

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

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Umweltbundesamt GmbH
Spittelauer Lände 5
1090 Vienna
Austria

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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 Belgium was reviewed in accordance with these guidelines.

This report presents the findings of the 2012 technical review of the greenhouse gas emission inventory of Belgium 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 Belgium 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 Belgium, is presented in Annex 3.

ESD 2012 technical review conclusions

Table 1. Main conclusions from the TERT

Findings
1. The TERT considers that the GHG emission inventory estimates of Belgium for the years 2005, 2008, 2009 and 2010 submitted in 2012 under the MMD do not include 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 in Annex 1).
3. During the course of the technical review, the TERT received revised GHG emission inventory estimates from Belgium in response to its initial findings (see Table 2).
4. The TERT considers that the aggregated revised GHG emission inventory estimates from Belgium for the years 2005, 2008, 2009 and 2010 do not include emission overestimates .
5. The TERT considers that it is not necessary to implement any technical correction to the GHG emission inventory estimates and to amend the reported GHG total (see Table 2).
6. As stated beneath Table 1, Belgium accepts the aggregated GHG emission inventory estimates presented in Table 2 including any revised estimate received from Belgium and accepted by the TERT.
7. The TERT identified non-binding recommendations for improvements of Belgium's GHG inventory (see Table 3 in Annex 1).
8. The TERT considers that it received a response from Belgium that was sufficient in order to undertake the review appropriately.

Statement from Belgium on the conclusions of the TERT

Belgium agrees with the TERT's conclusions and accepts the aggregated GHG emission inventory estimates presented in Table 2 including any revised estimates received from Belgium and accepted by the 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 April 2012, BE-2012-v1.4		143 622.547	136 686.239	125 186.551	132 459.223
Revised estimates provided by Belgium ⁽⁴⁾						
1.A.3.B Road transportation, CO ₂	1 August 2012 1A3B_revised estimates.xlsx	Accepted by the TERT				2 571.749
4.B.A Swine, CH ₄	1 August 2012 BE_CH4_VEE200x_VS_WR.zip	Accepted by the TERT	-468.368	-485.398	-491.138	-503.239
Total GHG emissions including any accepted revised estimate received from Belgium and/or technical correction as proposed by the TERT			143 154.179	136 200.841	124 695.413	134 527.733
CO₂ emissions from 1.A.3.a Civil aviation	15 April 2012, BE-2012-v1.4		8.619	11.458	9.268	10.057

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

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.

Annex 1 – Recommendations, revised estimates and technical corrections

Table 3. Recommendations of the TERT

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁵⁾	Technical correction ⁽⁶⁾
Yes	Energy: Country-specific issues Solid, Other 2005–2010	There are large differences between activity data for solid and other fuels reported in the CRF and to Eurostat for 1.A.2. in 2005–2010, in particular for 1.A.2.a. (solid fuels) and 1.A.2.c. (other fuels). The differences are due to larger amounts of fuel reported in the CRF. Belgium explained during the technical review that the differences are due to different methods for allocating emissions from iron and steel and refineries to the CRF compared to Eurostat reporting.	The TERT recommends that Belgium improves the transparency of the NIR by better describing how AD and emissions from solid and other fuels are allocated and by investigating whether the off gases from refineries should be considered as liquid fuels instead of other fuels.	No	No
Yes	1.A. Stationary combustion CO ₂ 2005, 2008–2010	Several recalculations were performed in the 2012 submission and descriptive information was provided in the NIR. However, the individual recalculations are not quantified and thus could not be verified by the TERT. During the technical review, Belgium provided detailed	The TERT recommends that Belgium includes in its future NIR detailed information (qualitative and quantitative) on all significant recalculations of key categories.	No	No

⁵ The GHG emission estimate for this category was revised by Belgium during the technical review.

⁶ 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 ⁽⁵⁾	Technical correction ⁽⁶⁾
		information explaining the different recalculations.			
Yes	1.A.1. Energy industries CO ₂ 2005–2010	Data reported under the EU ETS and in the CRF differ, with EU ETS data being higher for the CRF categories 1.A.1.a. and 1.A.1.b. This may indicate underestimations of emissions in the GHG inventory. Belgium explained during the technical review that the differences between data reported under EU ETS and in the CRF are due to different methods for emission allocation.	The TERT recommends that Belgium analyses the EU ETS data and describes in the NIR any major differences between EU ETS data and data reported in the CRF.	No	No
Yes	1.A.1.b. Petroleum refining CO ₂ /Liquid/Gaseous 2005, 2008–2010	In Belgium's NIR (page 63) it is described that the CO ₂ EF for refinery gas is based on information from the industries, but no information is provided on how the EF is derived. During the technical review, Belgium explained how the CO ₂ EF is derived.	The TERT recommends that Belgium includes in the NIR information on the method for deriving the CO ₂ EF for refinery gas.	No	No
Yes	1.A.2.f. Other Other 2005–2008, 2009–2010	The TERT noted a large variation in CO ₂ IEFs for other fuels for 2005–2008 compared to 2009–2010. No documentation is provided in the NIR to support the large variation in IEFs. Belgium explained during the technical review that the EFs are country specific for Wallonia and IPCC defaults for Flanders for 2009–2010, whereas emissions before 2009 were not estimated for Flanders.	The TERT recommends that Belgium improves the transparency of the NIR by clearly referencing the used EFs and by making an effort to estimate emissions from other fuels in Flanders for the years before 2009.	No	No
No	1.A.3.a. Civil aviation All gases 2005–2010	Time series on emissions from aviation are not consistent by fuel type as data by fuel type are only available from 2008 and subsequent years. Since EFs are different for each fuel type, this implies that	The TERT recommends that Belgium collects the necessary data and estimates the share of aviation gasoline and jet kerosene for all years in the time series. If no data are found in any national or EU data	No	No

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁵⁾	Technical correction ⁽⁶⁾
		emissions are not accurate for all years.	source, the TERT recommends that Belgium uses splicing techniques to make the time series consistent, as described in the 2000 IPCC GPG.		
Yes	1.A.3.b. Road transportation CO ₂ /Diesel oil 2010	CO ₂ emissions from diesel oil used in road transport are significantly lower in 2010 compared with earlier years. Belgium explained during the technical review that the value was provisional and should be corrected. In response to the draft review report Belgium provided revised estimates which were accepted by the TERT.	The TERT recommends that Belgium incorporates these revised estimates in future submissions.	Yes	No
Yes	1.A.3.b. Road transportation IEF CO ₂ /Gasoline All years	CO ₂ from road transportation is a key category. However, the Revised 1996 IPCC Guidelines default EF is used for CO ₂ emissions from gasoline. The 2000 IPCC Good Practice Guidance (GPG) states in this respect: 'For traded fuels in common circulation, it is good practice to obtain the carbon content of the fuel and net calorific values from fuel suppliers, and use local values wherever possible. If these data are not available, default values can be used.' Use of the default value is therefore not in line with good practice. The implied EF is at the low end compared with other MS. Unless gasoline in Belgium is very different from gasoline used in other MS, the Revised 1996 IPCC Guidelines default EF is not representative for Belgium.	The TERT recommends that Belgium obtains the carbon content and net calorific values of gasoline from fuel suppliers, develop a CS EF for CO ₂ from gasoline that is representative for gasoline used in Belgium and include revised data in future submissions. If this is not possible, Belgium could consult neighbouring countries in order to obtain country-specific emission factors.	No	No
No	1.A.3.b. Road transportation	Time series on CH ₄ and N ₂ O emissions from road transport is not consistent as different years are	The TERT recommends that Belgium recalculates the time series for CH ₄ and N ₂ O emissions from road	No	No

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁵⁾	Technical correction ⁽⁶⁾
	CH ₄ , N ₂ O 2007–2009	calculated by different versions of the COPERT model.	transportation using the COPERT 4 model. Furthermore, the TERT recommends that Belgium harmonises the methods used in the different regions with the aim of producing a single national inventory.		
No	1.B.1.b. Solid fuel transformation CH ₄ All years	The NIR 2012 (page 85) states that in Flanders CH ₄ emissions from coke production are calculated based on monitoring results. However, the methodology is not fully clear in the NIR. During the technical review, Belgium provided additional information on the methodology.	The TERT recommends that Belgium provides further methodological information in the NIR.	No	No
Yes	2.B.1. Ammonia production CO ₂ 2008, 2009, 2010	For ammonia production Belgium uses an oxidation factor of 0.995 in Flanders and of 1 in Wallonia. Both are standard factors from different sources. The factor of 1 is the IPCC default factor, and 0.995 is a standard factor from another source, which has not been justified with specific data from the plant.	The TERT recommends that Belgium also uses the IPCC default factor of 1 for Flanders if the factor of 0.995 cannot be further justified by the plant.	No	No
Yes	2.B.1. Ammonia production CO ₂ 2008–2010	The implied EF for CO ₂ from ammonia production is the second lowest among all MS. In its response to the TERT, Belgium indicated that the company (BASF) involved in the Flemish region had already been contacted several times in the past concerning this issue and insisted on keeping the estimation of their CO ₂ emissions as reported so far. On 22 May 2012 the Flemish region contacted the company once again.	The TERT strongly recommends that Belgium either provides an appropriate explanation for the low IEF or revises the EF and the CO ₂ emissions. The company might for example subtract CO ₂ stored in urea which is not in line with the Revised 1996 IPCC Guidelines and would result in an underestimation of emissions. The current reporting indicates an underestimation of CO ₂ emissions from ammonia production.	No	No
Yes	2.B.2. Nitric acid production	The IEF for N ₂ O from nitric acid production increased in 2009 and 2010 after it had strongly decreased in the	The TERT recommends that Belgium adds this explanation in the NIR.	No	No

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁵⁾	Technical correction ⁽⁶⁾
	N ₂ O 2009–2010	years before due to the installation of abatement technology, as explained in the NIR. In its response to the TERT, Belgium explained that an explosion in one plant in 2009 resulted in higher emissions in 2009 and 2010 as the control unit was out of order.			
Yes	2.B.2. Nitric acid production N ₂ O All years	For nitric acid production in the Walloon region, neither an average N ₂ O EF nor the plant technology is indicated in the NIR as it is provided for Flanders. The information was provided during the technical review.	The TERT recommends that Belgium adds similar information on an average N ₂ O EF and the plant technology for the Walloon region in the NIR as for Flanders.	No	No
Yes (C O ₂)	2.B.5. Other (chemical industry) CO ₂ , CH ₄ , N ₂ O	The emissions under Other chemical industry are mostly taken from reports from the industry. The QA/QC procedures applied to these emission estimates that were calculated by the industry and were directly incorporated into the inventory are not provided. In its response to the TERT, Belgium indicated that industrial plants have to report their emissions of air pollutants and GHGs from the moment they exceed a defined threshold (in tonne/year) via their yearly environmental reporting obligations. The industry also has the obligation to report the methods used to estimate these emissions. All emissions are validated and verified by a team of people experienced in emission inventories. In addition, each year a trend analysis is carried out for all emissions per industrial plant and sector. If any inconsistencies or problems are	The TERT recommends that Belgium adds these explanations on QA/QC procedures to the NIR.	No	No

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁵⁾	Technical correction ⁽⁶⁾
		detected by the team, the industry involved is contacted. In exceptional cases the inspection services are contacted.			
No	2.B.5. Other (chemical industry) N ₂ O All years	The NIR (page 98) states for N ₂ O emissions from caprolactam that 'Only one company is involved in Belgium in the Flemish region and since 1997 this company offers each year the results of the monitoring carried out. This company estimated the emissions of the previous years from 1990 on as accurately as possible. No emission factors and emissions of N ₂ O are presented in this report because only one company is involved in Belgium.' The methodology is not transparent. In response to questions raised by the TERT, Belgium indicated that the company is analysing the gas using the gas chromatography - ECD method to determine the concentration of N ₂ O in the gas and estimate the emissions of N ₂ O.	The TERT recommends that Belgium adds further explanations of the methodology used to estimate N ₂ O emissions from caprolactam in the NIR.	No	No
No	2.B.5. Other (chemical industry) N ₂ O, CH ₄	For emissions from 2.B.5. Other chemical industry the NIR (page 98) states that 'some small process emissions of N ₂ O (maximum 25 kt CO ₂ eq.) and CH ₄ (maximum of 11 kt CO ₂ eq.) mainly occur in the chemical industry in the Flemish region.' In response to questions raised by the TERT, Belgium indicated that in the Flemish region these emissions are reported by the industry via their annual environmental reporting obligations and are small	The TERT recommends that Belgium adds these explanations to the NIR.	No	No

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁵⁾	Technical correction ⁽⁶⁾
		process emissions from 1) for N ₂ O: a naphtha cracker, emissions from waste gas combustion (containing NH ₃ from the production process), emissions from purging of bottles and purifying of bulk product N ₂ O, and from 2) for CH ₄ : emissions from an adsorption system of an oxidation unit, process emissions of naphtha cracker and leak losses from a relax station of natural gas.			
Yes	2.C.1. Iron and steel production CO ₂ All years	Belgium's NIR includes the following statement: 'The emission factor was 169 kg/t pig iron. The plants approved these emission factors.' As the TERT did not consider the source of this emission factor transparent, the TERT asked Belgium to provide a reference for the source of the EF. In addition, Belgium was asked to provide evidence that emissions from coke use are not double-counted. During the technical review Belgium provided a satisfactory explanation and an example of the calculation of how emissions are split between 1.A.2.a. and 2.C.1.	The TERT recommends that Belgium includes the information provided during the technical review in the NIR. In addition, Belgium should provide some basic parameters for the calculation of CO ₂ emissions from iron and steel production (e.g. C content in pig iron for Wallonia) and their description/reference in NIR.	No	No
Yes	2.C.1.b. Pig iron CO ₂ 2009	The methodology description provided in Belgium's NIR is rather complicated because the inventory consists of two parts. In response to a question raised by the TERT during the technical review, Belgium provided a table in which data from the CRF and the EU ETS is compared and the differences are explained. Belgium also indicated during the technical review that it considers	The TERT recommends that Belgium includes the table on the comparison of CRF and EU ETS data, which was provided during the technical review, as explanatory information in Belgium's NIR. The TERT also recommends that Belgium considers the reallocation of emissions between 2.C.1./steel and 2.C.1./pig iron as indicated during the technical review.	No	No

Key category	Gas, fuel, activity	Observation	Recommendation	Technical correction (6)	
				Revised estimate (5)	
		reallocating emissions from fluid pig iron in the Flemish region now reported under 2.C.1./pig iron to 2.C.1./steel in order to improve the transparency.			
Yes	4.A. Enteric fermentation Activity data 2005	The numbers of dairy cows applied in the inventories 2005 and 2010 are 9.8 % lower compared to activity data available from Eurostat. The reason is that from 2000 onwards animal numbers for the Flanders region are obtained from the manure bank of Flanders and not from the national institute of statistics. According to a consistency check that Belgium performed in response to a recommendation of the previous UNFCCC review report, the differences of CH ₄ emission estimates calculated from both datasets range from 1.4 to 5.0 % for enteric fermentation and from 0.5 to 6.0 % for manure management, depending on the year. Although the differences do not exceed 10 %, which is the uncertainty level for the animal population data from the national institute of statistics, activity data should be consistent with national statistics.	The TERT recommends that Belgium further improves the consistency of its inventory with the national statistics to prevent a potential underestimation of emissions.	No	No
Yes	4.B.8. Swine CH ₄ All years	The CH ₄ EF of swine, sector 4.B. Manure management, of the Flanders region is twice as high (9.99 kg CH ₄ /head/yr) as the CH ₄ EF in the Wallonia region (4.81 kg CH ₄ /head/yr). Flanders applied the Tier 2 method using a default value of VS excretion as suggested by previous review teams. The TERT recommended that Belgium recalculates the Flemish estimate by using a country-specific VS	The TERT recommends that Belgium further investigates and develops regional and/or country specific excretion rates of volatile substance (VS) from pigs by applying a regional specific VS factor in the Tier 2 method and for the whole time series.	Yes	No

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁵⁾	Technical correction ⁽⁶⁾
		<p>excretion rate or applies the IPCC default value of 3 kg CH₄/head of swine.</p> <p>In response to the TERT, Belgium recalculated and submitted the Flemish CH₄ emissions from manure management for swine using the region-specific VS excretion rate from the Walloon region (VS=0.31 kg dm/day). The TERT accepted the revised estimates. In addition, Belgium explained that a region-specific VS factor for Flanders could not be found on such short notice, but that Belgium will make an effort to obtain one by the next submission. Belgium explained that the differences in EFs between the Walloon and Flemish regions are mostly linked to important differences in manure systems between the regions (see Tables 6.12a and 6.12b, pages 199–120 of the NIR).</p>			
Yes	4.D.1.2. Animal manure applied to soils AD All years	<p>The trend of animal manure applied to soils increased until 1999, then decreased until 2003 and was then stable. As this trend is not completely clear, the TERT asked a question for clarifying the reasons for this trend.</p> <p>Due to a misunderstanding in its response, Belgium addressed the trend of fertiliser use. Considering that more recent years are more reliable, this issue was not raised as an actual problem for both 4.B. and 4.D. categories within the framework of the technical review but leads to a recommendation to reconcile</p>	The TERT recommends that Belgium reconciles as far as possible the nitrogen excretion series for cattle.	No	No

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁵⁾	Technical correction ⁽⁶⁾
		series over time. Belgium addressed the trend of fertiliser use because the original question was referring to 4.D.1.1 and not 4.D.1.2.			
Yes	6.A. Solid waste disposal on land CH ₄ All years	The three regions are estimating emissions from SWDS with different methodologies. In the Flemish region a combination of 2 models is used : a multiphase model applied for the most recent sites and a FOD method for all others. Wallonia applies a FOD method based on the IPCC GPG 2000. No evidence of the consistency within those models is provided in the NIR.	The TERT encourages Belgium to apply the same methodology in all regions and to provide evidences of the consistency with the IPCC GPG 2000 methodology if a national methodology is chosen.	No	No
Yes	6.A.1. Managed waste disposal on land MCF All years	The TERT noticed that all CH ₄ emissions from SWDS are reported under 6.A.1. Managed waste disposal on land. Belgium indicated during the technical review that all the SWDS in Wallonia are considered to be managed and as a consequence a MCF of 1 is applied for all of it. It should be noted that old closed landfills (but still emitting CH ₄) that were unmanaged when they were used can be considered as managed landfills only if remediation techniques ensuring higher anaerobic conditions (compacting, covering of waste etc.) are applied after closing. Higher MCF values associated with anaerobic conditions (such as in managed SWDS) result in a higher CH ₄ generation.	The TERT recommends that Belgium further justifies the assumption that all SWDS in Wallonia are managed and that the MCF value is 1 over the 1990–2010 time series for all SWDS.	No	No

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁵⁾	Technical correction ⁽⁶⁾
Yes	6.A.1. Managed waste disposal on land Recovery All years	In the Flemish Region's inventory, the data on the amount of CH ₄ recovered are obtained from SWDS. No information is provided concerning the detailed methodology applied by landfills to estimate these values. In Wallonia's inventory, data concerning the amount and CH ₄ content of the biogas recovered (flaring or energy purpose) are used. No information is provided concerning the methodology applied to estimate these values. The use of undocumented estimates of a potential landfill gas recovery is not in accordance with the 2000 IPCC GPG.	The TERT recommends that Belgium improves the transparency of the NIR concerning the estimation of CH ₄ recovered on landfills. When direct data from landfills are used, the completeness of the reporting should be presented and recalculations made for undocumented sites (closed landfills, not reporting) should be explained. The type of monitored parameters used for this estimation should be indicated (amount of CH ₄ /biogas recovered, flared or valorised (in mass or energy units), energy generation, etc.). If monitored data is not available in terms of amounts of CH ₄ or biogas, but only in energy units (e.g. TJ, electricity/heat generation), the parameters used for the conversion of energy data to CH ₄ amounts (e.g. efficiency of the energy plants, NCV, on-site energy use) should be well documented.	No	No
No	6.B.2.a. Domestic and Commercial waste water treatment AD, Recovery All years	The TERT noted that Wallonia and Brussels do not consider any emissions from municipal WWTPs (assuming 100 % of recovery from anaerobic digester) but that the Flemish region does consider these emissions (using the default per capita emission factor of the EMEP/CORINAIR handbook).	The TERT encourages Belgium to use a consistent methodology within the three Belgian regions to estimate CH ₄ emissions from wastewater handling (domestic and industrial).	No	No
No	6.B.3.b. N ₂ O from human sewage N ₂ O All years	N ₂ O from human sewage is calculated using the IPCC methodology (61.163 Gg N) based on total population. Belgium also reported N ₂ O emissions from spreading of a small amount of sludge (74 Mg N) and from incineration of MSW (including sludge). This leads to an	The TERT recommends that Belgium avoids this double-counting of emissions by subtracting the N content in sludge spread/incinerated from the N content in human sewage.	No	No

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate ⁽⁵⁾	Technical correction ⁽⁶⁾
		overestimation of emissions but is compliant with the IPCC 2000 GPG methodology.			

Annex 2 - Detailed technical corrections

There are no technical corrections applied to the Belgium's estimates of emissions.

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 (⁷), as well as data from other international organisations.

⁷ Service contract 070307/2009/548866/SER/C4 to the European Commission

Annex 4 – Correspondence references

Date	Reference
15 April 2012	Final CRF and NIR submission under the MMD, version BEL-2012-v1.4
21, 23 May 2012	Initial questions raised by the TERT during the desk review
11, 13, 14 June 2012	Additional questions raised by the TERT during the centralised review
11, 15, 19 June 2012	Responses from Belgium to TERT questions
13 July 2012	Draft review report from TERT to Belgium
2 August 2012	Response from Belgium to draft review report
13 August 2012	Draft final review report from TERT to Belgium
14 August 2012	Response and additional information from Belgium to final review report
17 August 2012	Final review report to European Commission