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Report of the individual review of the inventory submission of Belarus submitted in 2013*

* In the symbol for this document, 2013 refers to the year in which the inventory was submitted, and not to the year of publication.

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Contents

I. Introduction and summary

1. This report covers the review of the 2013 inventory submission of Belarus, coordinated by the UNFCCC secretariat, in accordance with decision 19/CP.8. The review took place from 16 to 21 September 2013 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: generalists – Mr. Leif Hockstad (United States of America) and Mr. Marius Taranu (Republic of Moldova); energy – Ms. Rayna Angelova (Bulgaria), Mr. Norbert Nziramasanga (Zimbabwe), Ms. Duduzile Nhlengethwa-Masina (Swaziland) and Ms. Songli Zhu (China); industrial processes and solvent and other product use – Mr. Joseph Baffoe (Ghana), Ms. Valentina Idrissova (Kazakhstan) and Mr. Takuji Terakawa (Japan); agriculture – Ms. Olga Gavrilova (Estonia) and Ms. Janka Szemesova (Slovakia); land use, land-use change and forestry (LULUCF) – Mr. Emil Cienciala (Czech Republic) and Mr. Mark McGovern (Canada); and waste – Ms. Detelina Petrova (Bulgaria) and Ms. Irina Yesserkepova (Kazakhstan). Mr. Hockstad and Mr. Taranu were the lead reviewers. The review was coordinated by Mr. Stylianos Pesmajoglou (UNFCCC secretariat).

2. In accordance with the "Guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention" (hereinafter referred to as the UNFCCC review guidelines), a draft version of this report was communicated to the Government of Belarus, which made no comment on it. All encouragements and recommendations in this report are for the next inventory submission, unless otherwise specified.

3. In 2011, the main greenhouse gas (GHG) in Belarus was carbon dioxide (CO_2), accounting for 63.4 per cent of total GHG emissions[1] expressed in CO_2 equivalent (CO_2 eq), followed by nitrous oxide (N_2O) (19.1 per cent), methane (CH_4) (17.5 per cent) and sulphur hexafluoride (SF_6) (0.003 per cent). Emissions of hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) were not reported for 2011. The energy sector accounted for 60.9 per cent of total GHG emissions, followed by the agriculture sector (26.9 per cent), the waste sector (7.4 per cent), the industrial processes sector (4.8 per cent) and the solvent and other product use sector (0.1 per cent). Total GHG emissions amounted to 87,319.79 Gg CO_2 eq and decreased by 37.2 per cent between 1990 and 2011. The trend in the Party's total GHG emissions is typical of countries with economies in transition, with a rapid decline in emissions in the early 1990s. From 1995 to 2002 the trend is relatively stable. This period is followed by a slow increase in emissions from 2002 to 2006. After 2006 the trend in the Party's total GHG emissions is more variable, with increases and decreases in emissions between consecutive years.

4. Tables 1 and 2 show GHG emissions under the Convention, by gas and by sector, respectively. In table 1, CO_2, CH_4 and N_2O emissions do not include emissions and removals from the LULUCF sector.

5. Additional background data on recalculations by Belarus in the 2013 inventory submission can be found in annex I to this report.

[1] In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of CO_2 eq excluding LULUCF, unless otherwise specified.

Table 1
Greenhouse gas emissions by gas, 1990 to 2011

	Gg CO_2 eq								
Greenhouse gas	*1990*	*1995*	*2000*	*2005*	*2008*	*2009*	*2010*	*2011*	*(%) Change 1990–2011*
CO_2	103 806.85	57 599.77	53 319.28	56 669.77	60 328.70	56 827.71	58 318.34	55 401.48	–46.6
CH_4	15 217.16	11 704.96	11 421.85	13 116.46	14 520.68	14 968.71	15 221.89	15 275.97	0.4
N_2O	20 127.22	13 532.14	14 414.22	14 359.83	15 711.54	16 047.76	15 890.52	16 639.92	–17.3
HFCs	NA, NE, NO	2.84	9.35	26.19	35.80	32.20	13.10	NA, NE, NO	NA
PFCs	NA, NE, NO	NA, NE, NO	NA, NE, NO	NA, NE, NO	NA, NE, NO	NA, NE, NO	NA, NE, NO	NA, NE, NO	NA
SF_6	NA, NE, NO	0.01	0.41	1.48	2.39	2.42	2.42	2.42	NA

Abbreviations: NA = not applicable, NE = not estimated, NO = not occurring.

Table 2
Greenhouse gas emissions by sector, 1990 to 2011

	Gg CO_2 eq								
Sector	*1990*	*1995*	*2000*	*2005*	*2008*	*2009*	*2010*	*2011*	*(%) Change 1990–2011*
Energy	102 242.80	57 259.52	52 684.07	55 311.53	58 659.50	54 832.60	56 441.59	53 157.98	–48.0
Industrial processes	3 614.68	2 035.73	2 604.72	3 484.65	3 971.00	3 996.27	4 112.54	4 148.60	14.8
Solvent and other product use	74.40	62.33	76.04	69.19	64.09	64.06	122.44	61.57	–17.3
Agriculture	30 644.62	21 344.50	20 844.70	20 688.10	22 270.19	22 780.75	22 586.57	23 464.68	–23.4
LULUCF	–28 574.44	–31 221.80	–30 902.78	–26 209.98	–27 138.46	–29 928.04	–30 179.18	–29 233.59	2.3
Waste	2 574.73	2 137.64	2 955.57	4 620.24	5 634.33	6 205.10	6 183.13	6 486.97	151.9
Other	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total (with LULUCF)	**110 576.79**	**51 617.93**	**48 262.32**	**57 963.74**	**63 460.65**	**57 950.75**	**59 267.10**	**58 086.20**	–47.5
Total (without LULUCF)	**139 151.23**	**82 839.72**	**79 165.10**	**84 173.72**	**90 599.11**	**87 878.78**	**89 446.27**	**87 319.79**	–37.2

Abbreviations: LULUCF = land use, land-use change and forestry, NA = not applicable.

II. Technical assessment of the inventory submission

A. Overview

1. Inventory submission and other sources of information

6. The 2013 inventory submission was submitted on 18 April 2013; it contains a complete set of common reporting format (CRF) tables for the period 1990–2011 and a national inventory report (NIR). The inventory submission was submitted in accordance with the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories" (hereinafter referred to as the UNFCCC reporting guidelines). The expert review team (ERT) strongly recommends that Belarus submit its future inventories by 15 April each year as required by decision 18/CP.8.

7. The organization of the NIR, in general, follows the structure outlined in the UNFCCC reporting guidelines. However, the recommended chapter 10, "Recalculations and improvements", was not provided. In addition, some of the recommended annexes, such as annex 4, "CO_2 reference approach and comparison with sectoral approach, and relevant information on the national energy balance", and annex 5, "Assessment of completeness and (potential) sources and sinks of greenhouse gas emissions and removals excluded", were not provided either. The ERT recommends that Belarus provide the missing sections in the NIR following the structure outlined in the UNFCCC reporting guidelines.

2. Overall assessment of the inventory

8. Table 3 contains the ERT's overall assessment of the inventory submission of Belarus. For recommendations for improvements related to cross-cutting issues for specific categories, please see the paragraphs cross-referenced in the table.

Table 3
The expert review team's overall assessment of the inventory submission

		General findings and recommendations
The expert review team's (ERT's) findings on completeness of the 2013 inventory submission		
Non-land use, land-use change and forestry [a]	Not complete	Mandatory: "NE" is reported for: CO_2 and CH_4 emissions from oil transport; CH_4 emissions from natural gas transport; CO_2 emissions from limestone and dolomite use; CO_2 emissions from soda ash production; HFC, PFC and SF_6 emissions from consumption of halocarbons and SF_6 (most of the subcategories and species, with the exception of SF_6 from electrical equipment); CH_4 emissions from industrial wastewater; and CH_4 emissions from domestic and commercial wastewater
	Not complete	Non-mandatory: "NE" is reported for: CO_2 and CH_4 emissions from solid fuel transformation; N_2O

		General findings and recommendations
		emissions from industrial wastewater; and N_2O emissions from domestic and commercial wastewater
Land use, land-use change and forestry [a]	Not complete	Mandatory: Net CO_2 emissions/removals from dead organic matter and soils under forest land remaining forest land; Net CO_2 emissions/removals from land converted to forest land; Net CO_2 emissions/removals from soils under cropland remaining cropland; Net CO_2 emissions/removals from land converted to cropland; Net CO_2 emissions/removals from grassland; Net CO_2 emissions/removals from land converted to wetlands; Net CO_2 emissions/removals from land converted to settlements; Net CO_2 emissions/removals from land converted to other land; N_2O emissions from disturbance associated with land- grassland converted to cropland and other land converted to cropland
	Not complete	Non-mandatory: Net CO_2 emissions/removals from dead organic matter under cropland remaining cropland; Net CO_2 emissions/removals from dead organic matter under grassland remaining grassland Net CO_2 emissions/removals from living biomass, dead organic matter and soils under wetlands remaining wetlands; Net CO_2 emissions/removals from living biomass, dead organic matter and soils under settlements remaining settlements; Net CO_2 emissions/removals from living biomass, dead organic matter and soils under other land remaining other land; CH_4 emissions from drainage of mineral soils under forest land; CH_4 and N_2O emissions from drainage of flooded lands under wetlands;

		General findings and recommendations
		CO_2, CH_4 and N_2O emissions from biomass burning under settlements and other land The ERT recommends that Belarus collect AD and estimate emissions for all categories and subcategories currently reported as "NE" for which the IPCC provides estimation methods
The ERT's findings on recalculations and time-series consistency in the 2013 inventory submission	Not consistent	The ERT noted that Belarus has not implemented recommendations from previous review reports and has not recalculated its emissions/removals (except for N_2O emissions in the agriculture sector). The ERT recommends that Belarus undertake recalculations for all years of the time series, where this issue applies (see paras. 24, 29, 43, 44, 46, 49, 75 below)
The ERT's findings on verification and QA/QC procedures in the 2013 inventory submission	Not sufficient	The ERT noted that a large number of recommendations in this review report are the result of either complete lack, or poor implementation, of QA/QC procedures. The ERT noted the need for internal consistency within the inventory submission, including between different sections of the NIR, between different CRF tables and between the NIR and the CRF tables. In this regard, the ERT recommends that Belarus put in place robust QA/QC procedures and report complete and detailed information on sectoral QA/QC procedures in the NIR, in particular for the key categories. For more details see paragraphs 13, 22, 23, 30, 37, 44, 62, 67, 71, 80 below
The ERT's findings on the transparency of the 2013 inventory submission	Not sufficiently transparent	The NIR does not provide sufficient information to enable the thorough assessment of the inventory submission. The ERT recommends that Belarus include in the NIR more information to explain the methodologies and procedures used in the calculations, a description of the data collection process and more data tables to present the AD and EFs that have been used, as well as to provide background information on all AD used in the inventory, specifically for the energy and industrial processes sectors (see paras. 20, 32, 39, 40, 44, 46, 50, 51, 57, 60, 67, 68, 70, 72, 77 below)

Abbreviations: AD = activity data, CRF = common reporting format, EFs = emission factors, IPCC = Intergovernmental Panel on Climate Change, LULUCF = land use, land-use change and forestry, NE = not estimated, NIR = national inventory report, QA/QC = quality assurance/quality control.

[a] The assessment of completeness by the ERT considers only the completeness of reporting of mandatory categories (i.e. categories for which methods and default emission factors are provided in the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, or the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*).

3. Description of the institutional arrangements for inventory preparation, including the legal and procedural arrangements for inventory planning, preparation and management

Inventory planning

9. The Ministry of Natural Resources and Environmental Protection (MNREP) has overall responsibility for the preparation, planning and management of the national inventory. The Belarus Scientific Research Centre "Ecology" (hereinafter referred to as SRC "Ecology") is responsible for the compilation and reporting of the GHG inventory, including the choice of methods, emission factors (EFs) and data collection. Final approval of the annual GHG inventory is given by MNREP. According to the NIR, the main source of activity data (AD) is the annual publications of the National Statistical Committee of the Republic of Belarus (Belstat).

10. Other ministries are also involved in the provision of data for the inventory, including the Ministry of Industry, the Ministry of Transport and Communications, the Ministry of Health, the Ministry of Agriculture and Food, the Ministry of Forestry and the Ministry of Housing and Communal Services. Some AD for the energy and industrial processes sectors are received by SRC "Ecology" from other organizations, such as: the Belarusian State Concern for Oil and Chemistry; "Beltopgas", "Beltransgas" and "Belenergo" of the Ministry of Energy; the State Committee on Aviation; and the State Committee on Property. The NIR indicates that private companies provide data for the preparation of the inventory, but it does not provide detailed information on their specific contributions or roles. Therefore, the ERT reiterates the encouragement from the previous review report for Belarus to provide more information in the NIR on the role of private companies in providing data for the inventory.

11. The ERT also noted that the NIR does not include any information on the personnel involved in the development and management of the inventory. Such information would help to demonstrate that there is sufficient capacity and expertise to undertake the various tasks and roles within the inventory team (e.g. technical expertise in different sectors, experience with operating quality assurance/quality control (QA/QC) systems, management expertise). In response to questions raised by the ERT during the review, Belarus provided information on the inventory team members and their qualifications. The ERT reiterates the recommendation made in previous review reports that Belarus include such information in its NIR so as to clearly show that the inventory team has sufficient capacity and expertise to undertake its responsibilities.

12. The ERT noted that there have been very few improvements made since the Party's previous inventory submission, and that many key categories are still estimated using tier 1 methodologies and default EFs, despite repeated recommendations made in several previous review reports for the Party to use higher-tier methods and country-specific EFs. Considering that Belarus has not made any significant progress in this area, the ERT strongly reiterates the recommendations made in previous review reports that Belarus: (a) enhance its efforts to implement improvements to the inventory by using higher-tier estimation methods and country-specific EFs for key categories, in accordance with the Intergovernmental Panel on Climate Change (IPCC) *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC good practice guidance) and the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry* (hereinafter referred to as the IPCC good practice guidance for LULUCF); and (b) report in the NIR a delivery deadline for each of the planned improvements, so that future planning is presented in a more transparent manner.

13. The NIR explains that a QA/QC plan was adopted by order of SRC "Ecology" in February 2009. The ERT noted that a general description of QA/QC procedures is provided in the NIR. However, several key parts of the QA/QC system are not explained in the NIR. For example, the NIR includes information on sector-specific QC procedures undertaken for the agriculture and LULUCF sectors, while for other sectors there is limited or no information provided on checking input data for errors, comparing input data with other available data sets, checking the output of emission calculations, or checking consistency between the NIR and the CRF tables. The ERT reiterates the recommendations made in the previous review report that Belarus: (a) report complete and detailed information on sectoral QA/QC procedures in the NIR, in particular for the key categories; and (b) use the information available on internal and external reviews to help develop the section of the NIR that describes the QA/QC procedures undertaken.

Inventory preparation

14. Table 4 contains the ERT's assessment of the Party's inventory preparation process. For improvements related to specific categories, please see the paragraphs cross-referenced in the table.

Table 4
Assessment of inventory preparation by Belarus

		General findings and recommendations
Key category analysis		
Was the key category analysis performed in accordance with the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC good practice guidance) and the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry* (hereinafter referred to as the IPCC good practice guidance for LULUCF)?	No	Belarus did not follow the recommended disaggregation of categories, especially in the energy and agriculture sectors. The ERT recommends that Belarus undertake a key category analysis following the IPCC good practice guidance
Approach followed?	Tier 1	
Were additional key categories identified using a qualitative approach?	No	
Does the Party use the key category analysis to prioritize inventory improvements?	No	Belarus does not report in the NIR whether it uses the key category analysis in the prioritization of developments in and improvements to its inventory. The ERT strongly reiterates the recommendation made in previous review reports that Belarus provide such information in the NIR
Are there any changes to the key category analysis in the latest submission?	Yes	For 2011, without LULUCF, N_2O from crop residue (level) and indirect N_2O from agricultural soils (trend) became key categories, while CH_4 from dairy

		General findings and recommendations
		cattle was not identified as a key category (trend) With LULUCF, CO_2 emissions from solid fuels in energy industries (level) and N_2O from synthetic fertilizers (level and trend) became key categories, while CO_2 from liquid fuels in commercial/institutional was not identified as a key category (trend)
Assessment of uncertainty analysis		
Approach followed?	Tier 1	
Was the uncertainty analysis carried out consistent with the IPCC good practice guidance and the IPCC good practice guidance for LULUCF?	No	The ERT noted that the NIR does not provide reasons for the changes in the uncertainty estimates. The ERT strongly reiterates the recommendations made in previous review reports that Belarus: (a) include an explanation for the observed changes in the reported uncertainty estimates between inventory submissions in the NIR; (b) use only well-documented country-specific values for parameters in the uncertainty analysis; and (c) report how the uncertainty analysis is used to prioritize inventory improvements
Quantitative uncertainty (including LULUCF)	Level = 33.2%	
	Trend = 12.1%	
Quantitative uncertainty (excluding LULUCF)	Level = not provided	
	Trend = not provided	

Abbreviations: ERT = expert review team, IPCC = Intergovernmental Panel on Climate Change, LULUCF = land use, land-use change and forestry, NIR = national inventory report.

Inventory management

15. The NIR provides a brief description of the Party's centralized archiving system (maintained by SRC "Ecology"), which includes the archiving of disaggregated EFs and AD, and documentation on how these EFs and AD have been generated and aggregated for the preparation of the inventory. According to the NIR, archived information includes internal documentation on QA/QC procedures and verification, and documentation on the annual review of key categories and key category identification. The ERT noted that the NIR does not include a clear improvement plan. In response to questions raised by the ERT during the review, Belarus provided a copy of its inventory improvement plan, approved by the Director of SRC "Ecology" on 10 January 2013, which covers the 2013–2014 period and considers the findings contained in the 2011 annual review report. The ERT noted that the inventory improvement plan covers sectoral recommendations, but recommendations on cross-cutting issues have not been included. The ERT recommends that Belarus include in the NIR an updated version of the inventory improvement plan, which covers all recommendations made in the current and previous review reports.

4. Follow-up to previous reviews

16. The ERT commends Belarus for implementing the following recommendations made in the previous review report:

(a) Completing CRF table 8(b) with explanatory information on performed recalculations and including in the NIR explanations of such recalculations, the reasons behind the recalculations and the resulting changes to the emission estimates;

(b) Reporting more detailed information on sectoral QA/QC procedures in the NIR, in particular for the key categories in the agriculture sector;

(c) Including additional information in the NIR on planned inventory improvements, in particular for the agriculture and waste sectors;

(d) Putting in place an inventory improvement plan, approved by SRC "Ecology" in 2013.

17. The ERT noted that most of the recommendations made in this review report have already been identified in previous review reports. Noting that Belarus has continued to fail to address the relevant issues, the ERT strongly recommends that Belarus take action to improve its next inventory submission. General actions recommended in previous review reports that have not been addressed by Belarus are mentioned in previous paragraphs (see paras. 11, 12, 13 above) and in tables 3 and 4 above. Sector-specific recommendations in previous review reports that have not been addressed by Belarus are included in the sections below.

5. Areas for further improvement identified by the expert review team

18. During the review, the ERT identified a number of areas for improvement, including some related to specific categories. These are listed in the relevant chapters of this report and in table 7.

B. Energy

1. Sector overview

19. The energy sector is the main sector in the GHG inventory of Belarus. In 2011, emissions from the energy sector amounted to 53,157.98 Gg CO_2 eq, or 60.9 per cent of total GHG emissions. Since 1990, emissions have decreased by 48.0 per cent. The key drivers for the fall in emissions are: (a) the decreasing affluence (gross domestic product per capita) induced by the break-up of the former Soviet Union and associated structural changes; (b) the switch in fuel use from residual oil and coal to natural gas; and (c) the increased use of wood as a fuel in households (carbon intensity decreasing). The ERT considers the emission trends in the energy sector to be an accurate representation of the situation in Belarus. It also considers that the trends in the energy sector are comparable to the trends observed in other countries in the same geographical region of Europe. Within the sector, 54.7 per cent of the emissions were from energy industries, followed by 15.2 per cent from manufacturing industries and construction, 13.9 per cent from other sectors and 12.4 per cent from transport. Fugitive emissions from fuels accounted for 2.6 per cent and other accounted for 1.1 per cent.

20. Despite recommendations made in previous review reports, the inventory for the energy sector is still lacking transparency. The NIR does not provide sufficient information on methodologies adopted, sources of AD and EFs used, or underlying reasons for changes thereof over time. The ERT strongly reiterates the recommendations made in previous review reports that Belarus improve transparency and include detailed information on EFs

and AD in the NIR, for example by including summary tables of the AD and EFs used for the inventory estimations together with a clear description of the sources thereof, and by providing clear indications of the methodology used.

21. Belarus's reporting of emissions from the energy sector is complete in terms of years and geographical coverage, but not complete in terms of gases and categories (see table 3 above). Tier 1 estimation methods and default IPCC EFs are broadly used for all categories, together with country-specific net calorific values (NCVs) for most fuels. To comply with the IPCC good practice guidance, the ERT recommends that the Party, where possible, use country-specific EFs for key categories.

22. The ERT noted that the NIR includes a general description of the QA/QC system and provides a very brief description of QA/QC procedures only for fuel combustion. The ERT also noted that the NIR does not describe how the Party checks the quality of the AD used for the estimation of emissions. The ERT recommends that Belarus implement tier 2 QC procedures for all key categories in the energy sector and reiterates the recommendation made in the previous review report that Belarus include in the NIR detailed information on data management and handling.

23. The ERT also noted certain inconsistencies in the information reported in different CRF tables (see para. 31 below), between national statistical data and International Energy Agency (IEA) data (see para. 28 below) and in the use of the notation keys. For example, in CRF table 1.A(d), for feedstocks and non-energy use of fuels, the AD for coal oils and tars are reported as "NO" (not occurring), but the fraction of carbon (C) stored is reported as "NA" (not applicable) and the carbon stored is reported as "NE" (not estimated); and in CRF table 1.B.2 CH_4 emissions from venting of oil and gas are reported as included elsewhere ("IE"), with the explanation that these emissions are reported under the subcategory combined venting, while emissions from combined venting are reported as "NO". Some of the notation keys (i.e. "NO" and "NA") are also used incorrectly to report fugitive CO_2 emissions from oil and natural gas (see para. 41 below). The ERT therefore strongly recommends that Belarus implement QC procedures to ensure the correct and consistent use of notation keys.

24. Despite the strong recommendation made in the previous review report requiring Belarus to correct misused EFs, for example by changing the CH_4 EF for liquefied petroleum gas (LPG) used in road transportation from 50 kg/TJ to 20 kg/TJ and by using an appropriate N_2O EF for road transportation, as the actually used EF (0.6 kg/TJ) is far below default values in the IPCC good practice guidance, no recalculations have been made for the energy sector. The ERT strongly reiterates the recommendation made in previous review reports that Belarus use appropriate CH_4 and N_2O EFs to estimate emissions from road transportation.

2. Reference and sectoral approaches

25. Table 5 provides a review of the information reported under the reference approach and the sectoral approach, as well as comparisons with other sources of international data. Issues identified in table 5 are more fully elaborated in paragraphs 26–32 below.

Table 5
Review of reference and sectoral approaches

	Paragraph cross-references
Difference between the reference approach and the sectoral approach	Energy consumption: 328.80 PJ, 38.7%[a]

		Paragraph cross-references
	CO_2 emissions: 9,719.31 Gg CO_2 eq, 18.9%	
Are differences between the reference approach and the sectoral approach adequately explained in the NIR and the CRF tables?	No	Paragraph 26
Are differences with international statistics adequately explained?	No	Paragraph 28
Is reporting of bunker fuels in accordance with the UNFCCC reporting guidelines?	No	Paragraphs 29 and 30
Is reporting of feedstocks and non-energy use of fuels in accordance with the UNFCCC reporting guidelines?	No	Paragraphs 31 and 32

Abbreviations: CRF = common reporting format, NIR = national inventory report, UNFCCC reporting guidelines = "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories".

[a] The difference between the reference approach and the sectoral approach for apparent energy consumption, in the case of the reference approach, is calculated by including the non-energy use of fuels and feedstocks.

Comparison of the reference approach with the sectoral approach and international statistics

26. Belarus has estimated CO_2 emissions from fuel combustion using both the reference approach and the sectoral approach for all years from 1990 to 2011. The ERT noted that the difference in CO_2 emissions between the two approaches is generally significant and fluctuates from year to year. For example, for 2011 the difference was 18.94 per cent and for 1990 it was 33.23 per cent. Over the years the difference ranges between 38.58 per cent (1991) and –0.52 per cent (2010). No explanations were provided in the NIR or in the documentation box of CRF table 1.A(c). In response to a question raised by the ERT during the review, Belarus explained that the differences are due to the lack of information on consumption of petroleum products. The ERT considers that the provided response does not sufficiently explain the differences and strongly recommends that Belarus investigate and explain in the NIR and the CRF tables the reasons for the observed difference between the two approaches.

27. The ERT noted that refinery gas was treated as a primary fuel and allocated to gaseous fuel in the reference approach. In accordance with the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the Revised 1996 IPCC Guidelines), refinery gas is a secondary fuel originating from crude oil. Therefore, the ERT recommends that refinery gas is categorized as a liquid fuel.

28. The apparent fuel consumption reported in Belarus's reference approach for 1990–2011 was compared with data from IEA in previous review stages. The ERT noted a discrepancy in the total apparent fuel consumption between the two data sets, ranging between –6.5 per cent (2009, IEA data lower) to 3.4 per cent (2003, IEA data higher). For 2011 the difference was –3.1 per cent. Similar discrepancies were also noted for liquid and solid and gaseous fuels. In response to a question during the review, the Party stated that the discrepancies are caused by a correction by IEA of Belarus's data on the basis of its own statistical approach. The ERT is of the view that this explanation is not sufficient and reiterates the recommendation made in the previous review report that Belarus include in

the NIR a comparison of the fuel data used in the inventory and the corresponding IEA data, clarifying the reasons for any significant differences.

International bunker fuels

29. The ERT noted that Belarus reported emissions from jet kerosene differently for different parts of the time series. Specifically, for 1990–1999 all jet kerosene consumption, used for international and domestic aviation activities, was reported under aviation bunkers (information on consumption of jet kerosene for civil aviation for the respective period was considered confidential), which results in an overestimation of emissions from aviation bunkers and an underestimation of emissions from civil aviation. For 2000 onwards emissions from jet kerosene were reported separately under aviation bunkers and civil aviation. The ERT noted that the NIR does not provide an explanation of the methodology used or an indication of the sources of the AD. The ERT therefore reiterates the recommendation made in previous review reports that the Party provide information in the NIR on how jet kerosene is allocated between domestic and international flights for the period 2000–2011 and encourages the Party to extend the methodology used to split the jet kerosene consumption for the period 1990–1999 to ensure time-series consistency in accordance with the IPCC good practice guidance.

30. The ERT further noted an inconsistency between CRF tables 1.A(b) and 1.C for 2011. In CRF table 1.A(b) jet kerosene consumption under international bunkers was reported as 42.42 kt, equivalent to 1,827.54 TJ, while in CRF table 1.C jet kerosene consumption was reported under international bunkers as 3,437.77 TJ. The ERT recommends that the Party enhance its QC procedures to ensure the consistency of the data reported between CRF tables 1.A(b) and 1.C.

Feedstocks and non-energy use of fuels

31. The ERT noted inconsistencies between CRF tables 1.A(b), 1.A(c) and 1.A(d). For example, the utilization of bitumen, natural gas, gas/diesel oil and LPG as feedstocks and non-energy use of fuels is reported in CRF table 1.A(d) (other fuels were reported as "NO"), while in CRF table 1.A(c), for the item "Apparent energy consumption (excluding non-energy use and feedstocks)", "NA" is used for all types of fuels (generally, if feedstocks and non-energy use is deducted from the apparent energy consumption, the difference in energy consumption between the reference and sectoral approaches for liquid and gaseous fuels could be reduced). Furthermore, in CRF table 1.A(b) the carbon stored in crude oil, residual fuel oil, other bituminous coal and peat is reported as 1,401.47 Gg, 381.23 Gg, 2.59 Gg and 53.29 Gg, respectively, but there is no corresponding reporting for those fuels in CRF table 1.A(d). The ERT strongly recommends that the Party ensure consistency between CRF tables 1.A(b), 1.A(c) and 1.A(d).

32. The ERT is of the view that Belarus may be underestimating the amount of carbon stored by fuels used as feedstocks and for non-energy uses by reporting naphtha and lubricants as "NO" in CRF table 1.A(d). The ERT noted that, according to the IEA statistics, 650.08 TJ coal and coal products are used for non-energy purposes; however, there are no corresponding entries in CRF table 1.A(d). In response to a question raised by the ERT during the review, Belarus explained that national statistics do not provide data on the non-energy use of naphtha and lubricants, coal oils and tars. The ERT recommends that the Party: obtain information on the utilization of naphtha, lubricants, coal and coal products as feedstocks and for non-energy purposes; use this information to improve the accuracy of its emissions estimates; and provide detailed relevant explanations in the NIR to improve transparency.

3. Key categories

Stationary combustion: liquid, solid and gaseous fuels – CO_2

33. The ERT noted that Belarus continues to use default IPCC EFs to calculate CO_2 emissions from most fuels. The ERT also noted that the previous recommendation for Belarus to follow the IPCC good practice guidance for key categories under stationary combustion and use country-specific carbon contents for all fuels has not been implemented. Therefore the ERT strongly reiterates this recommendation, in particular for key categories.

34. According to CRF table 1.A(b) peat is dominant among solid fuels, which has a high default EF (106.0 t CO_2/TJ or 28.9 t C/TJ). With an oxidation rate of 0.99, the effective EF would be about 104.9 t CO_2/TJ or 28.6 t C/TJ. However, the implied emission factor (IEF) for solid fuels in fuel combustion (including mobile sources) reported by Belarus for 2011 is 96.41 t CO_2/TJ or 26.29 t C/TJ, which is much lower than the default value. In response to a question raised by the ERT during the review, the Party explained that the value of the oxidation factor used for peat in the reference and sectoral approaches is inconsistent. The ERT takes note of this information but is of the view that Belarus may be underestimating the emissions from solid fuels. The ERT recommends that the Party investigate further the reasons for the lower EF used and ensure that it uses the correct value in the future.

35. The ERT noted that the NIR continues to provide limited details regarding the derivation of the country-specific NCVs for solid fuels, some of which refer to 1993. Based on this limited information the ERT cannot determine whether the country-specific NCVs better reflect the national circumstances. Therefore, the ERT reiterates the previous recommendation that Belarus explain in more detail the derivation of the country-specific NCVs for solid fuels and provide a justification for their use.

36. The ERT noted that the emissions for 2011 from energy industries and manufacturing industries and construction are not disaggregated to the specific CRF subcategories. Specifically, emissions from petroleum refining and manufacture of solid fuels and other energy industries are reported together with emissions from public electricity and heat production; while emissions from iron and steel, non-ferrous metals, chemicals, pulp, paper and print, and food processing, beverages and tobacco are reported under other (manufacturing industries and construction). The ERT noted that this is not consistent with the UNFCCC reporting guidelines. In response to a question raised by the ERT during the review, Belarus explained that the disaggregation of AD by the national statistical agency is still in progress and that disaggregated data going back to 1990 are not yet available. Since the two above-mentioned categories are key, the ERT strongly reiterates the recommendation made in previous review reports that Belarus pursue this improvement to allow the reporting of disaggregated emission data by subcategory under manufacturing industries and construction and reallocate the emissions from petroleum refining and manufacture of solid fuels and other energy industries to the energy industries category.

37. The ERT further noted that the information in the NIR on the use of EFs for liquid and gaseous fuels is inconsistent and misleading. On the one hand it is mentioned in the NIR (page 35) that IPCC default EFs were used, while equation 3.3 explains how country-specific EFs were calculated. During the review, in response to a question raised by the ERT, Belarus explained that it uses default EFs and the reference to equation 3.3 was a misprint. The ERT recommends that Belarus strengthen its QC procedures to ensure that the information reported in various parts of the NIR is consistent.

Road transportation: liquid fuels – CO_2

38. The ERT noted that Belarus uses a tier 1 method with default EFs from the Revised 1996 IPCC Guidelines to estimate CO_2 emissions from road transportation. The ERT noted, however, that, according to table 1-36 in volume 3 of the Revised 1996 IPCC Guidelines, the default CO_2 EF specific to road transportation for gasoline is 73.0 t CO_2/TJ, while the IEF value reported by Belarus (68.61 t CO_2/TJ) is among the lowest IEFs reported by Parties. In response to a question raised by the ERT during the review, the Party noted that the EF for gasoline used in road transportation is not correct and it will be corrected in its next inventory submission. The ERT noted, however, that this is a key category and, in accordance with the IPCC good practice guidance, country-specific EFs should be used to estimate the emissions. The ERT strongly reiterates the recommendation made in the previous review report that Belarus use country-specific EFs to estimate emissions for this key category.

Oil and natural gas: liquid and gaseous fuels – CH_4

39. The ERT noted that, according to CRF table 3, Belarus reports the use of a combination of country-specific and default methods to estimate fugitive CH_4 emissions. The NIR, however, does not provide information on the country-specific methodology. The ERT recommends that Belarus include in the NIR descriptions of the country-specific methodology used, as well as other relevant information for the estimation of emissions, to improve transparency.

40. In response to a recommendation made in the previous review report, Belarus explained in the NIR (page 30) that the unusually low estimate of fugitive CH_4 emissions from oil and gas systems for 2009 was due to a 14 per cent decline in natural gas transmission through the territory of Belarus. The ERT commends the Party for providing this information and recommends that Belarus include in the NIR data on the volume of gas transmission (including any transit amounts), to improve transparency.

41. The ERT further noted that the estimate of fugitive CH_4 emissions from oil and natural gas for 2011 was unusually low (18.60 per cent lower than that for the previous year), mainly as a result of the Party not considering the emissions from natural gas transport under the subcategory other (reported as "NA"). In response to a question raised by the ERT during the review, Belarus explained that CH_4 emissions from natural gas transport were not calculated for 2011. The ERT strongly recommends that Belarus estimate CH_4 emissions for this category for all years of the time series, including 2011, to improve completeness.

42. The ERT noted that Belarus did not implement the recommendation made in the previous review report concerning reporting CH_4 emissions under the distribution of natural gas in order to improve the comparability of the inventory. The respective emissions are reported as "IE" and are included under transmission of natural gas. In response to a question raised by the ERT during the review, Belarus explained that the issue will be addressed for its next inventory submission. The ERT strongly reiterates the recommendation in the previous review report that Belarus implement this improvement.

43. The ERT noted that Belarus reported CH_4 emissions (as well as CO_2 emissions) from oil transport as "NE". In response to a question raised by the ERT during the review on this issue, the Party clarified that AD for oil transport are not available for all years of the time series. The ERT recommends that Belarus collect the missing AD and estimate the corresponding CH_4 (and CO_2) emissions for the whole time series, using the default EFs provided in the IPCC good practice guidance (table 2.16 on page 2.87) if no country-specific data are available.

44. The ERT noted that no specific QC procedures were developed for this key category. Therefore, the ERT strongly recommends that Belarus develop QC procedures for the oil and natural gas category, in order to ensure the accuracy of estimates, time-series consistency, the correct use of the notation keys and the transparency of the information provided in the NIR.

4. Non-key categories

Road transportation: liquid fuels – CH_4 and N_2O

45. The ERT noted that Belarus reported the use of default CH_4 and N_2O EFs from the Revised 1996 IPCC Guidelines for estimating CH_4 and N_2O emissions from liquid fuels in road transportation. The ERT also noted that Belarus has not implemented the recommendations made in previous review reports that it use the correct value of CH_4 EF for LPG (20.00 kg/TJ), as listed in table 1-45 of volume 3 of the Revised 1996 IPCC Guidelines, instead of 50.00 kg/TJ, and revise its N_2O emission estimates using appropriate N_2O EFs, considering also the possibility of estimating the amount of fuel used by vehicle type and the number of vehicles equipped with catalytic convertors. The ERT strongly reiterates the above-mentioned recommendations.

Other transportation: gaseous fuels – CH_4

46. The ERT noted that, under the transport category, the overall CH_4 IEF for gaseous fuels was constant for the period 1990–1999 (50.00 kg/TJ), while for 2000 the value dropped to 9.39 kg/TJ and further decreased to 6.87 kg/TJ for 2011. In response to a question raised by the ERT during the review, the Party explained that the decrease in the IEF value was due to the inclusion of emissions from pipeline transport under other transportation since 2000, with a CH_4 IEF for gaseous fuels of 5.00 kg/TJ. Belarus also explained that data for the years prior to 2000 are not available. The ERT recommends that Belarus make efforts to obtain AD for pipeline transportation for the complete time series and to calculate and report corresponding emission estimates to ensure time-series consistency and completeness of its estimates for this category. The ERT strongly reiterates the recommendation from the previous review report that Belarus develop and use a country-specific CH_4 EF based on the length of the transmission pipelines (similar to those recommended by the IPCC good practice guidance), and include fugitive and venting emissions (including CO_2) from this activity in its inventory submission. The ERT further reiterates the recommendation from the previous review report that Belarus either reallocate these emissions to the transmission subcategory in the CRF tables, or transparently describe in the NIR the reasons for the current allocation in the CRF tables.

Oil and natural gas: liquid and gaseous fuels – CO_2

47. The ERT noted that Belarus reported fugitive CO_2 emissions from oil and gas systems as “NA” or “NO” for all subcategories except combined flaring. The ERT is of the view that CO_2 emissions from oil and natural gas production, processing and transmission, transport, distribution and venting are potential sources of emissions. In response to a question raised by the ERT during the review, Belarus explained that some improvements will be made in its next inventory submission (for example, CO_2 emissions from gas flaring will be reported separately). However, the situation remains unclear for the other CO_2 emission sources under the oil and natural gas category. Therefore, the ERT recommends that Belarus collect data to allow the estimation and reporting of all associated emissions.

C. Industrial processes and solvent and other product use

1. Sector overview

48. In 2011, emissions from the industrial processes sector amounted to 4,148.60 Gg CO_2 eq, or 4.8 per cent of total GHG emissions, and emissions from the solvent and other product use sector amounted to 61.57 Gg CO_2 eq, or 0.1 per cent of total GHG emissions. Since 1990, emissions have increased by 14.8 per cent in the industrial processes sector, and decreased by 17.3 per cent in the solvent and other product use sector. The key driver for the rise in emissions in the industrial processes sector is the increase in cement production due to the growth in the construction industry. Within the industrial processes sector, 65.3 per cent of the emissions were from mineral products, followed by 33.0 per cent from chemical industry, 1.6 per cent from metal production and 0.1 per cent from consumption of halocarbons and SF_6.

49. Belarus has not reported any recalculations for the industrial processes sector or the solvent and other product use sector between its 2012 and 2013 inventory submissions.

50. The ERT noted that Belarus has made only minor changes to the text of the industrial processes chapter of the NIR in its last four inventory submissions, and none of the recommendations of previous ERTs have been implemented. The ERT considers that major improvements are required to ensure that inventory improvements are planned and delivered in a timely manner. The ERT therefore strongly reiterates the recommendation made in previous review reports to ensure that improvements in the transparency and completeness of the inventory are delivered.

51. The ERT also noted that the NIR is not structured in accordance with the recommended outline of the UNFCCC reporting guidelines and lacks transparency in the information and explanations provided for all non-key categories, which were presented aggregated in chapter 4.4 of the NIR under "Other production". Very limited information on AD is provided in the industrial processes chapter of the NIR. The ERT further noted that IPCC default EFs were used for almost all categories under industrial processes. Also, emission trends are not properly analysed in the respective chapter of the NIR. The ERT strongly reiterates the recommendation made in previous review reports that Belarus follow the structure of the NIR outlined in the UNFCCC reporting guidelines to improve the transparency of the inventory for the industrial processes sector, and by including clear and concise information in the NIR on the methods, AD and EFs used to estimate emissions for each subcategory.

52. The ERT noted that Belarus provided AD for many chemicals under the category chemical industry (e.g., acrylonitrile, caprolactam, ethylene and propylene, phtalic anhydride, polyethylene, sulphuric acid) but used the notation key "NA" to report emissions. The ERT noted that the Revised 1996 IPCC Guidelines and the IPCC good practice guidance do not provide EFs for these chemicals. However, the ERT recommends that Belarus make correct use of notation keys (for example, use "NO" for not occurring emissions, and where emissions occur but were not estimated use "NE", including due to the lack of an IPCC methodology and/or default EF) and provide appropriate explanations in the NIR and in CRF table 9(a).

2. Key categories

Cement production – CO_2

53. The ERT noted that Belarus used default values from the IPCC good practice guidance for calcium oxide content (0.65) and cement kiln dust (1.02) to estimate CO_2 emissions from cement production using the tier 1 approach. The ERT also noted that there

are only three active cement plants in the country. During the previous review, Belarus expressed the intention to collect and use plant-specific data from all three active plants existing in the country. However, this has not been implemented yet. Therefore, the ERT reiterates the recommendation that Belarus use a higher-tier approach and strengthen its efforts to collect plant-specific AD and EFs and use those data to calculate CO_2 emissions from cement production.

3. Non-key categories

Limestone and dolomite use – CO_2

54. The ERT noted that Belarus reported CO_2 emissions from limestone and dolomite use as "NE" owing to the lack of AD for the complete time series. In response to previous review stages, Belarus explained that CO_2 emissions from soil liming were estimated under the LULUCF sector and the limestone used for cement and lime production was taken into account under the cement and lime production subcategories. However, the ERT noted that there are other processes in which limestone and dolomite may be used (e.g. metal production, glass production, pollution control, etc.). The ERT therefore recommends that Belarus contact all limestone and dolomite suppliers and users (e.g. metal producers) and collect AD directly from plants to estimate CO_2 emissions from limestone and dolomite use, thereby improving the completeness of its inventory.

Consumption of halocarbons and SF_6 – HFCs, PFCs and SF_6

55. The ERT noted that Belarus reported only SF_6 emissions from electrical equipment under the consumption of halocarbons and SF_6 category for the period 1995–2011. Other subcategories and some species of HFC, PFC and SF_6 emissions were reported as "NE" due to lack of AD or as "NO". In response to questions raised by the ERT during the review, Belarus explained that it will consider the possibility of estimating emissions for the missing categories and subcategories for its next inventory submission. The ERT recommends that the Party obtain AD and report emission estimates. If, however, AD and/or EFs are not available, Belarus could estimate actual emissions from refrigeration and air-conditioning equipment, foam blowing, fire extinguishers and aerosols/metered dose inhalers using the average emission rates from a cluster of other countries with similar circumstances (excluding those with no such emissions or those which have had adjustments), using gross domestic product and/or population as the proxy or driver. The ERT considers that such an approach would temporarily address the problems of inventory incompleteness and emission underestimation, until Belarus identifies more reliable national data in order to use the IPCC methods.

D. Agriculture

1. Sector overview

56. In 2011, emissions from the agriculture sector amounted to 23,464.68 Gg CO_2 eq, or 26.9 per cent of total GHG emissions. Since 1990, emissions have decreased by 23.4 per cent. The key driver for the fall in emissions is the reduction in the country's livestock population since 1990 and a reduction in fertilizer consumption. Within the sector, 61.4 per cent of the emissions were from agricultural soils and 27.5 per cent of the emissions were from enteric fermentation, followed by 11.0 per cent from manure management. Belarus does not cultivate rice and according to national law the burning of agricultural residues is prohibited; both of these categories are reported as "NO".

57. The ERT noted that improvements have been implemented by Belarus since its last inventory submission, namely the structure of the NIR has been improved, reference

sources for several factors/parameters (e.g. feed digestibility for cattle livestock) used for the estimations were provided, and mistakes/omissions in the CRF tables were corrected (e.g. weight of dairy and non-dairy cattle was reported). The ERT welcomes those improvements and recommends that Belarus continue to take steps to improve the transparency of the inventory for the agriculture sector. The ERT also recommends that Belarus provide reference sources for the parameters/factors for which such references are still lacking (e.g. CH_4 conversion rate for cattle livestock, coefficient corresponding to animal feeding situation (Ca) for cattle, weight of swine livestock).

58. Belarus has undertaken an uncertainty analysis using IPCC default uncertainty values for enteric fermentation and manure management. However, Belarus used a tier 2 approach to calculate emissions for those categories; hence, it is not possible to judge whether the tier 2 approach applied has increased the accuracy of the estimates. The ERT reiterates the recommendation made in the previous review report that Belarus follow the procedure described in the IPCC good practice guidance and perform the uncertainty analysis with uncertainty values related to each parameter/factor used in the emission estimation.

2. Key categories

Enteric fermentation – CH_4

59. Dairy and non-dairy cattle are the dominant source of emissions from enteric fermentation, contributing 97.1 per cent of the total emissions for the category. Belarus used a tier 2 method to calculate emissions from enteric fermentation for cattle livestock and a tier 1 approach to estimate CH_4 emissions from enteric fermentation for swine, goats, sheep and horses. This is in line with the IPCC good practice guidance.

60. The ERT noted that Belarus derived CH_4 EFs for enteric fermentation for rabbits and fur animals by scaling the CH_4 EFs for swine and asses, respectively. Although it is common practice to use a weight-based scaling approach for those animal categories, the ERT recommends that Belarus provide references for the method employed and the CH_4 EFs and animal weights used in the NIR to improve transparency.

61. The ERT noted that in CRF table 4.A, under enteric fermentation, related information, such as average gross energy intake and average CH_4 conversion rate for sheep, goats, horses and swine, was reported as "NE". However, the appropriate notation key to use is "NA", since it is not necessary to report those parameters if the tier 1 approach is used. The ERT reiterates the recommendation made in the previous review report that Belarus correct the notation key used.

Manure management – CH_4

62. The ERT noted that in the additional information table of CRF table 4.B(a), for the allocation between different manure management systems, related information was incorrectly completed; for example, amounts of nitrogen excreted and stored in manure management systems were reported instead of percentage allocations of the manure management systems of the country. The ERT recommends that Belarus correct these mistakes and implement appropriate QC procedures to avoid such mistakes in the future.

Agricultural soils – N_2O

63. N_2O emissions from agricultural soils were the dominant contributor to the total emissions from the agriculture sector. Belarus used a tier 1a and tier 1b method to estimate emissions for this category. This is consistent with the IPCC good practice guidance. In response to a question raised by the ERT regarding improvements mentioned in the NIR, Belarus responded that for future submissions it plans to take into account the amount of

biomass in crop residues ploughed into soils and the content of nitrogen in the biomass. The ERT welcomes this improvement and encourages Belarus to make efforts to collect the data required to incorporate crop residues in its estimation methodology.

64. The ERT noted that the value used in the estimates for the fraction of total above-ground crop biomass that is removed from the field as a crop product is reported in the additional information table of CRF table 4.D as "NA". In response to a question raised by the ERT during the review, the Party explained that two values for this fraction were employed to estimate the amounts of residue that were removed from fields, for grain crops and forage crops. The ERT recommends that Belarus report in CRF table 4.D and the NIR the average-weighted fraction of total above-ground crop biomass that is removed from the field as a crop product.

65. The ERT also noted that Belarus did not estimate emissions from forage crops (annual and perennial grasses such as clover and alfalfa) in the estimation of nitrogen fixation and crop residues returned to soils. In the NIR, Belarus stated that data on these crops are collected and reported for more than one harvest per year; hence, the use of those data can lead to an overestimation of emissions. The ERT reiterates the recommendation made in the previous review report that Belarus make efforts to adjust the data collected from national statistics and calculate N_2O emissions for the above-mentioned crops.

E. Land use, land-use change and forestry

1. Sector overview

66. In 2011, net removals from the LULUCF sector amounted to 29,233.59 Gg CO_2 eq. The sector represents an offset of 33.5 per cent of Belarus's total GHG emissions in 2011. Since 1990, net removals have increased by 2.3 per cent with inter-annual fluctuations across the time series from a maximum of 41.1 per cent to a minimum of –21.9 per cent. The key driver for the observed trend in net removals from the LULUCF sector is forest management on forest land, affecting the tree growing stock and controlled burning. Specifically, within the sector, net removals of 29,143.69 Gg CO_2 eq were from forest land, net removals of 130.53 Gg CO_2 eq were from cropland (resulting from emissions of 714.16 Gg CO_2 due to liming and removals of 844.69 Gg CO_2 from biomass carbon stock change) and the remaining net emissions of 40.62 Gg CO_2 eq were from wetlands (peatland drainage). Emissions and removals from grassland, settlements, other land and harvested wood products were reported as "NE" and/or "NO".

67. Recommendations in the previous review report related to the completeness and transparency of the inventory for the LULUCF sector have not been addressed in the current inventory submission. Therefore the ERT strongly reiterates the recommendations made in previous review reports that Belarus provide in the NIR and the CRF tables estimates of carbon stock changes and emissions for all mandatory categories, provide a consistent uncertainty analysis for each estimated category, enhance the QA/QC procedures that are used for the LULUCF sector and, as a minimum, undertake an internal technical review to ensure consistency between the NIR and the CRF tables.

68. The inconsistency identified in the previous review report for the reported areas of land use remains unresolved in the current inventory submission. The NIR continues not to contain information on areas of land use according to the recommended IPCC categorization. In response to a question raised by the ERT during the review, Belarus confirmed that data on land-use areas have already been prepared by the State Committee on Property, and it provided to the ERT both land-use matrices for individual reporting years and the explanation table showing how the national land-use categorization links to the IPCC land-use categories. The ERT welcomes this notable progress in establishing the

required land-use matrices for the IPCC land-use categories, which is necessary for estimating emissions and removals in accordance with the IPCC good practice guidance for LULUCF. The ERT strongly recommends that Belarus include in the NIR complete, reconciled and transparent information on the areas of land corresponding to the IPCC land-use categories and the identified land-use transitions, including a transparent description of the sources of data and associated methodologies and information on how the national land-use categorization is linked to the IPCC land-use categories.

2. Key categories

Forest land remaining forest land – CO_2

69. The ERT noted that Belarus applied the default method (method 1) in accordance with the IPCC good practice guidance for LULUCF to estimate carbon stock changes for living biomass by using country-specific AD and EFs applicable to country-specific age categories (this is tier 2 , not tier 1 as stated in the CRF tables). For dead organic matter and soils Belarus has applied the tier 1 assumption from the IPCC good practice guidance for LULUCF and considered that carbon stocks in these pools are constant. However, as forest land remaining forest land is a key category, it is not good practice to apply that assumption for changes in dead organic matter, specifically when there are significant changes in forest management (e.g. as indicated by the reported trend in harvested wood volume showed in figure 7.1 in the NIR). The ERT recommends that Belarus develop the necessary national AD to quantify the potential emissions and removals for that carbon pool using a tier 2 or higher method.

70. The ERT noted that the NIR does not contain information on the specific definition of growing stock as applied by Belarus and information on the forest types in terms of their age span, thereby making it impossible to assess the age structure of the growing stock in Belarus. The ERT recommends that Belarus increase the transparency of the NIR by including this information in its NIR.

71. The ERT noted that the reported areas of organic soils provided in the CRF tables are inconsistent. Specifically, Belarus reported the area of organic soils on forest land (309.70 kha in 2011) in CRF table 5(II), while the area of organic soils under forest land remaining forest land is reported as "NE" in CRF table 5.A. The ERT believes that this is the result of insufficient data checks and recommends that Belarus put in place QC procedures to ensure the consistency and completeness of the reporting on organic soils under forest land as well as the consistency between the CRF tables.

3. Non-key categories

Land converted to forest land – CO_2 and N_2O

72. The ERT noted that in the NIR Belarus provided estimates of emissions from wetlands converted to forest land following drainage and reported increasing emissions of CO_2 and N_2O from 1990 to 2011. The emissions of both gases have increased by 43.8 per cent since 1990. Belarus reported the area of wetlands converted to forest land as "NE" in CRF table 5.A, but also reported drainage of wetlands (14.84 kha in 2011) in CRF table 5(II) for the non-CO_2 emissions from drainage of soils and wetlands category. The ERT recommends that Belarus improve the completeness and transparency of the reporting on organic soils and land converted to forest land in the CRF tables and the NIR, and ensure consistency of the information reported in the NIR with that reported in the CRF tables.

F. Waste

1. Sector overview

73. In 2011, emissions from the waste sector amounted to 6,486.97 Gg CO_2 eq, or 7.4 per cent of total GHG emissions. Since 1990, emissions have increased by 151.9 per cent. The key driver for the rise in emissions is the growth in the amount of municipal solid waste (MSW) disposed on land, which is due to an increase in the production and consumption of goods and food in the country. Within the sector, 96.7 per cent of the emissions were CH_4 emissions from solid waste disposal on land and the remaining 3.3 per cent were N_2O emissions from wastewater handling. CH_4 emissions from wastewater handling are reported as "NE" and emissions from waste incineration are reported as "NO".

74. Belarus implemented general QC procedures for the waste sector and category-specific procedures for solid waste disposal on land (trend analysis of AD and emissions, comparison of waste composition data obtained from different sources and comparison of AD and EFs with those of other countries). However, the ERT identified inconsistencies between the CRF tables and the NIR (see para. 80 below).

75. Belarus did not report any recalculations for the waste sector in the current inventory submission. The ERT noted that although the NIR states that incineration of MSW and industrial solid waste (ISW) does not occur in Belarus, the NIR also mentions that ISW is treated in thermal treatment plants. In response to a question raised by the ERT during the review, Belarus explained that it will investigate whether emissions from the thermal treatment are occurring and if they are they will be calculated and reported in its next inventory submission. The ERT recommends that Belarus improve the consistency of its reporting and provide more information in the NIR on the thermal treatment of industrial waste, and that the Party estimate any resulting emissions from the thermal treatment of waste and report such emissions in the NIR and the CRF tables.

2. Key categories

Solid waste disposal on land – CH_4

76. Belarus used the IPCC tier 1 default method for the estimation of CH_4 emissions from solid waste disposal on land. This is not in line with the IPCC good practice guidance, as it is a key category. The ERT reiterates the strong recommendation made in the previous review report that Belarus use the IPCC tier 2 first-order decay method to estimate CH_4 emissions from solid waste disposal on land.

77. Belarus reported in the NIR that all solid waste disposal sites (SWDS) in the country are unmanaged. The ERT considers that the explanations provided in the NIR on the classification of SWDS are not explicit enough to confirm that all landfills in the country are unmanaged. The ERT therefore reiterates the recommendation that Belarus provide a more comprehensive explanation of the classification of SWDS in the NIR to improve transparency.

78. The ERT noted that for 2011 the value of degradable organic carbon (DOC) for deep waste disposal sites (>5m) was reported as 0.1838, while it should have been reported as 18.38. The ERT also noted that the "fraction of DOC in MSW" in the additional information table (reported as 0.18) reflects the amount of degradable carbon in MSW as a share of MSW disposed on land, which is calculated using equation 5.4 from the IPCC good practice guidance (page 5.9). The ERT noted that this value should be 18.0. The ERT recommends that Belarus make the appropriate corrections in CRF table 6.A and in the additional information table.

79. According to the NIR, CH_4 emissions from wastewater sludge are included in the estimation of CH_4 emissions from solid waste disposal on land. Belarus also reported that ISW is disposed of at SWDS. However, there is no information provided in the NIR on the estimation of CH_4 emissions from ISW and wastewater sludge disposed of at SWDS. The ERT recommends that Belarus estimate these CH_4 emissions and provide more detailed information in the NIR on the amount of MSW, ISW and wastewater sludge that is landfilled.

80. The ERT noted that, although a CH_4 oxidation factor of 0.50 is reported in the additional information table of CRF table 6.A for solid waste disposal, the NIR stated that its value is equal to zero. The ERT noted that in the previous review report, Belarus stated that a default value of zero is used in the calculations. Nevertheless, in the current inventory submission the incorrect value continues to be reported in CRF table 6.A for all years of the time series. The ERT reiterates the recommendation made in the previous review report that Belarus improve its QC procedures and insert the correct value for the oxidation factor in the respective CRF table.

3. Non-key categories

Wastewater handling – CH_4

81. The ERT noted that CH_4 emissions from wastewater handling are reported as "NE". According to the NIR, the prevailing method of wastewater treatment in Belarus is aerobic treatment and the associated CH_4 emissions are negligible or equal to zero. In response to a question raised by the ERT during the review, Belarus confirmed that there are national statistical data on the handling of wastewater. The ERT reiterates the recommendation made in the previous review report that Belarus provide more information on wastewater treatment systems and discharge pathways (e.g. the wastewater fractions that are discharged into the sewage system and those that are treated on site) in the NIR to justify that there are no emissions and to use the notation key "NO" instead of "NE".

Wastewater handling (human sewage) – N_2O

82. According to the NIR, N_2O emissions from human sewage have been calculated on the basis of protein consumption, which has been obtained from the National Statistical Committee and which is lower than the information available in the database of the Food and Agriculture Organization of the United Nations (FAO).[2] As a result, N_2O emissions from human sewage seem to be underestimated by around 30–35 per cent. The ERT encourages Belarus to explain in the NIR the differences between the two datasets and provide the rationale for the use of the lower protein consumption figure.

III. Conclusions and recommendations

A. Conclusions

83. Table 6 summarizes the ERT's conclusions on the 2013 inventory submission of Belarus, in accordance with the UNFCCC review guidelines.

[2] FAO data are available for the former Soviet Union for 1990 and 1991 and for Belarus for 1992–2009 at <http://faostat.fao.org/site/609/DesktopDefault.aspx?PageID=609#ancor>.

Table 6
Expert review team's conclusions on the 2013 inventory submission of Belarus

		Paragraph cross-references
The ERT concludes that the inventory submission of Belarus is complete (categories, gases, years and geographical boundaries and contains both an NIR and CRF tables for 1990–2011)		
Non-land use, land-use change and forestry [a]	Not complete	Table 3, paragraphs 21, 41, 43, 46, 50, 54, 55
Land use, land-use change and forestry	Not complete	Table 3, paragraphs 67, 68, 71, 72
The ERT concludes that the inventory submission of Belarus has been prepared and reported in accordance with the UNFCCC reporting guidelines	No	Table 5, paragraphs 7, 36, 51
The Party's inventory is in accordance with the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* and the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*	No	Table 4, paragraphs 12, 21, 29, 33, 38, 58, 76
The institutional arrangements continue to perform their required functions	No	Paragraphs 9–13

Abbreviations: CRF = common reporting format, ERT = expert review team, IPCC = Intergovernmental Panel on Climate Change, NIR = national inventory report, UNFCCC reporting guidelines = "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories".

[a] The assessment of completeness by the ERT considers only the completeness of reporting of mandatory categories (i.e. categories for which methods and default emission factors are provided in the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, or the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*).

B. Recommendations

84. The ERT identified the issues for improvement listed in table 7. All recommendations are for the next inventory submission, unless otherwise specified.

Table 7
Recommendations identified by the expert review team

Sector	*Category*	*Recommendation*	*Paragraph cross-references*
Cross-cutting	General	Submit inventories by 15 April of each year as required by decision 18/CP.8	6
		Provide the missing sections in the NIR following the structure outlined in the UNFCCC reporting guidelines	7

Sector	*Category*	*Recommendation*	*Paragraph cross-references*
	Completeness	Collect AD and estimate emissions for all categories and subcategories which are currently reported as "NE", but for which the IPCC provides estimation methods	Table 3
	Recalculations and time-series consistency	Undertake recalculations for all years of the time series	Table 3
	Verification and QA/QC procedures	Put in place robust QA/QC procedures and report complete and detailed information on sectoral QA/QC procedures in the NIR, in particular for the key categories	Table 3
	Transparency	Include in the NIR more information to explain the methodologies and procedures used in the calculations, a description of the data collection process and more data tables to present the AD and EFs that have been used, as well as to provide background information on all AD used in the inventory, specifically for the energy and industrial processes sectors	Table 3
	Inventory planning	Include in the NIR information on the personnel involved in the development and management of the inventory in order to demonstrate sufficient levels of capacity and expertise to undertake the various tasks and roles within the inventory team	11
		Enhance efforts to implement improvements to the inventory by using higher-tier estimation methods and country-specific EFs for key categories, in accordance with the Intergovernmental Panel on Climate Change (IPCC) *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC good practice guidance) and the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*	12
		Report in the NIR a delivery deadline for each of the planned improvements	12
		Report complete and detailed information on sectoral QA/QC procedures in the NIR, in particular for the key categories, and use the information available on internal and external reviews to help develop the section of the NIR that describes the QA/QC procedures undertaken	13
	Inventory preparation	Undertake a key category analysis following the IPCC good practice guidance	Table 4
		Report in the NIR whether the Party uses the key category analysis in the prioritization of	Table 4

Sector	*Category*	*Recommendation*	*Paragraph cross-references*
		developments in and improvements to its inventory	
		Include an explanation for the observed changes in the reported uncertainty estimates between inventory submissions in the NIR; use only well-documented country-specific values for parameters in the uncertainty analysis; and report how the uncertainty analysis is used to prioritize inventory improvements	Table 4
	Inventory management	Include in the NIR an updated version of the inventory improvement plan, which covers all recommendations made in the current and previous review reports	15
Energy	Overview	Improve transparency and include detailed information on EFs and AD in the NIR, for example by including summary tables of the AD and EFs used for the inventory estimations together with a clear description of the sources thereof, and by providing clear indications of the methodology used	20
		Where possible, use country-specific EFs for key categories	21
		Implement tier 2 QC procedures for all key categories in the energy sector and include in the NIR detailed information on data management and handling	22
		Implement QC procedures to ensure the correct and consistent use of notation keys	23
		Use appropriate CH_4 and N_2O EFs to estimate emissions from road transportation	24
	Comparison of reference approach and sectoral approach	Investigate and explain in the NIR and the CRF tables the reasons for the observed difference between the two approaches	26
		Categorize refinery gas as a liquid fuel	27
		Include in the NIR a comparison of the fuel data used in the inventory and the corresponding IEA data, clarifying the reasons for any significant differences	28
	International bunker fuels	Provide information in the NIR on how jet kerosene is allocated between domestic and international flights for the period 2000–2011	29
		Enhance QC procedures to ensure the consistency of the data reported between CRF tables 1.A(b) and 1.C	30

Sector	*Category*	*Recommendation*	*Paragraph cross-references*
	Feedstocks and non-energy use of fuels	Ensure consistency between CRF tables 1.A(b), 1.A(c) and 1.A(d)	31
		Obtain information on the utilization of naphtha, lubricants, coal and coal products as feedstocks and for non-energy purposes; use this information to improve the accuracy of its emissions estimates; and provide detailed relevant explanations in the NIR to improve transparency	32
	Stationary combustion: liquid, solid and gaseous fuels – CO_2	Follow the IPCC good practice guidance for key categories under stationary combustion and use country-specific carbon contents for all fuels	33
		Investigate further the reasons for the lower EF used for solid fuels and ensure the use of the correct value in the future	34
		Explain in more detail the derivation of the country-specific NCVs for solid fuels and provide a justification for their use	35
		Report disaggregated emission data by subcategory under manufacturing industries and construction and reallocate the emissions from petroleum refining and manufacture of solid fuels and other energy industries to the energy industries category	36
		Strengthen QC procedures to ensure that the information reported in various parts of the NIR is consistent	37
	Road transportation: liquid fuels – CO_2	Use country-specific EFs to estimate emissions for this key category	38
	Oil and natural gas: liquid and gaseous fuels – CH_4	Include in the NIR descriptions of the country-specific methodology used, as well as other relevant information for the estimation of emissions to improve transparency	39
		Include in the NIR data on the volume of gas transmission (including any transit amounts) to improve transparency	40
		Estimate CH_4 emissions for this category for all years of the time series, including 2011, to improve completeness	41
		Reporting CH_4 emissions under the distribution of natural gas	42
		Collect the missing AD and estimate the corresponding CH_4 (and CO_2) emissions for the whole time series, using the default EFs provided	43

Sector	*Category*	*Recommendation*	*Paragraph cross-references*
		in the IPCC good practice guidance (table 2.16 on page 2.87) if no country-specific data are available	
		Develop QC procedures for the oil and natural gas category, in order to ensure the accuracy of estimates, time-series consistency, the correct use of the notation keys and the transparency of the information provided in the NIR	44
	Road transportation: liquid fuels – CH_4 and N_2O	Use the correct value of CH_4 EF for LPG and revise the N_2O emission estimates using appropriate N_2O EFs, considering also the possibility of estimating the amount of fuel used by vehicle type and the number of vehicles equipped with catalytic convertors	45
	Other transportation: gaseous fuels – CH4	Make efforts to obtain AD for pipeline transportation for the complete time series and to calculate and report corresponding emission estimates to ensure time-series consistency and completeness of its estimates for this category	46
		Develop and use a country-specific CH_4 EF based on the length of the transmission pipelines, and include fugitive and venting emissions (including CO_2) from this activity in its inventory submission	46
		Either reallocate these emissions to the transmission subcategory in the CRF tables, or transparently describe in the NIR the reasons for the current allocation in the CRF tables	46
	Oil and natural gas: liquid and gaseous fuels – CO_2	Collect data to allow the estimation and reporting of all associated emissions	47
Industrial processes and solvent and other product use	Overview	Ensure that improvements in the transparency and completeness of the inventory are delivered	50
		Follow the structure of the NIR outlined in the UNFCCC reporting guidelines to improve the transparency of the inventory for the industrial processes sector, and by including clear and concise information in the NIR on the methods, AD and EFs used to estimate emissions for each subcategory	51
		Make correct use of notation keys and provide appropriate explanations in the NIR and in CRF table 9(a)	52
	Cement production –	Use a higher-tier approach and strengthen efforts to collect plant-specific AD and EFs and use those	53

Sector	*Category*	*Recommendation*	*Paragraph cross-references*
	CO_2	data to calculate CO_2 emissions from cement production	
	Limestone and dolomite use – CO_2	Contact all limestone and dolomite suppliers and users (e.g. metal producers) and collect AD directly from plants to estimate CO_2 emissions from limestone and dolomite use[, thereby improving the completeness of the inventory	54
	Consumption of halocarbons and SF_6 – HFCs, PFCs and SF_6	Obtain AD and report emission estimates for all gases	55
Agriculture	Overview	Continue to take steps to improve the transparency of the inventory for the agriculture sector	57
		Provide reference sources for the parameters/factors for which such references are still lacking (e.g. CH_4 conversion rate for cattle livestock, coefficient corresponding to animal feeding situation (Ca) for cattle, weight of swine livestock).	57
		Follow the procedure described in the IPCC good practice guidance and perform the uncertainty analysis with uncertainty values related to each parameter/factor used in the emission estimation	58
	Enteric fermentation – CH_4	Provide references for the method employed and the CH_4 EFs and animal weights used in the NIR to improve transparency	60
		Correct the notation key used	61
	Manure management – CH_4	Correct mistakes in the additional information table of CRF table 4.B(a) and implement appropriate QC procedures to avoid such mistakes in the future	62
	Agricultural soils – N_2O	Report in CRF table 4.D and the NIR the average-weighted fraction of total above-ground crop biomass that is removed from the field as a crop product	64
		Make efforts to adjust the data collected from national statistics and calculate N_2O emissions for the above-mentioned crops	65
Land use, land-use change and forestry		Provide in the NIR and the CRF tables estimates of carbon stock changes and emissions for all mandatory categories, provide a consistent uncertainty analysis for each estimated category, enhance the QA/QC procedures that are used for the LULUCF sector and, as a minimum, undertake an internal technical review to ensure consistency	67

Sector	*Category*	*Recommendation*	*Paragraph cross-references*
		between the NIR and the CRF tables	
		Include in the NIR complete, reconciled and transparent information on the areas of land corresponding to the IPCC land-use categories and the identified land-use transitions, including a transparent description of the sources of data and associated methodologies and information on how the national land-use categorization is linked to the IPCC land-use categories	68
	Forest land remaining forest land – CO_2	Develop the necessary national AD to quantify the potential emissions and removals for that carbon pool using a tier 2 or higher method	69
		Increase the transparency of the NIR by including information on the specific definition of growing stock as applied by Belarus and information on the forest types in terms of their age span	70
		Put in place QC procedures to ensure the consistency and completeness of the reporting on organic soils under forest land as well as the consistency between the CRF tables	71
	Land converted to forest land – CO_2 and N_2O	Improve the completeness and transparency of the reporting on organic soils and land converted to forest land in the CFR tables and the NIR, and ensure consistency of the information reported in the NIR with that reported in the CRF tables	72
Waste	Overview	Improve the consistency of the reporting and provide more information in the NIR on the thermal treatment of industrial waste, and that the Party estimate any resulting emissions from the thermal treatment of waste and report such emissions in the NIR and the CRF tables	75
	Solid waste disposal on land – CH_4	Use the IPCC tier 2 first-order decay method to estimate CH_4 emissions from solid waste disposal on land	76
		Provide a more comprehensive explanation of the classification of SWDS in the NIR to improve transparency	77
		Make the appropriate corrections in CRF table 6.A and in the additional information table	78
		Estimate CH_4 emissions from wastewater sludge and provide more detailed information in the NIR on the amount of MSW, ISW and wastewater sludge that is landfilled	79
		Improve QC procedures and insert the correct value for the oxidation factor in the respective	80

Sector	*Category*	*Recommendation*	*Paragraph cross-references*
		CRF table	
	Wastewater handling – CH_4	Provide more information on wastewater treatment systems and discharge pathways in the NIR to justify that there are no emissions and to use the notation key “NO” instead of “NE”	81

Abbreviations: AD = activity data, CRF = common reporting format, EF = emission factor, IPCC = Intergovernmental Panel on Climate Change, IEA = International Energy Agency, ISW = industrial solid waste, LULUCF = land use, land-use change and forestry, LPG = liquefied petroleum gas, MSW = municipal solid waste, NCV = net calorific value, NIR = national inventory report, NE = not estimated, QA/QC = quality assurance/quality control, SWDS = solid waste disposal sites, UNFCCC reporting guidelines = “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories”.

Annex I

Background data on recalculations in the 2013 inventory submission

Table 8
Recalculations in the 2013 inventory submission for the base year and the most recent year

Greenhouse gas source and sink categories	*1990*	*2010*	*1990*	*2010*	*Reason for the recalculation*
	Value of recalculation (Gg CO_2 eq)		*Per cent change*		
1. Energy					
A. Fuel combustion (sectoral approach)					
1. Energy industries					
2. Manufacturing industries and construction					
3. Transport					
4. Other sectors					
5. Other					
B. Fugitive emissions from fuels					
1. Solid fuels					
2. Oil and natural gas					
2. Industrial processes					
A. Mineral products					
B. Chemical industry					
C. Metal production					
D. Other production					
E. Production of halocarbons and SF_6					
F. Consumption of halocarbons and SF_6					
G. Other					
3. Solvent and other product use					
4. Agriculture	–28.03	1.89	–0.1	0.01	Improved activity data
A. Enteric fermentation					
B. Manure management	–56.06	–15.71	–1.9	–0.9	
C. Rice cultivation					
D. Agricultural soils	28.03	17.60	0.2	0.1	
E. Prescribed burning of savannahs					
F. Field burning of agricultural residues					
G. Other					
5. Land use, land-use change and forestry					
A. Forest land					

Greenhouse gas source and sink categories	*1990*	*2010*	*1990*	*2010*	*Reason for the recalculation*
	Value of recalculation (Gg CO_2 eq)		*Per cent change*		
B. Cropland					
C. Grassland					
D. Wetlands					
E. Settlements					
F. Other land					
G. Other					
6. Waste					
A. Solid waste disposal on land					
B. Wastewater handling					
C. Waste incineration					
D. Other					
7. Other					
Total CO_2 equivalent without LULUCF	–28.03	1.89	–0.02	0.002	
Total CO_2 equivalent with LULUCF	–28.03	1.89	–0.03	0.003	

Abbreviation: LULUCF = land use, land-use change and forestry.

Annex II

Documents and information used during the review

A. Reference documents

Intergovernmental Panel on Climate Change. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. Available at <http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>.

Intergovernmental Panel on Climate Change. *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*. Available at <http://www.ipcc-nggip.iges.or.jp/public/gl/invs1.htm>.

Intergovernmental Panel on Climate Change. *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*. Available at <http://www.ipcc-nggip.iges.or.jp/public/gp/english/>.

Intergovernmental Panel on Climate Change. *Good Practice Guidance for Land Use, Land-Use Change and Forestry*. Available at <http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.htm>.

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories". FCCC/SBSTA/2006/9. Available at <http://unfccc.int/resource/docs/2006/sbsta/eng/09.pdf>.

"Guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention". FCCC/CP/2002/8. Available at <http://unfccc.int/resource/docs/cop8/08.pdf>.

Status report for Belarus 2013. Available at <http://unfccc.int/resource/docs/2013/asr/blr.pdf>.

Synthesis and assessment report on the greenhouse gas inventories submitted in 2013. Available at <http://unfccc.int/resource/webdocs/sai/2013.pdf>.

FCCC/ARR/2012/BLR. Report of the individual review of the inventory submission of Belarus submitted in 2012. Available at <http://unfccc.int/resource/docs/2013/arr/blr.pdf>.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Evgenia Bertosh (Department of International Scientific Cooperation, Belarus Scientific Research Centre "Ecology"), including information on the inventory improvement plan and the national legislation that refers to the institutional arrangements for inventory preparation.

Annex III

Acronyms and abbreviations

AD	activity data
C	carbon
CH_4	methane
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
CRF	common reporting format
EF	emission factor
ERT	expert review team
FAO	Food and Agriculture Organization of the United Nations
GHG	greenhouse gas; unless indicated otherwise, GHG emissions are the sum of CO_2, CH_4, N_2O, HFCs, PFCs and SF_6 without GHG emissions and removals from LULUCF
HFCs	hydrofluorocarbons
IE	included elsewhere
IEA	International Energy Agency
IEF	implied emission factor
IPCC	Intergovernmental Panel on Climate Change
ISW	industrial solid waste
kg	kilogram (1 kg = 1,000 grams)
kha	kilohectares
LPG	liquefied petroleum gas
LULUCF	land use, land-use change and forestry
MSW	municipal solid waste
NA	not applicable
NCV	net calorific value
NE	not estimated
N_2O	nitrous oxide
NIR	national inventory report
NO	not occurring
PFCs	perfluorocarbons
PJ	petajoule (1 PJ = 10^{15} joules)
QA/QC	quality assurance/quality control
SF_6	sulphur hexafluoride
SWDS	solid waste disposal sites
TJ	terajoule (1 TJ = 10^{12} joules)
UNFCCC	United Nations Framework Convention on Climate Change