

Final report of the 2012 technical  
review of the greenhouse gas emission  
inventory of Bulgaria  
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<sup>(1)</sup> (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 (CO<sub>2</sub> 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 15<sup>th</sup> 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<sup>(2)</sup>. The 2012 greenhouse gas emission inventory of Bulgaria was reviewed in accordance with these guidelines.

This report presents the findings of the 2012 technical review of the greenhouse gas emission inventory of Bulgaria 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)<sup>(3)</sup>;

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<sup>(1)</sup> 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.

<sup>(2)</sup> 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.

<sup>(3)</sup> 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 Bulgaria 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 & Ils 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 SF<sub>6</sub> + 2.F Consumption of Halocarbons and SF<sub>6</sub>; 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 15<sup>th</sup> of April, 2012 under the MMD. Resubmissions reported by Member States were taken into account until the 15<sup>th</sup> 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 Bulgaria, 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 Bulgaria 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.
3. During the course of the technical review, the TERT received revised GHG emission inventory estimates from Bulgaria in response to its initial findings (see Table 2).
4. The TERT considers that the aggregated revised GHG emission inventory estimates from Bulgaria for the years 2005, 2008, 2009 and 2010 do not include emission overestimates.
5. The TERT therefore suggests that it is not 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, Bulgaria accepts the aggregated GHG emission inventory estimates presented in Table 2 including any revised estimate received from Bulgaria and accepted by the TERT, and technical corrections as proposed by the TERT.
7. The TERT identified non-binding recommendations for improvements of Bulgaria's GHG inventory (see Table 3 in Annex 1).
8. The TERT considers that it received a response from Bulgaria that was sufficient in order to undertake the review appropriately. <i>The possibility of a country visit will significantly contribute to undertake the review appropriately given the specific national circumstances of Bulgaria.</i>
9. The TERT considers that the significant number of technical corrections and recommendations should be addressed by strengthening QA/QC procedures.

## Statement from Bulgaria on the conclusions of the TERT

Bulgaria agrees with the conclusions of the TERT.

During the review, Bulgaria submitted revised estimates to address emission overestimates of GHG emission inventory submitted in 2012.

All non-binding recommendations will be taken into account to improve the quality of Bulgarian GHG emission inventory.

The QA/QC procedures are going to be strengthened for the next submissions by the project "Improvement of the Bulgarian quality management system of the GHG inventory" which will be finalized by the end of September 2012.

**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 <sub>2</sub> eq.	2008 Gg CO <sub>2</sub> eq.	2009 Gg CO <sub>2</sub> eq.	2010 Gg CO <sub>2</sub> eq.
<b>Total GHG emissions as reported in the 2012 submission under the MMD</b>	12 April 2012, BGR-2012-v1.3		<b>66 361.446</b>	<b>68 603.668</b>	<b>58 895.136</b>	<b>61 427.055</b>
<b>Revised estimates provided by Bulgaria (<sup>4</sup>)</b>						
<b>1A2a solid fuels all gases</b>	BG-1A1, 1A2, 1A4, 1A5-9	Accepted by the TERT	-1 965.410	-916.290		
<b>Ammonia production, CO<sub>2</sub> / 1A2c gaseous fuels</b>	BG-2A+2B+Solvents-9	Accepted by the TERT	77.814	106.283	-82.429	-113.144
<b>2C1 Iron and steel</b>	BG-2C+2D+2G-2	Accepted by the TERT	269.997	308.390		
<b>Enteric Fermentation, calves, CH<sub>4</sub></b>	BG DEV_Agriculture 24-07-2012.xlsx, BG-4A+4B-9	Accepted by the TERT	-35.316	-30.165	-27.411	-21.505
<b>Manure Management, CH<sub>4</sub></b>	BG DEV_Agriculture 24-07-2012.xlsx, BG-4A+4B-4 and BG-4A+4B-5 and BG-4A+4B-12	Accepted by the TERT	-340.480	-317.176	-311.941	-276.998
<b>Crop residue, N<sub>2</sub>O</b>	4 July 2012, BG-4C-4F-6	Accepted by the TERT	-60.287	-67.124	-61.587	-67.584
<b>Crop residue, N<sub>2</sub>O</b>	3 August 2012, BG-4C-4F-5	Accepted by the TERT	-18.086	0.000	-18.476	0.000
<b>Solid waste disposal on land, CH<sub>4</sub></b>	4 July 2012,	Accepted by the TERT	-1 107.520	-946.060	-911.140	-861.230
<b>Total GHG emissions including any</b>			<b>63 182.157</b>	<b>66 741.526</b>	<b>57 482.152</b>	<b>60 086.595</b>

<sup>4</sup> 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.

<b>accepted revised estimate received from Bulgaria and/or technical correction as proposed by the TERT</b>						
<b>CO<sub>2</sub> emissions from 1.A.3.a Civil aviation</b>	12 April 2012, BGR-2012-v1.3		<b>40.043</b>	<b>39.943</b>	<b>70.688</b>	<b>46.092</b>

**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 <sup>(5)</sup>	Technical correction <sup>(6)</sup>
<b>Yes</b>	1.A.2.a. Iron and steel All gases 2005, 2008	During the review a double counting of coke was identified between industrial processes (2C1) and energy (1A2a). During the in-country visit Bulgaria provided revised estimates for both 1A2a and 2C1. The TERT agreed with the revised estimates.	The TERT recommends that the revised estimates are reflected in future 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
<b>No</b>	1.A.3.b. Road transportation CH <sub>4</sub> and N <sub>2</sub> O All years	The implied EF for N <sub>2</sub> O from gasoline in road transport decreases about three-fold between 2003 and 2004. The MS explained that this was due to changes in input data. The TERT notes that this specific change, if an error occurred in 2004 and later, could in principle lead to an underestimate in the years following 2003.	The TERT recommends that Bulgaria checks the reason for the trends in N <sub>2</sub> O EFs for gasoline and revises the estimates if applicable.	No	No
<b>Yes</b>	2.B.1. Ammonia production CO <sub>2</sub> 1998–2010	During the review the TERT noted that the implied CO <sub>2</sub> emission factor for ammonia production was very high compared to other MS and the IPCC default. In response Bulgaria provided revised estimates that were further explained during the in-country visit.	The TERT recommends that the revised estimates are reflected in future submissions. Furthermore, the TERT recommends that time-series consistency is ensured by implementing the revision for all relevant years of the time-series. Also, the TERT recommends that Bulgaria	Yes	No

<sup>5</sup> The GHG emission estimate for this category was revised by Bulgaria during the technical review.

<sup>6</sup> 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 <sup>(5)</sup>	Technical correction <sup>(6)</sup>
		Following the explanations provided the TERT accepted the revised estimates.	makes efforts to improve the split between energy and non-energy use of fuels in the national energy balance.		
<b>No</b>	2.C.1. Iron and steel production CO <sub>2</sub> Since 2005	The TERT concluded that carbon contained in the coke is double counted in the inventory under 1.A.2.a. and 2.C.1. for the years 2005–2008. Bulgaria uses the IPCC 2006 Guideline's default EF of 1.46 CO <sub>2</sub> t/t of steel, which accounts for all carbon input into the blast furnace. According to the explanation received from Bulgaria for blast furnaces allocated under CRF 1.A.2.a., the transformed quantities of coke oven coke were used to calculate emissions while the consumption of the produced blast furnace gas was disregarded. During the review Bulgaria provided a carbon balance for iron and steel production. The elaboration of a carbon balance led to revised estimates. The TERT agreed with the revised estimates.	The TERT recommends that the revised estimates are reflected in future 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
<b>Yes</b>	2.F(a).2. Foam blowing HFCs All years	Actual emissions from foam blowing are calculated using the quantities used for production in the current year multiplied by the first year EF plus the banked quantities from the previous years multiplied by the annual EF. HFCs emissions from foam blowing increased by a factor of almost three in 2008 compared to previous and following years because HFC 134a use in foams is reported by the producers only for 2008. Bulgaria is thus assuming that only HFC-152a species is used in foams produced in the country. Most reporting	The TERT recommends that Bulgaria further investigates the use of HFC 134a in foams and collects the relevant information to include emissions from imported and in-use foams in Bulgaria. The TERT also recommends that Bulgaria corrects the calculation of potential emissions in accordance with the 2000 IPCC GPG by considering that potential emissions are the total annual f-gases used in manufacturing foams.	No	No

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate <sup>(5)</sup>	Technical correction <sup>(6)</sup>
		<p>Parties report HFC 134a emissions from foam blowing. In addition, only foam produced in the country is taken into account in the calculation of the estimates (and not the foam imported and already in use). The non-reporting of HFC 134a use by the producers and the non-inclusion of foam imported and in use in Bulgaria could result in an underestimation. Potential emissions from foam blowing are calculated by using the banked quantities rather than the total annual f-gas used in manufacture, which is not in line with the 2000 IPCC Good Practice Guidance (GPG).</p>			
Yes	2.F(a).4. Aerosols HFCs 2005	<p>In Bulgaria, the quantities of HFCs used in MDIs reported by the importers (number of imported containers and the amount of HFCs contained in each container) are used to estimate emissions. Data from 6 companies concerning 18 types of MDIs were reported during the period 2007–2010 with , only one company providing data for 2005. The TERT concluded that not all emissions were included in the estimates for 2005 and this non-reporting of HFC 134a use in MDIs by the importers does not provide a consistent timeseries and could be related to an underestimation.</p> <p>In addition potential emissions from aerosols are calculated by using the banked quantities instead of the total amount of the agent used during the reporting year, which is not in line with the 2000 IPCC GPG.</p>	<p>The TERT recommends that Bulgaria investigates the types of MDIs imported and used in the country during the whole time series and improves on the completeness of the inventory and the accuracy of the estimates. The TERT recommends that the Party continues its efforts in obtaining and quality checking data from all importers or applying appropriate interpolation/extrapolation techniques when data is not provided.</p> <p>The TERT also recommends that Bulgaria corrects the calculation of potential emissions in accordance with the 2000 IPCC GPG by considering that potential emissions are the emissions from the total amount of the agent used during the reporting year (for short-lived sources such as MDIs and aerosol products, the estimate of potential emissions is equivalent to using</p>	No	No

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate <sup>(5)</sup>	Technical correction <sup>(6)</sup>
			an emission factor of 100%).		
<b>Yes</b>	4.A. Enteric fermentation CH <sub>4</sub> 2005, 2008, 2009, 2010	Bulgaria is using the IPCC tier 2 methodology to estimate CH <sub>4</sub> emission from enteric fermentation for young cattle. This IEF for young cattle is among the highest of EU MS without any clear case for differing farming practices. The TERT considers that Bulgaria is assuming average calf weight that is unrealistically high in its calculation resulting in an overestimation. During the technical review, Bulgaria indicated that slaughter weights from the national Agrostatistics are used. However, to calculate the feed energy demand for maintenance an average weight should be used and not the slaughter weight. Based on the information presented to the TERT, it seems that final slaughter weight has been used and that this can explain the high IEF for Bulgaria compared to other countries. During the in-country visit Bulgaria confirmed this and afterwards provided revised estimates using average weight rather than slaughter weight. The TERT agreed with the revised estimates.	The TERT recommends that the revised estimates are reflected in future 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
<b>Yes</b>	4.B. Manure management CH <sub>4</sub> 2005, 2008, 2009, 2010	Two potential overestimations were identified for manure management. 1) In the inventory Bulgaria has used EFs for the temperate climate zone (> 15 °C). The IPCC GPG (page 4.10) defines the climatic zones according to average annual temperature, as: cool (<15°C), temperate (15°C - 25°C), and warm (>25°C). According to WMO, the	The TERT recommends that the revised estimates are reflected in future 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 <sup>(5)</sup>	Technical correction <sup>(6)</sup>
		<p>average annual temperature of all cities listed for Bulgaria (Lom, Varna, Sofia, Burgas, Sandanski, Sadovo and Obrastzov Chiflik) is below 15 °C. Sofia and Varna have an annual average temperature of 10.1 and 12.6 °C, respectively, which is below the temperate climate zone (&gt; 15 °C).</p> <p>2) In the inventory Bulgaria has indicated that 26 % of the poultry manure is handled as liquid manure. Handling of poultry manure as liquid is very rare in Europe and Bulgaria was not able to provide clear evidence of liquid manure systems and the use of MCF factor for liquid systems is too high for the more common poultry manure systems. During the in-country visit these issues were discussed and revised estimates were provided. The TERT agreed with the revised estimates.</p>			
<b>Yes</b>	4.B.1.OptB.a. Mature dairy cattle N <sub>2</sub> O All years	The nitrogen excretion rates (Nex) used in Bulgaria for manure management from dairy cattle is based on national data and is among the lowest in the EU . The TERT notes that it is probably a combination of low estimated Nex for dairy cows included together with heifers not having calved (> 2 yr) and could be an underestimation.	It is recommended that Bulgaria investigates the assumptions behind the low Nex. If the Nex cannot be verified, it is recommended that Bulgaria estimates updated Nex data and revises the emission inventory accordingly.	No	No
<b>Yes</b>	4.D. Agricultural soils N <sub>2</sub> O 1988–2010	Following the analysis of the answer and the calculation sheets Bulgaria provided, the TERT concluded that lucerne and clover are cultivated in Bulgaria while related emissions are not estimated,	The TERT recommends that Bulgaria estimates the emissions associated with the cultivation of lucerne and clover, as part of the N-fixing crops and crop residue categories, in accordance with the	No	No

Key category	Gas, fuel, activity	Observation	Recommendation	Revised estimate <sup>(5)</sup>	Technical correction <sup>(6)</sup>
		leading to an underestimation of emissions. In accordance with the provisions on page 4.57 and 4.59 of the 2000 IPCC GPG, the emissions from the cultivation of lucerne and clover have to be estimated as part of the N-fixing crops and crop residue categories.	methodologies in the 2000 IPCC GPG.		
<b>Yes</b>	4.D.1.4. Crop residue N <sub>2</sub> O 1988–2010	Bulgaria estimates the N <sub>2</sub> O emissions in the crop residues category using the 2000 IPCC GPG Tier 1a (equation 4.28 in the 2000 GPG) with a value of 0.45 for the fraction of total aboveground biomass that is removed from field as crop (Frac <sub>R</sub> ) from the Revised IPCC 1996 Guidelines. However, the equation 4.28 of the 2000 IPCC GPG uses a default value of 2 to convert the Nitrogen amount in the N-fixing and non-N-fixing crops annual production to total aboveground crop residue and product which is inconsistent with the Frac <sub>R</sub> value of 0.45 used in Bulgaria. According to the provisions in pages 4.59 and 4.63 in the 2000 IPCC GPG, a value of 0.5 has to be used; this relates to an emission overestimation. During the technical review, Bulgaria provided revised estimates that were accepted by the TERT.	The TERT recommends that the revised estimates are reflected in future 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
<b>Yes</b>	4.D.1.4. Crop residue N <sub>2</sub> O 2005, 2009	Bulgaria has used a value of 0 for the fraction of crop residue burned (Frac <sub>BURN</sub> ) for all years except 2007, 2008 and 2010. During the in-country visit, it was determined that it was an error in the calculation formula for the years in question. Bulgaria provided	The TERT recommends that the revised estimates are reflected in future 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 <sup>(5)</sup>	Technical correction <sup>(6)</sup>
		revised estimates that were agreed with the TERT.			
<b>Yes</b>	4.D.3.1. Atmospheric deposition N <sub>2</sub> O 1988–2010	In response to a question on the estimation of emissions associated with atmospheric deposition, Bulgaria provided the TERT with details of its calculations for agricultural soils. The TERT found an inconsistency at the level of the sewage sludge N amount considered in sludge spreading and atmospheric deposition categories, for 2008. A further dialogue with Bulgaria revealed that the inconsistency is due to an error and results in an underestimation associated with the sludge spreading category.	The TERT recommends that Bulgaria uses the correct data on the N sewage sludge amount applied to agricultural soils, both in sludge spreading and atmospheric deposition categories.	No	No
<b>Yes</b>	6.A. Solid waste disposal on land CH <sub>4</sub> All years	Historical AD (waste production) for estimation of CH <sub>4</sub> emissions from SWDS in Bulgaria are higher than expected compared to other Member States. Bulgaria was not able to provide sufficient justification for this in its NIR or in its response to the TERT's questions. During the technical review, Bulgaria provided revised estimates. The TERT agreed with the revised estimates.	The TERT recommends that the revised estimates are reflected in future 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
<b>No</b>	6.C.1. Biogenic CO <sub>2</sub> All years	Bulgaria reports biogenic waste incineration as NO. During the review, Bulgaria stated that 'carbon in clinical waste is both biogenic and fossil origin'. Thus, the TERT concluded that some biogenic waste is incinerated.	Bulgaria should include estimates of emissions from fossil based material in biogenic waste.	No	No

## **Annex 2 – Detailed technical corrections**

There are no technical corrections applied to Bulgaria’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 (<sup>7</sup>), as well as data from other international organisations.

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

## Annex 4 – Correspondence references

Date	Reference
<b>12 April 2012</b>	Final CRF and NIR submission under the MMD, version BGR-2012-v1.3
<b>21, 23 May 2012</b>	Initial questions raised by the TERT during the desk review
<b>5, 7, 11, 13, 15, 16 June 2012</b>	Additional questions raised by the TERT during the centralised review
<b>1, 7, 8, 11, 12, 14, 15, 18 June 2012</b>	Responses from Bulgaria to TERT questions
<b>7, 12 June 2012</b>	Telephone conferences (EEA, TERT lead reviewers and Bulgaria)
<b>21 June 2012</b>	Draft technical corrections from TERT to Bulgaria
<b>3, 5 July 2012</b>	Responses from Bulgaria to TERT draft technical corrections
<b>13 July 2012</b>	Draft review report from TERT to Bulgaria
<b>23-24 July 2012</b>	Country visit
<b>2 August 2012</b>	Response from Bulgaria to draft review report
<b>13 August 2012</b>	Draft final review report from TERT to Bulgaria
<b>15 August 2012</b>	Response and additional information from Bulgaria to final review report
<b>17 August 2012</b>	Final review report to European Commission