spain reports data either at a more aggregate level or uses indices for production data (instead of production data in tonnes) because this would improve on the transparency of the reporting.	No	No
No	2.B.5. Other (chemical industry) CO ₂ , CH ₄ All years	CH ₄ emissions are reported in the CRF under 2.B.5. for carbon black, ethylene and styrene, but there is no methodological description. In response to a question raised by the TERT during the technical review, Spain indicated that it reported CH ₄ emissions for these activities under 2.B.5. when it had found information on emission factors in either the	The TERT recommends that Spain completes the estimation of CO ₂ emissions from the chemical sector, in particular in the light of the inclusion of these installations in the EU ETS from 2013 onwards. For the initial allocation under the ETS, verified emissions from the installations in the chemical industry were already collected and reported to the competent authorities.	No	No

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁶⁾	Technical correction ⁽⁷⁾
		'Revised 1996 IPCC Guidelines' or the 2007 EMEP/CORINAIR Guidebook. Spain did not estimate CO ₂ emissions for these activities since it did not find associated EFs in the IPCC Guidelines (1996 and 2000). Methodological descriptions for CO ₂ emissions are available in the 2006 IPCC Guidelines. For example, for 2010 there seems to be a discrepancy of about 400 kt CO ₂ reported as natural gas feedstock use in Table 1.A(d) and the emissions reported under 2.B.5. in the industrial processes sector.	This data could be used.		
Yes	2.C.1. Iron and steel production CO ₂ 2007	The ratio of CO ₂ emissions reported in the CRF and ETS emissions for the years 2007 and 2008 indicates that the emissions reported in the GHG inventory for these years could be underestimated. Spain did not provide any future clarification to this issue during the technical review.	The TERT recommends that Spain verifies the data in its GHG inventory with data obtained from the EU ETS.	No	No
Yes	2.C.1. Iron and steel production CO ₂ All years	Currently the Spanish emission inventory team has no access to all ETS data.	The TERT recommends that Spain adapts the national inventory system so that the Spanish inventory team has full access to all EU ETS data (including background data). The recommendation is general and valid for all inventory categories which include sources covered by the EU ETS.	No	No
No	2.C.2. Ferroalloys production CO ₂ All years	Spain reports CO ₂ emissions from ferroalloys production based on the information about production and default/country-specific EFs. CO ₂ emissions from ferroalloys production come from reducing agents (fuels), which are normally reported under category	The TERT recommends that Spain includes the revised estimates in future inventory submissions. Furthermore, the TERT recommends that time series consistency is ensured by implementing the revision for all relevant years of the time series.	Yes	No

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁶⁾	Technical correction ⁽⁷⁾
		<p>1.A.2.a. If the amount of reducing agents is not subtracted from the amount reported under the 1.A.2.a category, this amount of carbon is double-counted. As Spain was not able to provide an explanation on the approach followed to avoid double-counting of emissions in the 1.A.2.a. and 2.C.2. category the TERT concluded that CO₂ emissions from ferroalloys production are double-counted. All carbon/CO₂ emissions reported from ferroalloys production (2.C.2. category) originate from reducing agents (fuels - coke, coal), which are reported in the 1.A.2.a. category. To avoid double-counting, the TERT recommended Spain to subtract this amount of carbon/CO₂ emissions from the 1.A.2.a. category. In response to the draft review report Spain accepted the TERT's proposal and provided revised estimates based on updated information received from ferroalloys production plants concerning their consumption of fossil fuels as reducing agents. The revised estimates were accepted by the TERT.</p>			
Yes	2.F(a).1. Refrigeration and air conditioning equipment HFC-32 2005–2010	<p>Spain has not reported any emissions of HFC-32, which is present in some refrigerant mixes on the market. During the review Spain replied that at national level there is a norm (Real Decreto 138/2011) that frames and regulates the safety conditions of refrigerating equipment, which has been updated with additional refrigerant mixes, some of which contain HFC-32.</p>	<p>The TERT recommends that Spain pursues this research and includes all refrigerant mixes used in Spain in future submissions, in order not to underestimate the emissions from this source.</p>	No	No

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁶⁾	Technical correction ⁽⁷⁾
		Therefore, the inventory team is aware that mixes containing HFC-32 are to be examined in order to extend the coverage of the F-gases used in refrigeration and air conditioning in the inventory. To this end, research is carried out to fix the potential omission of effectively used HFC-32 and other f-gases in the newly registered refrigerant mixes.			
Yes	2.F(a).4. Aerosols HFC-134a 2009–2010	There is a sharp decrease in the reported time series of the use and emissions of HFC-134a from aerosols from 2009–2010. Spain explained that the Spanish Aerosol Association (AEDA) ascribes the decrease in HFC-134a consumption to the Regulation (EC) No 842/2006 on certain fluorinated GHGs, which bans the use of the mentioned gas in novelty aerosols. AEDA remarks that their estimates are based on data provided by the companies affiliated with the association. Spain stated that further research was needed to ascertain the HFCs replacement in aerosols. According to the aerosol sector substances to replace HFC-134a are already being developed, such as HFO 1234ze (GWP = 6). Research is being carried out in collaboration with AEDA in order to determine the actual use of the mentioned gas in Spain.	The TERT recommends that Spain continues this research to determine the actual reduction of the use of HFC-134a in aerosols in Spain and makes sure that in the future these emissions are not underestimated.	No	No
Yes	4.B.1.OptA.a. Dairy cattle N ₂ O 2005	The nitrogen-excretion value of dairy cattle (67.5 kg in 2005) is among the lowest of all MS. Spain currently works on a new and more detailed national methodology, which will be ready for the next	To prevent underestimation the TERT recommends that Spain incorporates new data on nitrogen excretion in its inventory as soon as possible.	No	No

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁶⁾	Technical correction ⁽⁷⁾
		inventory submission.			
Yes	4.B.1.OptA.b. Non-dairy cattle CH ₄ All years	In Spain, non-dairy cattle are only held in solid systems and pastures. The non-consideration of liquid systems might result in an underestimation of emissions.	The TERT recommends that Spain updates its AWMS and includes detailed information on the share of AWMS specific to Spain in its next submission.	No	No
Yes	4.D.1.1. Synthetic fertilisers N ₂ O All years	AD of mineral fertiliser is not adjusted by volatilisation. Spain answered that this issue had often been raised by the various ERTs but that it considers that the CRF tables do not require reporting of activity data adjusted by volatilisation. The TERT is aware of a certain ambiguity in the CRF tables. However, the TERT considers that the current reporting practice of Spain affects negatively the transparency and consistency between CRF and the NIR. In addition, the TERT notes that nearly all countries in Europe adjust AD for volatilisation. Therefore, reporting in the same way would improve comparability of the Spanish inventory with the inventories of other MS.	The TERT recommends that Spain reports AD adjusted by volatilisation for this category in order to improve on the transparency and consistency between CRF and NIR and in order to improve on the comparability of the inventory with other MS.	No	No
Yes	4.D.1.2. Animal manure applied to soils N ₂ O All years	AD of animal manure application is not adjusted by volatilisation. In response to a question raised by the TERT during the technical review, Spain answered that this issue had often been raised by the various ERTs but that it considers that the CRF tables do not require reporting of activity data adjusted by volatilisation. The TERT is aware of a certain ambiguity in the CRF tables. However, the TERT considers that the current	The TERT recommends that Spain reports AD adjusted by volatilisation for this category in order to improve on the transparency and consistency between CRF and NIR and in order to improve on the comparability of the inventory with other MS.	No	No

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁶⁾	Technical correction ⁽⁷⁾
		reporting practice of Spain affects negatively the transparency and consistency between CRF and the NIR. In addition, the TERT notes that nearly all countries in Europe adjust AD for volatilisation. Therefore, reporting in the same way would improve comparability of the Spanish inventory with the inventories of other MS.			
Yes	6.A. Solid waste disposal on land CH ₄ All years	The TERT noticed that the applied activity data concerning SWDS started in 1970 in the Spanish inventory. A longer period would be necessary to be compliant with 2000 IPCC Good Practice Guidance (GPG) according to the k values used in the FOD methodology. In response to a question raised by the TERT during the technical review, Spain indicated that the need to extend the time series down to 1950 had already been identified and that an estimation of the impact of this improvement is under preparation.	The TERT recommends that Spain extends the time series considered for the FOD methodology (according to the selected k value) in order to be compliant with the 2000 GPG.	No	No
Yes	6.A.1. Managed waste disposal on land CH ₄ recovery All years	It is specified in the NIR that the minimum between 70 % of the CH ₄ generated and the quantity reported in the questionnaire is used to estimate CH ₄ recovery. The TERT asked for more clarification concerning this threshold and the way SWDS estimated the recovery rate. During the review, Spain provided more detailed clarifications concerning the estimation of CH ₄ recovery in SWDS, especially that the amount of biogas	The TERT recommends that Spain includes in the NIR the detailed information provided to the TERT during the review.	No	No

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁶⁾	Technical correction ⁽⁷⁾
		recovered is based on the data collected through a questionnaire sent to landfills that capture biogas (with or without energy recovery), and that the threshold of 70 % of capture is only used as a way to control the data reported.			
Yes	6.B.1. Industrial wastewater CH ₄ All years	The TERT notes that Spain applies the Revised 1996 IPCC Guidelines equation to estimate CH ₄ emissions from industrial wastewater treatment. In response to a question raised by the TERT during the technical review, Spain indicated that currently no information is available concerning the kind of treatment taking place in Spanish industrial wastewater treatment plants. Therefore, the values chosen to apply the IPCC equation (WS _{ix} , SS _{ix} , MCF _x , MCF _y , DS, MR, etc.) are based on undocumented assumptions. Spain also indicated that further research is being carried out in order to obtain updated information, in collaboration with the General Directorate of Water, with the aim of improving emission estimates from this source category in the next inventory.	The TERT recommends that Spain obtains relevant information on its national waste treatment system of industrial wastewater by collaborating with the National General Directorate of Water and reports this in the next NIR.	No	No
Yes	6.B.1. Industrial wastewater CH ₄ recovery All years	The TERT noted that the fraction of CH ₄ recovered in anaerobic sludge treatment systems is estimated to be 50 % for industrial and domestic wastewaters. In response to a question raised by the TERT during the technical review, Spain indicated that there is no specific information about the amount of CH ₄	The TERT recommends that Spain improves on the estimation of CH ₄ recovered in industrial and municipal wastewater treatment plants on the basis of research currently being carried out by Spain.	No	No

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁶⁾	Technical correction ⁽⁷⁾
		<p>recovered in industrial wastewater treatment plants available and that a conservative approach (50 %) has been taken in the absence of better information. In addition, Spain indicated further research is being carried out in order to obtain this information for the next GHG inventory. Basically, as sludge anaerobic digesters recover the main part of the generated biogas, the use of 50 % for the recovery rate appears to be a small share. However, the default value for CH₄ recovery proposed in the Revised 1996 IPCC Guidelines is 0 if no data is available. As the calculated amount of CH₄ recovered from sewage sludge estimated on the basis of EUROSTAT data is not over 50 %, the TERT decided to accept the 50 %.</p>			
Yes	6.B.2. Domestic and Commercial Waste Water AD All years	<p>CH₄ emissions from municipal wastewater treatment plants are calculated on the basis of an equivalent population input in order to include industrial wastewater treated in municipal wastewater plants. The applied ratio of equivalent inhabitants/inhabitants varies by Autonomous Communities (i.e. 1.5 in Valencia) and therefore a conservative value of 2 was considered in the inventory. On the other hand, CH₄ emissions from wastewater treatment from food and chemical industries were calculated by applying an IPCC-compliant methodology based on national production/consumption in various subsectors of the food industry (sugar, coffee, meat, etc.) and the</p>	<p>The TERT recommends that Spain includes the revised estimates in future inventory submissions. Furthermore, the TERT recommends that time series consistency is ensured by implementing the revision for all relevant years of the time series.</p>	Yes	No

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁶⁾	Technical correction ⁽⁷⁾
		chemical industry (pharmacy, etc.), discharge ratio, volume of discharged wastewater and organic load of wastewater. This leads to a double-counting of emissions for the food and chemical industries. The ratio 'equivalent inhabitants/inhabitants' of 2 is considered too high by the TERT because emissions from industrial waste water with heavy organic load are calculated in addition. During the technical review, Spain provided revised estimates using the ratio 'equivalent inhabitants/inhabitants' between 1.38 and 1.42 (similar to the ratio documented in Valencia). The TERT accepted the revised estimates.			
Yes	6.B.3.b. N ₂ O from human sewage N ₂ O All years	The TERT noted that Spain estimates N ₂ O emissions from human sewage using the total nitrogen input of the national population as recommended in the Revised 1996 IPCC Guidelines. The TERT also noted that N ₂ O emissions from sludge spreading and sludge disposal in SWTP are also estimated in the Spanish inventory. This approach results in a double-counting of N ₂ O emissions although it is consistent with the Revised 1996 IPCC Guidelines.	The TERT recommends that Spain avoids this double-counting by subtracting the N content in sludge spread/incinerated from the N content in human sewage.	No	No

Annex 2 – Detailed technical corrections

Name of technical correction	Correction of petroleum coke in 1.A.2.b				
Reference to transcript finding record	ES-1.A.1., 1.A.2., 1.A.4., 1.A5-8				
Subsector	1.A.2.b Non-ferrous metals				
Gas/fuel/activity	CO ₂ , CH ₄ , N ₂ O, Liquid fuel/Petroleum coke				
	2005	2008	2009	2010	
Original estimate	2 942.80	2 451.14	2 295.94	2 417.18	Gg CO ₂ eq.
Corrected estimate	1 373.39	1 444.84	1 336.63	1 386.87	Gg CO ₂ eq.
The underlying problem	During the UNFCCC review of the 2010 submission, it was concluded that Spain could not account for large amounts of petroleum coke (about 10 PJ in 2008) in feedstock and non-energy use of fuels sector (CRF 1.A.d.). In the 2011 submission, Spain allocated the petroleum coke not accounted for as non-energy use of fuels to CRF 1.A.2.b. (non-ferrous metals). In the 2012 submission, Spain reallocated the petroleum coke not accounted for as non-energy use of fuels to CRF 1.A.2.f. (Other).				
The rationale for the technical correction	During the ESD review, Spain could not provide information on the use of the amounts of reallocated petroleum coke. In the data provided by EUROSTAT the reallocated amounts of petroleum coke are reported as ‘final non-energy consumption’. The TERT has not received any justifying information that confirms that the abovementioned petroleum coke should be considered as fuel combusted and thus its emissions should be deducted from the fuel combustion in non-ferrous metals (CRF 1.A.2.b.).The TERT considers CO ₂ , CH ₄ and N ₂ O emissions from petroleum coke to be overestimated.				
The assumptions, data and methodology used to calculate the technical correction	To estimate the amount of petroleum coke to reallocate from CRF 1.A.2.b. to CRF 1.A.d. (non-energy use of fuels), data on petroleum coke reported in CRF 1.A.d. has been deducted from EUROSTAT data on final non-energy consumption. IPCC default EFs were used.				

Response from Spain on the technical correction

Spain considers that on this issue has to maintain the implementation of the recommendations made by the last two ERTs of UNFCCC in submissions 2010 and 2012. The rationale behind such recommendations is that the carbon content of consumed amount of petroleum coke that, while being assigned in the energy balance within the row “non-energy use”, could not be allocated to specific sector/process is to be understood as not being incorporated in long enduring products and, consequently, needs to be accounted as generating in CO₂ emissions. Allocation of those emissions to category 1A2b was retained as an option until it could be ascertained where such petroleum coke amounts are used, in which case they could be reallocated under a specific category within the Sector 2 of CRF Industrial Processes, what would be more coherent. In the mean time, what is important is not to neglect such CO₂ emissions that most likely are produced if there is not positive evidence that the carbon in that amount of petroleum coke is sequestered in long enduring products. In conclusion, Spain considers that there is not an overestimation in this item and that, consequently, cannot accept the TERT recommendation for a technical correction on this item.

Final remarks by TERT

Spain has reported unaccounted emissions from petroleum coke in 1.A.2. due to a recommendation by the UNFCCC ERT of the 2010 submission. Prior to the 2010 submission, the amounts of petroleum coke were accounted as non-energy use of fuels, in accordance with the energy statistics reported to the EUROSTAT. During the ESD review Spain could not provide evidence that the amounts of petroleum coke resulted in emissions (via combustion or industrial processes). Therefore, the TERT made a technical correction of the 2012 submission in order to avoid possible overestimation of emissions. Spain does not agree with the TERT technical correction arguing that although Spain does not know for what the amounts of petroleum coke is used, Spain wants to follow the UNFCCC ERT recommendation in order to avoid possible underestimation of emissions. The TERT believes that in this case it is unavoidable that the ESD TERT and the UNFCCC/KP review teams come to different conclusions: the ESD review is a review of the base year thus the ESD TERT focuses on avoiding overestimations; in contrast to this, the UNFCCC/KP reviews are reviews during the commitment period thus the UNFCCC/KP review teams focus on avoiding underestimations. As Spain does not provide evidence that the non-energy use of petroleum coke results in emissions the ESD TERT considers that it is necessary to apply a technical correction to exclude all potential emissions (in order to avoid a potential overestimation). This situation can only be solved by Spain providing evidence that the petroleum coke results in emissions and supporting this by ensuring that its national energy balance submitted to Eurostat is consistent with its assumptions.

Annex 3 – Checks and tests completed

The initial checks (stage 1 and 2 checks), which cover the national inventory submissions, informed the stage 3 technical review with a view to:

- a) assess whether all emission source categories and gases are reported as required under Decision 280/2004/EC;
- b) assess whether sub-category sums are consistent with sectoral and national totals;
- c) assess whether emission data time series are consistent;
- d) assess whether implied emission factors across Member States are comparable;
- e) assess the use of 'Not Estimated' notation keys where IPCC Tier 1 methodologies exist;
- f) compare with the previous year's inventory submission of the Member State;
- g) limited sector-specific checks performed by ETC/ACM sector experts.

The EU initial checks were extended in 2012 to address additional elements needed for the 2012 technical review. The extended checks included:

- a) a detailed analysis of recalculations performed for the 2012 inventory submissions, in particular if recalculations are based on methodological changes.
- b) a comparison of the verified emissions reported under the EU ETS with the greenhouse gas emissions reported in GHG inventories. The verified emissions under the EU ETS are not fully comparable with the emissions reported in the GHG inventories. This comparison may only highlight areas where some Member States' data and trends deviate considerably from those of other Member States.
- c) a comparison of the results from Eurostat's reference and sectoral approach, based on energy data reported under Regulation (EC) No 1099/2008, with the Member States' reference and sectoral approach.

The specific activities of the 2012 technical review included:

- a) an analysis of the Member States' implementation of recommendations related to improving inventory estimates in accordance with the Revised 1996 IPCC Guidelines and the 2000 IPCC good practice guidance (GPG) as listed in the UNFCCC Annual Review Reports from the 2010 and 2011 UNFCCC review processes. Where UNFCCC recommendations have not been implemented, the analysis included an assessment as to whether the Member State provided adequate justification for this;
- b) an assessment of the time series consistency of the greenhouse gas emissions estimates, with a particular focus on the 2005 and 2008-2010 estimates;
- c) checking whether problems identified for one Member State in UNFCCC reviews might also have been a problem for other Member States (whether identified by the UNFCCC expert review team or not);
- d) an assessment of any recalculations made by a Member State in its inventory since the previous submission, and an assessment as to whether these were transparently reported and were in accordance with IPCC good practice guidance;
- e) a follow-up on any outstanding findings from existing and extended stage 1 and 2 checks;
- f) the inclusion of revised estimates as provided by Member States in response to the review, and as accepted by the TERT during the review;
- g) the provision of an estimate for any 'technical correction' to emission estimates reported by a Member State where it is believed that emissions reported by the Member State are

overestimated, and a statement of the significance of these 'technical corrections' in comparison to the overall reported inventory estimates;

- h) the provision of recommendations where problems have been identified that do not require technical corrections.

Material from previous UNFCCC inventory reviews was used to inform the technical review, including the previous years' Annual Review Reports, which provide an indication of the overall quality of the inventory.

The TERT used additional technical information in the review process, such as EU ETS data, information from Eurostat, and F-gas data from the 'Preparatory study for a review of Regulation (EC) No 842/2006 on certain fluorinated greenhouse gases (⁸), as well as data from other international organisations.

⁸ Service contract 070307/2009/548866/SER/C4 to the European Commission

Annex 4 – Correspondence references

Date	Reference
12 April 2012	Final CRF and NIR submission under the MMD, version ESP-2012-v1.4
21, 23 May 2012	Initial questions raised by the TERT during the desk review
7, 11, 12, 13, 16 June 2012	Additional questions raised by the TERT during the centralised review
4, 8, 12, 27 June 2012	Responses from Spain to TERT questions
21 June 2012	Draft technical corrections from TERT to Spain
6 July 2012	Response from Spain to TERT draft technical corrections
13 July 2012	Draft review report from TERT to Spain
25 July 2012	Response from Spain to draft review report
14 August 2012	Draft final review report from TERT to Spain