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Report of the technical review of the sixth national communication of Belarus

Parties included in Annex I to the Convention are requested, in accordance with decision 9/CP.16, to submit a sixth national communication to the secretariat by 1 January 2014. In accordance with decision 7/CMP.8, Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol shall include in their sixth national communication supplementary information under Article 7, paragraph 2, of the Kyoto Protocol.

This report presents the results of the technical review of the sixth national communication and supplementary information under the Kyoto Protocol of Belarus conducted by an expert review team in accordance with the “Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention” and the “Guidelines for review under Article 8 of the Kyoto Protocol”.

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I. Introduction and summary

A. Introduction

1. For Belarus the Convention entered into force on 9 August 2000 and the Kyoto Protocol on 24 November 2005. Under the Convention, Belarus made a commitment to reducing its greenhouse gas (GHG) emissions by 8 per cent by 2020 below the 1990 level. The Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP), by its decision 10/CMP.2, adopted the amendment to Annex B to the Kyoto Protocol, which states that Belarus has a commitment to reducing its GHG emissions by 8 per cent in relation to the base year level over the period 2008–2012. In accordance with the provisions of Article 20 of the Kyoto Protocol, the amendment will enter into force on the ninetieth day after the date of receipt by the Depositary of an instrument of acceptance by at least three fourths of the Parties to the Protocol. At the time of the in-depth review of the sixth national communication (NC6) of Belarus, this had not yet been achieved and as a result, Belarus does not yet have a commitment to reducing its GHG emissions during the first commitment period, from 2008 to 2012. For the second commitment period of the Kyoto Protocol, from 2013 to 2020, Belarus committed to reduce its GHG emissions by 12 per cent below the 1990 level.

2. This report covers the in-country technical review of the NC6 of Belarus, coordinated by the secretariat, in accordance with the “Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention” (decision 13/CP.20) and the “Guidelines for review under Article 8 of the Kyoto Protocol” (decision 22/CMP.1).

3. The review took place from 20 to 25 April 2015 in Minsk, Belarus, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Ms. Kema Kasturiarachchi (Sri Lanka), Mr. Eduardas Kazakevicius (Lithuania), Ms. Batimaa Punsalmaa (Mongolia) and Mr. Koen Smekens (Belgium). Ms. Punsalmaa and Mr. Smekens were the lead reviewers. The review was coordinated by Ms. Barbara Muik (secretariat).

4. During the review, the expert review team (ERT) reviewed each section of the NC6. The ERT also reviewed the supplementary information provided by Belarus as a part of the NC6 in accordance with Article 7, paragraph 2, of the Kyoto Protocol.

5. In accordance with decisions 13/CP.20 and 22/CMP.1, a draft version of this report was communicated to the Government of Belarus, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

B. Summary

6. The ERT conducted a technical review of the information reported in the NC6 of Belarus in accordance with the “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications” (hereinafter referred to as the UNFCCC reporting guidelines on NCs). As required by decision 15/CMP.1, supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol¹ is provided in the NC6 (see para. 135 below).

¹ Decision 15/CMP.1, annex, chapter II.

7. Belarus considered part of the recommendations provided in the report of the in-depth review of the fifth national communication (NC5) of Belarus.² The NC6 was significantly improved compared with the NC5 even though Belarus had not considered all recommendations made in the previous review report. Belarus provided: GHG emission trend tables; an overview of policies and measures (PaMs) for the industry and building sectors; non-GHG mitigation benefits of some policies, such as the reduction of air pollution; a description of the methodology used to estimate the impacts of some PaMs; and information under Article 10 of the Kyoto Protocol. The ERT commends Belarus for its improved reporting.

8. Belarus did not follow the recommendations made in the previous review report to include information on: building stock and urban structure (e.g. the profile of residential and commercial buildings); how PaMs are modifying longer-term trends of GHG emissions/removals; the steps it has taken to promote or implement any decisions by the International Civil Aviation Organization (ICAO); projections of international aviation emissions; and an estimate of the total effect of implemented and adopted PaMs, in accordance with the 'with measures' definition, compared to a situation without such PaMs, presented in terms of GHG emissions avoided or sequestered, by gas (reported in terms of carbon dioxide equivalent (CO₂ eq)).

9. During the review, Belarus provided further relevant information on: the total effect of its PaMs; mitigation impacts of PaMs and explanations of the estimation methodologies; potential overlaps between PaMs and their combinations; the status of its PaMs; the Long-range Energy Alternatives Planning System (LEAP) and Energy and Power Evaluation Program (ENPEP-BALANCE) models; and data used for the calculation of national total GHG emission projections. Belarus also described preliminary work on the potential development of the national emissions trading system (ETS), and regional and local activities and their place within the legislative arrangements established to meet its commitments. Belarus also provided additional information on Article 10 of the Kyoto Protocol, and on United Nations Development Programme/Global Environment Facility (UNDP/GEF) projects in the land use, land-use change and forestry (LULUCF) sector that contribute to the conservation of biodiversity.

1. Completeness and transparency of reporting

10. Gaps and issues related to the reported information identified by the ERT are presented in table 1 below.

2. Timeliness

11. The NC6 was submitted on 31 December 2013, before the deadline of 1 January 2014 mandated by decision 9/CP.16. Belarus submitted a revised version of its NC6 on 13 February 2015.

3. Adherence to the reporting guidelines

12. The information reported by Belarus in its NC6 is mostly in adherence with the UNFCCC reporting guidelines on NCs as per decision 4/CP.5 (see table 1).

² FCCC/IDR.5/BLR.

Table 1

Assessment of completeness and transparency issues of reported information in the sixth national communication of Belarus^a

<i>Sections of national communication</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to paragraphs</i>	<i>Supplementary information under the Kyoto Protocol</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to paragraphs</i>
Executive summary	Complete	Transparent		National systems	NA, but reported	NA, but reported	
National circumstances	Mostly complete	Mostly transparent	14, 15	National registries	NA, but reported	NA, but reported	
Greenhouse gas inventory	Complete	Transparent		Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	NA	NA	
Policies and measures (PaMs)	Mostly complete	Mostly transparent	37, 38, 39, 89	PaMs in accordance with Article 2	Partially complete	Mostly transparent	95, 96
Projections and total effect of PaMs	Mostly complete	Partially transparent	99, 102, 104, 107, 108, 115	Domestic and regional programmes and/or arrangements and procedures	Complete	Mostly transparent	24
Vulnerability assessment, climate change impacts and adaptation measures	Complete	Transparent		Information under Article 10 ^b	Complete	Mostly transparent	117
Financial resources and transfer of technology ^c	NA	NA		Financial resources ^c	NA	NA	
Research and systematic observation	Mostly complete	Transparent	125	Minimization of adverse impacts in accordance with Article 3, paragraph 14	NA	NA	
Education, training and public awareness	Complete	Transparent					

Abbreviation: NA = not applicable.

^a A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in the chapter on conclusions and recommendations.

^b For the purposes of reporting in this table, this assessment refers to information provided by the Party on the provisions contained in Article 4, paragraphs 3, 5 and 7, of the Convention reported under Article 10 of the Kyoto Protocol, which is relevant for developed country Parties and other developed Parties included in Annex II to the Convention only. Assessment of the information provided by the Party on the other provisions of Article 10 of the Kyoto Protocol is provided under the relevant substantive headings under the Convention, for example research and systematic observation.

^c Reporting on financial resources under the Kyoto Protocol is relevant for developed country Parties and other developed Parties that are included in Annex II to the Convention (Annex II Parties). As Belarus is not an Annex II Party, it does not have an obligation to provide information on financial resources under Article 11 of the Kyoto Protocol, including on “new and additional” resources.

II. Technical review of the reported information in the national communication and supplementary information under the Kyoto Protocol

A. Information on greenhouse gas emissions and national circumstances relevant to greenhouse gas emissions and removals, including other elements related to the Kyoto Protocol

1. Information on relevant national circumstances

13. In its NC6, Belarus has provided a detailed description of the national circumstances and elaborated on the framework legislation and key policy documents on climate change. Further information on the review of the institutional and legislative arrangements for the coordination and implementation of PaMs is provided in chapter II.B below.

14. The NC6 does not include information recommended by the UNFCCC reporting guidelines on NCs regarding building stock and urban structure, although the previous review report encouraged the Party to include this information in its NC6. In response to questions raised by the ERT during the review, Belarus provided information on urban, rural, state and private housing stock for 1995 and the period 2000–2013. The ERT recommends that Belarus include information on its building sector (such as building stock and energy efficiency levels, prevailing heating technologies, tenure structure, main barriers to energy efficiency, renovation and new construction rates and other relevant information) in the next national communication (NC) to enhance completeness.

15. The ERT noted that the reporting on the national circumstances and drivers and the effect both have on emission trends is not transparent in the NC6. During the review, in response to a question raised by the ERT, such information was made available to the ERT. The ERT recommends that Belarus elaborate further on how national circumstances and changes in national circumstances affect GHG emissions and removals over time in its next submission, to enhance transparency.

16. The ERT noted that during the period 1990–2012, Belarus's population decreased by 7.1 per cent and its gross domestic product (GDP) increased by 93.8 per cent, while GHG emissions per GDP and GHG emissions per capita decreased by 66.9 and 30.9 per cent, respectively. The main drivers of the emission trends in Belarus include the economic decline in the early 1990s following the beginning of the transition towards a market economy, the growing share of services in the Belarusian economy, changes in the fuel mix and the effect of energy efficiency measures. The ERT noted that, despite continuous economic growth since 1995, Belarus has managed to keep emissions well below 1990 levels and thus provides a good example of how Parties can successfully work towards a decoupling of economic growth from GHG emissions growth. Table 2 illustrates the national circumstances of Belarus by providing some indicators relevant to GHG emissions and removals.

Table 2

Indicators relevant to greenhouse gas emissions and removals for Belarus

	1990	2000	2005	2010	2012	Change 1990–2012 (%)	Change 2011–2012 (%)
Population (million)	10.19	10.01	9.66	9.49	9.46	–7.1	–0.1
GDP (2005 USD billion using PPP)	73.41	65.10	93.50	132.89	142.31	93.8	1.5
TPES (Mtoe)	45.50	24.57	26.76	27.50	30.50	–33.0	3.9
GHG emissions without LULUCF (kt CO ₂ eq)	139 151.23	79 165.10	84 173.72	89 425.90	89 283.33	–35.8	2.0
GHG emissions with LULUCF (kt CO ₂ eq)	110 576.79	48 262.32	57 963.74	59 246.72	63 782.58	–42.3	9.5
GDP per capita (2005 USD thousand using PPP)	7.21	6.51	9.68	14.00	15.04	108.7	1.6
TPES per capita (toe)	4.47	2.46	2.77	2.90	3.22	–27.8	4.0
GHG emissions per capita (t CO ₂ eq)	13.66	7.91	8.71	9.42	9.43	–30.9	2.1
GHG emissions per GDP unit (kg CO ₂ eq per 2005 USD using PPP)	1.90	1.22	0.90	0.67	0.63	–66.9	0.5

Sources: (1) GHG emissions data: Belarus's 2014 GHG inventory submission, version 1.2; (2) Population, GDP and TPES data: International Energy Agency.

Note: The ratios per capita and per GDP unit are calculated relative to GHG emissions without LULUCF; the ratios are calculated using the exact (not rounded) values and may therefore differ from a ratio calculated with the rounded numbers provided in the table.

Abbreviations: GDP = gross domestic product, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry, PPP = purchasing power parity, TPES = total primary energy supply.

2. Information on the greenhouse gas inventory, emissions and trends

17. Belarus has provided a summary of information on GHG emission trends for the period 1990–2012 in its resubmission of its NC6. The original NC6 submission contained information on GHG emissions up to 2011. The information in the resubmitted NC6 is fully consistent with the 2014 national GHG inventory submission and includes GHG emissions for 2012. Summary tables, including trend tables for emissions in CO₂ eq (given in the common reporting format tables), are provided in an annex to the NC6. The NC6 also contains overview tables and figures of GHG emissions by sector and by gas.

18. Total GHG emissions³ excluding emissions and removals from LULUCF decreased by 35.8 per cent between 1990 and 2012, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 42.3 per cent over the same period. Carbon dioxide (CO₂) is the main GHG in Belarus and accounted for 74.6 per cent of the total net emissions in 1990 and 64.4 per cent in 2012. In absolute numbers, CO₂ emissions decreased by 44.6 per cent between 1990 and 2012, mainly driven by decreases in emissions from energy industries and transport. In contrast, emissions from combustion in manufacturing industries have increased by 37.1 per cent. The main driver of this is the increase in cement production, both for domestic use and for export. Nitrous oxide (N₂O) is the second most important GHG with shares of 14.5 per cent in 1990 and 18.4 per cent in 2012. Between 1990 and 2012 N₂O emissions decreased by 18.5 per cent, mainly driven by

³ In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions expressed in terms of CO₂ eq excluding LULUCF, unless otherwise specified.

reductions in emissions from manure management and agricultural soils. The share of methane (CH₄) increased from 10.9 per cent in 1990 to 17.2 per cent in 2012. CH₄ emissions increased by 1.1 per cent between 1990 and 2012.

19. The ERT noted that for 2011 and 2012 no emissions from hydrofluorocarbons (HFCs) were reported. In its GHG inventory, submitted in its national inventory report 2014, Belarus reports emissions only for the years 1995 to 2010. The NC6 does not contain an explanation for the fact that no HFC emissions are reported for 2011 and 2012. In the report of the individual review of the annual submission of Belarus submitted in 2013,⁴ lack of activity data was mentioned as the rationale for not providing estimates for these emissions. In the period 1995–2010, HFC emissions increased by 361.1 per cent. In absolute terms, HFCs account for only 0.01 per cent of the total 2010 emissions. Emissions of perfluorocarbons (PFCs) are reported in the NC6 as “NO” (not occurring). Emissions of sulphur hexafluoride (SF₆) are reported in the NC6 for the period 1995–2012. Although SF₆ emissions increased by 31,495.0 per cent over this period, these emissions account for only 0.003 per cent of the total 2012 emissions. An analysis of the drivers of GHG emission trends in each sector is provided in chapter II.B below. Table 3 provides an overview of GHG emissions by sector from 1990 to 2012.

Table 3
Greenhouse gas emissions by sector in Belarus, 1990–2012

Sector	GHG emissions (kt CO ₂ eq)				Change (%)		Shares ^a by sector (%)	
	1990	2000	2010	2012	1990–2012	2011–2012	1990	2012
	1. Energy	102 242.80	52 684.07	55 311.53	55 303.82	–45.9	3.6	73.5
A1. Energy industries	65 307.26	30 751.18	32 121.26	28 664.97	–56.1	–1.4	46.9	32.1
A2. Manufacturing industries and construction	7 238.50	6 767.49	8 142.39	9 924.68	37.1	23.2	5.2	11.1
A3. Transport	13 074.05	3 132.64	4 488.24	7 217.24	–44.8	9.1	9.4	8.1
A4.–A5. Other	15 382.97	10 568.54	8 967.30	7 894.39	–48.7	–1.4	11.1	8.8
B. Fugitive emissions	1 240.02	1 464.21	1 592.33	1 602.53	29.2	–1.4	0.9	1.8
2. Industrial processes	3 614.68	2 604.72	3 484.65	4 274.32	18.2	3.5	2.6	4.8
3. Solvent and other product use	74.40	76.04	69.19	64.48	–13.3	4.5	0.1	0.1
4. Agriculture	30 644.62	20 844.70	20 688.10	23 371.52	–23.7	–0.3	22.0	26.2
5. LULUCF	–28 574.44	–30 902.78	–26 209.98	–25 500.74	–10.8	–12.8	NA	NA
6. Waste	2 574.73	2 955.57	4 620.24	6 269.18	143.5	–3.4	1.9	7.0
GHG total with LULUCF	110 576.79	48 262.32	57 963.74	63 782.58	–42.3	9.5	NA	NA
GHG total without LULUCF	139 151.23	79 165.10	84 173.72	89 283.33	–35.8	2.0	100.0	100.0

Source: Belarus's 2014 GHG inventory submission, version 1.2 (for GHG emission data).

Note: The changes in emissions and the shares by sector are calculated using the exact (not rounded) values and may therefore differ from values calculated with the rounded numbers provided in the table.

⁴ FCCC/ARR/2013/BLR.

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

^a The shares of sectors are calculated relative to GHG emissions without LULUCF; for the LULUCF sector, the negative values indicate the share of GHG emissions that was offset by GHG removals through LULUCF.

3. National system

20. Belarus provided in its NC6 a description of how its national system is performing the general and specific functions defined in the guidelines for national systems under Article 5, paragraph 1, of the Kyoto Protocol (decision 19/CMP.1). However, Belarus, as a Party included in Annex I to the Convention but with no commitments inscribed yet in Annex B to the Kyoto Protocol, has no obligation to report supplementary information on its national system under Article 5, paragraph 1, of the Kyoto Protocol. The ERT commends Belarus for its efforts to report information on the national system in the NC6 on a voluntary basis.

4. National registry

21. In its NC6, Belarus has provided information on the national registry in accordance with the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1. However, Belarus, as an Annex I Party to the Convention but with no commitments inscribed yet in Annex B to the Kyoto Protocol, has no obligation to report supplementary information on its national registry. The ERT commends Belarus for its efforts to report information on the national registry in the NC6 on a voluntary basis.

5. Domestic and regional programmes and/or legislative arrangements and procedures related to the Kyoto Protocol

22. Belarus has reported information on domestic and regional programmes and legislative arrangements and procedures related to the Kyoto Protocol in various parts of its NC6. Belarus has provided an adequate overview of its legislative and institutional arrangements to meet its commitments under the Kyoto Protocol, including the legal authority for such programmes and how they are implemented. Reporting on regional programmes is analysed in the policy framework and cross-sectoral measures section of this report (see paras. 46–51 below).

23. The ERT noted that Belarus has not provided sufficient detail on how these programmes and legislation are enforced and how cases of non-compliance under domestic law are addressed. The NC6 also does not contain information on provisions to make information on these legislative arrangements and enforcement procedures publicly accessible.

24. During the review, Belarus provided additional information, elaborating on its legislative system and how enforcement of its legislation, including that related to meeting its commitments under the Kyoto Protocol, is performed. Belarus also explained that information on legislative arrangements and enforcement procedures is available on the official websites of relevant institutions. In order to increase the transparency of the NC, the ERT recommends that Belarus include a separate section on its domestic legislative arrangements and administrative procedures, established pursuant to the implementation of the Kyoto Protocol, in its next NC, including information on enforcement and public access to this information.

25. The overall responsibility for climate change policymaking lies within the Ministry of Natural Resources and Environmental Protection of Belarus, and a number of national institutions are involved in the implementation of policies. The Ministry is the focal point for the Party's commitments under the Convention and its Kyoto Protocol and as such it

coordinates within Belarus and ensures implementation of these international agreements according to the Decrees of the President No. 177 and No. 370.

26. The Ministry of Energy is responsible for the implementation of energy sector PaMs, including those on energy efficiency and renewable energy. The State Committee for Standardization is also involved in activities promoting PaMs regarding energy efficiency improvements and increasing use of renewable energy. The Ministry of Economy sets the feed-in tariffs for energy produced from renewable sources. The Ministry of Transport and Communications develops and implements PaMs in the transport sector. The Ministry of Housing and Communal Services deals with housing policy, including issues relating to the construction of new housing and renovation of existing building stock, and also develops and implements strategies and programs in the waste sector. The Ministry of Agriculture and Food develops and implements PaMs in the agriculture sector.

27. The State Commission on Climate Change, established by the Council of Ministers Regulation No. 1145 on 5 September 2006, had in the past coordinated climate policy actions among sector ministries and other institutions. However, during the review, Belarus informed the ERT of the abolishment of the Commission on 7 December 2014 and explained that no other commission has been established for the coordination of climate policy actions in Belarus.

28. The Belarus Scientific Research Centre “Ecology” provides technical and scientific support for the implementation of commitments under the Convention and its Kyoto Protocol by compiling GHG emission inventories, drafting national inventory reports and NCs, and by performing other technical tasks. If needed, external experts are called upon to provide specific sections of the reports.

29. During the review, the ERT noted that resources in Belarus are limited to fulfil the required periodic reporting commitments under the Convention, such as preparing and submitting NCs. The ERT further noted that Belarus may want to ensure that sufficient means are made available to guarantee continuity of its reporting commitments under the Convention as well as maintaining the level of quality.

30. Implementation of the Kyoto Protocol is underpinned by the State programme on Climate Change Mitigation Measures for the years 2013–2020, Presidential Decree No. 224 “On the negotiations on the draft amendment to Annex B to the Kyoto Protocol to the United Nations Framework Convention on Climate Change”, the Strategy on Environmental Protection up to 2025 and numerous sector-specific PaMs.

31. Belarus has a well-established system for monitoring the implementation of PaMs and also for the evaluation of their effectiveness. Usually, each programme contains a clear mechanism for monitoring specific achievement indicators. However, during the review the Party explained that the assessment of mitigation effects from implemented PaMs is not compulsory in Belarus, therefore some ministries and other institutions do not always provide estimates of mitigation impacts for their sector policies even if they do influence GHG emission trends. The achievement indicators used by some ministries for monitoring policy implementation are not directly related to GHG emissions, thus making it difficult for the Ministry of Natural Resources and Environmental Protection to properly assess and report the achieved or expected mitigation impacts of these PaMs.

32. In order to ensure the transparency and completeness of the NC, the ERT encourages Belarus to improve its reporting on the way in which progress of PaMs to mitigate GHG emissions is monitored and evaluated over time. This information should include a description of how cooperation between various national ministries and institutions has been strengthened in order to assess the ex ante and ex post climate impact of all policies reported in the NCs.

33. Because Belarus does not yet have a binding target for reducing its GHG emissions under the Kyoto Protocol, the ERT did not review institutional arrangements and decision-making procedures relating to participation in the Kyoto Protocol mechanisms.

B. Policies and measures, including those in accordance with Article 2 of the Kyoto Protocol

34. Belarus has provided in its NC6 comprehensive and well-organized information on its package of PaMs implemented, adopted and planned in order to fulfil its commitments under the Convention and its Kyoto Protocol.

1. Policies and measures related to implementation of commitments under the Convention

35. In its NC6, Belarus reported on its PaMs adopted, implemented and planned in achieving its commitments under the Convention. Belarus provided information on PaMs by sector and by gas and a description of the principal PaMs. The NC6 contains, with a few exceptions, a set of PaMs similar to those in the NC5. The ERT noted that completeness and transparency of the NC6 has improved compared with the NC5. Belarus also reported on its policy context and the national targets for various sectors that are set in order to implement its commitments under the Convention.

36. Several recommendations and encouragements made in the previous review report have been taken into consideration by Belarus in the NC6; for example, PaMs covering the industry sector were included and non-GHG mitigation benefits of some policies, such as reduction of air pollution, were mentioned in the NC6. The ERT commends Belarus for this improvement. However, the ERT noted that several recommendations and encouragements made in the previous review report were not taken into consideration, as explained in paragraphs 37–45 below.

37. The ERT noted that several of the reported PaMs are clearly linked, but these linkages are not explained in the NC6. During the review, Belarus provided an updated common tabular format (CTF) table 3 of the first biennial report (BR1) clarifying linkages among various policies and potential overlaps in the estimates of mitigation impacts. The ERT recommends that Belarus improve the transparency of the textual description in the section on PaMs in its next NC by grouping PaMs where there is a clear linkage or overlap, and by combining longer-term sector strategies and shorter-term implementation programmes. The ERT further suggests that a chart explaining the overall design, hierarchy and linkages among various PaMs would strengthen the transparency of the reported information.

38. In its NC6, Belarus did not clearly report the status of implementation of the national ETS, which could potentially deliver very significant GHG emission reductions at low cost if it were well designed and implemented. During the review, the Party provided additional descriptions of the status of implementation each of its PaMs and described preliminary work on the potential development of the national ETS. In order to improve transparency, the ERT recommends that Belarus report clearly on the status of implementation of its PaMs, and also encourages the Party to distinguish PaMs in the planning stage from those that have been implemented and adopted in its next NC.

39. Belarus has not explicitly reported in the NC6 on how it believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals in accordance with the objective of the Convention. During the review, Belarus explained that some of its measures (e.g. the ambitious energy efficiency standards for new buildings, the feed-in tariff system for renewable energy and the investments in cogeneration power plants) are

likely to have long-lasting effects. In order to ensure the completeness of the reporting, the ERT recommends that Belarus include a brief explanation of how it believes its policies modify longer-term trends in its next NC.

40. In its NC6, Belarus gave priority to those PaMs adopted, implemented and planned that provide significant contribution to its emission reduction efforts. However, the mitigation impacts were provided only for three policies out of 35 reported, namely, for the State programme on mitigation actions in 2013–2020, the National Energy Saving Programme for 2011–2015 and the National Programme for the Development of Local and Renewable Energy Sources for 2011–2015. Therefore it was difficult for the ERT to assess whether priority is given to PaMs with the most significant impact. The ERT encourages Belarus to provide quantitative estimates of the impacts of more of its PaMs or groups of PaMs in its next NC.

41. The ERT also noted that some of the reported PaMs (e.g. the strategy of development of the hydrometeorological activity and the State Programme on the development of the National Environmental Monitoring System for 2011–2015) are likely to have indirect and marginal effects on GHG mitigation. During the review, Belarus confirmed these observations. In order to improve transparency of its reporting, the ERT encourages Belarus to focus on PaMs having the most significant GHG mitigation impact in its next NC.

42. Following an encouragement made in the previous review report, Belarus in its NC6 described the methodology used to estimate the impact of its energy efficiency measures. However, the ERT noted that the NC6 does not contain an analysis of potential synergies and overlaps of the effects of individual PaMs and there is no clear description of the methodologies used for the other estimates. During the review, Belarus provided additional information on the mitigation impacts of other PaMs and explained the potential overlaps between mitigation actions and their combinations. The Party also provided additional explanations of the estimation approach and methodologies. The quantitative effects of a policy or measure provided by Belarus consist of the GHG emissions avoided cumulated during the implementation phase of that policy or measure, relative to a scenario where this policy or measure is not implemented over the same time period. This estimation approach does not take into account the effects of the policy or measure in the years after the end date of implementation. As the full mitigation effect of some types of PaMs is only realised once the PaMs have been fully implemented (sometimes after the end date of implementation), this could lead to an underestimation in some cases. The ERT reiterates the encouragement of the previous review report that Belarus describe the methodologies used to estimate the effect of the individual PaMs and explain how synergies and overlaps are considered in the effects of PaMs in its next NC.

43. The ERT noted that Belarus does not identify in the NC6 its policies and practices that encourage activities that lead to greater levels of anthropogenic GHG emissions than would otherwise occur. During the review, the Party provided additional information on several policies that could potentially lead to greater GHG emissions, such as the promotion of the use of peat in the energy mix, the cross-subsidization of energy tariffs for certain user groups, and policies aiming at the increase of meat production. In order to ensure the completeness of the reporting, the ERT encourages Belarus to report on policies that potentially lead to greater levels of GHG emissions and provide the rationale for such actions in its next NC.

44. The ERT noted that the NC6 provides a detailed assessment of the achievements and effects of PaMs reported in previous NCs. Belarus also reported on those PaMs no longer in place and provided explanations of why these PaMs were discontinued. The ERT commends Belarus for this reporting.

45. In its NC6 Belarus provided total budgets of some of its PaMs. However, the ERT noted that the share of investments relating to climate policy in the total budgets is not always clear in the NC6. During the review, the Party stated that detailed costs of separate activities are sometimes available in the relevant legal acts. In order to improve transparency, the ERT encourages Belarus to include available information about costs of climate PaMs in its next NC.

2. Policy framework and cross-sectoral measures

46. The State programme on mitigation actions in 2013–2020 is the key overarching policy approved by the Council of Ministers on 21 June 2013. It replaces the Strategy for Reducing Emissions by Sources and Enhancing Removals by Sinks of the Greenhouse Gases in the Republic of Belarus for 2007–2012, which was presented in detail in the NC5. This new programme also sets the national GHG emission reduction target of 8 per cent for 2020 compared with the 1990 level.

47. Implementation of this programme is expected to avoid more than 1,400 kt CO₂ eq of GHG emissions annually (see table 4 below). This mitigation impact combines the impacts of individual cross-sectoral and sectoral PaMs, such as the Strategy on technological potential development until 2015; the State programme on construction of energy sources on local fuels in 2011–2015; the State programme on energy system development until 2016; the State energy saving programme for 2010–2015; the National Programme for the Development of Local and Renewable Energy Sources for 2011–2015; the programmes for the construction of biogas and hydropower plants; the State forestry development programme for 2011–2015; and other PaMs.

48. Other important cross-sectoral policies in Belarus are the National Programme for Socio-economic Development (2011–2015) and the Strategy on technological potential development until 2015. These programmes call for a reduction in materials consumption and energy intensity, an increase in the use of local fuels, including peat, and an improvement in environmental quality.

49. According to the updated CTF table 3 of the BR1, which was provided by the Party during the review, the key individual policies delivering the highest mitigation impact are the State programme on energy system development until 2016, the National Programme for the Development of Local and Renewable Energy Sources for 2011–2015 and the State energy saving programme for 2010–2015, including programmes promoting energy efficiency in buildings (see table 4 below).

50. The number of legal acts ensuring compliance with the Party's commitments under the Convention and its Kyoto Protocol is continuously increasing. There were more than 60 legal acts on climate change, energy efficiency and energy production adopted during the period 2006–2014.

51. Most of the PaMs reported in the NC6 are implemented at the national level. Although there was an encouragement in the previous review report for the Party to include a description of regional and local activities, the NC6 only briefly mentions the regional energy efficiency programmes, without providing any details of these programmes. During the review, Belarus provided additional information on regional and local activities and their place within the various legislative arrangements. Belarus indicated that regional and local authorities play an important role in several national programmes. In order to improve transparency, the ERT reiterates the encouragement of the previous review report that Belarus include a description of regional and local activities in its next NC.

52. Table 4 provides a summary of the reported information on the PaMs of Belarus.

Table 4
Summary of information on policies and measures reported by Belarus

<i>Sectors affected</i>	<i>List of key policies and measures</i>	<i>Estimate of average annual mitigation impact (kt CO₂ eq)</i>
<i>Policy framework and cross-sectoral measures</i>		
	State programme on mitigation actions in 2013–2020	1 400 ^a
	National Programme for Socio-economic Development (2011–2015)	NE
	Strategy on technological potential development until 2015	440
Energy	Strategy on energy potential development in 2011–2015 and until 2020	NE
Energy supply	State programme on energy system development until 2016	400
Renewable energy	National Programme for the Development of Local and Renewable Energy Sources for 2011–2015	678
	State programme on construction of energy sources on local fuels in 2011–2015	114
Energy efficiency	State energy saving programme for 2010–2015	340
Residential and commercial sectors	Comprehensive programme on construction and reconstruction of energy-efficient buildings for 2009–2010 and until 2020	175
Transport	State Programme for the Development of Road Transport for 2011–2015	NE
	State Programme for the Development of Railway Transport for 2011–2015	26
Industrial sectors	Programme of the development of the industrial complex for the period up to 2020	NE
Agriculture	State programme for sustainable rural development for 2011–2015	NE
Forestry	State forestry development programme for 2011–2015	175
Waste management	Programme of development of housing and communal services until 2015	230 ^b

Note: The estimates of avoided greenhouse gas emissions given for some measures are average annual avoided emissions in carbon dioxide or carbon dioxide equivalent. These were calculated by the expert review team by dividing the cumulative greenhouse gas emissions avoided during the implementation phase of that policy or measure (relative to a case in which this policy or measure is not implemented), as provided by Belarus during the review, by the number of years over which the policy or measure was implemented. This estimation approach does not take into account the effects of the policy or measure in the years after the end date of implementation. See paragraph 42 above.

Abbreviation: NE = not estimated.

^a This figure comprises impacts of some of the sector policies and measures listed below.

^b This programme and the figure includes energy efficiency measures for the building sector and greenhouse gas emission reduction measures in the waste sector.

3. Policies and measures in the energy sector

53. Between 1990 and 2012, GHG emissions from the energy sector decreased by 45.9 per cent (46,939 kt CO₂ eq), mainly owing to the structural changes in the Belarusian economy (i.e. an increasing share of GDP for the services sector) and changes in the energy mix (i.e. transition from coal and oil to natural gas and biomass) as well as improvements in energy efficiency.

54. As a result, there were significant reductions of GHG emissions from fuel combustion in the energy industries (by 56.1 per cent), in transport (by 44.8 per cent) and in energy use in the commercial and institutional sectors and agriculture (by 49.7 per cent), which were partially compensated for by increases in GHG emissions from manufacturing industries and construction (by 37.1 per cent) and in fugitive emissions (by 29.2 per cent) during the period 1990–2012. The energy sector remained the main source of GHG emissions in Belarus even though its share in total GHG emissions fell from 73.5 to 61.9 per cent.

55. From 2005 to 2013 the gross energy consumption remained relatively stable, which contributed to a continuous reduction of the energy intensity of the GDP. At the same time, GHG emissions from the transport sector increased by more than 60 per cent during the period 2005–2012, making transport and manufacturing industries and construction the fastest growing sources of GHG emission within the energy sector.

56. The ERT noted that the descriptions of PaMs in all sections in the energy sector of the NC6 broadly cover objectives and technical solutions and are sometimes lacking detail regarding policy design features and the expected mitigation impacts. It is therefore difficult for the ERT to assess the effectiveness of the reported measures. During the review the Party provided additional information on the design of the PaMs that influence GHG emissions in energy supply, the residential and commercial sectors, and transport and industry, including mitigation impacts of the key PaMs. In order to improve transparency, the ERT encourages Belarus to provide more details on the design and impacts of energy supply sector policies, including those on renewable energy, of PaMs encouraging the uptake of energy efficiency technologies and solutions in the residential and commercial sectors, and of PaMs in the transport and industry sectors, and also to include mitigation impacts for the key PaMs in its next NC.

57. **Energy supply.** In 2012, energy industries were the main source of GHG emissions, accounting for about 32.1 per cent of the total emissions of Belarus.

58. The NC6 contains a comprehensive and well-structured section on the energy supply sector PaMs. Following a recommendation made in the previous review report, Belarus enhanced the description of specific PaMs on heat and power production and included a complete description of PaMs related to renewable energy sources.

59. The Strategy on energy potential development in 2011–2015 and until 2020 establishes the main political goals for both the energy supply and the demand sectors. The objective of the strategy is to reduce the energy intensity of the Belarusian economy by 50 per cent by 2015 and by 60 per cent by 2020, compared with the level of 2005. The strategy foresees the construction of new power plants run by natural gas, coal and nuclear power and the decommissioning of obsolete and inefficient capacity.

60. The State programme on energy system development until 2016 has been implementing the strategy via a set of concrete measures since 2011. The latest version of the programme (updated in 2013) foresees the commissioning by the State company Belenergo of new efficient gas and coal power plants with a capacity of 1,870 MW, and the phase-out of 900 MW of outdated capacity by 2016. Energy losses in electricity and heat supply networks are planned to be reduced by 2 per cent by 2016 compared with the 2010

levels. These investments are planned to be financed by the State budget and Belenergo's own financial resources. As a result, the specific fuel consumption for electricity production in 2016 is expected to be reduced by 25–30 g of coal equivalent per kWh compared with the 2010 level. The programme also foresees investments supporting the use of local fuels, such as peat and biomass, and secondary energy resources, such as processed solid waste, for heating and electricity generation, which is expected to reach 1,100–1,300 kt of coal equivalent. If all these measures were to be successfully implemented, the annual natural gas consumption would be expected to drop by 1.26 billion m³ by 2016. The programme would be also expected to deliver cumulative GHG emission reductions of more than 2,000 kt CO₂ eq compared with a scenario in which this programme is not implemented during the period 2011–2016.⁵

61. **Renewable energy sources.** Belarus has provided more information on renewable energy sources in the NC6, compared with its NC5. The NC6 provides a good overview of renewable energy potential, covering all major energy sources available in the country such as hydro, wind, solar, biomass, biofuels, biogas and geothermal energy. This information helps the ERT to understand the focus of the Party's renewable PaMs and the ERT commends the Party for its efforts to improve transparency.

62. The cumulative GHG mitigation impact was provided only for the National Programme for the Development of Local and Renewable Energy Sources for 2011–2015. During the review Belarus provided additional clarifications on its renewable energy policies, including details on its feed-in tariff system for renewable electricity. GHG mitigation impacts were also provided for the State programme on construction of energy sources on local fuels in 2011–2015, the Programme on construction of biogas energy sources in 2011–2015 and the State programme on construction of hydropower plants in 2011–2015.

63. The most significant mitigation impacts are expected from implementing the National Programme for the Development of Local and Renewable Energy Sources for 2011–2015 and the State programme on construction of energy sources on local fuels in 2011–2015.

64. The first of these two programmes establishes renewable energy targets for different technologies. For example, it envisages the installation of 120 MW of electrical capacity from hydropower plants and 168 MW from wind power plants, and also heat pumps with heat capacity of 6.4 MW, all by 2015. Installation of renewable power is incentivized by guaranteed access to the power grid (with connection expenses paid by Belenergo), guaranteed feed-in tariffs for extended periods of operation and also land and tax exemptions. The feed-in tariffs are set and regularly updated by the Ministry of Economy. The total expenditure for the implementation of this programme is estimated at USD 3.5 billion. The cumulative impact of this programme is estimated at 2,700 kt CO₂ eq, with biomass, biogas and wind power plants delivering the largest emission reductions.

65. The State programme on construction of energy sources on local fuels in 2011–2015 supports the development of local fuels for heat and electricity production. The programme will provide subsidized financing for the installation of 160 boilers and electricity generators running on biomass and peat, with cumulative electrical capacity of almost 33 MW and thermal capacity of 1,023 MW over the period 2011–2015. The total funding of the programme is planned to be around USD 190 million. As the programme incentivizes the use of peat, the final mitigation outcome depends on the fuel mix of the

⁵ The quantitative mitigation impacts reported in the text are cumulative over the years of implementation of the PaMs, and are therefore different from those provided in table 4, which are average annual mitigation impacts.

installed systems. The cumulative mitigation impact of this programme over 2011–2015 is estimated at 570 kt CO₂ eq.

66. **Energy efficiency.** In the NC6 Belarus has provided a comprehensive overview of its energy efficiency measures, including the methodology used for estimating the effect of the National Energy Saving Programme for 2011–2015, following an encouragement made in the previous review report. During the review, Belarus provided additional information on the design of its energy efficiency measures and further clarifications on the methodologies used to estimate the effect of the individual PaMs.

67. Energy efficiency is very important for achieving the strategic goal of reducing the energy intensity of the Belarusian economy and for improving the country's energy security. The State energy saving programme for 2010–2015 is the key energy efficiency measure in Belarus. The programme partly overlaps with other Belarusian energy PaMs; however, it is expected to deliver cumulative GHG emission reductions of 1,700 kt CO₂ eq in addition to the 10,000 kt CO₂ eq cumulative reductions foreseen in the State programme on mitigation actions in 2013–2020. The energy saving programme includes measures to promote: cogeneration; the minimization of energy losses in the electricity grid and the heat supply network; and increasing energy efficiency in buildings and the energy-intensive industries.

68. This programme includes subsidized financing for priority projects implemented by Belenergo and other industrial enterprises, the establishment of minimum energy efficiency standards for new buildings and certain energy-using products, the elimination of cross-subsidies in the heating sector, the provision of information and education campaigns for the general public and targeted interest groups, and other measures. The total funding of the programme is estimated to be USD 8.6 billion.

69. **Residential and commercial sectors.** Belarus included information on PaMs for the residential and commercial sectors in its NC6, following a recommendation made in the previous review report. However, the ERT noted that the information on building sector policies was included in the energy and industry sections and the NC6 contains limited information on the Belarusian building stock. During the review the Party provided additional information on its building sector.

70. The measure delivering the most significant mitigation impact in the residential and commercial sectors is the Comprehensive programme on construction and reconstruction of energy-efficient buildings for 2009–2010 and until 2020. The annual mitigation impact of this programme is expected to reach 175 kt of CO₂ eq by 2020. This programme is expected to deliver energy savings by: improving technical standards for buildings and construction products; incentivizing local production of new efficient technologies and products; and improving the quality of construction with stricter enforcement of the building codes.

71. The Concept of development of construction sector in 2011–2020 proposed mandatory standards for the specific energy consumption of heating, ventilation and air-conditioning systems, which should not exceed 60 kWh/m² by 2015 and 40 kWh/m² by 2020 for newly constructed buildings. In 2013, the Concept of the State Housing Policy of the Republic of Belarus until 2016 further strengthened the specific energy consumption requirement by introducing the 40 kWh/m² per year level already starting from April 2013. Given the relatively high levels of new construction in Belarus this measure is expected to deliver significant energy savings. The climate mitigation effect of the concept is included in the cumulative impact of the Comprehensive programme on construction and reconstruction of energy-efficient buildings for 2009–2010 and until 2020.

72. The State programme on housing and communal services development until 2015 is also expected to deliver significant energy savings in the residential building sector via financial incentives for the renovation of the existing building stock.

73. **Transport sector.** The NC6 includes a separate section on transport policies with two policies reported: the State Programme for the Development of Road Transport for 2011–2015; and the State Programme for the Development of Railway Transport for 2011–2015.

74. Very limited information was provided on the transport sector in the national circumstances chapter of the NC6, which would have facilitated the assessment of the effectiveness of the reported PaMs. Thus, the ERT encourages Belarus to provide more information in its next NC, including information on composition and average mileages of the passenger car fleet, modal distribution of passenger and cargo transport, and other relevant information to increase transparency.

75. The programme for the development of road transport is expected to deliver GHG emission reductions via financial support for the renewal and development of public road transport and improvements in traffic management and urban planning. The programme for the development of railway transport will incentivize a modal shift by providing subsidized financing for the modernization of railway vehicles. Belarus expects that investments will reduce the energy intensity in rail transport by 29–30 per cent. The Innovation Fund of the Ministry of Transport is expected to provide USD 5.7 million for the railway programme.

76. **Industrial sector.** Following a recommendation made in the previous review report, Belarus included an overview of industry sector measures in the industry section of the NC6.

77. The ERT noted that the Comprehensive programme on construction and reconstruction of energy-efficient buildings and the Concept of the development of the building complex for 2011–2020 that the Party has reported in the industry sector are more relevant for the section describing energy efficiency in buildings, because these programmes set energy efficiency standards for newly constructed buildings. In order to improve transparency, the ERT encourages Belarus to move measures relating to the building sector to the energy section in its next NC.

78. The Programme of the development of the industrial complex for the period up to 2020 sets the target for the industry and energy sector to reduce GHG emissions by at least 10 per cent below the 1990 levels in 2020. The programme foresees the allocation of substantial financial resources for providing subsidized financing of selected investments. The ERT noted that the Party's strategy on technological potential development until 2015 also contains a few measures that affect the GHG emissions of the industry sector (e.g. providing subsidized financing to investments encouraging resource and energy efficiency and the use of renewable energy resources) and the ERT encourages Belarus to provide a cross-reference to this policy in the industry section in its next NC.

4. Policies and measures in other sectors

79. Between 1990 and 2012, GHG emissions from industrial processes (including solvent and other product use), agriculture and waste decreased by 7.9 per cent (2,929 kt CO₂ eq), mainly owing to the decrease in the use of fertilizers in agriculture. The GHG emission trends and main drivers in the specific sectors are provided in paragraphs 80–92 below.

80. **Industrial processes.** Between 1990 and 2012, GHG emissions from the industrial processes sector increased by 18.2 per cent (659.6 kt CO₂ eq), mainly owing to the increase in cement production. In 2012, GHG emissions from industrial processes amounted to 4.8 per cent of the national total emissions, up from 2.6 per cent in 1990. Cement production experienced a rapid growth in 2005–2012 thanks to the expansion of the construction sector. GHG emissions from ammonia production, the second most important contributor, also experienced moderate growth in the years 2005–2012 because of the

increasing demand for synthetic fertilizers. There are no policies in Belarus specifically targeting GHG emissions from industrial processes. Programmes targeting overall GHG emissions in the industrial sector are analysed in paragraphs 76–78 above.

81. **Agriculture.** Between 1990 and 2012, GHG emissions from the agriculture sector decreased by 23.7 per cent (7,273 kt CO₂ eq), mainly owing to the overall decrease of agricultural production and livestock numbers and also because of a fall in the use of synthetic fertilizers. However, since 2002 the agricultural emissions have increased: during the 2005–2012 period agricultural GHG emissions increased by 13 per cent because of increases in agricultural production and the growing use of synthetic fertilizers. The agriculture sector is the second most important source of emissions in Belarus, accounting for over 26 per cent of the national total GHG emissions in 2012, up from 22 per cent in 1990.

82. The NC6 includes a separate section on Belarusian agricultural policies. However, the section provides only a list of three State programmes, without providing sufficient detail on the main challenges addressed, programme objectives and the design of policies. Therefore, it was difficult for the ERT to assess the effectiveness, mitigation potentials and non-GHG benefits of the reported measures. There was also no information on how PaMs reported in the NC5 inter-relate with those reported in the NC6.

83. In response to questions raised by the ERT during the review, Belarus provided more information on its PaMs that aim to reduce agricultural GHG emissions. Budgetary resources are allocated for supporting investments, for example: to prevent land degradation; to ensure soil fertility conservation; to monitor pollution sources; and to encourage the adoption of waste-free and low-waste technologies, and the development of energy- and resource-saving technologies. Belarus uses a mix of direct financing and interest subsidies to support environmentally friendly agricultural technologies. The ERT noted that mitigation measures in agriculture are also supported by the National Programme for Social and Economic Development for 2011–2015, the State Programme of Innovative Development of the Republic of Belarus for 2011–2015 and the Strategy for Technological Development of the Republic of Belarus for the period up to 2015. These programmes and the strategy allocate budgetary resources for increasing fertility of agricultural lands, implementation of the best agricultural practices and the construction of biogas installations. Also, the Strategy on energy potential development and the National Energy Saving Programme have certain measures affecting emissions from agriculture by promoting the use of biogas from agriculture residues (straw) and animal waste.

84. In order to improve transparency, the ERT reiterates the encouragement made in the previous review report for Belarus to elaborate on the objectives and design features of its agricultural PaMs, their GHG mitigation impacts and also their non-GHG benefits, such as enhancing food security, in its next NC. If any cross-sector policies have significant impact on agricultural emissions, such as measures promoting the production of biogas, this should be also mentioned and references to other chapters of the communication should be given.

85. **LULUCF.** The LULUCF sector was a net sink accounting for removals of 25,500.74 kt CO₂ eq in Belarus in 2012, and net GHG removals decreased by 10.8 per cent since 1990. The trend was mainly driven by the losses of wood stock owing to forest fires and disturbances on forest lands (pests, forest diseases, unfavourable weather conditions).

86. Only the State forestry development programme for 2011–2015 was described in the NC6. The NC6 contains only general information on the aims of this programme, which are to increase the productivity of forests by improving the age classes and species composition of forests and to conduct reforestation and forest management activities. Thus it was difficult for the ERT to assess the effectiveness of the programme.

87. The Strategy on energy potential development in 2011–2015 and the National Energy Saving Programme 2011–2015 described under the energy sector PaMs (see paras. 53–78 above) also include measures affecting removals in LULUCF by promoting the introduction of equipment for the production of wood chips from non-commercial wood and wood residues. The ERT encourages Belarus to improve the transparency of its reporting by providing clear references to relevant sections of the NC, if these cross-sector policies have significant mitigation impact.

88. During the review, the Party stated that PaMs targeted at reducing GHG emissions from the LULUCF sector are included in the following integrated programmes: the Strategy for Reducing Emissions by Sources and Enhancing Removals by Sinks of the Greenhouse Gases in the Republic of Belarus for 2007–2012, the State programme on mitigation actions in 2013–2020, the National Programme for Socio-economic Development (2011–2015), the Strategy for Technological Development of the Republic of Belarus for the period up to 2015 and the Strategy on Environmental Protection up to 2025. The State forestry development programme for 2011–2015 is the update of the State Programme for Development of Forestry in the Republic of Belarus for 2007–2011; implementation of the original programme resulted in an increase of forested area from 37.7 per cent to 38.5 per cent and total stock of standing wood increased by 131 million m³. The updated programme for 2011–2015 aimed to increase the forested area from 38.5 per cent to 39.0 per cent.

89. During the review, Belarus explained that there are a number of UNDP/GEF projects targeting environment and biodiversity conservation under implementation. One of these projects is “Landscape approach to the management of peatlands” which, during its first phase (2011–2015), resulted in reduced water pollution and reduced eutrophication impact on riverine and wetland species; it also improved agriculture management for 595 ha of land, restored 2,027 ha of forested peatlands and restored 4,311 ha of degraded lands. Regarding improved forest management, in total 9,100 kt CO₂ eq are expected to be sequestered within 20 years. The ERT recommends that Belarus improve the transparency of its next NC by providing more detailed information on its PaMs in the LULUCF sector, and encourages the Party to also include estimated mitigation impacts of the key PaMs in the LULUCF sector.

90. **Waste management.** Between 1990 and 2012, GHG emissions from the waste sector increased by 143.5 per cent (3,694 kt CO₂ eq), mainly driven by the rapid increase in CH₄ emissions from solid waste disposal on land. The solid municipal waste generation rate increased from 0.485 kg/person per day to 1.5 kg/person per day between 1997 and 2013. The total volume of municipal solid waste in Belarus reached 5,150 kt in 2013 and most of this amount was landfilled.

91. The NC6 describes one policy in the waste sector: the Programme of development of housing and communal services until 2015, which aims to reduce the GHG emissions of the waste sector and also to improve energy efficiency in the building sector. However, the description in the NC6 focuses on objectives and technical solutions without providing sufficient detail on the policy design; therefore, it was difficult for the ERT to assess the effectiveness of the reported measures, including with regard to potential non-GHG benefits. During the review the Party provided additional information on the design and expected impact of the waste sector PaMs.

92. The programme aims to deliver the sorting and recycling of at least 1,000 kt of municipal solid waste per year by the end of the programme. The state and local budgets and other financial institutions will provide subsidized financing for the construction and expansion of waste recycling plants in 7 Belarusian cities and for the construction of 11 biogas plants to process the organic part of municipal waste. These plans are supported by the introduction of municipal solid waste separation and the promotion of recycling. The cumulative mitigation impact of the programme is expected to be 700 kt CO₂ eq over the

period of 2013–2015. In order to improve transparency, the ERT reiterates the encouragement of the previous review that the Party provide more details on the design of waste policies and their mitigation impact in its next NC.

5. Policies and measures related to implementation of commitments under the Kyoto Protocol

93. Belarus reported on its package of PaMs adopted, implemented and elaborated in achieving its commitment under the Kyoto Protocol.

94. As a landlocked country, Belarus does not address emissions from fuels used in international maritime transport. The ERT noted that the NC6 contains a description on cooperation activities between the Belarusian aviation authorities and ICAO in the chapter on research and systematic observation. The Department of Aviation of the Ministry of Transport and Communications actively cooperates with ICAO in developing future aviation policies aiming at the reduction of GHG emissions in international aviation.

95. However, no details were provided on the steps taken to promote or implement any decisions by ICAO relating to international aviation; for example, regarding the sector programme for the protection of the environment for 2011–2015, which is mentioned in the PaMs chapter of the NC6. In order to increase transparency, the ERT recommends that Belarus, in its next NC, include information on steps taken to promote or implement any decisions by ICAO relating to international aviation. This information should be reported in the transport section of the PaMs chapter.

96. Belarus, in its NC6, did not report on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects on international trade and social, environmental and economic impacts on other Parties. During the review, Belarus informed the ERT that it considers that its PaMs relating to climate change promote sustainable development and thus have no direct or indirect negative effects on other Parties. The ERT reiterates the recommendation made in the previous review report that Belarus elaborate on this information, as appropriate, in its next NC.

C. Projections and the total effect of policies and measures

1. Projections overview, methodology and key assumptions

97. The GHG emission projections provided by Belarus in the NC6 include a ‘with measures’, a ‘with additional measures’ and a ‘without measures’ scenario until 2020, presented relative to actual inventory data for 1990–2012. The ERT commends Belarus for providing this range of scenarios, allowing for a more extensive assessment of future emission trends. In its NC6, Belarus also provided a ‘without measures since 1995’ scenario, which excludes all PaMs since 1995. Although Belarus also provided total emissions for the ‘without measures since 1995’ scenario, there were no details provided on assumptions, underlying methodologies or results by sector or by gas. Thus, the ERT did not consider this scenario in its review.

98. Projections are presented on a sectoral basis, using the same sectoral categories used in the PaMs section and on a gas-by-gas basis for all GHGs: CO₂, CH₄, N₂O, PFCs, HFCs and SF₆, treating PFCs and HFCs separately. Projections are also provided in an aggregated format for each sector as well as for a national total, using global warming potential values from the Second Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).

99. The NC6 does not include information required by the UNFCCC reporting guidelines on NCs regarding emission projections related to fuel sold to aircraft engaged in international transport. Emission projections related to fuel sold to ships engaged in international transport are not relevant for Belarus as it is a landlocked country and has limited fluvial activity. During the review, Belarus provided additional information, elaborating on these projections. Based on historical trends and the fact that only annual arrangements are made regarding the flights operated by the national company, Belavia, and foreign companies, Belarus assumes that these emissions will remain stable up to 2020. The ERT considered this additional information and agrees that this is an appropriate approach, given the historical trends and the national circumstances. The ERT reiterates the recommendation made in the previous review report that Belarus include these projections, and the underlying rationale in its next NC.

100. The ERT noted that, for the reported scenarios, the definitions are not transparently documented in the NC6. From the information in the NC6 and that received during the review, it became clear that the three above-mentioned scenarios differ only in their assumptions on heat demand and on power plant additions in the energy industry. Assumptions for all other sectors and gases are kept constant for the three scenarios, as well as the final electricity demand.

101. The ERT could not assess which implemented and adopted key PaMs, or effects thereof, have been included in the 'with measures' scenario. The applied approach of regression analysis for most non-energy sectors (see para. 103 and 105 below), which is based on the national approach to generally continue existing PaMs, also assumes a continuous effect of these PaMs. The ERT observed that Belarus could investigate in more detail whether trend continuation through regression analysis is the most appropriate way to estimate emissions for its national and sectorial GHG projections.

102. From the information provided on higher heat demand compared with the 'with measures' scenario, the ERT could determine that in the 'without measures' scenario a number of energy efficiency policies for buildings were excluded. It was not clear which of the PaMs listed in the PaMs chapter and from which year onwards they were excluded, but from the information provided during the review the ERT could determine that it was 2012. The 'with additional measures' scenario differs from the 'with measures' scenario regarding heat demand and includes additional hydro and wind power plants, but only after 2025, which is beyond the reported projection range. The ERT recommends that Belarus report more transparently on its scenario definitions as per the UNFCCC reporting guidelines on NCs, especially for the 'with measures' and 'without measures' scenarios. The ERT also recommends that Belarus improve the approach used for projecting GHG emissions in order to be able to include the effect of PaMs in non-energy sectors such as agriculture and waste, which are currently not reflected in the scenarios.

103. Belarus reported in its NC6 that it uses a mixed approach to estimate GHG emission projections. The use of both the LEAP and the ENPEP-BALANCE models was mentioned for projecting emissions from energy industries, which cover energy supply (mainly heat and electricity). For most of the other sectors (comprising energy end use sectors such as manufacturing industry and construction, agriculture, commercial and other sectors as well as industrial processes, solvents and non-CO₂ emissions from agriculture and waste), a forecast based on regression analysis was applied. For the transport sector a separate projection estimate was made based on growth rates of volume (private transport) or turnover (public transport and freight).

104. The NC6 is not transparent regarding the Party's use of the above-mentioned models for projections for the energy industries sector. During the review, Belarus provided additional information on the use of these models. LEAP was the primary model used to estimate emissions in this sector, as was the case for the projections reported in the NC5.

The ENPEP-BALANCE model is used for comparative purposes: to check the robustness of the LEAP results, while using the same assumptions. According to the information provided by the Party during the review, the difference in results between both model calculations using LEAP and ENPEP-BALANCE did not exceed 5 per cent. The ERT commends Belarus for such efforts, but recommends that the Party report more transparently on the applied methodology in its next NC. Furthermore, the ERT encourages Belarus to transparently report any changes regarding the methodology applied, in the next NC. The ERT also encourages Belarus to include in its next submission information on any comparative modelling studies undertaken to counter-check the projections reported in the NC and to provide references to such studies.

105. Compared with the NC5, Belarus used a more elaborated projection method for most of the sectors and gases other than energy industries. A regression analysis was performed as a basis for the projections of these sectors, which was based on trends either in energy resource consumption or in GHG emissions, compared with national or sectoral GDP, depending on the sector. Although the NC6 is transparent in describing the methodology and assumptions, the rationale for the change in methodology compared with the NC5 is not described. This information was provided during the review. Belarus explained that, because these parameters are interconnected and show a high level of correlation and dependency, forecasts using these main drivers in the period up to 2020 can be made, which are likely to be close to the actual future values. The ERT encourages Belarus to include information on the rationale for applying this methodology in its next submission in order to increase the transparency of the reported methodology.

106. For transport emission projections, growth rates in terms of passenger-kilometres were applied for private passenger transport and growth rates in terms of economic turnover were used for the other passenger transport modes, including public transport, and for the freight transport modes. Two variants were reported in the NC6: a trend development scenario and a state (government planning) development scenario. These scenarios differ somewhat owing to other growth rates applied. Although not reported in the NC6, Belarus explained during the review that, for the reported projections, the trend development scenario has been used. Major emitting transport modes in Belarus are roads and railways.

107. Belarus did not report on the rationale for the changes to the methodology compared with the NC5 and did not provide supporting documentation. The changes to the methodology resulted in a closer adherence to historical trends than the previous method, which only applied a GDP growth rate. However, the ERT could not assess if and how the effect of PaMs has been captured in this approach and if this has improved since the previous submission. Therefore the ERT recommends that Belarus elaborate in more detail for each sectoral projection how the effects of the PaMs reported in its NC have been incorporated in the applied methodology.

108. Key assumptions as mentioned above include GDP growth rates, growth rates for transport in terms of economic turnover, and assumptions for heat and electricity demand. The projected heat and electricity demand is used as the main input for the LEAP model, which is used to estimate emissions in the energy industries sector. The heat and electricity demand forecasts are made separately and Belarus explained during the review that these include the effects of PaMs, but did not provide further information on how this is done and which PaMs are included. The Party further explained during the review that these forecasts were compared with the official forecasts under the Energy Security Concept and that there was congruence between both. The ERT recommends that Belarus, in its next NC, further elaborate on the approach followed in the development of the electricity and heat demand forecasts and provide information on which and how PaMs are taken into account. Belarus uses the latest available assumptions, namely GDP growth, explaining why the projections

have changed since the original submission of its NC6 and BR1 compared with the resubmitted NC6 a year later. However, the NC6 does not contain some important information (e.g. on how technological change is included in the applied energy model). The ERT encourages Belarus to include such information in order to increase the transparency of the applied methodologies.

2. Results of projections

109. Belarus has the following targets inscribed in Annex B of the Kyoto Protocol: for the first commitment period (2008–2012), a decrease of 8 per cent compared with the base year level (however, because the amendment to Annex B has not been ratified, this target does not yet apply); and for the second commitment period (2013–2020), a decrease of 12 per cent compared with the base year level (see para. 1 above). The chosen base year level by Belarus is 1990 for CO₂, CH₄ and N₂O and 1995 for HFCs, PFCs and SF₆ (collectively known as the fluorinated gases (F-gases)). Under the Convention, for 2020, Belarus submitted a pledge to reduce its emissions by 8 per cent compared with the base year (1990 for CO₂, CH₄ and N₂O and 1995 for the F-gases). Belarus is currently excluded from the use of the Kyoto Protocol mechanisms in the first commitment period (see para. 1 above), so Belarus did not report on its intention to use units from the Kyoto Protocol mechanisms for this period.

110. The ERT noted that in the NC6, results of projections are not reported in a consistent manner: the national total in a given year calculated as the sum of the sectoral subtotals do not add up to the national total as reported; and numbers in tables do not correspond with data derived from provided figures (agriculture). During the review, Belarus provided the correct data and explained that the inconsistencies resulted from a lack of means to execute proper quality assurance/quality control (QA/QC) procedures on the report before submission. The ERT noted that such inconsistencies also occurred in the previous submission and encourages Belarus to improve the accuracy of its next NC by executing a QA/QC process before submission.

111. In the ‘with measures’ scenario without LULUCF, CO₂ is projected to remain the most prominent GHG, reaching a level of 60,466 kt CO₂ eq in 2020. This represents a reduction of 41.8 per cent compared with the base year level. CH₄ is projected to increase by 8,391.22 kt CO₂ eq between 1990 and 2020, reaching a level of 23,608.38 kt CO₂ eq (an increase of 55.1 per cent); while N₂O reaches a level of 18,138 kt CO₂ eq, a decrease of 9.9 per cent between 1990 and 2020. Emissions of HFCs increase by 30.7 per cent compared with the base year level, reaching an amount of 4 kt CO₂ eq; and finally emissions of SF₆ increase by 38,745.6 per cent, reaching 3 kt CO₂ eq in 2020. Total GHG emissions reach a level of 102,218 kt CO₂ eq, which is 26.5 per cent below the base year level and 20.2 per cent below the 2020 target level of 128,022 kt CO₂ eq. These figures were provided during the review, because the ERT had noted inconsistencies in the reported figures and requested the Party to provide correct figures (see para. 110 above).

112. In the ‘with measures’ scenario, the energy sector remains the largest source of emissions with a share of 56.8 per cent, with energy industries alone accounting for 28.7 per cent of total emissions in 2020. Emissions from the agriculture sector, including emissions from fuel combustion, account for 26.4 per cent. The waste sector is the third largest source of emissions, mainly because of the lack of national policies to reduce emissions from landfills and the lack of policies to change the domestic waste management system, and accounts for 13.6 per cent of the total emissions in 2020. Only emissions from the energy sector are projected to decrease after 2018; all other sectors show an increasing trend. The decrease of emissions in the energy sector between 2018 and 2020 is caused by the planned introduction of the first nuclear power plant into the electricity system in 2019.

113. Belarus provided GHG emission projections for two other elaborated scenarios in its NC6: one for the ‘without measures’ scenario and one for the ‘with additional measures’ scenario. These scenarios differ from the ‘with measures’ scenario only by a higher (‘without measures’) or a lower (‘with additional measures’) value for the expected heat demand. All other assumptions are the same as for the ‘with measures’ scenario. As such, the scenario results differ only in the energy industries sector where most effects relate to CO₂, although the Party also reported smaller changes in CH₄ and N₂O emissions in this sector. The two scenarios result in emission levels in 2020 that are 1,569 kt CO₂ eq above the ‘with measures’ scenario for the ‘without measures’ scenario and 2,688 kt CO₂ eq below the ‘with measures’ scenario for the ‘with additional measures’ scenario.

114. The projected emission levels under different scenarios and information on the tentative Kyoto Protocol targets and the quantified economy-wide emission reduction target for 2020 are presented in table 5 and the figure.

Table 5
Summary of greenhouse gas emission projections for Belarus

	<i>Greenhouse gas emissions (kt CO₂ eq per year)</i>	<i>Changes in relation to the base year^a level (%)</i>	<i>Changes in relation to the 1990 level (%)</i>
Kyoto Protocol base year	139 154.08	0.0	0.0
Kyoto Protocol target for the first commitment period (2008–2012) ^b	128 021.75	–8.0	–8.0
Kyoto Protocol target for the second commitment period (2013–2020)	122 455.59	–12.0	–12.0
Quantified economy-wide emission reduction target under the Convention	128 021.75	–8.0	–8.0
Inventory data 1990 ^c	139 151.23	–0.0	0.0
Inventory data 2012 ^c	89 283.33	–35.8	–35.8
Average annual emissions for 2008–2012 ^c	88 933.51	–36.1	–36.1
‘Without measures’ projections for 2020 ^d	103 787	–25.4	–25.4
‘With measures’ projections for 2020 ^d	102 218	–26.5	–26.5
‘With additional measures’ projections for 2020 ^d	99 530	–28.5	–28.5
‘Without measures’ projections for 2030 ^d	NA	NA	NA
‘With measures’ projections for 2030 ^d	NA	NA	NA
‘With additional measures’ projections for 2030 ^d	NA	NA	NA

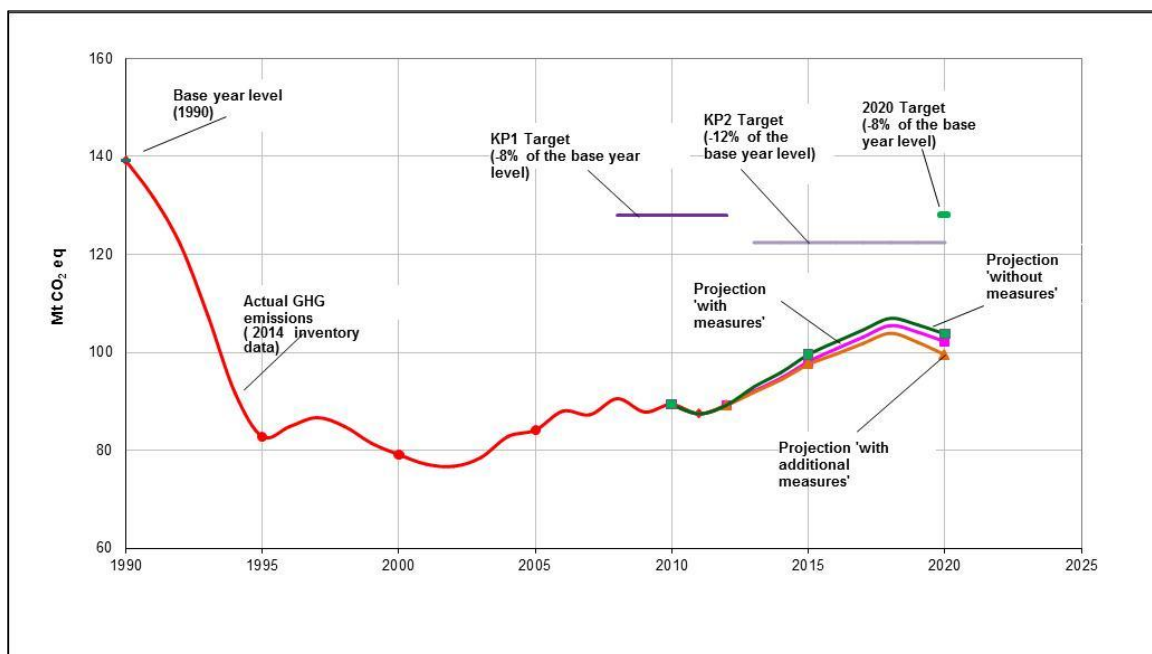
^a “Base year” in this column refers to the base year used for the targets under the Kyoto Protocol, while for the target under the Convention it refers to the base year used for that target.

^b At the time of the in-depth review of the sixth national communication (NC6) of Belarus, the amendment to Annex B to the Kyoto Protocol (decision 10/CMP.2) had not yet entered into force and as a result, Belarus does not yet have a commitment to reducing its GHG emissions during the first commitment period, from 2008 to 2012.

^c Belarus’s 2014 greenhouse gas (GHG) inventory submission; the emissions are without land use, land-use change and forestry (LULUCF).

^d Belarus’s sixth national communication; the projections are for GHG emissions without LULUCF.

Greenhouse gas emission projections



Sources: (1) Data for the years 1990–2012: Belarus’s 2014 greenhouse gas inventory submission version 1.2; the emissions are without land use, land-use change and forestry; (2) Data for the years 2012–2020: Belarus’s sixth national communication; the emissions are without land use, land-use change and forestry.

Note: The target for the second commitment period of the Kyoto Protocol is based on preliminary estimates of the base year emissions for the first commitment period of the Kyoto Protocol and quantified emission limitation or reduction objective included in annex I to decision 1/CMP.8. The initial assigned amount for the second commitment period will be established after the initial review for the second commitment period of the Kyoto Protocol.

Abbreviations: GHG = greenhouse gas, KP1 = first commitment period of the Kyoto Protocol, KP2 = Second Commitment Period of the Kyoto Protocol.

3. Total effect of policies and measures

115. In the NC6, Belarus did not present the estimated and expected total effect of implemented and adopted PaMs, in accordance with the ‘with measures’ scenario definition, compared with a situation without such PaMs. The Party did provide the results of the projection scenarios, but did not describe how it defined the total effect of PaMs. During the review, Belarus informed the ERT that it considers the difference between the ‘without measures’ scenario and the ‘with measures’ scenario as being the total effect of implemented and adopted PaMs; and it considers the difference between the ‘with measures’ scenario and the ‘with additional measures’ scenario as the total effect of planned PaMs. The effects amount to 1,569 kt CO₂ eq for implemented and adopted PaMs and 2,688 kt CO₂ eq for planned PaMs. The ERT took note of this information. However, in light of the applied scenario definitions (see para. 100 above), the ERT concludes that by taking this approach, it is likely that the effect of implemented and adopted PaMs is

underestimated because this approach includes only the effects of energy efficiency measures for buildings. The ERT recommends that Belarus report the estimated and expected total effect of implemented and adopted PaMs in its next NC. To do so, the ERT encourages Belarus to perform an in-depth assessment of its scenario definitions regarding PaMs being included or excluded and the year from which PaMs are excluded in the ‘without measures’ scenario. The ERT also encourages Belarus to perform an in-depth assessment of its scenario definitions regarding PaMs being included in its ‘with additional measures’ scenario.

116. The most effective PaMs and drivers behind GHG emission reductions are described in chapter II.B above. Table 6 provides an overview of the total effect of PaMs as provided by Belarus during the review.

Table 6
Projected effects of planned, implemented and adopted policies and measures in 2020

Sector	2020			
	<i>Effect of implemented and adopted measures (kt CO₂ eq)</i>	<i>Relative value (% of 1990 emissions)</i>	<i>Effect of planned measures (kt CO₂ eq)</i>	<i>Relative value (% of 1990 emissions)</i>
Energy (without transport)	1 569	1.8	2 688	3.0
Transport	0	NA	0	NA
Industrial processes	0	NA	0	NA
Agriculture	0	NA	0	NA
Land-use change and forestry	0	NA	0	NA
Waste management	0	NA	0	NA
Total	1 569	1.1	2 688	1.9

Source: Belarus’s sixth national communication.

Note: The total effect of implemented and adopted policies and measures is defined as the difference between the ‘without measures’ and ‘with measures’ scenarios; the total effect of planned policies and measures is defined as the difference between the ‘with measures’ and ‘with additional measures’ scenarios.

Abbreviation: NA = not applicable.

D. Information under Article 10 of the Kyoto Protocol

117. Following the recommendations made in the previous review report, the information related to Article 10 of the Kyoto Protocol is briefly summarized in chapter 7 of the NC6. In addition, information related to Article 10 of the Kyoto Protocol is placed in several other chapters of the NC6. However, the ERT noted that chapter 7 of the NC6 is too short and does not provide clear references to other chapters of the NC6 where relevant information can be found. The ERT therefore recommends that Belarus improve the transparency of reporting by providing clear references in the chapter on Article 10 of the Kyoto Protocol to where more descriptive information is provided in its NC.

118. In its NC6, the Party indicated that as of 1 August 2013, 1,894 foreign students from 26 countries were studying different courses related to the environment and climate change at 25 universities in Belarus. During the review, Belarus provided additional information elaborating on its cooperation at the international level on education and training

programmes regarding climate change, including the strengthening of national capacity-building, in particular human capacities. In addition, the Party further elaborated on its cooperation in scientific and technical research and the promotion of the maintenance and development of systematic observation systems and the development of data archives to reduce uncertainties related to the climate system. The Belarusian hydrometeorological organization is actively participating in World Meteorological Organization (WMO) information exchange network activities, providing observational data to relevant organizations, and participating in international conferences and workshops to share experiences in research and systematic observation.

E. Vulnerability assessment, climate change impacts and adaptation measures

119. In its NC6, Belarus has provided the required information on the expected impacts of climate change in the country and on adaptation options. Belarus has determined the degree of meteorological vulnerability as “relatively high” through calculation of a dimensionless complex index using the critical meteorological parameters. However, it also identified that the uncertainty of available knowledge on climate change causes a wide range of scenario assessments in Belarus. The Party has identified agriculture, forestry and biodiversity, water and human health as the most vulnerable sectors in Belarus. The ERT noted that Belarus did not provide adequate information on the expected impacts of climate change on human health or on integrated plans for water resources, agriculture and coastal zones management. However, because Belarus does not have coastal zones, integrated plans are not relevant and the ERT concludes that not reporting on them is not an omission in the NC6. During the review, the Party explained that information on human health was not provided owing to the lack of information available and insufficient research studies carried out so far.

120. During the review, Belarus provided additional information on integrated plans for water resources and agriculture and on how the Party will elaborate the actions taken to implement Article 4, paragraph 1 (b) and (e) of the Convention with regard to adaptation. Further, Belarus mentioned that no specific integrated adaptation action plans that are approved by the government exist for agriculture and water resources. However, in the framework of implementation of the CLIMAEAST Project, the Concept for Adaptation Action Plans to Climate Change in Agriculture will be developed by the end of 2015 and will be adopted after governmental approval. Currently, there is no information on the development of legislation for adaptation of water resources to climate change. However, some adaptation measures for water resources are stipulated in the Water Strategy of the Republic of Belarus up to 2020, approved by the decision #72-R of the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus dated 11 August 2011. This strategy establishes the basic principles of state policy on the use and protection of water resources and conservation of ecosystems, and identifies the main activities for the protection and use of water resources of Belarus up to 2020.

121. The ERT encourages Belarus to include the latest information on the Adaptation Action Plan on Agriculture, on its Water Strategy and on the linkages between these strategies, as well as the additional information regarding human health in its next NC. Table 7 summarizes the information on vulnerability and adaptation to climate change presented in the NC6.

Table 7
Summary of information on vulnerability and adaptation to climate change

<i>Vulnerable area</i>	<i>Examples/comments/adaptation measures reported</i>
Agriculture and food security	<p><i>Vulnerability:</i> Harvest losses owing to the increasing frequency and intensity of unfavourable weather events (droughts, floods, heavy rains, storms, fires, etc.) or occurrence of parasitic diseases</p> <p><i>Adaptation:</i> Introduction of grain crops and vegetable hybrid varieties that are resistant to adverse impacts of climate change; expansion of the cultivation area for some traditional and for new highly efficient crops; adjustment of cropping patterns to seasonal changes; expansion of the sprinkler irrigation system; development of the insurance system against drought consequences</p>
Forestry and biodiversity	<p><i>Vulnerability:</i> Decrease of forest cover; decrease of forest areas owing to the increasing frequency of forest fires or decline of groundwater availability; deterioration of vegetation in forest cover, causing loss of biodiversity</p> <p><i>Adaptation:</i> Elaboration and implementation of the forest industry strategy and a targeted programme of adaptation to new climatic conditions; growth of forests, taking into account the shift of climatic zones and change in soil moisture supply regime; shift to increased felling age; protection of forests from insect pests; development of prevention measures to control the propagation of non-native invasive insect pests in the country; rehabilitation of disturbed wetlands by rewetting to reactivate peat formation processes and rehabilitation of other greenhouse gas natural sinks; improvement of the forest/peat land fire protection system; research and development to assess the climate change impact on forest vegetation</p>
Human health	<p><i>Vulnerability:</i> Spread of infections transmitted through infected water and insects</p> <p><i>Adaptation:</i> National environmental monitoring system will be adopted and will introduce advanced technologies for monitoring and forecasting emergencies</p>
Water resources	<p><i>Vulnerability:</i> Increase of winter run-off of rivers and decrease of spring run-off of rivers; reduction of the period of ice cover; changes in the time and processes of freezing and breakup on rivers and water bodies; reduction of the groundwater table; greater risk of increased frequency and intensity of floods</p> <p><i>Adaptation:</i> Need to elaborate flood protection measures with consideration for the specificities of the river run-off formation in Ukraine, which are to be supplemented by a reliable hydrometeorological monitoring programme and extensive use of radar and satellite information for assessing snow cover characteristics and planning water management measures; plan to implement measures to improve water quality and efficient usage of water, to convert hydro-reclamation systems into more technically advanced systems and switch to a waste-free system of using water resources and artificially replenishing groundwater resources</p>

122. Weather-dependent sectors contribute 41 per cent to the GDP of Belarus. Agriculture is the most weather-dependant sector of the Belarusian economy and its exposure to the impacts of extreme weather events will lead to a higher probability of low crop yield as a result of an increase in the frequency and recurrence of droughts, growth phase shifts and insufficient soil moisture supply during the spring season, worsening of phytosanitary conditions, and so on. The second most vulnerable sector is forestry owing to

a shift in areas of some forest plant species and to increased frequency of diseases and forest fires. Water resources and human health are other vulnerable sectors in Belarus. Consequently, the Party has already developed and is implementing specific measures for adapting to climate change in agriculture and forestry; identified adaptation measures for water resources; and improved its reporting on adaptation in the NC6 compared with the NC5.

123. The ERT noted that there is insufficient information in the NC6 on the use of the IPCC *Technical Guidelines for Assessing Climate Change Impacts and Adaptations* and the United Nations Environment Programme *Handbook on Methods for Climate Change Impacts Assessment and Adaptation Strategies*. The ERT encourages Belarus to include the findings of research activities to identify the vulnerability among sectors and the socio-economic impacts using the standard international methodologies in its next NC.

F. Research and systematic observation

124. Belarus has provided information on its actions relating to research and systematic observation and addressed both domestic and international activities, including the World Climate Programme, the International Geosphere–Biosphere Programme, the Global Climate Observing System (GCOS) and the IPCC. Belarus is progressing in climate change related research which is needed for climate change impact assessment and has already developed the National Climate Inventory Data system. As recommended in the previous review report, the NC6 included information on WMO and summary information on GCOS activities. Belarus actively participates in WMO activities including the WMO Voluntary Cooperation Programme and has a well-established hydrometeorological observation network.

125. The NC6 does not reflect on actions taken to support climate change related capacity-building in developing countries. During the review, the Party explained that Belarusian specialists and experts actively participate in international conferences and workshops where they share their experience in research and systematic observation. The ERT recommends that Belarus report on its actions taken to support capacity-building regarding research and systematic observations in developing countries in order to improve the completeness of its next NC.

126. Belarus identified in its NC6 the availability and quality of climate data as essential for progress in climate change research and impact assessments of climate change on any economically important sector. The legal basis of hydrometeorological activities in Belarus is the Act on Hydrometeorological Activity, which aims to provide government agencies, other organizations and individuals with actual and forecasted hydrometeorological information. The composition and state of climate inventory data as well as their provision to the public is regulated by the Statement on National Climate Inventory, which was developed and approved in 2006. The Sector Development Programme of the State Hydrometeorological Service for 2011–2015 contains sections relating to the development and improvement of the monitoring system, satellite data usage and weather forecasts. In addition, the State Programme of Measures to Mitigate the Consequences of Climate Change for 2013–2020 contains a number of activities regarding improving systematic observation of climate change, supporting the development of mitigation measures and cooperating internationally on adaptation.

127. Belarus has no separate budget for funding climate research activities. Hydrometeorological organizations and their structural departments are financed from the state budget and a major part of climate-related research is funded through the state budget and international projects.

128. Within the framework of the State Programme of Measures to Mitigate the Consequences of Climate Change certain research activities are planned, including: an assessment of the impact of climate change on agro-climatic resources of Belarus; the development of technologies for the cultivation of drought-resistant and heat-resistant crops; and investigation of the adaptation of species diversity of food crops to changing climatic conditions and the related optimization of the structure of sown areas. In addition, research on the evaluation of GHG fluxes from natural wetlands and drained peat lands through direct instrumental measurements is being conducted in Belarus.

129. In addition to its participation in BALTRAD (an advanced weather radar network for the Baltic Sea Region), Belarus has been a member of the Baltic Sea Experiment (BALTEX) since 1993. This project was designed to study and forecast the weather, climate and global changes. The BALTEX project was completed in 2013 and replaced by the Baltic Earth project. The system of hydrometeorological observations and measurement was established as a result of the State programme on Monitoring of Polar Regions of the earth and support of the Arctic and Antarctic expeditions.

130. Belarus has been a member of WMO since 1948 and currently the focus of cooperation lies in the performance of meteorological observations according to internationally agreed standards and rapid information exchange. Owing to the participation in the WMO Voluntary Cooperation Programme, the Hydrometeorological Service of Belarus actively implements new technologies in measurement systems and is equipped with new means of observation, communication and data processing. Belarus's participation in the Global Observing Systems is to ensure the stable operation of ground and satellite observation networks and process their data to prepare weather forecast analyses and severe weather warnings, if needed. Currently, the hydrometeorological activity in Belarus is carried out by 167 hydrometeorological stations, including: the National Hydrometeorological Centre, National Centre of Radiation Control and Environmental Monitoring, 5 regional and 2 inter-district centres of hydrometeorology and environmental monitoring, 32 meteorological stations, 2 hydrological stations, 9 specialized stations, 8 aviation meteorological stations run by civilians, 97 river and 10 lake hydrological stations; and 3 meteorological radars.

G. Education, training and public awareness

131. In the NC6, Belarus has provided information on its actions relating to education, training and public awareness at both the domestic and the international level. Compared with the NC5, the Party has in its NC6 provided more extensive information on its actions relating to education, training and public awareness in accordance with Article 4, paragraph 1(i), Article 6 and Article 12, paragraph 1(b), of the Convention.

132. Environmental education, training and public awareness are part of the National Programme for Socio-economic Development for the period up to 2020. Education in the field of environmental protection, including the process of informing citizens about Belarus's legislation on the environment is organized by the Ministry of Natural Resources and Environmental Protection and its territorial bodies, central government bodies, local authorities and government, public associations and media, as well as health care institutions and environmental agencies. The Ministry of Education is responsible for developing the environmental syllabus in schools.

133. Environmental protection has been incorporated as a subject in the primary and secondary school curricula in Belarus. Climate change related disciplines are included in the higher education system and research activities in collaboration with research institutions are conducted. Belarus has conducted many training programmes for different

levels of professionals to enhance their knowledge and skills with regard to climate change. For example, to improve the commercialization of renewable energy sources such as wood, water, wind, geothermal and solar energy, the Ministry of Education has set short-term goals to develop the training activities, courses and programmes on the economy and thrift in institutions providing general secondary education and to improve the system of training and advanced training in the field of energy and resources by other state bodies.

134. The National Environmental Fund is used for the public awareness programme to disseminate knowledge on climate change and environmental protection. Furthermore, funds are used for environmental forums, competitions, seminars, to produce TV programmes and so on. The Government of Belarus cooperates with non-governmental organizations in the implementation of the activities of education, training and public awareness.

III. Summary of reviewed supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

135. Supplementary information provided by Belarus under Article 7, paragraph 2, of the Kyoto Protocol in its NC6 is mostly complete and mostly transparent. The supplementary information is located in different sections of the NC6. Table 8 provides an overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol as well as references to the NC6 chapters in which this information is provided.

136. Belarus has not reported the following elements of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol: identification of steps taken to promote and/or implement any decisions by ICAO in order to limit or to reduce GHG emissions not included in the Montreal Protocol from aviation bunker fuels; and information on what efforts Belarus is making to implement PaMs in such a way as to minimize adverse effects, including the effects of climate change, effects on international trade and the social, environmental and economic impacts on other Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention. The technical assessment of the information reported under Article 7, paragraph 2, of the Kyoto Protocol is contained in the relevant sections of this report. The ERT recommends that Belarus include these missing reporting elements in its next NC.

Table 8

Overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

<i>Supplementary information</i>	<i>Reference to the sixth national communication</i>
National registry	Chapter 2, pages 70–73
National system	Chapter 2, pages 73–74
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Not applicable
Policies and measures in accordance with Article 2	Chapter 4, pages 75–125
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	Chapter 4.1, 4.2 and 7, pages 75,79, 174
Information under Article 10	Chapter 7, pages 174–175
Financial resources	Not applicable

Note: Reporting on financial resources under the Kyoto Protocol is relevant for developed country Parties and other developed Parties that are included in Annex II to the Convention (Annex II Parties). As Belarus is not an

Annex II Party, it does not have an obligation to provide information on financial resources under Article 11 of the Kyoto Protocol, including on “new and additional” resources. Reporting on the national registry, national system and supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 is relevant for Parties included in Annex I with greenhouse gas emission reduction commitments inscribed in Annex B to the Kyoto Protocol. As Belarus does not have a commitment inscribed in Annex B, it does not have an obligation to provide information on these topics.

IV. Conclusions and recommendations

137. The ERT conducted a technical review of the information reported in the NC6 of Belarus according to the UNFCCC reporting guidelines on NCs. The ERT concludes that the NC6 provides a good overview of the national climate policy of Belarus. The information provided in the NC6 includes most elements of the supplementary information under Article 7 of the Kyoto Protocol, with the exception of information on: identification of steps taken to promote and/or implement any decisions by ICAO; and information on what efforts Belarus is making to implement PaMs in such a way as to minimize adverse effects.

138. During the review, Belarus provided: additional information on building stock and urban structure, on total effects of PaMs and on the mitigation impacts of policies; explanations of potential overlaps between mitigation actions and their combinations; explanations of the estimation methodologies; explanations of the status of its PaMs and descriptions of preliminary work on the potential development of the national ETS, regional and local activities and their place within various legislative arrangements of the national system of PaMs in different sectors; explanations of the use of the LEAP and BALANCE models; data on the calculation of national total projections; additional information on Article 10 of the Kyoto Protocol; and information on UNDP/GEF projects that target environment and biodiversity conservation in the LULUCF sector.

139. Belarus’s emissions in 2012 were estimated to be 35.8 per cent below the 1990 level excluding LULUCF and 42.3 per cent below the 1990 level including LULUCF. The decreases were driven by significant economic changes in the early 1990s following the beginning of the transition towards a market economy, the growing share of the services sector in the Belarusian economy, changes in the fuel mix and the effect of energy efficiency measures. Emissions show an upward trend in recent years caused by economic recovery and continued reliance on fossil fuels. Despite continuous economic growth since 1995, the Party’s total emissions are still well below the 1990 level and GHG emissions per GDP continued to decrease.

140. In the NC6, Belarus presents GHG emission projections for the period from 2012 to 2020. Three scenarios are included: a baseline (‘without measures’) scenario, a ‘with measures’ scenario and a ‘with additional measures’ scenario. The projected reductions in GHG emissions under the baseline scenario, in relation to the base year, and under the ‘with measures’ and ‘with additional measures’ scenarios, are 25.4, 26.5 and 28.5 per cent in 2020, respectively. The projections indicate that Belarus can meet its Kyoto Protocol target for the second commitment period (12 per cent reduction), even under the baseline scenario, and GHG emissions are not expected to exceed the target under the Convention (8 per cent reduction by 2020) even by 2020. Based on the comparison of the target with the average annual emissions for the first commitment period (2008–2012), Belarus would be in a position to meet its Kyoto Protocol target for the first commitment period (8 per cent reduction).

141. Belarus has reported on its implemented, adopted and planned PaMs in achieving its GHG emission reduction commitments. The largest mitigation impacts are expected from the measures implemented in the energy supply and demand sectors, focusing on modernization of electricity generation capacity and promoting the use of renewable energy

resources and energy efficiency. These PaMs primarily aim at the reduction of energy intensity and the improvement of energy security in the economy of Belarus, with the decline in GHG emissions as a co-benefit. Most of the Belarusian mitigation actions are a mix of regulatory measures and fiscal instruments. The key policies delivering the highest mitigation impact are the State programme on energy system development until 2016, the National Programme for the Development of Local and Renewable Energy Sources for 2011–2015 and the State energy saving programme for 2010–2015.

142. Belarus provided information on impacts, vulnerability and adaptation for the major sectors such as agriculture, forestry and biodiversity, water resources and health. Weather-dependent sectors contribute 41 per cent to the GDP of Belarus and thus agriculture and forestry, the two most weather-dependant sectors in Belarus, are considered the most vulnerable sectors. Consequently, the Party has already developed and is implementing specific measures for adapting to climate change in agriculture and forestry, and has identified adaptation measures for water resources. In the framework of the CLIMAEAST project, the Concept for adaptation action plans to climate change in agriculture will be developed by the end of 2015 and the forest industry strategy includes a targeted programme for adaptation.

143. The NC6 reports information on the Party's actions regarding research and systematic observation. Belarus is involved in domestic activities such as the National Climate Inventory, which is a systematic set of data based on hydrometeorological information, and climate change related research activities. At the international level, a proper coordination mechanism and network system has been established with WMO, the national hydrometeorology stations and the IPCC for meteorological observations and climate data management, exchange of information, weather forecasts and early warnings.

144. Belarus provided comprehensive information on its actions related to education, training and public awareness.

145. Information related to Article 10 of the Kyoto Protocol is briefly summarized in chapter 7, but is also placed in several other chapters of the NC6. Belarus elaborated on its cooperation at the international level on education and training programmes regarding climate change, including the strengthening of national capacity-building, in particular human capacities, and on its cooperation in scientific and technical research and promotion of the maintenance and the development of systematic observation systems and development of data archives to reduce uncertainties related to the climate system.

146. In the course of the review, the ERT formulated several recommendations relating to the completeness and transparency of Belarus's reporting under the Convention and its Kyoto Protocol. The key recommendations⁶ are that Belarus:

- (a) Improve completeness of reporting by including in the next NC the following:
 - (i) Information on building stock and urban structure in the national circumstances chapter;
 - (ii) Information on how it believes that its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals;
 - (iii) Information on steps taken to promote or implement any decisions by ICAO relating to international aviation;

⁶ The recommendations are given in full in the relevant sections of this report.

- (iv) Information on how Belarus strives to implement its PaMs in such a way as to minimize adverse effects;
- (v) Information on the status of implementation of its PaMs;
- (vi) Projections for international aviation emissions, separate and not included in the total;
- (vii) The estimated and expected total effect of implemented and adopted PaMs;
- (viii) Information on actions taken to support capacity-building regarding research and systematic observation in developing countries;
- (b) Improve the transparency of reporting by including in the next NC the following:
 - (i) More detailed information on how national circumstances and changes in national circumstances affect GHG emissions and removals over time in all sectors;
 - (ii) A separate section on its domestic legislative arrangements and administrative procedures established pursuant to the implementation of the Kyoto Protocol, including information on the enforcement and public access to information;
 - (iii) A grouping of PaMs if there is a clear linkage or overlap; for example, by combining longer-term sector strategies and shorter-term implementation programmes;
 - (iv) More detailed information on PaMs in the LULUCF sector;
 - (v) More detailed information on the scenario definitions for projections, especially for the 'with measures' scenario; and projection scenarios that include the effect of PaMs in non-energy sectors, such as agriculture and waste;
 - (vi) More detailed information on the approach followed in the development of the electricity and heat demand forecasts, including the interconnection with PaMs affecting these demands;
 - (vii) More detailed information for each sectoral projection, including how the effects of the PaMs reported in the NC have been incorporated in the applied methodology;
 - (viii) Clear references to where more descriptive information related to Article 10 of the Kyoto Protocol is provided in the NC.

V. Questions of implementation

147. During the review, the ERT assessed the NC6, including supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol, with regard to timeliness, completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. No question of implementation was raised by the ERT during the review.

Annex

Documents and information used during the review

A. Reference documents

“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications”. FCCC/CP/1999/7. Available at <<http://unfccc.int/resource/docs/cop5/07.pdf>>.

“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/CP/1999/7. Available at <<http://unfccc.int/resource/docs/cop5/07.pdf>>.

“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol”. Decision 15/CMP.1. Available at <<http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf#page=54>>.

“Guidelines for review under Article 8 of the Kyoto Protocol”. Decision 22/CMP.1. Available at <<http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=51>>.

“Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”. Annex to decision 13/CP.20. Available at <http://unfccc.int/meetings/lima_dec_2014/meeting/8141/php/view/decisions.php>.

FCCC/SBI/2014/INF.20. Compilation and synthesis of sixth national communications and first biennial reports from Parties included in Annex I to the Convention. Executive summary. Note by the secretariat. Available at <http://unfccc.int/national_reports/annex_i_natcom/compilation_and_synthesis_reports/items/2736.php>.

FCCC/SBI/2014/INF.20/Add.1. Compilation and synthesis of sixth national communications and first biennial reports from Parties included in Annex I to the Convention. Note by the secretariat. Addendum. Policies and measures; past and projected greenhouse gas emission trends; quantified economy-wide emission reduction target and progress towards the target; and provision of financial, technological and capacity-building support to developing country Parties. Available at <http://unfccc.int/national_reports/annex_i_natcom/compilation_and_synthesis_reports/items/2736.php>.

FCCC/SBI/2014/INF.20/Add.2. Compilation and synthesis of sixth national communications and first biennial reports from Parties included in Annex I to the Convention. Note by the secretariat. Addendum. Vulnerability, impacts and adaptation; research and systematic observation; and education, training and public awareness. Available at <http://unfccc.int/national_reports/annex_i_natcom/compilation_and_synthesis_reports/items/2736.php>.

FCCC/SBI/2014/INF.21. Compilation and synthesis of supplementary information incorporated in sixth national communications from Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol. Note by the secretariat. Available at <http://unfccc.int/national_reports/annex_i_natcom/compilation_and_synthesis_reports/items/2736.php>.

FCCC/ARR/2013/BLR. Report of the individual review of the annual submission of Belarus submitted in 2013. Available at <<http://unfccc.int/resource/docs/2014/arr/blr.pdf>>.

FCCC/IDR.5/BLR. Report of the in-depth review of the fifth national communication of Belarus. Available at <http://unfccc.int/documentation/documents/advanced_search/items/6911.php?priref=600006967#beg>.

Sixth national communication of Belarus. Available at <http://unfccc.int/national_reports/annex_i_natcom/submitted_natcom/items/7742.php>.

2013 GHG inventory submission of Belarus. Available at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/7383.php>.

2014 GHG inventory submission of Belarus. Available at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/8108.php>.

B. Additional information provided by the Party

Responses to questions during the review were received from Mr. Ivan Narkevitch and Ms. Evgeniya Bertosh (Rue Bel SRC “Ecology”), including additional material on policies and measures, the reported greenhouse gas projections and recent climate policy developments in Belarus.
