



**Report of the in-depth review of the fifth national communication  
of Belgium**

**Note by the secretariat**

The report of the in-depth review of the fifth national communication of Belgium was published on 31 May 2011. For purposes of rule 10, paragraph 2, of the rules of procedure of the Compliance Committee (annex to decision 4/CMP.2, as amended by decision 4/CMP.4), the report is considered received by the secretariat on the same date. This report, FCCC/IDR.5/BEL, contained in the annex to this note, is being forwarded to the Compliance Committee in accordance with section VI, paragraph 3, of the annex to decision 27/CMP.1.





## Framework Convention on Climate Change

Distr.: General  
31 May 2011

English only

---

### Report of the in-depth review of the fifth national communication of Belgium

Parties included in Annex I to the Convention are requested, in accordance with decision 10/CP.13, to submit a fifth national communication to the secretariat by 1 January 2010. In accordance with decision 8/CMP.3, Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol shall include in their fifth national communications supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. In accordance with decision 15/CMP.1, these Parties shall start reporting the information under Article 7, paragraph 1, of the Kyoto Protocol with the inventory submission due under the Convention for the first year of the commitment period. This includes supplementary information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol. This report presents the results of the in-depth review of the fifth national communication of Belgium conducted by an expert review team in accordance with the relevant provisions of the Convention and Article 8 of the Kyoto Protocol.

## Contents

	<i>Paragraphs</i>	<i>Page</i>
I. Introduction and summary .....	1–10	3
A. Introduction .....	1–4	3
B. Summary .....	5–10	3
II. Technical assessment of the reviewed elements .....	11–98	5
A. National circumstances relevant to greenhouse gas emissions and removals, including legislative arrangements and administrative procedures .....	11–27	5
B. Policies and measures, including those in accordance with Article 2 of the Kyoto Protocol .....	28–60	9
C. Projections and the total effect of policies and measures, and complementarity relating to the Kyoto Protocol mechanisms .....	61–77	17
D. Vulnerability assessment, climate change impacts and adaptation measures .....	78–81	22
E. Financial resources and transfer of technology, including information under Articles 10 and 11 of the Kyoto Protocol .....	82–87	24
F. Research and systematic observation .....	88–91	26
G. Education, training and public awareness .....	92–94	27
H. Evaluation of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol .....	95	28
I. Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol .....	96–98	28
III. Conclusions and recommendations .....	99–110	29
IV. Questions of implementation .....	111	32
Annex		
Documents and information used during the review.....		33

## I. Introduction and summary

### A. Introduction

1. For Belgium, the Convention entered into force on 15 April 1996 and the Kyoto Protocol on 16 February 2005. Within the burden-sharing agreement of the European Union (EU) for meeting commitments under the Kyoto Protocol, Belgium committed itself to reducing its greenhouse gas (GHG) emissions by 7.5 per cent compared with the base year<sup>1</sup> level during the first commitment period from 2008 to 2012.

2. This report covers the in-country in-depth review (IDR) of the fifth national communication (NC5) of Belgium, coordinated by the UNFCCC secretariat, in accordance with the guidelines for review under Article 8 of the Kyoto Protocol (decision 22/CMP.1). The review took place from 31 January to 5 February 2011 in Brussels, Belgium, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Mr. Amr Osama Abdel-Aziz (Egypt), Mr. Libasse Ba (Senegal), Mr. Liviu Gheorghe (Romania) and Ms. Frédérique Millard (France). Mr. Abdel-Aziz and Ms. Millard were the lead reviewers. The review was coordinated by Ms. Xuehong Wang (UNFCCC secretariat).

3. During the IDR, the expert review team (ERT) examined each section of the NC5. The ERT also evaluated the supplementary information provided by Belgium as a part of the NC5 in accordance with Article 7, paragraph 2, of the Kyoto Protocol. In addition, the ERT reviewed the information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol, which was provided by Belgium in its 2010 annual submission under Article 7, paragraph 1, of the Kyoto Protocol.

4. In accordance with decision 22/CMP.1, a draft version of this report was communicated to the Government of Belgium, which provided comments that were considered and incorporated, as appropriate, in this final version of the report.

### B. Summary

5. The ERT noted that Belgium's NC5 complies in general 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). As required by decision 15/CMP.1, supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol<sup>2</sup> is provided in the NC5. Belgium considered some of the recommendations provided in the report on the in-depth review of the fourth national communication of Belgium.<sup>3</sup> The ERT commended Belgium for its improved reporting compared to the previous national communication.

6. The supplementary information on the minimization of adverse impacts referred to in paragraph 3 above was mostly complete and transparent and was provided on time. During the review, Belgium provided further relevant information.

---

<sup>1</sup> "Base year" refers to the base year under the Kyoto Protocol, which is 1990 for carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) and 1995 for perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF<sub>6</sub>). The base year emissions include emissions from sectors/source categories listed in Annex A to the Kyoto Protocol.

<sup>2</sup> Decision 15/CMP.1, annex, chapter II.

<sup>3</sup> FCCC/IDR.4/BEL.

## 1. Completeness

7. The NC5 covers all sections and most of the mandatory elements required by the UNFCCC reporting guidelines, and contains all supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol (see chapter II.H below). However, the NC5 does not include the following information required by the UNFCCC reporting guidelines: land use, land-use change and forestry (LULUCF) activities under Article 3, paragraph 3, of the Kyoto Protocol; national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, contributes to the conservation of biodiversity and the sustainable use of natural resources (see paras. 21 and 23 below); how Belgium believes its policies and measures (PaMs) are modifying longer-term trends in anthropogenic GHG emissions and removals consistent with the objective of the Convention (see para. 29 below); details and examples of how Belgium strives to implement PaMs in such a way as to minimize adverse impacts (see paras. 59 and 60 below); the estimated and expected aggregated effect of implemented and adopted PaMs by gas and the information on factors and activities for each sector for the years 1990–2020 (see para. 73 below); the identification of “new and additional” financial resources (see paras. 82 and 83 below); a clear distinction between activities undertaken by the public sector and those undertaken by the private sector as well as activities for financing access by developing countries to ‘hard’ or ‘soft’ environmentally sound technologies (see para. 86 below); and a description of projects/programmes on technology transfer and access in order to highlight success and failure stories (see para. 87 below). The ERT recommends that Belgium enhance the completeness of its reporting by providing this information in its next national communication.

## 2. Transparency

8. The ERT acknowledged that Belgium’s NC5, including supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol is broadly transparent. The NC5 provides information on all aspects of implementation of the Convention and its Kyoto Protocol. The ERT noted that the NC5 is structured following the outline contained in the annex to the UNFCCC reporting guidelines and supplementary information submitted under Article 7, paragraph 2, of the Kyoto Protocol is easily identifiable.

9. In the course of the review, the ERT formulated a number of recommendations that could help Belgium to further increase the transparency of its reporting with regard to: PaMs (see paras. 29, 33, 34, 38, 42 and 58 below); projections and the total effect of PaMs (see paras. 63–67 and 73 below); vulnerability, climate change impacts and adaptation (see paras. 80 and 81 below); financial resources and technology transfer (see paras. 82 and 85–87 below); research and systematic observation (see para. 88 below); education, training and public awareness (see paras. 92–94 below); a description of the national system (see para. 23 below); and information on the minimization of adverse impacts (see para. 60 below).

## 3. Timeliness

10. The NC5 was first submitted on 4 December 2009, before the deadline of 1 January 2010 mandated by decision 10/CP.13. The revised version of the NC5 was submitted on 10 March 2010. The ERT noted with concern the delay in the submission of the revised version of the NC5.

## **II. Technical assessment of the reviewed elements**

### **A. National circumstances relevant to greenhouse gas emissions and removals, including legislative arrangements and administrative procedures**

11. In its NC5, Belgium has provided a description of the national circumstances, and has elaborated on the framework legislations and key policy documents on climate change. The NC5 also refers to the description of the national system provided in the national inventory report (NIR) of the 2009 annual submission. Further technical assessment of the institutional and legislative arrangements for the coordination and implementation of PaMs is provided in chapter II.B.1 of this report.

#### **1. National circumstances**

12. In its NC5, Belgium has provided a description of its national circumstances, and information on how these national circumstances affect GHG emissions and removals in Belgium and how changes in national circumstances affect GHG emissions and removals over time. Information was provided on the institutional structure, population, geography, climate, economic and energy profiles, and other relevant economic sectors.

13. The ERT noted that the main drivers of emission trends in Belgium include population growth, the increase in economic activities, the closure of some industries, and the European Union emissions trading scheme (EU ETS). Table 1 illustrates the national circumstances of the country by providing some indicators relevant to GHG emissions and removals.

14. Belgium is a federal State consisting of communities and regions. The federal government is responsible for key policies such as foreign affairs, defence, justice, finance, social security and an important part of public health matters and internal affairs. The communities and regions are nonetheless responsible for establishing foreign relations and scientific research in areas under their authority. The three regions (Brussels-Capital, Flanders and Wallonia) have powers in areas related to the occupation of the “territory”. These regions are thus responsible for the economy, employment, and various economic sectors, as well as provincial, municipal and inter-municipal administration.

15. The Inter-ministerial Conference for the Environment (ICE) plays a key role in national climate policy. It is composed of the Federal Minister for the Environment, the Environment Ministers of each of the three regions and the Federal Minister for Science Policy. The decisions of the ICE are prepared and implemented by different working groups, which are accountable to the Coordination Committee for International Environment Policy (CCIEP), comprised of representatives of the different departments of the federal and regional public administrations concerned. The CCIEP is the main body responsible for coordinating international environment policy. The principal working group affiliated to the CCIEP dealing with climate policy is the Greenhouse Effect Coordination Group. This working group is made up of representatives from federal and regional administrations and policy units as well as the federal and regional cabinets.

16. A cooperation agreement between the federal State, the Flemish Region, the Walloon Region and the Brussels-Capital Region was signed on 14 November 2002. This agreement states that a National Climate Plan will be drawn up, executed, evaluated and reported to the UNFCCC under the Kyoto Protocol. This National Climate Plan is meant to provide the legal basis for Belgium to meet its commitments under the Kyoto Protocol as well as to establish obligations to evaluate federal PaMs. The agreement also results from

decision 280/2004/EC concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol. Further legislative arrangements and administrative procedures, including those for the national system and the national registry, are presented in chapters II.A.2–3 and II.B below.

Table 1

**Indicators relevant to greenhouse gas emissions and removals for Belgium**

	1990	1995	2000	2005	2008	Change <sup>a</sup> 1990– 2000 (%)	Change 2000– 2008 (%)	Change <sup>a</sup> 1990– 2008 (%)
Population (million)	10.0	10.1	10.3	10.5	10.7	2.8	4.5	7.4
GDP (2000 USD billion using PPP)	227.2	245.9	283.1	306.2	327.3	24.6	15.6	44.1
TPES (Mtoe)	48.3	53.8	58.5	58.7	58.6	21.2	0.1	21.3
GDP per capita (2000 USD thousand using PPP)	22.8	24.3	27.6	29.2	30.6	21.2	10.7	34.1
TPES per capita (toe)	4.8	5.3	5.7	5.6	5.5	17.9	–4.2	12.9
GHG emissions without LULUCF (Tg CO <sub>2</sub> eq)	143.4	149.6	144.6	141.5	133.3	0.9	–7.9	–7.1
GHG emissions with LULUCF (Tg CO <sub>2</sub> eq)	140.6	147.6	143.0	139.8	132.0	1.7	–7.7	–6.2
CO <sub>2</sub> emissions per capita (Mg)	11.9	12.2	12.1	11.8	10.9	1.5	–9.4	–8.1
CO <sub>2</sub> emissions per GDP unit (kg per 2000 USD using PPP)	0.5	0.5	0.4	0.4	0.4	–16.3	–7.7	–22.8
GHG emissions per capita (Mg CO <sub>2</sub> eq)	14.4	14.7	14.1	13.5	12.4	–1.9	–11.8	–13.5
GHG emissions per GDP unit (kg CO <sub>2</sub> eq per 2000 USD using PPP)	0.6	0.6	0.5	0.5	0.4	–19.0	–20.3	–35.5

*Sources:* (1) GHG emissions data: Belgium's 2010 greenhouse gas inventory submission; (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.

<sup>a</sup> For emissions, base year data are used instead of 1990 data, whereas GDP, TPES and population data are for 1990, which may lead to some inconsistency in the calculation of GHG emissions per capita and per GDP unit.

17. Belgium has provided a summary of information on GHG emission trends for the period 1990–2007. This information is broadly consistent with the 2009 national GHG inventory submission. Summary tables, including trend tables for emissions in carbon dioxide equivalent (CO<sub>2</sub> eq) (given in the common reporting format (CRF)), are also



provided in an annex to the NC5. During the review, the ERT assessed the most recently submitted 2010 annual submission and reflected the findings in this report.

18. Total GHG emissions excluding emissions and removals from LULUCF decreased by 7.1 per cent between the base year and 2008, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 6.2 per cent. This was mainly attributed to non-CO<sub>2</sub> emissions: methane (CH<sub>4</sub>) emissions decreased by 35.0 per cent and emissions of nitrous oxide (N<sub>2</sub>O) decreased by 30.5 per cent over this period. Emissions of CO<sub>2</sub> also decreased by 1.3 per cent only. Emissions of fluorinated gases (F-gases) accounted for about 3.5 per cent of total GHG emissions in 1995 and 1.5 per cent in 2008 and decreased by 59 per cent during that period. Trends of total GHG emissions were mostly underpinned by GHG emission trends in the energy sector, driven by energy industries, and manufacturing industries and construction. An analysis of the key drivers of sectoral GHG emission trends is provided in chapter II.B below. Table 2 provides an overview of GHG emissions by sector from the base year to 2008.

Table 2

**Greenhouse gas emissions by sector in Belgium, 1990–2008**

Sector	GHG emissions (Tg CO <sub>2</sub> eq)						Change (%)		Shares <sup>a</sup> by sector (%)	
	1990	1995	2000	2005	2007	2008	1990–2008	2007–2008	1990	2008
	1. Energy	112.5	115.9	116.1	115.0	105.5	109.3	–2.8	3.6	78.4
A1. Energy industries	30.2	29.5	28.4	29.4	26.8	24.8	–17.9	–7.6	21.1	18.6
A2. Manufacturing industries and construction	33.2	32.5	32.9	27.9	26.3	26.7	–20.7	1.5	23.1	20.0
A3. Transport	20.5	22.5	24.7	26.3	25.4	27.6	35.0	9.0	14.3	20.7
A4.–A5. Other	27.7	30.7	29.5	30.9	26.5	29.7	7.1	12.1	19.3	22.3
B. Fugitive emissions	0.9	0.6	0.6	0.5	0.5	0.5	–46.1	–4.5	0.7	0.4
2. Industrial processes	15.7	18.7	15.2	15.2	13.7	13.1	–16.9	–4.5	10.9	9.8
3. Solvent and other product use	0.2	0.2	0.3	0.2	0.2	0.2	0.1	–0.1	0.2	0.2
4. Agriculture	11.6	11.7	10.8	9.7	9.7	9.7	–16.5	–0.5	8.1	7.3
5. LULUCF	–2.7	–1.9	–1.6	–1.7	–1.3	–1.3	–53.6	1.7	–1.9	–1.0
6. Waste	3.4	3.0	2.3	1.4	1.1	1.0	–70.2	–8.8	2.4	0.8
7. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
<b>GHG total with LULUCF</b>	<b>140.6</b>	<b>147.6</b>	<b>143.0</b>	<b>139.8</b>	<b>129.0</b>	<b>132.0</b>	<b>–6.2</b>	<b>2.3</b>	<b>NA</b>	<b>NA</b>
<b>GHG total without LULUCF</b>	<b>143.4</b>	<b>149.6</b>	<b>144.6</b>	<b>141.5</b>	<b>130.2</b>	<b>133.3</b>	<b>–7.1</b>	<b>2.3</b>	<b>100.0</b>	<b>100.0</b>

*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.

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

<sup>a</sup> 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.

19. Emission trends in Belgium are mainly driven by the increasing population, changes in primary energy use, and overall economic activities. Emission decreases between the base year and 2008 were mainly due to: (a) the increased use of biomass, the decrease in refinery activities and the increase in the use of cogeneration plants in the energy industries; (b) reduced activity in the iron and steel sector and improved processes in the chemical industry; (c) the fuel switch in the residential and commercial sectors; (d) biogas recovery in solid waste disposal sites; and (e) the reduction in emissions from agricultural activities mainly due to the reduction in the number of livestock.

## **2. National system**

20. In accordance with decision 15/CMP.1, Belgium provided in its NC5 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). Belgium also provided a reference to the 2009 annual submission, which contains a more detailed description of the national system. The description includes almost all elements as required by decision 15/CMP.1, except for the contact information for the national entity, which is the interregional cell IRCEL/CELINE.

21. The ERT noted that Belgium did not provide a description of national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, and elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contribute to the conservation of biodiversity and the sustainable use of natural resources. In the NC5, Belgium explained that the information on Article 3, paragraph 3, is under preparation and is expected to be ready for reporting in 2010. Further, Belgium did not elect any activities under Article 3, paragraph 4.

22. During the review, Belgium provided additional information on the national system, elaborating on the institutional arrangements for the compilation of inventory data and the procedures for the official consideration and approval of the inventory data (i.e. endorsed by the National Climate Commission). The ERT commends Belgium for its consistent efforts to maintain the national system and the quality of its inventory.

23. The ERT took note of the recommendations of the report of the individual review of the 2009 annual submission of Belgium<sup>4</sup> (the 2009 annual review report (ARR)). The ERT reiterates the recommendations of the previous ERT that Belgium improve its capacity to report on LULUCF activities under Article 3, paragraph 3, of the Kyoto Protocol, and provide information on national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, contributes to the conservation of biodiversity and the sustainable use of natural resources in its next national communication. The ERT concludes that the national system of Belgium continues to perform its functions as set out in decision 19/CMP.1.

## **3. National registry**

24. In its NC5, Belgium has provided information on the national registry, including a detailed description of how its national registry performs the functions defined in the annex

---

<sup>4</sup> Report of the individual review of the annual submission of Belgium submitted in 2009 (FCCC/ARR/2009/BEL).

to decision 13/CMP.1 and the annex to decision 5/CMP.1 and how it complies with the requirements of the technical standards for data exchange between registry systems. Belgium also provided a reference to the 2009 annual submission, which contains a more detailed description of the national registry.

25. During the review, Belgium provided additional information on the measures put in place to safeguard, maintain and recover registry data, the security measures employed in the registry to prevent unauthorized manipulations, the measures put in place to protect the registry against security compromises, the test procedures related to the performance of the current version of the national registry and the recording of the changes and discrepancies of the national registry. In response to questions raised by the ERT, Belgium provided documents demonstrating how it records the changes related to the national registry and how it maintains these records. The ERT noted that updates of databases and applications, implemented security measures, and changes to the national registry software are documented on a regular basis by nominated responsible staff.

26. The ERT took note of the conclusion of the standard independent assessment report (SIAR) that the reported information on the national registry is complete and has been submitted in accordance with the annex to decision 15/CMP.1. The ERT also took note of the recommendations of the 2009 ARR that Belgium improve the availability of the public information referred to in paragraphs 46–48 of the annex to decision 13/CMP.1. During the review, Belgium informed the ERT that the registry software upgrade had provided a structural solution to the previously reported shortcomings in the public reports module.

27. The ERT concluded that Belgium's national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1, and continues to adhere to the technical standards for data exchange between registry systems in accordance with decisions 16/CP.10 and 12/CMP.1.

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

28. As required by the UNFCCC reporting guidelines, Belgium has provided in its NC5 information on its package of policies and measures (PaMs) implemented, adopted and planned in order to fulfil its commitments under the Convention and its Kyoto Protocol. Each sector has its own textual description of the principal PaMs, supplemented by summary tables on PaMs by sector. According to Belgium, the National Climate Plan for the period 2009–2012, adopted in April 2009, represents major progress in the development of PaMs since the NC4.

29. However, the ERT noted that Belgium did not provide information on how it believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals consistent with the objective of the Convention, as required by the UNFCCC reporting guidelines. Some of the recommendations from the previous review were taken into consideration to improve reporting in the NC5, including the provision of a summary table of PaMs by sector. The ERT recommends that Belgium include information on how it believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals consistent with the objective of the Convention in its next national communication. The ERT also encourages Belgium to provide more information on the cost estimates of PaMs across all sectors and on how the quantification of some of the PaMs is derived, and to illustrate the effect of these PaMs in textual format in its next national communication.

30. PaMs to reduce GHG emissions in Belgium are mapped out at different levels of responsibility based on the distribution of powers between the federal government and the

regions. In the NC5, Belgium provided information on PaMs at both the federal and the regional level. The National Climate Plan for 2009–2012, developed on the basis of various regional plans and federal measures, sets out the key strategic areas and provides the overall policy framework at the federal level. The Climate Policy Plan for 2006–2012 for the Flemish Region, the Climate and Atmosphere Plan for the Walloon Region and the Climate Plan for 2002–2010 for the Brussels-Capital Region set out climate policy objectives and strategies at the regional level.

31. Within the overall policy framework provided by the National Climate Plan and the regional climate plans, sectoral PaMs have been adopted to mitigate GHG emissions at both the federal and the regional level. These sectoral PaMs are outlined in chapters II.B.2 and II.B.3 of this report. Since the 1990s, the switch from solid fuel to gaseous fuel, the development of biomass and technological development have contributed to emission reductions in the energy sector in Belgium. In recent years, Belgium has attached greater importance to the development of highly efficient combined cycle gas power plants (CCGT) to replace nuclear energy, which currently accounts for about 54 per cent of the country's electricity generation and is expected to be phased out from 2014 to 2025. The green certificates scheme for renewable energy sources and the combined heat and power (CHP) certificates system are two of the major PaMs to promote the use of renewable energy and electricity generated from CHP. Across various sectors, such as the energy supply, transport and industry sectors, financial incentives in the form of tax deductions and subsidies have been more widely used in recent years to promote the development of renewables and improve energy efficiency in Belgium.

32. Belgium's commitments under the Kyoto Protocol and the EU burden-sharing agreement are that GHG emissions as an annual average for the period 2008–2012 will be 7.5 per cent below the 1990 level. The internal burden-sharing agreement between the federal and regional governments was established in 2004 to set differentiated targets for each of the three regions. Total GHG emissions in Belgium, excluding emissions and removals from LULUCF, decreased by 7.1 per cent over the period 1990–2008. Belgium is on track to meet its Kyoto Protocol emissions reduction target. According to Belgium, the development of a National Allocation Plan in accordance with the EU emissions trading directive and the use of flexibility mechanisms under the Kyoto Protocol are the key policy instruments that will help Belgium meet its Kyoto Protocol target during the first commitment period.

33. The NC5 provided estimates of the effects of some key PaMs by gas. The impacts of these PaMs were not aggregated at the sectoral level. Limited information was provided on how synergies and overlap among various PaMs were taken into consideration when the effects of PaMs were estimated. During the review, Belgium explained that the PaMs were quantified on the basis of the objectives set in several climate plans. According to Belgium, the impact of PaMs is periodically evaluated by the federal and regional governments both ex-ante and ex-post. Work has already been undertaken to harmonize the methodologies and statistics used to evaluate PaMs in the context of GHG emission projections at the federal and regional levels. The ERT encourages Belgium to provide more information on the quantification of the impacts of PaMs and also to provide estimates for 2015 and 2020 for a greater number of PaMs in its next national communication.

34. No estimation of the implementation costs of the PaMs was provided in the NC5. The ERT encourages Belgium to evaluate both the costs and benefits of a complete set of PaMs in its next national communication. This would allow Belgium to conduct a comprehensive cost-benefit analysis of its PaMs in order to prioritize these PaMs and achieve emission reductions in a more cost-effective manner. According to Belgium, no PaMs have been discontinued since the NC4. Table 3 provides a summary of the reported information on the PaMs of Belgium.

Table 3  
**Summary of information on policies and measures**

<i>Major policies and measures</i>	<i>Examples/comments</i>
<i>Policy framework and cross-sectoral measures</i>	
National Climate Plan	It sets out priority strategic areas for the reduction of GHG emissions
Belgian National Allocation Plan 2008–2012	Implemented by the three regions under the EU ETS (3.1 Mt CO <sub>2</sub> in 2010)
<i>Policies and measures by sector</i>	
<i>Energy</i>	
The green certificates scheme for renewable energy sources and the CHP certificates system	Support the production of green electricity from renewable sources and CHP (0.76 Mt CO <sub>2</sub> in 2010 and 2.1 Mt CO <sub>2</sub> in 2020)
Financial support for electricity generation from RES	(2.1 Mt CO <sub>2</sub> in 2010 and 2.5 Mt CO <sub>2</sub> in 2020)
Financial incentives for the rational use of energy and RES	Tax has been deducted and subsidies are being granted to encourage energy-efficiency improvements (1.8 Mt CO <sub>2</sub> in 2010 and 4.2 Mt CO <sub>2</sub> eq in 2020)
Energy performance and the certification of buildings	Energy performance conditions are imposed at the regional level for new buildings and authorized renovations
<i>Transport</i>	
Tax exemption of biofuels	To achieve the target of a 5.75 per cent share in 2010 and 10 per cent in 2020 (0.75 Mt CO <sub>2</sub> in 2010 and 1.04 Mt CO <sub>2</sub> in 2020)
Improve and promote public transportation	By tax deduction and a mobility plan (0.24 Mt CO <sub>2</sub> and 0.3 Mt CO <sub>2</sub> in the Flemish Region)
Evaluation of the environmental impact of vehicles and a reform of vehicle tax and vehicle registration tax	“Eco-score” has been developed for vehicles as a criterion to judge the eco-friendliness of vehicles and to inform the public. A reform of the vehicle tax and vehicle registration tax is being planned to encourage eco-friendly vehicles (0.27 Mt CO <sub>2</sub> in 2010)
<i>Industrial processes</i>	
Regulations on environment permits	Restriction on the use of F-gases; introduction of best available technologies (BAT)
Agreements with individual producers	Covenant to reduce N <sub>2</sub> O emissions from nitric acid production (2.5 Mt CO <sub>2</sub> eq in 2010 and 2020 in the Flemish Region)
<i>Agriculture</i>	
Rational use of energy	For greenhouse horticulture, supported by financial incentives
Plans for Rural Development	This policy is supplemented at the regional level by specific measures on the rational use of mineral and organic nitrogen fertilizers
Improvement of farming practices	In order to reduce GHG emissions
<i>Forestry</i>	
Reforestation and forest conservation	Specified in the new Forestry Code (Decree of 15

<i>Major policies and measures</i>	<i>Examples/comments</i>
measures	July 2008) in the Walloon Region and in the Forest Regulations in the Flemish Region
Biomass for energy use	Wood Energy Plan in the Walloon Region
<i>Waste</i>	
Environmental taxation	To reduce the volume and optimize the treatment of waste
Promote methane capture and use for electricity production	All solid waste disposal sites are equipped with biogas recovery and most of them produce green electricity

*Note:* The GHG emission reduction estimates, given for some measures (in parentheses), are reductions in CO<sub>2</sub> or CO<sub>2</sub> eq for the years 2010 and 2020.

*Abbreviations:* CHP = combined heat and power, EU ETS = European Union emissions trading scheme, F-gases = fluorinated gases, GHG = greenhouse gas, RES = renewable energy sources.

## 1. Policy framework and cross-sectoral measures

35. Institutional arrangements have been put in place to promote consultation and cooperation between the different levels of power and to ensure consistency in the action of the federal State and its entities. The ICE, made up of the Federal Minister for the Environment, the Environment Ministers of each of the three regions and the Federal Minister for Science Policy, plays a key role in climate policy in Belgium. The decisions of the ICE are prepared and implemented by different working groups such as the Greenhouse Effect Coordination Group and the Emissions Working Group, which report to the CCIEP.

36. The federal and regional governments set their own priorities for environment and climate policy. The National Climate Commission, composed of representatives at the federal and regional levels, is the most important coordinating body to harmonize and create synergy between the policies implemented by the federal government and the three regions. It is also responsible for coordinating the monitoring and assessment of the National Climate Plan on a yearly basis. The preparation of climate change PaMs is consequently determined by the plans established by the federal and regional authorities, which set out policy objectives and strategies. According to Belgium, one of the most distinctive features of its policymaking process is the stakeholder forum, where organizations from small- and medium-sized businesses, companies, scientists, citizens and authorities use an intense negotiation process to build a basis for the climate policy plan.

37. Belgium's National Climate Plan for the period 2009–2012 sets out six sectoral strategic areas: (a) to optimize the production of energy; (b) to use energy rationally in buildings; (c) to exert influence on industrial processes; (d) to develop sustainable transport modes; (e) to foster the sustainable management of agricultural and forest ecosystems; and (f) to reinforce efforts regarding waste management. These six strategic areas are further supported by research, awareness-raising, the direct involvement of the public authorities in reducing GHG emissions, the implementation of the flexibility mechanisms under the Kyoto Protocol and the incorporation of climate issues into the development aid policy.

38. The NC5 provided limited information on the list of PaMs being planned after 2012 when the National Climate Plan and regional climate plans expire. During the review, Belgium explained that new plans and strategies beyond 2012 are now being prepared and discussed at both the federal and the regional level. The ERT encourages Belgium to provide more information on its long-term national strategy and targets as well as the set of PaMs to achieve the long-term targets in the next national communication.

39. PaMs transposed from the EU directives have played a key role in GHG emission reductions in Belgium. These include: the emissions trading system (directives 2003/87/EC and 2009/29/EC); the promotion of cogeneration (directive 2004/8/CE); the promotion of the use of energy from renewable sources (directives 2001/77/CE and 2009/28/CE); the energy performance of buildings (directives 2002/91/EC and 2010/31/EU); energy end-use efficiency and energy services (directive 2006/32/EC), the eco-design of energy-using products (directive 2005/32/EC); the promotion of the use of biofuels (directive 2003/30/EC); and waste (directive 2008/98/EC). The EU ETS has been an important policy instrument for emission reductions in the energy and industrial sectors. Emissions covered by the EU ETS in Belgium accounted for around 42 per cent of total emissions in 2010. In the framework of the EU climate and energy package, Belgium has, at the European level, a 13 per cent target of renewable energy sources (RES) in its primary energy consumption for 2020 and a reduction of 15 per cent of non-EU ETS emissions by 2020 compared to 2005. At this point in time, no policies have been clearly defined to achieve these targets.

## 2. Policies and measures in the energy sector

40. Between 1990 and 2008, GHG emissions from the energy sector decreased by 2.8 per cent (3,200 Gg CO<sub>2</sub> eq), mainly driven by a switch from solid fuel to gaseous fuel coupled with the development of biomass. The trend in GHG emissions from fuel combustion showed a notable decrease in manufacturing industries (20.7 per cent or 6,500 Gg CO<sub>2</sub> eq) and energy industries (17.9 per cent or 5,400 Gg CO<sub>2</sub> eq). On the other hand, an increase in GHG emissions was observed for the transport sector (35 per cent or 7,100 Gg CO<sub>2</sub> eq) and energy use in other sectors (7 per cent or 2,000 Gg CO<sub>2</sub> eq), mainly the service sector buildings.

41. **Energy supply.** Emissions in the energy supply sector are mainly from public electricity and heat generation. In Belgium, about 54 per cent of electricity is generated from nuclear power plants, while 39 per cent is generated from conventional thermal power stations and the remaining 7 per cent from pumped storage stations and renewable sources. While electricity production increased by 55 per cent between 1990 and 2007, emissions dropped by 7 per cent due to the switch from coal to natural gas and RES, and to technological improvements. In addition, the decrease in refinery activities and the increase in the number of CHP plants have contributed to emission reductions in this sector. Primary energy intensity has declined in Belgium since 1998, reflecting the progress made in improving energy efficiency.

42. In 2003, Belgium passed the law to progressively phase out nuclear energy by decommissioning nuclear power plants between 2014 and 2025. This is expected to lead to an increase in CO<sub>2</sub> emissions of 6.3 Mt by 2020. Belgium plans to replace nuclear power generation with new combined cycle power plants (CCGT) and also intends to substantially increase the share of renewables in primary energy supply. This implies a dramatic change in the energy mix in Belgium over the next decade. The ERT encourages Belgium to provide more information on the implications of the energy mix change on long-term GHG emissions in the next national communication.

43. **Renewable energy sources.** Renewable energy constitutes a very small share of primary energy supply, primarily due to the small territory and limited availability of hydro, geothermal and solar resources. In 2007, renewable energy represented 5.4 per cent of primary electricity generation in Belgium. However, the share of RES is expected to be increased, which will contribute substantially to primary energy supply over time. The green certificates scheme for renewable energy sources and the CHP certificates system, as well as financial support for electricity generation from RES and financial incentives for the rational use of energy and RES are the key policy instruments in promoting the use of RES in Belgium. Complementary measures include those that draw on action plans for using

biomass, the promotion of offshore and onshore wind energy, and the promotion of cogeneration through various policy incentives.

44. The green certificates scheme for renewable energy sources and the CHP certificates system aim to support the production of green electricity (e.g. from wind energy, hydro energy, solar energy and biomass) and CHP. The green certificates scheme in Belgium operates at both the federal and the regional level. At the federal level, the mechanism is based on minimum guaranteed prices rather than mandatory quotas for suppliers. At the regional level, the green certificates scheme is supplemented by mechanisms aiming to guarantee a minimum income for green electricity producers either via funding for production or a minimum guaranteed price for green certificates. Green electricity producers also benefit from priority network access. The green certificates scheme has proven to be quite effective in the Walloon Region. A mechanism supporting the use of RES has existed in this region since 2003 but was reinforced by the green certificates scheme introduced in 2006. Within the scheme, quotas of certificates are allocated every year to electricity producers. In 2009, about 9 per cent of electricity produced in Wallonia was produced using RES. Across the three regions, it is estimated that the green certificates scheme will result in an annual GHG emissions reduction of 2.1 Mt CO<sub>2</sub> eq by 2020.

45. **Energy efficiency.** In the framework of the EU energy and climate package, Belgium has a target of a 20 per cent energy efficiency improvement by 2020 with respect to a baseline scenario. Currently, each political entity at the federal and regional level is preparing new policies to meet this target. According to Belgium, financial incentives in the form of tax deductions or subsidies granted are the most effective way to encourage the use of energy-efficient electric appliances, which will result in an annual emissions reduction of 1.8 Mt CO<sub>2</sub> eq in 2010 and a further reduction of 4.1 Mt CO<sub>2</sub> eq on an annual basis by 2020 (for further detail see para. 47 below).

46. Voluntary sectoral agreements also play a key role in increasing energy efficiency in Belgium. In Flanders, a benchmarking agreement is in force for heavy industrial consumers and facilities covered by the EU ETS, under which companies agree to achieve the highest world ranking for energy efficiency in their facilities. Similarly, in Wallonia industries pledge to achieve energy efficiency objective and reduction in GHG emissions over a given period of time. Voluntary sectoral agreements now cover 80 per cent of industrial energy consumption in Wallonia.

47. **Residential and commercial sectors.** The residential and commercial sectors accounted for 18.7 per cent of total GHG emissions in 2007. While the emissions in the residential sector have decreased since 1990, there has been a rise in emissions from the service sector buildings mainly due to the rising number of employees. Despite the increase in the number of dwellings, a fuel switch and new thermal regulations have contributed to emission reductions in the residential sector. The increase in energy consumption in the commercial sector has been to some extent outweighed by the replacement of fuel oil with natural gas observed since 1995. For both sectors, the share of biomass use remains negligible. PaMs that help to reduce emissions in the residential and commercial sectors include: standards for the energy performance of buildings and building certification transposed from the EU directive on the energy performance of buildings; subsidies and fiscal deductions for energy-efficient renovation; and third party financing in the public sector. These incentives are frequently offered at the regional level.

48. **Transport sector.** Emissions from the transport sector have been increasing steadily since 1990 due to an increase in road transport, and accounted for 20.7 per cent of total GHG emissions in 2008. As in many other countries, the mitigation of emissions from transport remains a challenge for Belgium, as the demand for fuels is expected to continue to rise in this sector. The main PaMs to reduce emissions from the transport sector include: the improvement and promotion of public transport; the promotion of a modal shift to rail



transport and waterways; eco-driving; the evaluation of the environmental impact of vehicles and the reform of vehicle tax and vehicle registration tax; biofuel tax exemptions; and the improvement of transport efficiency.

49. In 2008, the share of biofuels in transport fuels was around 4 per cent. In line with the EU directive on the promotion of the use of biofuels and other renewable fuels for transport, Belgium has a 5.75 per cent target for 2010 for the share of biofuels in the fuel consumed for land transport, and by 2020 this target will increase to 10 per cent. These targets are expected to result in a slight drop in GHG emissions in 2009 and 2010. Based on Belgium's estimation, these targets will be achieved primarily through the tax exemption of biofuels, which will be the most effective policy instrument in the transport sector, delivering an emissions reduction of 0.8 Mt Gg CO<sub>2</sub> eq in 2010 and 1.0 Mt CO<sub>2</sub> eq in 2020.

50. Emissions from bunker fuels used for international air and maritime transport accounted for 27 per cent of national GHG emissions in 2007, with maritime transport representing the most important source. Aviation bunker fuels will be covered by the EU ETS from 2012 onwards.

51. **Industrial sector.** Emissions from the industrial sector decreased by 20.7 per cent during the period 1990–2008 due to a switch to electric furnaces in the iron and steel industry, the increased use of gaseous fuels and biomass, and increased energy efficiency. Some level of decoupling of industrial output from energy consumption was observed in the industrial sector during this period. Reduced activity in the iron and steel sector led to a decrease in emissions of 9.4 per cent during the period covered by the NC5 between 2003 and 2007. Key instruments to reduce GHG emissions in the industrial sector include the EU ETS and the voluntary sectoral agreements negotiated between the regional authorities and industrial federations (see para. 46 above).

### 3. Policies and measures in other sectors

52. Between 1990 and 2008, GHG emissions from the industrial processes (including solvent and other product use), agriculture and waste sectors decreased by 29 per cent (6,950 Gg CO<sub>2</sub> eq), mainly driven by reductions in emissions from waste management and industrial processes.

53. **Industrial processes.** Between 1990 and 2008, GHG emissions from the industrial processes sector decreased by 16.9 per cent (2,646 Gg CO<sub>2</sub> eq), mainly driven by reduced activity in the iron and steel sector and improved processes in the chemical industry and F-gas production. PaMs designed to reduce GHG emissions come within the scope of regulations on environment permits such as the restriction on the use of F-gases and the introduction of best available technologies (BAT), and agreements with individual producers to reduce N<sub>2</sub>O emissions. For the period covered by the NC5 between 2003 and 2007, improved processes in the chemical industry (emissions of N<sub>2</sub>O in nitric acid production) reduced the emissions in the industrial process sector by 5.8 per cent. Moreover, in 2008 and 2009, the global economic crisis led to a steep decrease in emissions.

54. **Agriculture.** GHG emissions from the agriculture sector accounted for 7 per cent of total GHG emissions in 2008. Between 1990 and 2008, GHG emissions from the agriculture sector decreased by 16.5 per cent (1,916 Gg CO<sub>2</sub> eq), mainly due to a reduction in the livestock population and a shift from dairy cattle to brood cattle as well as a reduced level of manure and mineral fertilizers being applied to agricultural soils. The promotion of the rational use of energy for greenhouse crops, supported by financial incentives, is one of the key PaMs in the agriculture sector. For example, the Flemish Region encourages the conversion to natural gas and other sustainable energy sources in greenhouse horticulture and provides financial incentives to promote energy-saving technologies. In addition, the

Plans for Rural Development are supplemented at the regional level by specific measures on the rational use of mineral and organic nitrogen (N) fertilizers. Other policy approaches include the improvement of farming practices to reduce GHG emissions.

55. **LULUCF.** The ERT noted that major recalculations of emissions were performed in the LULUCF sector during the 2010 inventory submission compared to the 2009 submission. The stock change method was used in the 2010 submission instead of the “growth minus harvest” approach used in the 2009 submission. Based on the 2010 submission, the LULUCF sector was a net removal of 1,275 Gg CO<sub>2</sub> eq in Belgium in 2008 and net GHG removals in the LULUCF sector have decreased by 53.6 per cent since 1990. This trend was mainly driven by an increased harvest rate linked to the ageing of some forests. The harvest has been followed by new plantation or enhanced natural regeneration, which are part of sustainable forest management practices.

56. Reforestation and forest conservation measures were specified in the new Forestry Code (Decree of 15 July 2008) in the Walloon Region and in the Forest Regulations in the Flemish Region. Sustainable forest management has been promoted through forest certification systems in both the Walloon and Flemish Regions. In addition, biomass for energy use has been developed in Belgium. For example, the Wood Energy Plan in the Walloon Region aims at the development of small- and medium-sized solid biomass heating systems in rural municipalities and collectives. Information on activities under Article 3, paragraph 3, of the Kyoto Protocol was not provided in the NC5, but is currently under preparation and is expected to be ready for reporting in 2010.

57. **Waste management.** Between 1990 and 2008, GHG emissions from the waste sector decreased by 70.2 per cent (2,388 Gg CO<sub>2</sub> eq), mainly driven by CH<sub>4</sub> recovery in landfills and its use for energy purposes, which has been developed on a large scale since 1990, the improvement in separating and recovery practices, and a reduction in the amount of landfill waste. Policies implemented to reduce the volume of waste and to optimize waste treatment are based on environmental taxation, stricter regulations and the development of specific channels for treating and recovering waste materials.

58. Overall, in the context of PaMs, the ERT encourages Belgium to clearly define in its next national communication its mid- and long-term national targets in climate change mitigation against which the effectiveness of PaMs can be assessed. The ERT also encourages Belgium to provide more information on how synergies and overlap among PaMs are taken into account and on the cost estimates of the implementation of its PaMs.

#### **4. Minimization of adverse effects in accordance with Article 2, paragraph 3, of the Kyoto Protocol**

59. In its NC5, Belgium reported limited information on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts, on other Parties, especially developing country Parties. Further information on how Belgium strives to implement its commitments under Article 3, paragraph 1, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on the developing country Parties, as reported in the 2010 annual submission, is presented in chapter II.I of this report.

60. The NC5 stated that Belgium has implemented PaMs in all sectors and for all gases to ensure balanced efforts and to limit the potential adverse impact of a single specific measure. However, this statement was not supported by any examples or further evidence. Belgium also explained that the sustainability criteria applied to the clean development mechanism (CDM) has promoted the use of environmentally sound and safe technologies in the host countries. During the review, more information was provided on how Belgium

strives to minimize the adverse impacts of its PaMs. For example, the EU directives on the liberalization of electricity and gas markets and the sustainability criteria of biofuel required by the EU provide incentives to minimize the adverse impacts of PaMs in Belgium. The ERT recommends that Belgium provide more details and examples in its next national communication of how it strives to implement PaMs in such a way as to minimize adverse impacts.

## **C. Projections and the total effect of policies and measures, and complementarity relating to the Kyoto Protocol mechanisms**

61. In its NC5, Belgium has provided comprehensive information on its projections for all GHG emissions, following the Intergovernmental Panel on Climate Change (IPCC) sector and source categories, under a ‘with measures’ and a ‘with additional measures’ scenario. During the review, Belgium informed the ERT that the updated projections are not yet available, even though these are expected to be submitted to the EU on 15 March 2011. Projections in each region are still being prepared and discussions are ongoing with regard to the finalization of these latest projections.

### **1. Projections overview, methodology and key assumptions**

62. The GHG emission projections provided by Belgium in the NC5 include a ‘with measures’ and a ‘with additional measures’ scenario until 2020 presented relative to actual inventory data for 1990, 1995, 2000, 2005 and 2007. Projections are presented on a sectoral basis, using generally the same sector categories used in the PaMs section and on a gas-by-gas basis for the following GHGs: CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF<sub>6</sub>) (treating PFCs, HFCs and SF<sub>6</sub> collectively in each case). Projections are also provided in an aggregated format for each sector as well as for a national total, using global warming potential (GWP) values. Emission projections related to fuel sold to ships and aircraft engaged in international transport were reported separately and not included in the totals. General assumptions are presented for the federal level and are provided in a transparent manner, as well as assumptions for each sector included in the analysis. The methodology is also well explained in the NC5.

63. However, the ERT noted that the sector categories used in the projections section of the Party’s NC5 are not fully consistent with those used in the section on PaMs as required by the UNFCCC reporting guidelines. For example, the PaMs that address energy issues in the manufacturing industries and construction sector and the PaMs that address issues in the sector of solvent and other product use could be better explained in the PaMs section so that better links between the PaMs section (e.g. summary table of PaMs) and projections section (e.g. projection tables for various gases) can be established and consistency can be achieved. The ERT therefore encourages Belgium to follow, in its next national communication, a consistent structure in relation to the sector categories used in both, the PaMs and the projections section of its NC5.

64. The ‘with measures’ scenario reported in the NC5 includes all PaMs adopted at the end of 2008 and described in the National Climate Plan for the period 2009–2012, which integrates all PaMs of the federal and regional governments aimed at GHG emission reductions. In the NC5, Belgium explained that the effects of some of the measures cannot be estimated. The Party also reported the ‘with additional measures’ scenario which encompasses planned PaMs, mainly referring to those associated with the promotion of renewable energy and GHG emissions reduction in the non-EU ETS sectors. The ‘without measures’ scenario was not provided by Belgium in its NC5. According to Belgium, the climate policy has been in place for many years and it is therefore difficult to assess how

energy use and GHG emissions would have evolved without this policy. The ERT encourages Belgium to prepare and report a ‘without measures’ scenario in its next national communication.

65. Belgium prepared its emission projections as a sum of bottom-up projections developed by the three regions as part of their respective climate strategies. Assumptions have been harmonized and a top-down model has been used for the validation of the bottom-up approach. Regional projections were prepared using the MARKAL (Flemish Region) and EPM (Walloon and Brussels-Capital Regions) models for the energy (and transport) sector. Transport emissions were modelled using the TREMOVE (Flemish Region) and PRIMES (Walloon Region) models. Compared to the NC4, more models have been used in order to estimate the evolution of the emissions and a more accurate estimation of the evolution of emissions may therefore be expected. During the review, more information was provided on the strengths and weaknesses of the models used. The ERT encourages Belgium to improve its reporting of models used for each sector as well as a description of their respective strengths and weaknesses in its next national communication.

66. The main assumptions used in the NC5 include GDP growth rate, population growth, energy prices, CO<sub>2</sub> trade price and the number of heating degree days. Compared to the NC4, projections in the NC5 assumed a higher economic growth for the period 2011–2020, an increase in the population and in the number of households by 2020, a higher price for oil and natural gas as well as an increased CO<sub>2</sub> trade price that are almost double those contained in the NC4 assumptions. The higher population size correlated with the higher economic growth result in higher GHG emissions, while higher energy prices stimulate energy efficiency and a shift towards non-fossil sources of energy. The impact of the recent global economic crisis has not been considered in the bottom-up projections. The ERT also encourages Belgium to include a description of the assumptions used at both the regional level and at the sectoral level in its next national communication.

67. Sensitivity analyses on different assumptions as well as to estimate the impact of economic growth and PaMs (i.e. the projected nuclear phase-out) on emission levels were conducted for the ‘with measures’ scenario. The results show that a growth of 1.5 per cent instead of 2.1 per cent leads to a decrease in emissions of 6.9 to 7.7 Tg CO<sub>2</sub> eq in 2020, with the sector most affected being the industrial sector. The decrease in the number of heating degree days from 1,900 to 1,714 in 2020 leads to an emissions reduction of 2.1 Tg CO<sub>2</sub>. In case nuclear capacity is not phased out, emissions would be 6.3 Tg CO<sub>2</sub> eq lower in 2020. Furthermore, an increase of 0.7 per cent in electricity demand during the period 2010–2020 (instead of the 1.1 per cent increase for 2010–2015 and the 0.9 per cent increase for 2015–2020 used in the main scenario) contributes to a decrease of about 0.9 Tg CO<sub>2</sub> eq in 2020, and a doubling of the assumed 2020 import of electricity may decrease the GHG emissions by 2.0 Tg CO<sub>2</sub> eq. The sensitivity analysis indicates that the potential of supplementary actions in emission reductions needs to be tapped in order to fill the gap once nuclear energy is phased out. The ERT also encourages Belgium to perform a sensitivity analysis on fuel prices in the emission projections, as this may contribute to the technological changes needed to replace the nuclear power plants.

## **2. Results of projections**

68. The GHG emissions in the ‘with measures’ scenario are expected to increase from 145.7 Tg CO<sub>2</sub> eq in the base year to 150.8 Tg CO<sub>2</sub> eq in 2020, which represents a 3 per cent increase. Key results of the Party’s GHG emission projections are provided in table 4 and the emission trends are illustrated in the figure below. In the NC5, Belgium explained that the main drivers of the significant increase in GHG emissions after 2010 are the assumed

increased electricity demand combined with the nuclear phase-out and increased production in the industrial sectors producing process emissions.

Table 4

**Summary of greenhouse gas emission projections for Belgium**

	<i>Greenhouse gas emissions (Tg CO<sub>2</sub> eq per year)</i>	<i>Changes in relation to base year level (%)</i>	<i>Changes in relation to 1990 level (%)</i>
Inventory data 1990 <sup>a</sup>	143.2	-2	NA
Inventory data 2008 <sup>a</sup>	133.2	-9	-8
Kyoto Protocol base year <sup>b</sup>	145.7	NA	2
Kyoto Protocol target <sup>b</sup>	134.8	-7.5	-6
‘Without measures’ projections for 2010 <sup>c</sup>	NA	NA	NA
‘With measures’ projections for 2010 <sup>c</sup>	136.9	-6	-5
‘With additional measures’ projections for 2010 <sup>c</sup>	136.7	-7	-5
‘Without measures’ projections for 2020 <sup>c</sup>	NA	NA	NA
‘With measures’ projections for 2020 <sup>c</sup>	150.8	3	5
‘With additional measures’ projections for 2020 <sup>c</sup>	139.5	-4	-3

*Sources:*

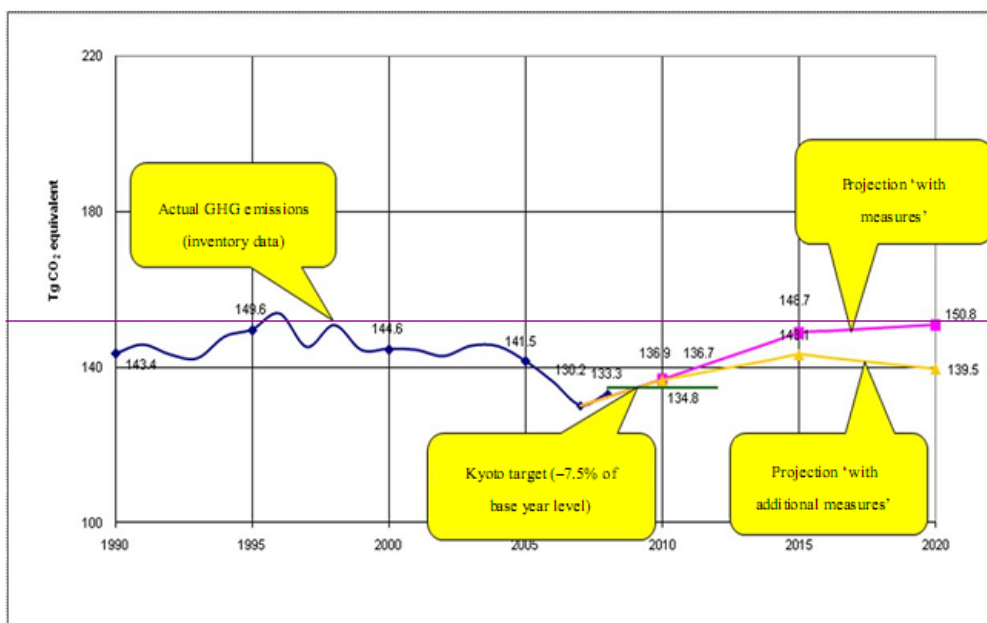
<sup>a</sup> Belgium’s 2010 greenhouse gas (GHG) inventory submission; the emissions are without land use, land-use change and forestry (LULUCF).

<sup>b</sup> Based on the initial review report contained in document FCCC/IRR/2007/BEL.

<sup>c</sup> Belgium’s fifth national communication.

*Abbreviations:* NA = not applicable.

### Greenhouse gas emission projections



Sources: (1) Data for the years 1990–2008: Belgium’s 2010 greenhouse gas inventory submission; the emissions are without land use, land-use change and forestry (LULUCF). (2) Data for the years 2009–2020: Belgium’s fifth national communication; the emissions are without LULUCF.

69. As table 4 and the figure indicate, Belgium’s GHG emissions without LULUCF are expected to total 136.9 Tg CO<sub>2</sub> eq in 2010 during the first commitment period. This represents a gap of 2.1 Tg CO<sub>2</sub> eq per year on average between the projected level of emissions and the Kyoto target of 134.8 Tg CO<sub>2</sub> eq. However, as a result of the implementation of the EU ETS, 58.5 Tg of the total average annual assigned amount of 134.8 Tg is allocated to the ETS sector, bringing the average annual Kyoto target for the non-ETS sectors to 76.3 Tg. In the NC5 Belgium estimates the average non-ETS emission level in the Kyoto Period to be 79.9 Tg of CO<sub>2</sub> eq or 3.6 Tg above the annual target for these sectors. Belgium is expected to fill this gap and meet its Kyoto Protocol target mainly through the use of flexibility mechanisms under the Kyoto Protocol. Specifically, the intended use of flexibility mechanisms at the government level is estimated to be around 4.4 Tg CO<sub>2</sub> eq annually, which takes into account uncertainties associated with projections and the effective delivery of contracted projects.

70. In 1990, Belgium’s CO<sub>2</sub> emissions accounted for 81 per cent of total GHG emissions, but their share is expected to reach 88 per cent in 2020. During the period 2007 – 2020, the highest increase, about 46 per cent (12.5 Tg CO<sub>2</sub> eq), will come from the energy sector, due to the replacement of the nuclear power plants with fossil fuel technologies (CCGT). An increase in emissions of almost 4.0 Tg CO<sub>2</sub> eq (15 per cent) is expected in the building sector due to the increase in the number of houses. An additional increase of 2.7 Tg CO<sub>2</sub> eq (28 per cent) is expected in emissions from the industrial processes sector from the increased production of mineral products, the chemical industry and the iron and steel industry. CH<sub>4</sub> emissions in Belgium accounted for about 8 per cent of total GHG emissions in the base year and are expected to decrease to about 4 per cent in 2020, mainly due to the decrease in emissions in the waste sector. N<sub>2</sub>O emissions accounted for about 7 per cent of Belgium’s GHG emissions in the base year. There was a decrease in N<sub>2</sub>O emissions before 2007, but the emissions have been increasing and are expected to increase further from 2007 onwards, due to an expansion in the production of nitric acid. Emissions from F-gases

decreased after 1990 but are expected to keep increasing until 2020, mainly because of increased refrigeration and other applications.

71. While emissions for the ‘with measures’ scenario are projected to amount to 150.8 Tg CO<sub>2</sub> eq by 2020, the ‘with additional measures’ projections bring this number down to 139.5 Tg CO<sub>2</sub> eq. In the context of the EU climate and energy package, Belgium has a target to reduce emissions in the non-EU ETS sectors by 15 per cent in 2020 compared to the 2005 level. So far, no burden-sharing agreement between the regions has been established, but one is expected to be put in place soon. According to the information provided by Belgium during the review week, further efforts are to be made and new policies are to be designed and included in a new climate plan to be implemented after 2012. Projections included in the NC5 suggest that additional efforts are necessary to enable Belgium to achieve its 2020 emission reduction targets.

### **3. Total effect of policies and measures**

72. In the NC5, Belgium provided some brief information on the estimated and expected aggregated effect of implemented and adopted PaMs in 2010, 2015 and 2020. As Belgium did not provide a ‘without measures’ scenario for its emission projections, these aggregated effects of PaMs were estimated by aggregating the individual effect of each single policy and measure that is considered significant by Belgium.

73. However, the ERT noted that Belgium did not provide an estimate of the aggregated effect of its PaMs by gas (on a CO<sub>2</sub> eq basis) in 2010, 2015 and 2020 in the NC5. During the review, this information was provided to the ERT. Relevant information on factors and activities for each sector for the years 1990–2020 was also missing in the NC5. It remains unclear to the ERT which PaMs were included in the estimation of the aggregated effect of PaMs. The ERT recommends that Belgium provide the estimated and expected aggregated effect of implemented and adopted PaMs by gas and the information on factors and activities for each sector for the years 1990–2020 in its next national communication. The ERT also encourages Belgium to provide the aggregated effect of its PaMs by sector and to improve the transparency of its reporting by providing information on the way in which the aggregated effect of PaMs is estimated in its next national communication.

74. In the NC5, Belgium reported that the aggregated estimated effect of adopted and implemented PaMs is 12.6 Tg CO<sub>2</sub> eq in 2010. Based on the projections, the aggregated reductions will total 11.4 Tg CO<sub>2</sub> eq in 2015 and 14.1 Tg CO<sub>2</sub> eq in 2020. According to Belgium, these estimations need to be interpreted with caution, as they are not representative of the expected effect of all PaMs currently implemented. For example, no reduction effect could be estimated for the EU ETS after 2010 as the exact scope of the policy after 2012 is not yet clear and the cap at the EU level for the EU ETS may change. According to the estimation, the additional measures will bring about an estimated additional reduction of 5.6 Tg CO<sub>2</sub> eq in 2015 and 11.3 Tg CO<sub>2</sub> eq in 2020.

### **4. Supplementarity relating to mechanisms pursuant to Articles 6, 12 and 17**

75. Belgium, in its NC5, provided implicit information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action. A definition of supplementarity was not explicitly provided in the NC5. During the review, Belgium explained that in defining supplementarity it took into account a threshold value of 50 per cent of the difference between the projected emissions in 2010 and the Kyoto Protocol target (average annual emissions for the period 2008–2012). This difference

was estimated by the ERT to be around 22.0 Tg CO<sub>2</sub> eq<sup>5</sup> and 50 per cent of it amounts to 11.0 Tg CO<sub>2</sub> eq.

76. Belgium’s intended use of the flexibility mechanisms at the government level is estimated to be around 4.4 Tg CO<sub>2</sub> eq of credits annually. In accordance with the EU linking directive,<sup>6</sup> companies that are under the EU ETS can meet their emission reduction target by reducing emissions and/or by acquiring emission allowances from the market. Belgian companies can use up to 4.9 Tg CO<sub>2</sub> eq per year (including the new entrant companies for the period 2008–2012) of carbon credits which is 8.49 per cent<sup>7</sup> of their cap (264.7 Tg CO<sub>2</sub> eq for the period 2008–2012). The overall use of carbon credits by the government and by EU ETS companies (existing and new entrants) is therefore not expected to exceed 11.0 Tg CO<sub>2</sub> eq annually or 50 per cent (i.e. the threshold used by the Party to define supplementarity during the review) of the total reduction effort. Considering the above figures and also the potentially lower-than-projected GHG emissions during the Kyoto Protocol first commitment period (due to the recent global economic crisis), the ERT expects that Belgium will meet its target under the Kyoto Protocol.

77. The government (federal and regional) has contributed to “starting up” the market for CO<sub>2</sub> credits by allocating approximately EUR 270 million to the development of joint implementation (JI) and CDM projects and the purchase of AAUs during the period 2004–2014. This investment has directly and indirectly (via participation in funds) supported the launch of nearly 200 CDM projects in countries in Africa, Asia, Latin America and Europe (no JI projects); the resulting credits should amount to 13.7 – 14.9 Tg CO<sub>2</sub> eq during the period 2008–2012. In total 19 countries were covered.

#### D. Vulnerability assessment, climate change impacts and adaptation measures

78. In its NC5, Belgium has provided the required information on the expected impacts of climate change in the country and on adaptation options. Table 5 summarizes the information on vulnerability and adaptation to climate change presented in the NC5.

Table 5

##### 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> If local temperatures do not rise by more than three degrees, climate change will have little impact on agriculture in Belgium, according to all scenarios. This vulnerability assessment is uncertain</p> <p><i>Adaptation:</i> Changes in crop choices; changes in sowing dates; improved humus content of agricultural land and irrigation are possible options</p>

<sup>5</sup> This number is derived by adding the amount of carbon credits that can be used by Belgian companies (4.9 Tg CO<sub>2</sub> eq) and the amount to be used by the Government of Belgium (4.4 Tg CO<sub>2</sub> eq) plus the emission reductions achieved through domestic efforts (12.69 Tg CO<sub>2</sub> eq).

<sup>6</sup> Directive 2004/101/EC of the European Parliament and of the Council of 27 October 2004 amending Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community, in respect of the Kyoto Protocol’s project mechanisms.

<sup>7</sup> Approved JI/CDM limit (percentage of allocation) approved according to the National Allocation Plan.



<i>Vulnerable area</i>	<i>Examples/comments/adaptation measures reported</i>
Biodiversity and natural ecosystems	<p><i>Vulnerability:</i> New warm climate adapted animal species may arrive and compete with indigenous species; some species have already started adapting/moving northwards in the case of sea life and fisheries; complex perturbation of ecosystems (e.g. broken food chain due to different changes among species)</p> <p><i>Adaptation:</i> Reduction of all non-climate stresses; further creation of protected areas and migration corridors; active and adaptable management that responds to observed changes</p>
Coastal zones	<p><i>Vulnerability:</i> Increased coastal erosion; storm-related floods; deterioration of natural ecosystems (indirect or long-term)</p> <p><i>Adaptation:</i> Protection of low-level rivers on the basis of the recently updated Sigma Plan. Beach nourishment (i.e. the addition of sand)</p>
Floods	<p><i>Vulnerability:</i> Increased river flooding in summer; probable increased risk of flooding due to heavy rain</p> <p><i>Adaptation:</i> Monitoring of river flows; ban on construction in flood-sensitive areas; improvement of water infiltration in soils, better use of natural ponds and rivers to retain water in urban areas (Brussels-Capital Region); building of rainwater harvesting basins</p>
Tourism	<p><i>Vulnerability:</i> Impact of a moderate temperature rise should be positive; reduced river flow in summer would have an impact on river sports; more rain in winter would lead to fewer outdoor activities</p>
Forests	<p><i>Vulnerability:</i> Increased frequency of dry summers and heatwaves may damage crops, grasslands and forests; increased migration and distribution of pests; reducing soil fertility; increased salinity of soil in polders; increased damage to forests due to extreme storms</p> <p><i>Adaptation:</i> Plantation of species adapted to mild and rainy winters such as Douglas pine and broad-leaved trees.</p>
Human health	<p><i>Vulnerability:</i> Heatwaves, which cause increased mortality and problems such as heatstroke; consequences of more frequent ozone peaks; probable contribution to increased prevalence of Lyme disease; possible contribution to an increase in pollen-associated allergies</p> <p><i>Adaptation:</i> Federal heatwave and ozone peak plan; regulations for the structural protection of buildings and alternatives for eco-construction</p>
Industry, energy and transport	<p><i>Vulnerability:</i> Reduced energy demand for heating in winter; increased demand for air conditioning in summer; probable (but not certain) increase in damage due to the heaviest storms; possible difficulties in industries and sectors adapted to a colder climate (e.g. power stations cooled by river water)</p>
Water resources	<p><i>Vulnerability:</i> More evaporation and possibly less precipitation in summer would reduce the groundwater level, while increased winter precipitation would have the opposite effect</p> <p><i>Adaptation:</i> Information campaign on water savings; implementation of measures to improve water quality; monitoring of certain water bodies</p>

79. The submission focused on both vulnerability and adaptation assessments, similarly to the NC4 submission. Water, agriculture and forestry are the three areas in which the most progress has been made. Studies have built knowledge to put forward evaluation and management plans. Water-related research and monitoring projects are under way to better evaluate the impact of climate change on water resources. Climate change projection results were based on five general circulation models and a set of regional circulation models under the PRUDENCE EU project.

80. Since 2008, Belgium's development cooperation has explicitly included the fight against climate change in its policy as a priority. The Party has been active in supporting countries in preparing for adaptation. For example, in Burundi, Belgium supports ISABU (Institut des Sciences Agronomiques du Burundi). This support aims at reinforcing Burundian government institutions. The ERT encourages Belgium to provide a better description of its efforts regarding cooperation on adaptation issues.

81. The ERT appreciates the efforts recently undertaken by Belgium in developing more aggressive policies on adaptation and developing a strategy at the national level. The ERT encourages Belgium to report on the progress made in relation to adaptation in its next national communication. However, the ERT also noted that no information was included in the NC5 relating to adaptation measures in the industry, energy, transportation and tourism sectors. During the review, more information was provided by Belgium in this regard. The ERT encourages Belgium to provide more information on adaptation measures in the industry, energy, transportation and tourism sectors in its next national communication.

## **E. Financial resources and transfer of technology, including information under Articles 10 and 11 of the Kyoto Protocol**

### **1. Provision of financial resources, including "new and additional" resources and resources under Article 11 of the Kyoto Protocol**

82. The information provided in the NC5 covers most of the issues on which information is required under the Convention and its Kyoto Protocol. However, the ERT noted that the Party did not provide the following reporting elements required by the UNFCCC reporting guidelines: an indication of what "new and additional" financial resources it has provided pursuant to Article 4, paragraph 3, and a clarification of how it has determined such resources as being "new and additional". The ERT reiterates the recommendation from the previous review that Belgium report this information in its next national communication. To enhance transparency, the ERT encourages Belgium to present the information on the assistance it has made available to developing country Parties that are particularly vulnerable to the adverse effects of climate change to help them meet the costs of adaptation to those adverse effects in tabular format with reference to table 5 of the UNFCCC reporting guidelines.

83. In its NC5, Belgium provided details on measures taken to give effect to its commitments under Article 4, paragraphs 3, 4 and 5, of the Convention as required by the UNFCCC reporting guidelines and under Article 11 of the Kyoto Protocol, as required by the Guidelines for the preparation of information required under Article 7 of the Kyoto Protocol. During the review, Belgium explained that it is not in a position to provide a definition of "new and additional" financial resources for the period covered by the NC5 and in the future. Belgium further noted that the contribution of EUR 40 million from the Belgian Federal Development Cooperation (DGD) for 'fast-start finance' in 2010 comes out of the rising official development assistance (ODA) budget and covers only commitments agreed after the United Nations Climate Change Conference in Copenhagen. Further, the Walloon Region announced a contribution of EUR 2 million in autumn 2010

which is additional to the ODA. The Greenhouse Effect Coordination Group on 27 September 2010 confirmed that Belgium had determined such resources as being “new and additional” for 2010 but this does not prejudice the definition that would be given to “new and additional” in the longer term.

84. Belgium has provided detailed information on the assistance it has made available to developing country Parties that are particularly vulnerable to the adverse effects of climate change to help them meet the costs of adaptation to those adverse effects. Furthermore, the Party has provided information on financial resources related to the implementation of the Convention provided through bilateral, regional and other multilateral channels. In particular, it provided information on its financial contributions to the Global Environment Facility (GEF) during the period 2003–2008.

85. The ERT noted that although the Party provided information on support given to 18 countries for finance and research activities, all research activities appear to be focused on only three countries, namely Burkina Faso, Burundi and the Democratic Republic of Congo. The ERT further noted that the information on financial contributions could have been better presented in the NC5. Specifically, the ERT encourages Belgium to provide information on its bilateral and regional financial contributions related to the implementation of the Convention at the country/regional level on both mitigation and adaptation activities in tabular format. The ERT also encourages Belgium to include information on financial contributions to sectors such as transportation, waste management and coastal zones in its next national communication. Table 6 summarizes information on financial resources and technology transfer.

Table 6

**Summary of information on financial resources and technology transfer for 2004–2008**

<i>Channel of financial resources</i>	<i>Years of disbursement (EUR million)</i>			
	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>
Official development assistance (ODA)	1 572.72	1 573.63	1 425.35	1 654.26
Climate-related aid in bilateral ODA	27.68	43.24	36.98	52.88
Climate-related support programmes	22.11	23.20	25.86	27.53
Contributions to GEF (USD million)	10.50	10.50	11.55	11.55
Pledge for GEF replenishment		46.18		
JI and CDM under the Kyoto Protocol	EUR 240 million has been committed by the government as “start-up” funds for JI and CDM during 2004–2009			
Other (bilateral/multilateral)	NA	NA	NA	NA

*Abbreviations:* CDM = clean development mechanism, GEF = Global Environment Facility, JI = joint implementation, NA = not applicable.

**2. Activities related to transfer of technology, including information under Article 10 of the Kyoto Protocol**

86. In its NC5, Belgium has provided a general overview of its efforts dedicated to capacity-building and technology transfer. Information has also been provided on cooperation with universities and scientific institutions in developing countries to help develop their education programmes on subjects such as natural resource management.

However, the ERT noted that Belgium did not provide a clear distinction between activities undertaken by the public sector and those undertaken by the private sector, nor did it report on its activities for financing access by developing countries to ‘hard’ or ‘soft’ environmentally sound technologies. There is also a lack of clarity on the steps taken by the Government of Belgium to promote, facilitate and finance transfer of technology, and to support the development and enhancement of endogenous capacities and technologies of developing countries. The ERT recommends that Belgium include this information in its next national communication.

87. The ERT noted that Belgium’s capacity-building and technology transfer activities focus on the forestry, agriculture, water and energy sectors. Limited contributions have been made to capacity-building and technology transfer in programmes exclusively aimed at environmental protection. During the review, Belgium explained that it has undertaken bilateral and, predominantly, multilateral activities in the field of capacity-building and technology transfer, but has difficulties in assessing them with precision. Information was provided to the ERT on selected projects or programmes that promote practicable steps to facilitate and finance the transfer of, or access to, environmentally sound technologies in Cambodia, the Lao People’s Democratic Republic, Rwanda, the United Republic of Tanzania and Viet Nam. The ERT recommends that Belgium provide a description of its projects/programmes on technology transfer and access in order to highlight success and failure stories in its next national communication. The ERT further encourages Belgium to include this information in tabular format in the next national communication using table 6 of the UNFCCC reporting guidelines.

## **F. Research and systematic observation**

88. Belgium has provided in its NC5 comprehensive information on its actions relating to research and systematic observation, and has addressed both domestic and international activities, including the World Climate Programme, the International Geosphere–Biosphere Programme (IGBP), the Global Climate Observing System (GCOS), and the Intergovernmental Panel on Climate Change (IPCC). The NC5 also reflects action taken to support related capacity-building in developing countries. Furthermore, Belgium has provided a summary of information on GCOS activities. While appreciating the amount and quality of the information reported in the NC5, the ERT encourages Belgium to elaborate further on how research funding is coordinated and allocated across the federal, regional and community levels in its next national communication.

89. The ERT noted numerous research activities in Belgium which aim at improving the understanding of climate system and atmospheric processes and providing support for the preparation and evaluation of climate policy. Belgium has actively participated in numerous international climate research programmes, including the IGBP, the World Climate Research Programme (WCRP), and the EU Seventh Framework Programme for Research and Technological Development. Belgium also contributes substantially to international earth observation programmes such as those of the Group on Earth Observations (GEO), the European Space Agency (ESA), the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), the European Centre for Medium-Range Weather Forecasts (ECMWF) and Global Monitoring for Environment and Security (GMES). Programmes on research and systematic observation (RSO) have also been developed at the regional level. The ERT commends Belgium for its efforts to promote RSO activities at both the international and the domestic level.

90. In the NC5, Belgium provided comprehensive information on policies and the institutional framework to support climate research at various governance levels. Climate research policies exist at the federal, regional and community levels in Belgium, with

specific research activities being conducted mainly in universities and research institutes. The ERT noted that Belgium has provided assistance to developing countries to enhance their capacity in research and development. This is mostly done at the federal level through fellowship or grant programmes at universities or research institutes. Capacity-building support has also been provided within the framework of bilateral cooperation activities such as the Belgian–Vietnamese project entitled “Development to Support Decision Making in Water Management in the Mekong Delta”.

91. Belgium carries out systematic atmospheric, oceanic and terrestrial observations related to climate change. Belgium is well covered by synoptic meteorological stations which are operated by the Royal Meteorological Institute of Belgium, the civil aviation service Belgocontrol, and the military aviation service Meteo Wing. These are part of the World Meteorological Organization (WMO) Global Observing System (GOS). These ground stations are supplemented by upper air stations, offshore meteorological stations in the North Sea as well as river discharge and aerosol observations to support ground-based measurements in Belgium. Ground-based measurements are also conducted on foreign grounds, such as meteorological and climatological measurements in Africa. In addition, Belgium contributes to satellite observations at the international and European levels.

## **G. Education, training and public awareness**

92. In the NC5, Belgium has provided information on its actions relating to education, training and public awareness at both the domestic and the international level. Compared to the NC4, Belgium has provided more detailed information on education and training, especially on issues related to energy and transport and on target groups of various activities. The training programmes are administered mostly at the regional level, but actions organized at the local and national levels were also presented in the NC5. The ERT encourages Belgium to provide more detail in its next national communication on activities aimed at strengthening institutional capacity in education, training and public awareness-raising.

93. Education is among the responsibilities of communities in Belgium. Education and training are carried out mostly through experiential learning such as competitions, experiments, and films, which are supplemented by theoretical information. In the NC5, Belgium did not provide information on the priority areas identified for the purpose of education, training and public awareness at the federal level. However, a number of key objectives in relation to education, training and public awareness were highlighted based on agreements between the regions and communities. These included the multiplication of channels of information, better incorporation of environmental education in the school curriculum, and collaboration in logistics and the establishment of reciprocal exchanges for the purpose of improving pedagogical teaching practices. The ERT encourages Belgium to incorporate in its next national communication information on the priorities regarding education, training and public awareness at the national level. The ERT also encourages Belgium to share more information on its capacity-building programmes with developing countries in its next national communication.

94. During the review, Belgium provided more information on the successful cooperation between non-governmental organizations (NGOs) and public administration on environmental issues including climate change. A stakeholder information management system is in place which allows for regular meetings between the federal government and all stakeholders involved to discuss issues related to climate change. Public-awareness campaigns are carried out at the federal and regional levels. For instance, the federal government launched the “Energy Guzzlers” campaign with a website to disseminate information on climate change. This campaign is closely monitored through statistics on

access to the website to evaluate the effectiveness of the campaign.<sup>8</sup> The ERT encourages Belgium to include information on these successful examples of the stakeholder information management system and monitoring of public-awareness campaigns in its next national communication.

**H. Evaluation of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol**

95. Belgium has provided most of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol in its NC5. The supplementary information is placed in different sections of the NC5. Table 7 provides an overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol as well as references to the NC5 chapters in which this information is provided. The technical assessment of the information reported under Article 7, paragraph 2, is contained in the relevant sections of this report.

Table 7

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

<i>Supplementary information</i>	<i>Reference</i>
National registry	Chapter 3.4
National system	Chapter 3.3
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Chapter 7.2
Policies and measures in accordance with Article 2	Chapter 4.3.2
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	Chapter 4.2
Information under Article 10	Chapters 3.3, 6.4, 7.3, 8 and 9.6
Financial resources	Chapter 7.2

**I. Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol**

96. Belgium reported the information requested in section H, Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the annex to decision 15/CMP.1 as a part of its 2010 annual submission. During the in-country review, Belgium provided the ERT with additional information on how it strives to implement its commitments under Article 3, paragraph 1, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention. The ERT considers the reported information to be mostly transparent and complete. The ERT encourages Belgium to continue exploring and reporting on the adverse impacts of the response measures.

97. The 2010 NIR and the additional information provided during the review presented several initiatives of Belgium aiming to minimize adverse impacts, most of which have been implemented within the EU framework. As a member of the EU, Belgium designs and implements most of its policies within the framework of EC directives, regulations,

<sup>8</sup> More information about the campaign can be found at <<http://energivores.be>>.

decisions and recommendations. The implementation of the EU directives on the liberalization of the electricity and natural gas markets, and participation in the EU ETS has helped to address market imperfections and internationalize the negative externalities of GHG emissions, which in turn minimizes the adverse impacts of PaMs. In addition, the Belgian agricultural policies and the promotion of biofuels are developed within the EU common policies which create market conditions that are more accessible to products from developing countries and establish strict sustainability criteria for the development of biofuels.

98. At the national level, Belgium strives to develop PaMs that address not only fossil fuel combustion but also emissions of all gases such as CH<sub>4</sub>, nitrogen protoxide and F-gases to ensure a balanced distribution of efforts and to limit the potential adverse impact of a single specific measure. Belgium applies the sustainability criteria of “Golden Standards” to select its CDM projects in order to achieve environmental and social sustainability in the host countries. The design of the CDM projects also aims to improve capacity-building and promote technology transfer in developing countries.

### III. Conclusions and recommendations

99. The ERT concludes that in general the NC5 provides a good overview of the national climate policy of Belgium. The information provided in the NC5 includes most of the mandatory information required by the UNFCCC reporting guidelines and all elements of the supplementary information required under Article 7 of the Kyoto Protocol, with the exception of information on: LULUCF activities under Article 3, paragraph 3, of the Kyoto Protocol; national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, contributes to the conservation of biodiversity and the sustainable use of natural resources; how Belgium believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals consistent with the objective of the Convention; details and examples of how Belgium strives to implement PaMs in such a way as to minimize the adverse impacts of climate change; the estimated and expected aggregated effect of implemented and adopted PaMs by gas; factors and activities for each sector for the years 1990–2020; the identification of “new and additional” financial resources; a clear distinction between activities undertaken by the public sector and those undertaken by the private sector as well as activities for financing access by developing countries to ‘hard’ or ‘soft’ environmentally sound technologies; and a description of projects/programmes on technology transfer and access to highlight success and failure stories. During the review, Belgium provided additional information on the above missing elements.

100. Belgium’s emissions for 2008 were estimated to be 7.1 per cent below its 1990 level excluding LULUCF and 6.2 per cent below the 1990 level including LULUCF. Emission decreases were mainly driven by the increased use of biomass and cogeneration, reduced activity in the iron and steel sector and improved process in the chemical industry, the fuel switch in the residential and commercial sectors, biogas recovery in solid waste disposal sites, and a reduction in the number of livestock.

101. In the NC5, Belgium presents GHG projections for the period 2007–2020. Two scenarios are included: the ‘with measures’ scenario and the ‘with additional measures’ scenario. The projected GHG emissions under the ‘with measures’ and ‘with additional measures’ scenarios in 2010 are 6 per cent and 7 per cent, respectively, below the base year level. Thus, the projections indicate that Belgium can meet its Kyoto Protocol target (which is a 7.5 per cent reduction) with the use of flexibility mechanisms under the Kyoto Protocol of around 4.4 Mt CO<sub>2</sub> eq annually on average in addition to domestic efforts. However, projections show that by 2020, emissions will increase by 3 per cent under the ‘with

measures' scenario and decrease by 4 per cent under the 'with additional measures' scenario. The long-term emissions may be further increased as a result of the dramatic change in Belgium's energy mix due to the planned nuclear phase-out during the period 2014–2025. This implies that more efforts are needed to enable Belgium to achieve its 2020 emission reduction targets for the non-EU ETS sector.

102. The NC5 contains information on how the Party's use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action. During the review, Belgium explained that in defining supplementarity it took into account a threshold value of 50 per cent of the difference between the projected emissions in 2010 and the Kyoto Protocol target (average annual emissions for the period 2008–2012). Belgium is planning to make use of the Kyoto Protocol mechanisms to meet its first commitment period Kyoto Protocol target.

103. Total GHG emissions in Belgium, excluding emissions and removals from LULUCF, decreased by 7.1 per cent over the period 1990–2008. Belgium is on track to meet its Kyoto Protocol target. According to Belgium, the development of a National Allocation Plan in accordance with the EU emissions trading directive and the use of flexibility mechanisms under the Kyoto Protocol are the key policy instruments that will help Belgium meet its Kyoto Protocol target during the first commitment period. In recent years, Belgium has attached greater importance to the development of highly efficient combined cycle gas power plants (CCGT) to replace nuclear energy which currently supplies about 54 per cent of the country's electricity generation and is expected to be phased out from 2014 to 2025. The green certificates scheme for renewable energy sources and the CHP certificates system have been used to promote the use of renewable energy and electricity generated from CHP. In addition, financial incentives in the form of tax deductions and subsidies have been more widely used in recent years to promote the development of renewables and improve energy efficiency in Belgium. The ERT noted that more efforts are needed in order to achieve the national target in the non-EU ETS sector by 2020.

104. Belgium has provided detailed information in the NC5 on measures taken to give effect to its commitments under Article 4, paragraphs 3, 4 and 5, of the Convention. During the review, Belgium explained that it is not in a position to provide a definition of "new and additional" financial resources for the period covered by the NC5 even though its contribution to the 'fast-start finance' in 2010 comes out of the rising ODA budget and covers only commitments agreed after the United Nations Climate Change Conference in Copenhagen. In the NC5, Belgium reported on its capacity-building and technology transfer activities which mainly focus on the forestry, agriculture, water and energy sectors.

105. Belgium provided detailed information on both vulnerability assessment and adaptation measures in its NC5, among which assessments in the water, agriculture and forestry sectors have made the most progress compared to the NC4. During the review, Belgium provided more information on its recent activities in developing more aggressive policies on adaptation and in developing an adaptation strategy at the national level.

106. In the NC5, Belgium has provided information on its actions relating to education, training and public awareness at both the domestic and the international level. A number of key objectives in education, training and public awareness were highlighted based on agreements between the regions and communities. During the review, Belgium provided more information on the successful cooperation between NGOs and public administration on environmental issues including climate change.

107. The ERT concluded that the national system in Belgium continues to perform its required functions as set out in decision 19/CMP.1; that the national registry continues to perform the functions set out in decision 13/CMP.1 and decision 5/CMP.1, and continues to



adhere to the technical standards for data exchange between registry systems in accordance with relevant decisions of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP). The ERT noted that updates of databases and applications are carried out frequently and the implemented security measures and changes to the national registry software are documented on a regular basis by nominated responsible staff.

108. Supplementary information under Article 7, paragraph 1, of the Kyoto Protocol on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol provided by the Party in its 2009 and 2010 annual submissions is mostly complete and transparent. The ERT encourages Belgium to further enhance the reporting on Article 3, paragraph 14, including by indicating the prioritization of the action taken in implementing its commitments under Article 3.

109. In the course of the IDR, the ERT formulated several recommendations relating to the completeness and transparency of Belgium's reporting under the Convention and its Kyoto Protocol. The key recommendations<sup>9</sup> are that Belgium:

(a) Improve the completeness of its reporting by including in the next national communication the following information:

(i) LULUCF activities under Article 3, paragraph 3, of the Kyoto Protocol, and on national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, contributes to the conservation of biodiversity and the sustainable use of natural resources;

(ii) How Belgium believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals consistent with the objective of the Convention;

(iii) How Belgium strives to implement PaMs in such a way as to minimize the adverse impacts of climate change;

(iv) An indication of what "new and additional" financial resources Belgium has provided pursuant to Article 4, paragraph 3, and a clarification of how it has determined such resources as being "new and additional";

(v) A clear distinction between activities undertaken by the public sector and those undertaken by the private sector, and activities for financing access by developing countries to 'hard' or 'soft' environmentally sound technologies;

(vi) A description of projects/programmes on technology transfer and access in order to highlight success and failure stories;

(b) Improve the transparency of its reporting by providing the estimated and expected aggregated effect of implemented and adopted PaMs by gas and the information on factors and activities for each sector for the years 1990–2020.

110. The ERT encourages Belgium to undertake a number of improvements regarding transparency and completeness of reporting; the most important of these are that the Party:

(a) Provide more information on the cost estimates of PaMs across all sectors and on how the quantification of some of the PaMs is derived, and illustrate the effect of these PaMs in textual format;

(b) Aggregate the impacts of PaMs at the sectoral level and elaborate on how synergies and overlap among various PaMs were taken into consideration when the effects of PaMs were estimated;

<sup>9</sup> The recommendations are given in full in the relevant sections of this report.

- (c) Define the mid- and long-term national targets in climate change mitigation against which the effectiveness of PaMs can be assessed;
- (d) Follow a consistent structure in relation to the sector categories used in both the PaMs and the projections section;
- (e) Provide more information on the implications of the energy mix change due to the nuclear phase-out on long-term GHG emissions;
- (f) Prepare and report a ‘without measures’ scenario for GHG emission projections;
- (g) Provide a description of the models used for each sector as well as a description of their respective strengths and weaknesses.

#### **IV. Questions of implementation**

111. During the review, the ERT assessed the NC5, including supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol and reviewed information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol, with regard to timeliness, completeness and transparency. 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>>.

FCCC/SBI/2007/INF.6. Compilation and synthesis of fourth national communications. Available at <<http://unfccc.int/resource/docs/2007/sbi/eng/inf06.pdf>>.

FCCC/SBI/2007/INF.6/Add.1. Compilation and synthesis of NC4s, Add.1: Policies, measures, past and projected future greenhouse gas emission trends of Parties included in Annex I to the Convention. Available at <<http://unfccc.int/resource/docs/2007/sbi/eng/inf06a01.pdf>>.

FCCC/SBI/2007/INF.6/Add.2. Compilation and synthesis of NC4s, Add.2: Financial resources, technology transfer, vulnerability, adaptation and other issues relating to the implementation of the Convention by Parties included in Annex I to the Convention. Available at <<http://unfccc.int/resource/docs/2007/sbi/eng/inf06a02.pdf>>.

FCCC/SBI/2007/INF.7. Compilation and synthesis of supplementary information incorporated in fourth national communications submitted in accordance with Article 7, paragraph 2, of the Kyoto Protocol. Available at <<http://unfccc.int/resource/docs/2007/sbi/eng/inf07.pdf>>.

FCCC/ARR/2009/BEL. Report of the individual review of the greenhouse gas inventory of Belgium submitted in 2009. Available at <<http://unfccc.int/resource/docs/2010/arr/bel.pdf>>.

FCCC/IRR/2007/BEL. Report of the review of the initial report of Belgium. Available at <<http://unfccc.int/resource/docs/2007/irr/bel.pdf>>.

FCCC/IDR.4/BEL. Report of the centralized in-depth review of the fourth national communication of Belgium. Available at <<http://unfccc.int/resource/docs/2008/idr/bel04.pdf>>.

Fourth national communication of Belgium. Available at <<http://unfccc.int/resource/docs/natc/belnc4.pdf>>.

2009 GHG inventory submission of Belgium. Available at <[http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/4771.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/4771.php)>.

2010 GHG inventory submission of Belgium. Available at <[http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/5270.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/5270.php)>.

**B. Additional information provided by the Party**

Responses to questions during the review were received from Ms. Laurence de Clock (Federal Public Service Health, Food Chain Safety and Environment), including additional material on updated PaMs, GHG projections, the national registry and recent climate policy developments in Belgium. The following documents<sup>1</sup> were also provided by Belgium:

CONCERE/ENOVER. 2010. *Belgium National renewable energy action plan*. Available at <[http://ec.europa.eu/energy/renewables/transparency\\_platform/doc/national\\_renewable\\_energy\\_action\\_plan\\_belgium\\_en.pdf](http://ec.europa.eu/energy/renewables/transparency_platform/doc/national_renewable_energy_action_plan_belgium_en.pdf)>.

National Climate Commission. 2010. *Belgian National Climate Change Adaptation Strategy*. Available at <<http://www.climat.be/IMG/pdf/NASpublicatiedruk.pdf>>.

---

---

<sup>1</sup> Reproduced as received from the Party.