



COMPLIANCE COMMITTEE

CC/ERT/ARR/2021/20

24 August 2021

**Report of the individual review of the annual submission of
Belgium submitted in 2020**

Note by the secretariat

The report of the individual review of the annual submission of Belgium submitted in 2020 was published on 19 August 2021. 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 decisions 4/CMP.4 and 8/CMP.9), the report is considered received by the secretariat on the same date. This report, FCCC/ARR/2020/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.



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Report on the individual review of the annual submission of Belgium submitted in 2020*

Note by the expert review team

Summary

Each Party included in Annex I to the Convention must submit an annual inventory of emissions and removals of greenhouse gases for all years from the base year (or period) to two years before the inventory due date (decision 24/CP.19). Parties included in Annex I to the Convention that are Parties to the Kyoto Protocol are also required to report supplementary information under Article 7, paragraph 1, of the Kyoto Protocol with the inventory submission due under the Convention. This report presents the results of the individual review of the 2020 annual submission of Belgium, conducted by an expert review team in accordance with the “Guidelines for review under Article 8 of the Kyoto Protocol”. The review took place from 26 to 31 October 2020 remotely.

* In the symbol for this document, 2020 refers to the year in which the inventory was submitted, not to the year of publication.



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Abbreviations and acronyms

AAU	assigned amount unit
AD	activity data
Annex A source	source category included in Annex A to the Kyoto Protocol
AR	afforestation and reforestation
Article 8 review guidelines	“Guidelines for review under Article 8 of the Kyoto Protocol”
CER	certified emission reduction
CH ₄	methane
CM	cropland management
CNG	compressed natural gas
Convention reporting adherence	adherence to the “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories”
COPERT	software tool for calculating road transport emissions
CO ₂	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
CPR	commitment period reserve
CRF	common reporting format
DOM	dead organic matter
EEA	European Environment Agency
EF	emission factor
EMAV	ammonia emission model for Flanders
EMEP	Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe
EMMOSS	Emission Model for Shipping and Rail
ERT	expert review team
ERU	emission reduction unit
EU	European Union
EU ETS	European Union Emissions Trading System
Eurostat	statistical office of the European Union
F-gas	fluorinated gas
FM	forest management
FMRL	forest management reference level
Frac _{GASM}	fraction of applied organic nitrogen fertilizer material and of urine and dung nitrogen deposited by grazing animals that volatilizes as ammonia and nitrogen oxides
GHG	greenhouse gas
GM	grazing land management
HFC	hydrofluorocarbon
HWP	harvested wood products
IE	included elsewhere
IEF	implied emission factor
IPCC	Intergovernmental Panel on Climate Change
IPCC good practice guidance for LULUCF	<i>Good Practice Guidance for Land Use, Land-Use Change and Forestry</i>
IPPU	industrial processes and product use
KP-LULUCF	activities under Article 3, paragraphs 3–4, of the Kyoto Protocol
KP reporting adherence	adherence to the reporting guidelines under Article 7, paragraph 1, of the Kyoto Protocol

Kyoto Protocol Supplement	<i>2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol</i>
LULUCF	land use, land-use change and forestry
N	nitrogen
NA	not applicable
NE	not estimated
Nex	nitrogen excretion
NF ₃	nitrogen trifluoride
NH ₃	ammonia
NIR	national inventory report
NO	not occurring
NO _x	nitrogen oxides
N ₂ O	nitrous oxide
OFFREM	off-road emissions model
PFC	perfluorocarbon
PPSR	previous period surplus reserve
QA/QC	quality assurance/quality control
RMU	removal unit
RV	revegetation
SF ₆	sulfur hexafluoride
Statbel	Belgian statistical office
UNFCCC Annex I inventory reporting guidelines	“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories”
UNFCCC review guidelines	“Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”
WDR	wetland drainage and rewetting
Wetlands Supplement	<i>2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands</i>
2006 IPCC Guidelines	<i>2006 IPCC Guidelines for National Greenhouse Gas Inventories</i>

I. Introduction

1. This report covers the review of the 2020 annual submission of Belgium, organized by the secretariat in accordance with the Article 8 review guidelines (adopted by decision 22/CMP.1 and revised by decision 4/CMP.11). In accordance with the Article 8 review guidelines, this review process also encompasses the review under the Convention as described in the UNFCCC review guidelines, particularly in part III thereof, namely the “UNFCCC guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention” (annex to decision 13/CP.20). The review took place from 26 to 31 October 2020 remotely¹ and was coordinated by Sohail Pasha, Kyoko Miwa and Roman Payo (secretariat). Table 1 provides information on the composition of the ERT that conducted the review for Belgium.

Table 1

Composition of the expert review team that conducted the review for Belgium

<i>Area of expertise</i>	<i>Name</i>	<i>Party</i>
Generalist	John David Watterson	United Kingdom
Energy	Yuriko Hayabuchi	Japan
	Hiroshi Ito	Japan
	Alexander Zahar	Australia
IPPU	Juan Luis Martin Ortega	El Salvador
	Newton Paciornik	Brazil
	Takuji Terakawa	Japan
Agriculture	Abdulkadir Bektaş	Turkey
	Amnat Chidthaisong	Thailand
	Paulo Cornejo	Chile
LULUCF and KP-LULUCF	Pierre Brender	United Kingdom
	Agustín José Inthamoussu	Uruguay
	Midori Yanagawa	Japan
Waste	Veronica Jakarasi	Zimbabwe
	Takefumi Oda	Japan
Lead reviewers	Newton Paciornik	
	John David Watterson	

2. The basis of the findings in this report is the assessment by the ERT of the Party’s 2020 annual submission in accordance with the UNFCCC review guidelines and the Article 8 review guidelines.

3. The ERT has made recommendations that Belgium resolve identified findings, including issues² designated as problems.³ Other findings, and, if applicable, the encouragements of the ERT to Belgium to resolve related issues, are also included.

4. A draft version of this report was communicated to the Government of Belgium, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

5. Annex I presents the annual GHG emissions of Belgium, including totals excluding and including LULUCF, indirect CO₂ emissions, and emissions by gas and by sector, and

¹ Owing to the circumstances related to the coronavirus disease 2019, the review had to be conducted remotely.

² Issues are defined in decision 13/CP.20, annex, para. 81.

³ Problems are defined in decision 22/CMP.1, annex, paras. 68–69, as revised by decision 4/CMP.11.

contains background data on emissions and removals from KP-LULUCF, if elected by the Party, by gas, sector and activity.

6. Information to be included in the compilation and accounting database can be found in annex II.

II. Summary and general assessment of the Party's 2020 annual submission

7. Table 2 provides the assessment by the ERT of the Party's 2020 annual submission with respect to the tasks undertaken during the review. Further information on the issues identified, as well as additional findings, may be found in tables 3 and 5.

Table 2

Summary of review results and general assessment of the 2020 annual submission of Belgium

Assessment		Issue/problem ID#(s) in table 3 or 5 ^a	
Dates of submission	Original submission: NIR, 14 April 2020; CRF tables (version 1), 14 April 2020; standard electronic format tables, 14 April 2020 Revised submission: CRF tables (version 2), 30 November 2020 Unless otherwise specified, values from the most recent submission are included in this report		
Review format	Centralized review conducted remotely		
Application of the requirements of the UNFCCC Annex I inventory reporting guidelines and the Wetlands Supplement (if applicable)	Have any issues been identified in the following areas:		
	(a) Identification of key categories?	Yes	KL.15
	(b) Selection and use of methodologies and assumptions?	Yes	I.14, I.16, L.1, L.6, L.10, L.20
	(c) Development and selection of EFs?	Yes	E.12, E.13, E.14, A.3, A.9, A.11, L.7
	(d) Collection and selection of AD?	Yes	I.3, I.15, L.3, L.13, L.14, L.17
	(e) Reporting of recalculations?	No	
	(f) Reporting of a consistent time series?	Yes	I.20
	(g) Reporting of uncertainties, including methodologies?	Yes	G.12
	(h) QA/QC?		QA/QC procedures were assessed in the context of the national system (see supplementary information under the Kyoto Protocol below)
	(i) Missing categories, or completeness? ^b	Yes	E.16, E.17, I.9, I.19, I.21, L.18, KL.8, KL.17
	(j) Application of corrections to the inventory?	No	
Significance threshold	For categories reported as insignificant, has the Party provided sufficient information showing that the likely level of emissions meets the criteria in paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines?	NA	The Party did not report any insignificant categories as "NE"
Description of trends	Did the ERT conclude that the description in the NIR of the trends for the different gases and sectors is reasonable?	Yes	
Supplementary information under	Have any issues been identified related to the following aspects of the national system:		

Assessment		Issue/problem ID#(s) in table 3 or 5 ^a	
the Kyoto Protocol	(a) Overall organization of the national system, including the effectiveness and reliability of the institutional, procedural and legal arrangements?	No	
	(b) Performance of the national system functions?	No	
	Have any issues been identified related to the national registry:		
	(a) Overall functioning of the national registry?	Yes	G.7
	(b) Performance of the functions of the national registry and the adherence to technical standards for data exchange?	No	
	Have any issues been identified related to the reporting of information on AAUs, CERs, ERUs and RMUs and on discrepancies in accordance with decision 15/CMP.1, annex, chapter I.E, in conjunction with decision 3/CMP.11, taking into consideration any findings or recommendations contained in the standard independent assessment report?	No	
	Have any issues been identified in matters related to Article 3, paragraph 14, of the Kyoto Protocol, specifically problems related to the transparency, completeness or timeliness of the reporting on the Party's activities related to the priority actions listed in decision 15/CMP.1, annex, paragraph 24, in conjunction with decision 3/CMP.11, including any changes since the previous annual submission?	No	
	Have any issues been identified related to the following reporting requirements for KP-LULUCF:		
	(a) Reporting requirements of decision 2/CMP.8, annex II, paragraphs 1–5?	Yes	KL.3, KL.5, KL.6, KL.7
	(b) Demonstration of methodological consistency between the reference level and reporting on FM in accordance with decision 2/CMP.7, annex, paragraph 14?	No	
	(c) Reporting requirements of decision 6/CMP.9?	No	
	(d) Country-specific information to support provisions for natural disturbances in accordance with decision 2/CMP.7, annex, paragraphs 33–34?	No	
CPR	Was the CPR reported in accordance with decision 18/CP.7, annex; decision 11/CMP.1, annex; and decision 1/CMP.8, paragraph 18?	Yes	
Adjustments	Has the ERT applied any adjustments under Article 5, paragraph 2, of the Kyoto Protocol?	No	
	Has the Party submitted a revised estimate to replace a previously applied adjustment?	NA	Belgium does not have a previously applied adjustment
Response from the Party during the review	Has the Party provided the ERT with responses to the questions raised, including the data and information necessary for assessing conformity with the UNFCCC Annex I inventory reporting guidelines and any further guidance adopted by the Conference of the Parties?	Yes	
Recommendation for an exceptional in-country review	On the basis of the issues identified, does the ERT recommend that the next review be conducted as an in-country review?	No	
Questions of implementation	Did the ERT list any questions of implementation?	No	

^a Further information on the issues identified, as well as additional findings, may be found in tables 3 and 5.

^b Missing categories for which methods are provided in the 2006 IPCC Guidelines may affect completeness and are listed in annex III.

III. Status of implementation of recommendations included in the previous review report

8. Table 3 compiles the recommendations from previous review reports that were included in the most recent previous review report, published on 7 August 2019,⁴ and had not been resolved by the time of publication of the review report of the Party's 2018 annual submission. The ERT has specified whether it believes the Party had resolved, was addressing or had not resolved each issue or problem by the time of publication of this review report and has provided the rationale for its determination, which takes into consideration the publication date of the most recent previous review report and national circumstances. The ERT noted that the individual review of Belgium's 2019 annual submission did not take place in 2019 owing to insufficient funding for the review process.

Table 3
Status of implementation of recommendations included in the previous review report for Belgium

ID#	Issue/problem classification ^{a, b}	Recommendation made in previous review report	ERT assessment and rationale
General			
G.1	CPR (G.3, 2018) KP reporting adherence	Demonstrate the CPR in the NIR in accordance with decision 11/CMP.1, annex, paragraph 6, by calculating 100 per cent of eight times the total emissions reported in the most recently submitted inventory.	Resolved. The ERT noted that the Party's calculations presented in the NIR (section 11.4, p.306) are in accordance with decision 11/CMP.1, annex, paragraph 6. However, footnote 25 on NIR page 306 should refer to the 2018 inventory submitted in 2020, and not to the 2017 inventory submitted in 2019, as the latest submitted inventory for CPR calculations.
G.2	Follow-up to previous reviews (G.4, 2018) Transparency	Report in the NIR on the Party's response to the review process by including a description of how each recommendation from previous review reports has been or will be addressed.	Addressing. The ERT noted that although the NIR (section 9.1, pp.272–279) contains some descriptions of the Party's responses to the review process, the responses do not refer to the issue ID numbers which match them to the recommendations from previous review reports. During the review, Belgium clarified that it provided specific responses in tabular format to issues and problems raised in tables 3, 4 and 5 in the 2018 review report (a reference was provided in annex 3 to the 2020 NIR), which were communicated to the EU during the EU monitoring mechanism regulation inventory review process. The Party indicated that it will include such tables directly in its next NIR. The ERT noted that even if it was originally intended for use under the EU monitoring mechanism regulation inventory review process, the file includes the responses to the UNFCCC review process. The ERT concludes that the recommendation has not yet been fully addressed because the Party did not fully report in the NIR how it has responded to the review process by indicating how each recommendation from previous review reports has been or will be addressed.
G.3	NIR (G.1, 2018) (G.5, 2016)	Report planned improvements in accordance with paragraph 50 of the UNFCCC Annex I inventory reporting guidelines.	Addressing. In the 2020 NIR (p.279) Belgium included an extra section about the improvement work being done in specific CRF categories. The ERT concluded that this section greatly increased the transparency of Belgium's inventory improvement

⁴ FCCC/ARR/2018/BEL. The ERT notes that the report on the individual inventory review of Belgium's 2019 annual submission has not been published yet. As a result, the latest previously published annual review report reflects the findings of the review of the Party's 2018 annual submission.

<i>ID#</i>	<i>Issue/problem classification^{a, b}</i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
	(G.5, 2015) Transparency		actions. However, some improvements are not time-bound, with implementation dates specified as, for example, “the near future”. During the review, the Party clarified that the ERT recommendation has been partially implemented. Adding likely implementation dates to each improvement in future annual submissions, together with the estimated effort and complexity, could fully resolve the issue.
G.4	National system (G.8, 2018) KP reporting adherence	Update section 1.2 of the NIR to reflect the changes introduced in the national system, including the responsibilities attributed to institutional bodies, and describe in more detail the annual process of improving the inventory.	Addressing. The ERT noted that in the NIR (section 1.2, pp.22–25), the names and responsibilities of some of the stakeholders have been updated since the previous submission following changes to the national system. However, Belgium still has not provided details about the process it uses to improve the inventory, and it is not clear how each region contributes to the improvement activities. During the review, the Party clarified that no major operational changes have been made since the 2018 annual submission. Some references to EU legislation had to be updated and some names of responsible agencies had changed. Consequently, references to EU legislation were updated in the NIR for the 2019 annual submission in response to the recommendation and corrected as necessary in the NIR of the 2020 annual submission. The ERT concludes that the issue could be fully resolved by updating section 1.2 of the NIR to (1) ensure that all the names and responsibilities of the ministries, departments and agencies involved in the process of improving the inventory are correct at the time of publication of the NIR; and (2) provide a section which clearly states how each region contributes to the inventory improvement activities.
G.5	NIR (G.9, 2018) Convention reporting adherence	Submit any additional documents included in the annexes to the NIR in one of the official languages of the United Nations.	Not resolved. The ERT noted that some of the documents included in annex 3 to the NIR were written in Dutch, as in previous submissions. During the review, the Party clarified that Belgium and the Flemish Region are still looking for ways (with appropriate resources and people) to further investigate this issue. The ERT considers that the recommendation has not yet been addressed because the Party did not submit some of the additional documents included in the annexes to the NIR in one of the official languages of the United Nations.
G.6	QA/QC and verification (G.11, 2018) Transparency	Update the information in section 1.6 of the NIR to reflect the new QA/QC plan and the improvements to QA/QC procedures.	Addressing. Belgium reported the most recent update to its QA/QC plan during the 2019 annual submission (2020 NIR, section 1.6, p.39), yet section 1.6 appears very similar in the 2018 and 2020 NIRs. Further, section 12 and annex 3 of the 2020 NIR refer to the QA/QC plan of April 2017. During the review, the Party clarified that only a few minor changes were made in section 1.6 of the 2020 NIR because most changes related to the actualization of Belgium’s QA/QC plan were already included in the 2018 NIR. The ERT considers that the recommendation has not yet been fully addressed because the Party did not fully update section 1.6 of the NIR to reflect the latest QA/QC plan, which was updated during the 2019 annual submission, and the improvements to QA/QC procedures.

ID#	Issue/problem classification ^{a, b}	Recommendation made in previous review report	ERT assessment and rationale
G.7	National registry (G.6, 2018) KP reporting adherence	Establish a PPSR account in accordance with decision 1/CMP.8.	Not resolved. The Party reported in its NIR (section 11.1, p.306) that prior to opening its PPSR account, the PPSR account type must first be introduced into the EU legislative framework, and until the Doha Amendment enters into force, it is not in a position to open the PPSR account in its national registry. During the review, the Party clarified that the creation of the PPSR accounts in the EU registry is addressed in the annex to EU regulation 2015/1844, but as the relevant provision becomes applicable only on the date of publication by the European Commission in the Official Journal of the European Union of a communication on the entry into force of the Doha Amendment to the Kyoto Protocol, the PPSR accounts have not yet been established. However, during the review it transpired that the Doha Amendment would formally enter into force at the end of 2020, so all preconditions regarding EU regulation 2015/1844 were fulfilled, and Belgium therefore proceeded to create its PPSR account in the national registry (pending the publication in the Official Journal of the European Union of a communication on the entry into force of the Doha Amendment).
G.8	National registry (G.7, 2018) Transparency	Address the recommendation from section 4.2 of the standard independent assessment report to keep the two public websites referenced in NIR section 11.3 https://www.climateregistry.be/en/links-reports/links-reports.htm#KYOTO and https://unionregistry.ec.europa.eu/euregistry/BE/public/reports/publicReports.xhtml updated and consistent.	Resolved. Consistency between the general public website of the national registry and the website of the national registry itself (the Belgian part of the EU registry) has been ensured by providing a link to the national registry on the general public website. Updated information has been provided on the websites. The weblinks are provided in the NIR (section 11.3, p.306).
Energy			
E.1	1. General (energy sector) – solid, liquid and gaseous fuels (E.2, 2018) (E.3, 2016) (E.3, 2015) (23, 2014) Transparency	Clearly document in the NIR any remaining differences between the regional and federal energy balances and provide explanations for these differences.	Addressing. The Party reported in its NIR (section 3.2.1, p.74) on the working group established to improve data in order to fit Eurostat definitions and requirements and to harmonize, when feasible, regional and federal data. During the review, the Party explained that the process of harmonizing the regional and federal energy balances and identifying remaining differences has been in progress for several years, but the institutional structure of the country and the bottom-up approach for regional energy balances versus the top-down approach for Belgian energy balances means that it will be difficult to reach a perfect match. The ERT noted that the output of the working group and the information in the NIR (section 3.2.1, p.79) on the differences between the federal energy balance data (the reference approach) and the regional energy balance data (the sectoral approach), including the figures and the reasons for the differences, could be used to help the Party to identify the remaining differences and fully resolve the issue.
E.2	1. General (energy sector) – solid, liquid and gaseous fuels – CO ₂ , CH ₄	Update the NIR by including information on the progress made in improving the consistency of data on the consumption of	Resolved. The Party reported that in 2015 an initial survey was sent out to public filling stations to be completed on a voluntary basis. In 2016, the survey was repeated and an additional survey for private filling stations was conducted. In 2017 and 2018,

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	and N ₂ O (E.13, 2018) Transparency	petroleum products for transport fuel and heating and the results of the surveys applied to the public filling stations, including the impact of the improvement between the regional and federal energy balances.	surveys for public filling stations were once again carried out, this time introducing the notion of sampling (NIR section 3.2.1, p.74).
E.3	1. General (energy sector) – solid, liquid and gaseous fuels – CO ₂ , CH ₄ and N ₂ O (E.14, 2018) Transparency	Describe in the NIR the process undertaken to improve the consistency of data (for electricity, renewable energy, natural gas, solid fossil fuels and heat) between the regional and federal level, and report on the exercise of comparison between the sum of the regional balances and the federal balance, including the limitations related to the reporting of calorific values.	Resolved. The Party reported the process undertaken to improve the consistency of data (for electricity, renewable energy, natural gas, solid fossil fuels and heat) between the regional and federal level in its NIR (section 3.2.1, p.75).
E.4	1. General (energy sector) – solid, liquid and gaseous fuels – CO ₂ , CH ₄ and N ₂ O (E.15, 2018) Transparency	Provide in the NIR a more detailed description and an evaluation of the impact of actions on the improvement of consistency between the regional and federal energy balances related to the procedures in place since 2008 to divide federal oil statistics into regional data; and the harmonization of the end uses of solid fossil fuels (including the results and limitations of the harmonization).	Resolved. The Party reported in its NIR (section 3.2.1, p.73) a more detailed description and an evaluation of the impact of actions on the improvement of consistency between the regional and federal energy balances related to the procedures in place since 2008 for dividing federal oil statistics into regional data. Belgium also reported that it harmonized data on the end uses of solid fossil fuels in 2014–2015, leading to an increase in the number of reporting companies for the federal statistics.
E.5	Fuel combustion – reference approach – solid, liquid and gaseous fuels – CO ₂ (E.16, 2018) Transparency	Update the values reported for the corrected reference approach in the NIR (figure 3.6) and explain more clearly how the corrected reference approach was calculated, in particular regarding the treatment of consumption of off-gases in the IPPU sector, in line with the explanation referred to under ID# E.16 of the 2018 review report.	Addressing. The Party reported updated values for the corrected reference approach in its NIR (figure 3.6, p.71). During the review, the Party clarified that the recommendation has been implemented and referred to NIR figure 3.6. The Party further explained that the NIR tables below figure 3.6 contain energetic combustion values for the off-gases produced and combusted in blast furnaces and reported under subcategory 1.A.2.a or subcategory 1.A.1.a, with comparisons between the reference and sectoral approaches for solid fuels and all fuels. Although the calculations are shown in the tables, the Party will add clarifications in textual form in a future NIR. The ERT considers that the recommendation has not yet been fully addressed because the Party did not explain more clearly how the corrected reference approach was calculated, in particular regarding the treatment of consumption of off-gases in the IPPU sector.
E.6	Comparison with international data – liquid fuels – CO ₂ (E.17, 2018) Convention reporting adherence	Revise the values for stock change of crude oil reported in CRF table 1.A(b).	Resolved. The Party reported the revised values for stock change of crude oil in CRF table 1.A(b).

<i>ID#</i>	<i>Issue/problem classification^{a, b}</i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
E.7	Comparison with international data – gaseous fuels – CO ₂ (E.18, 2018) Convention reporting adherence	Report revised values of imports and exports of natural gas, including a revised conversion factor, in CRF table 1.A(b).	Resolved. The Party reported the revised values of imports and exports of natural gas, including a revised conversion factor, in CRF table 1.A(b).
E.8	Comparison with international data – biomass – CO ₂ (E.19, 2018) Convention reporting adherence	Report imports of waste (non-biomass fraction) in CRF table 1.A(b).	Resolved. The Party reported the imports of waste (non-biomass fraction) in CRF table 1.A(b).
E.9	1.A Fuel combustion – sectoral approach – all fuels – CO ₂ , CH ₄ and N ₂ O (E.7, 2018) (E.12, 2016) (E.12, 2015) Transparency	Include the regional and national energy statistics in the NIR in a similar format and explain in more detail how AD are allocated to the CRF categories.	Addressing. The Party provided in its NIR (section 3.2.5.1, p.79) an allocation table for each region (Walloon, Flemish and Brussels-Capital) that shows the links between each CRF category and each line of the regional energy balances. However, the Party did not include a table in the NIR in a similar format showing the national energy statistics and explaining how AD are allocated to the CRF categories.
E.10	1.A.1.b Petroleum refining – liquid fuels – CO ₂ (E.20, 2018) Consistency	Include revised AD for liquid fuels used in petroleum refining and a corresponding explanation in the next annual submission.	Resolved. The Party reported the revised AD for liquid fuels used in petroleum refining for 1991–1993 in CRF table 1.A(a) (sheet 1) and provided a corresponding explanation in its NIR (section 3.2.6.5, p.99), which indicates that a number of corrections were made following a thorough analysis of the energy and raw material data released by a large refinery in Flanders.
E.11	1.A.3.b Road transportation – liquid fuels – CO ₂ , CH ₄ and N ₂ O (E.9, 2018) (E.13, 2016) (E.13, 2015) Transparency	Include in the NIR a description of how gasoline consumption for road transportation in the national energy statistics is corrected to account for off-road transportation.	Resolved. The Party reported in its NIR that OFFREM has been updated and explained how it was used to estimate gasoline consumption for off-road transportation under subcategories 1.A.2.g.vii (p.106), 1.A.3.e.ii (p.117) and 1.A.4.b and 1.A.4.c (p.122) for all regions in Belgium. During the review, the Party explained that the new version of the model has been available since the 2020 annual submission and a short report on this will be provided in the 2021 annual submission.
E.12	1.A.3.b Road transportation – liquid fuels – CO ₂ (E.10, 2018) (E.14, 2016) (E.14, 2015) Accuracy	Collect country-specific carbon contents of gasoline and gas/diesel oil used in road transportation and use these data to calculate the CO ₂ emissions from road transportation.	Not resolved. The Party has used COPERT version 5.3.0 since the 2020 annual submission and continued to report the use of the default CO ₂ EFs from the COPERT model for all fuels used in road transportation in its NIR (section 3.2.8.2.1, p.111). The Party reported in its NIR (p.111) that given the importance of trade in petroleum products with neighbouring countries (in particular the Netherlands), the default values provided by COPERT at the European level seem reasonably appropriate and completely in line with the values used by the Netherlands, which has the most recent data on this subject. The Party also reported that a subgroup of Working Group I of

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			the EU Climate Change Committee is trying to establish European values for the carbon content of gasoline and gas/diesel oil used in road transportation. During the review, the Party clarified that no country-specific carbon content values or country-specific CO ₂ EFs for gasoline and gas/diesel oil are available in Belgium. The ERT considers that the recommendation has not yet been addressed because the Party did not use country-specific carbon contents of gasoline and gas/diesel oil to calculate the CO ₂ emissions from road transportation.
E.13	1.A.3.c Railways – liquid fuels – CO ₂ (E.21, 2018) Accuracy	Revise the EF used for estimating CO ₂ emissions from railways using the appropriate calorific values and explain why the IEF values are lower than the IPCC default values.	Addressing. The Party reported in its NIR (section 3.2.8.2.3, p.114) that it calculated CO ₂ emissions with a revised EF of 72.56 t/TJ for liquid fuels for railways for the complete time series in the Flemish Region. The Party further reported that since the 2015 submission, it has recalculated CO ₂ emissions for the complete time series using the IPCC default values. However, looking at the trend in the IEFs across the entire time series in CRF table 1.A(a) (sheet 3) for this category, the ERT noted that the value is above the IPCC default value 72.75 t/TJ for all years, including an outlier (81.50 t/TJ in 2017). During the review, the Party clarified that the revised values are not reflected in the CRF tables because of a difference in timing between the (earlier) publication of the Flemish energy balance and the calculation of the emissions. The Party also explained that, as a consequence of the difference in timing, CO ₂ emissions reported for subcategory 1.A.3.c. railways are correct but the calculated IEF is not reflected in the revised value. In response to a question raised by the previous ERT, the Party explained that there are differences between the calorific values used for the energy balance and those used for the inventory. The ERT considers that the recommendation has not yet been fully addressed because the Party did not provide an explanation in the NIR as to how the appropriate calorific values were used to estimate CO ₂ emissions.
E.14	1.A.4 Other sectors – solid, liquid and gaseous fuels – CO ₂ , CH ₄ and N ₂ O (E.22, 2018) Accuracy	Make efforts to develop country-specific EFs for gaseous and liquid fuels for the key categories under category 1.A.4 and explain in the NIR the reasons for not using country-specific EFs for solid fuels for the key categories under category 1.A.4.	Addressing. The Party reported in its NIR (section 3.2.9.2, p.121) that it switched to using country-specific CO ₂ EFs for natural gas for the 2020 annual submission. These data were discussed with and obtained by Fluxys, the independent company responsible for the transport network for natural gas in Belgium. During the review, the Party clarified that the use of country-specific EFs in the other fuel categories still needs more investigation. The ERT considers that the recommendation has not yet been fully addressed because the Party did not develop country-specific EFs for liquid fuels for the key categories under category 1.A.4 or explain in the NIR its reasons for not using country-specific EFs for solid fuels for the key categories under category 1.A.4.
IPPU			
I.1	2.A.3 Glass production – CO ₂ (I.5, 2018) Transparency	Include in the NIR explanations of the reasons for the inter-annual variation and reduction in the CO ₂ EF for flat glass production between 2002 and 2016.	Resolved. The Party explained the reasons for the inter-annual variation and reduction in the CO ₂ EF for flat glass production between 2002 and 2016 in its NIR (section 4.2.2, pp.146–147).

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I.2	2.A.3 Glass production – CO ₂ (I.6, 2018) Accuracy	Correct the weighted average EF and recalculate emissions from flat glass production for the period 1990–2002.	Resolved. The Party reported the use of a correct weighted average CO ₂ EF in its NIR (section 4.2.2, p.144) and the recalculated CO ₂ emissions from flat glass production for 1990–2002 in CRF table 2(I).A-H (sheet 1).
I.3	2.B.1 NH ₃ production – CO ₂ (I.7, 2018) Accuracy	Report the amount of CO ₂ recovered in CRF table 2(I).A-H (sheet 1).	Addressing. The Party reported the amount of CO ₂ recovered from NH ₃ production in CRF table 2(I).A-H (sheet 1) for 1992, 1993 and 2005–2018. The ERT noted that Belgium reported “NA” and “NE” for CO ₂ recovery in CRF table 2(I).A-H (sheet 1) for 1990–1991 and 1994–2004, respectively. During the review, the Party clarified that recovery amounts for 1994–2004 cannot be reported because these data were not delivered by the company. The ERT considers that the recommendation has not yet been fully addressed because the Party did not report the amount of CO ₂ recovered in all years.
I.4	2.B.2 Nitric acid production – N ₂ O (I.8, 2018) Comparability	Reallocate N ₂ O emissions from nitrophosphoric acid production from category 2.B.2 to category 2.B.10.	Resolved. The Party reported N ₂ O emissions from nitrophosphoric acid production under category 2.B.10 other (chemical industry) and explained the reallocation of these emissions from category 2.B.2 in its NIR (section 4.3.2.2, p.152).
I.5	2.B.8 Petrochemical and carbon black production – CO ₂ (I.9, 2018) Transparency	Include in the NIR a detailed description of the reporting of emissions for subcategories 2.B.8.b (ethylene production) and 2.B.8.g (other non-specified) in Belgium, including the number of naphtha cracking facilities, the importance of this sector in comparison with other EU countries and the other products generated during ethylene production, and provide in the NIR information on how the emissions are calculated for the Flemish and Walloon Regions for subcategories 2.B.8.b and 2.B.8.g, including the EFs used for the plants.	Addressing. The Party included a detailed description of the reporting of emissions for subcategories 2.B.8.b and 2.B.8.g in the NIR (section 4.3.2.5) but did not include information about the number of naphtha cracking facilities, the importance of this sector in comparison with other EU countries and the other products generated during ethylene production. During the review, the Party explained that discussions with a group of chemical companies on reporting emissions for subcategories 2.B.8.b and 2.B.8.g are still ongoing and that the companies rigorously protect their data because of competitive pressures and are reluctant to report these confidential data. The Party also explained that in the Walloon Region, CO ₂ process emissions for subcategory 2.B.8.g occur from the production of 1,2-dichloromethane and vinyl chloride and that the EF will be presented in the 2021 NIR. The ERT considers that the recommendation has not yet been fully addressed because the Party did not include detailed information about all these subcategories in the NIR.
I.6	2.B.8 Petrochemical and carbon black production – CO ₂ (I.10, 2018) Transparency	Include in the NIR information on how the data under subcategory 2.B.8.f (carbon black) are collected, and the assumptions and methodology used to estimate emissions for before and after 2014.	Resolved. The Party reported information on how the data under subcategory 2.B.8.f (carbon black) are collected, and the assumptions and methodology used to estimate emissions for before and after 2014 in its NIR (section 4.3.2.5, p.153).
I.7	2.B.10 Other (chemical industry) – CO ₂ (I.11, 2018) Comparability	Reallocate the emissions from ethylene oxide, ethylene dichloride and other petrochemical products from category 2.B.10 to category 2.B.8 (petrochemical and carbon black	Not resolved. The Party reported in its NIR (chap. 4.3.2.5, p.153) that emissions from ethylene oxide, ethylene dichloride and other petrochemical products were included under category 2.B.10 in CRF table 2(I).A-H (sheet 1). During the review, the Party clarified that discussions on reporting emissions for subcategories 2.B.8.b and 2.B.8.g

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		production) and update the relevant information in the NIR accordingly.	with a group of chemical companies are still ongoing in the Flemish Region. The ERT considers that the recommendation has not yet been addressed because the Party still reported the emissions from ethylene oxide, ethylene dichloride and other petrochemical products under category 2.B.10 instead of category 2.B.8. The ERT noted a new comparability issue related to the reporting of emissions under category 2.B.10 (see ID# I.22 in table 5).
I.8	2.C.1 Iron and steel production – CO ₂ (I.2, 2018) (I.14, 2016) (I.14, 2015) Transparency	Include information in the NIR to describe the allocation of emissions from the iron and steel industry between the energy and IPPU sectors.	Resolved. The Party described the allocation of emissions from the iron and steel industry between the energy and IPPU sectors in its NIR (section 4.4.2.1, tables 4.8–4.9, pp.159–161).
I.9	2.C.5 Lead production – CO ₂ (I.12, 2018) Completeness	Confirm whether primary or secondary lead production occurs in the country and either report the emissions under category 2.C.5 (clarifying the method and EFs applied) or, in case there is no lead production, report the correct notation key “NO” in CRF table 2(I)A-H (sheet 2) and correct the information in the documentation box.	Not resolved. The Party did not confirm in the NIR whether primary or secondary lead production occurs in the country and reported that emissions from lead purification were included under category 2.C.7 in its NIR (section 4.4.2.2, p.163), while the notation key “NO” was reported under category 2.C.5 in CRF table 2(I)A-H (sheet 2). During the review, the Party clarified that there is no lead production in Belgium and therefore the notation key “NO” was used in the CRF tables. However, according to the 2006 IPCC Guidelines (vol. 3, chap. 4.6.2.4, p.4.75), emissions from lead purification should be reported under category 2.C.5. The ERT considers that the recommendation has not yet been addressed because the Party did not correctly report emissions from lead purification under category 2.C.5, including by clarifying the method and EFs applied. The ERT believes that future ERTs should consider this issue further to ensure that there is no underestimation of emissions for this category.
I.10	2.C.6 Zinc production – CO ₂ (I.13, 2018) Comparability	Confirm whether primary or secondary zinc production occurs in the country and either report the emissions under category 2.C.6 (clarifying the method and EFs applied) or, in case there is no zinc production, report the correct notation key “NO” in CRF table 2(I)A-H (sheet 2) and correct the information in the documentation box.	Not resolved. The Party did not confirm in the NIR whether primary or secondary zinc production occurs in the country and reported emissions from secondary zinc production under category 2.C.7 in its NIR (section 4.4.2.2, p.163), while the notation key “NO” was reported under category 2.C.6 in CRF table 2(I)A-H (sheet 2). During the review, the Party clarified that there is zinc production in Belgium and emissions are reported under category 2.C.7 (where all the emissions from non-ferrous metal production are reported together) instead of category 2.C.6. The Party indicated that it will report the emissions under category 2.C.6 in its next annual submission, in 2021. The ERT considers that the recommendation has not yet been addressed because the Party did not report emissions from secondary zinc production under category 2.C.6 correctly, including by clarifying the method and EFs applied.
I.11	2.C.7 Other (metal industry) – CO ₂ (I.14, 2018) Comparability	Include in the NIR an explanation of the sources of AD considered for category 2.C.7 and clarify the method and EFs applied for calculating emissions and either explain why casting of iron and processing of metals are not	Addressing. The Party reported information on sources of AD for category 2.C.7 (EU ETS data and plant reporting) in its NIR (section 4.4.2.2, p.163). However, the ERT noted that information on emission estimation methods or EFs used was not included in the NIR and the Party continued to report casting of iron and processing of metals under category 2.C.7 without providing an explanation. During the review, the Party

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		reported under category 2.C.1 or reallocate the emissions from category 2.C.7 to category 2.C.1.	explained that as different processes are involved and AD are not always available (for confidentiality reasons), it is difficult to give more information and/or report on EFs used. The ERT considers that the recommendation has not yet been fully addressed because the Party did not either explain why casting of iron and processing of metals are not reported under category 2.C.1 or reallocate the emissions from category 2.C.7 to category 2.C.1 and clarify the method and EFs applied for calculating emissions.
I.12	2.D.2 Paraffin wax use – CO ₂ (I.15, 2018) Consistency	Investigate other sources of data for paraffin wax use and report on efforts and progress in the NIR. Future ERTs should consider this issue further to ensure that there is not an underestimate of emissions for this category.	Resolved. The Party reported the methodology and source of AD for category 2.D.2 in its NIR (section 4.5.2.2, p.164). Instead of using the average annual paraffin wax consumption in 2003–2008 (10.80 kt) to estimate the annual paraffin wax consumption in Belgium for 2009–2016, the actual annual paraffin wax consumption was used for all years, ensuring completeness of the emission estimates.
I.13	2.F.1 Refrigeration and air conditioning – HFCs (I.16, 2018) Transparency	Include in the NIR information on how the AD for F-gas emissions from filling in the car manufacturing industry are collected and clarify the method and EF used.	Resolved. The Party included information on how the AD for F-gas emissions from filling in the car manufacturing industry are collected in its NIR (section 4.7.2.1, p.167). The Party also clarified the method and EF applied for calculating emissions.
I.14	2.F.1 Refrigeration and air conditioning – HFCs and PFCs (I.17, 2018) Comparability	Collect the AD and calculate emissions from chillers separately from those from industrial and commercial refrigeration and report emissions from all stationary air-conditioning equipment (chillers, split, multisplit, etc.) under stationary air conditioning following a tier 2a approach.	Addressing. The Party reported in its NIR (section 4.7.2.1, p.167) that emissions from chillers were estimated separately to emissions from industrial and commercial refrigeration on the basis of F-gas consumption. The Party did not report emissions from all stationary air-conditioning equipment (chillers, split, multisplit, etc.) under stationary air conditioning following a tier 2a approach. During the review, the Party indicated that the recommendation has been implemented and referred the ERT to NIR section 4.7.2.1. However, as in the previous submission, this section states that estimates of emissions from on-site assembled air-conditioning systems are based on F-gas consumption, following a mass balance approach. Correcting the description for the Party's future NIR could fully resolve the issue.
I.15	2.F.1 Refrigeration and air conditioning – HFCs (I.18, 2018) Accuracy	Make efforts to collect data separately for commercial and industrial refrigeration applications following a tier 2a approach in accordance with the 2006 IPCC Guidelines.	Not resolved. The Party reported in its NIR (section 4.7.2.1, p.167) that emissions from commercial and industrial refrigeration were aggregated. During the review, the Party explained that the emissions from filled installations are calculated from the total supply of refrigerant, so further disaggregation of this supply balance would lead to unrealistic results. Refrigerant supply data are obtained through a survey among the importers/wholesalers, whose professional association stated that it was not possible to specify the destination of the refrigerants because of the presence of intermediaries in the market. The Party further explained that the calculations of emissions from commercial and industrial refrigeration cover the mandatory gases for reporting in addition to different refrigerant mixes, and an evaluation of the emissions per pollutant was performed. Owing to the lack of detailed data, a recalculation would require considerable work. The ERT considers that the recommendation has not yet been addressed because the Party did not report the emissions from commercial and

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			industrial refrigeration separately following a tier 2a approach in accordance with the 2006 IPCC Guidelines (vol. 3, chap. 7.1.2.2, p.7.17).
I.16	2.F.1 Refrigeration and air conditioning – HFCs and PFCs (I.19, 2018) Accuracy	Collect data (at the subapplication level) for F-gases imported in products for commercial and industrial refrigeration and check the overall methodology applied for F-gases to ensure that emissions are neither over- nor underestimated.	Not resolved. The Party did not provide information on how it estimates the amount of F-gases imported in products for commercial and industrial refrigeration, with the exception of a short sentence on commercial refrigerators in its NIR (section 4.7.2.1, p.167). In addition, the NIR does not contain any information on checking the overall methodology applied for F-gases to ensure that emissions are neither over- nor underestimated. During the review, the Party clarified that the recommendation has been implemented and referred the ERT to NIR section 4.7.2.1.
I.17	2.F.1 Refrigeration and air conditioning – HFCs and PFCs (I.20, 2018) Transparency	Improve the description in the NIR of the lifetimes used for each subapplication under category 2.F.1 and justify in the NIR the reasons for using a lifetime of 12 years for transport refrigeration instead of the default value from the 2006 IPCC Guidelines.	Addressing. The Party reported in its NIR (section 4.7.2.1, p.167) that a 15-year lifetime was used for commercial and industrial refrigeration. The ERT notes that lifetimes were not provided for all subapplications. The Party reported in its NIR (section 4.7.2.1, p.168) the reasons for using a lifetime of 12 years for transport refrigeration instead of the default value from the 2006 IPCC Guidelines (vol. 3, table 7.9, p.7.52). During the review, the Party clarified that the recommendation has been implemented and referred the ERT to NIR section 4.7.2.1. The ERT considers that the recommendation has not yet been fully addressed because the NIR did not contain information on lifetimes for all subapplications under category 2.F.1.
I.18	2.H Other (IPPU) – CO ₂ (I.22, 2018) Transparency	Include in the NIR a description of the process emissions reported under category 2.H.1 and information on how and where the emissions from energetic use of the fossil fraction of sludge are reported.	Resolved. The Party included a description of the process emissions reported under category 2.H.1 and information on how and where the emissions from energy use of the fossil fraction of sludge are reported in its NIR (section 4.9.2, p.173).
Agriculture			
A.1	3. General (agriculture) (A.5, 2018) Transparency	Include in the NIR detailed information on how planned improvements for the agriculture sector are listed and prioritized for the three regions.	Addressing. The Party provided information on the improvement plans and the progress of their implementation in the Flemish Region during 2018–2021 in the NIR (section 5.2.6 (p.189) for category 3.A and section 5.3.6 (p.211) for category 3.B). This includes the establishment of a working group on emissions to examine, inter alia, the parameters needed to obtain a year-specific EF for non-dairy cattle, the revision of the CH ₄ emission model in 2021 and the reduction in CH ₄ emissions from enteric fermentation (cattle) towards 2030. The Party provided information on planned improvements for category 3.D in the NIR (section 5.4.6, p.211). The N ₂ O model used by the Party is to be revised in 2021, taking into account the updated information from the <i>2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories</i> and updated information on the AD in Belgium. During the review, the Party clarified that the recommendation was implemented and referred to NIR section 5.3.2.2, which lists the N ₂ O emissions from manure management for the three regions. The ERT considers that the recommendation has not yet been fully addressed because

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			the information for the regions other than the Flemish Region for categories 3.G–3.I was not provided.
A.2	3.A Enteric fermentation 3.B Manure management – CH ₄ and N ₂ O (A.6, 2018) Accuracy	Estimate livestock population (for poultry, swine, sheep, goats and horses) for the Brussels-Capital Region using the trend in each animal category at the national level, as a reflection of variations in the Walloon and Flemish Regions, and recalculate emissions for categories 3.A and 3.B.	Resolved. The Party reported in its NIR (p.178) that the livestock numbers for the Brussels-Capital Region from 2011 onward have been recalculated by multiplying the 2011 values of the Brussels-Capital Region by the extrapolation of the sum of livestock numbers of the two other regions. The data used are from Statbel. Information on the recalculation of emissions for 1990–2017 was provided in the NIR (pp.180–181 for categories 3.A and 3.B). During the review, the Party clarified that the recommendation was implemented, but it did not provide a reference to the relevant section of the NIR. The ERT considers that the recommendation has been implemented but that the Party should provide full details of methodology and AD (see ID# A.10 in table 5).
A.3	3.A.1 Cattle – CH ₄ (A.7, 2018) Accuracy	Use a country-specific EF that reflects changes in the productive systems for all cattle subcategories across the entire time series for the entire country, and, until that is possible, report in the NIR on the progress made, including the progress under the working group in Flanders.	Addressing. The Party reported in its NIR (section 5.2.6, p.189) that a working group on emissions was established in the Flemish Region in 2018 to examine, inter alia, the parameters needed to obtain a year-specific EF for non-dairy cattle. In 2019, a steering body, the “Covenant Enteric Emissions”, was set up by the Flemish Government, along with a working group, with the aim of reducing CH ₄ emissions from enteric fermentation from cattle in 2019–2030. These bodies replaced the working group on emissions. The Flanders Environment Agency was involved in monitoring CH ₄ emissions for the different cattle subcategories in the Flemish Region. The CH ₄ emission model will be revised accordingly in 2021. During the review, the Party explained that EFs for non-dairy cattle show fluctuations in the production system over the years where data are available. A study to establish a region-specific CH ₄ emissions inventory was expected to start on 1 January 2021. During 2020 the new working group on emissions gathered region-specific data/parameters and set up a system to register the lacking data. The ERT considers that this recommendation has not yet been fully implemented because the Party did not use a country-specific EF that reflects changes in the productive system for all cattle subcategories across the entire time series for the entire country as planned.
A.4	3.A.4 Other livestock – CH ₄ (A.8, 2018) Convention reporting adherence	Report the notation key “NE” in CRF table 3 (sheet 1) for CH ₄ emissions from enteric fermentation for poultry and include explanatory information in CRF table 9 accordingly.	Resolved. CH ₄ emissions from enteric fermentation for poultry were reported as “NE” in CRF table 3 (sheet 1) and explanatory information was included in CRF table 9 accordingly.
A.5	3.B Manure management – N ₂ O (A.2, 2018) (A.13, 2016) (A.13, 2015) Transparency	Provide accurate information in the NIR on the method used for estimating direct N ₂ O emissions from manure management.	Addressing. The Party used a tier 2 approach for estimating AD and Nex values and a tier 1 approach for the EFs. The ERT noted that the information in the NIR describing the methods used for estimating direct N ₂ O emissions (chapter 5.3.2.2, p.193) is very limited. During the review, the Party provided the additional information by region on the methods for obtaining the Nex values and the proportion of manure management for each animal waste management system. In the Walloon and Brussels-Capital

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			Regions, Nex factors were derived from the information in the Walloon Region's Sustainable Nitrogen Management in Agriculture scheme. A mean loss of 25 per cent was assumed. The new values for "other cattle" (all other subcategories except dairy cattle) became available in the most recent Sustainable Nitrogen Management in Agriculture report (2014) and the EFs have been updated on the basis of these parameters. Concerning the proportion of manure management for each animal waste management system, the number of days in stable was identified from surveys and this allowed for the estimate of the fraction of livestock grazed and the fraction of those in stable. The per cent fraction of solid and liquid waste was deduced from (1) the amount of manure produced by animals in the different manure management systems, using data from the Sustainable Nitrogen Management in Agriculture scheme and (2) the number of places in the different manure management systems, using data from Statbel. In Flanders the allocation of animals to type of animal waste management system was based on expert judgment for each category combined with questionnaires. At the national level, these parameters were established from a weighting of the regional parameters on the basis of the relevant AD. The ERT considers that the recommendation has not yet been fully addressed because the Party did not provide detailed and accurate information on the method used for estimating direct N ₂ O emissions from manure management.
A.6	3.D.a.6 Cultivation of organic soils (i.e. histosols) – N ₂ O (A.9, 2018) Accuracy	Recalculate N ₂ O emissions from cultivated organic soils using only the total area of organic soils subject to agricultural management or drainage.	Resolved. The estimate of N ₂ O emissions from cultivated organic soils has been recalculated using only the total area of organic soils subject to agricultural management or drainage (i.e. 2,520 ha as reported in CRF table 3D.6).
A.7	3.D.b.1 Atmospheric deposition – N ₂ O (A.10, 2018) Transparency	To increase the transparency of the next annual submission, and considering that EMAN version 2.0 and related documentation are not written in an official United Nations language (they are in Dutch), include in the NIR detailed information on (1) the assumptions and principles used in EMAN version 2.0 to estimate the country-specific EF for gaseous losses for the Flemish Region; (2) how results from the model are subject to QC by the Flemish Region; (3) how data are included in the inventory reporting; and (4) how the detailed calculations of NH ₃ emissions carried out by the Flemish Region are harmonized with results coming from the estimation of emissions for this subcategory by the Walloon and Brussels-Capital Regions.	Not resolved. The Party reported information on the estimation of direct N ₂ O emissions from manure management in its NIR (section 5.3.2.2, p.193). However, the ERT noted that the information provided in the 2020 NIR is the same as that in the 2018 NIR, indicating that the specific information on the issues listed in the previous recommendation has not yet been provided. During the review, the Party clarified its use of the EMAN version 2.1 methodology and outlined the QC procedures applied. An external validation of EMAN version 2.1 was performed by the Flemish Institute for Technological Research between December 2019 and April 2020. An English summary of the validation will be available in the 2021 NIR. During the review, the Party also provided additional information with the Belgian reference document under the Convention on Long-range Transboundary Air Pollution of March 2020 (latest informative inventory report, available at http://cdr.eionet.europa.eu/be/eu/nec_revised/iir/envxm4ldg/). After examining this document, the ERT noted that the assumptions, input parameters (animal number, manure transport, Nex values at the detailed level of stable) and principles used in EMAN version 2.1 to estimate the country-specific EF for gaseous losses for the Flemish Region for the 2020 annual submission are sufficiently provided and QC

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A.8	3.J Other (CO ₂ emissions from liming, urea application and other carbon-containing fertilizers) – CO ₂ (A.11, 2018) Transparency	Include in the NIR a description of the main source of liquid fertilizers associated with the use of other fertilizers in all regions of the country, including information that no other carbon-based fertilizers are used in the country.	procedures of the Flemish Region are described. However, the NIR and the reference document do not provide the required information on the issues of how data are included in the inventory reporting and how the detailed calculations of NH ₃ emissions carried out by the Flemish Region are harmonized with results from the estimation of emissions for this subcategory by the Walloon and Brussels-Capital Regions. During the review, the Party further clarified that, regarding how data are included in the inventory reporting, the Belgian submission results from the aggregation of the three regional inventories. Therefore, the Belgian parameters for agriculture are established from a weighting of the regional parameters on the basis of the relevant AD. Finally, it is not possible to harmonize the methodologies from all regions as each region uses its own methodology (in compliance with the 2006 IPCC Guidelines). Belgian emissions are summations of the regional inventories, which applied different AD. However, in some cases where EFs were not available, EFs were derived by weighting EFs from the other regions. The ERT considers that the recommendation has not yet been addressed because the requested detailed information was not updated in the NIR. Resolved. The Party reported in table 5.29 of its NIR (p.209) the types of synthetic fertilizer used in the Flemish Region. The group of N liquid fertilizers is composed mainly of urea and ammonium nitrate. The group of other synthetic fertilizers includes calcium nitrate, sodium nitrate, ammonium chloride and a solution of magnesium and ammonium nitrate. No other carbon-based fertilizers are used in the country. During the review, the Party clarified that no N liquid fertilizers are applied in the other regions.
LULUCF			
L.1	4. General (LULUCF) – all gases (L.1, 2018) (L.8, 2016) (L.8, 2015) Accuracy	Correctly apply and reference the section of the 2006 IPCC Guidelines used to derive removal and emission estimates for all gases in the LULUCF sector and indicate clearly the tier methods used for specific estimates.	Addressing. Belgium revised the estimations for carbon stock change in DOM for land converted to forest land (NIR p.228) and GHG emissions from grassland fires (NIR p.235) using the 2006 IPCC Guidelines. However, the ERT noted that the Party continued to apply the estimation method provided in the IPCC good practice guidance for LULUCF for estimating emissions from wildfires in forest land remaining forest land (see ID# L.20 in table 5). In addition, the Party did not correctly apply and reference the relevant section of the 2006 IPCC Guidelines; although it referred to volume 4, chapter 4.3.2.1, in deriving emission and removal estimates for carbon stock change in DOM in forest land remaining forest land (NIR p.225), this concerns land converted to forest land and not forest land remaining forest land (see ID# L.2 below). During the review, the Party indicated that it fully implemented the recommendation. The ERT considers that the recommendation has not yet been fully addressed because the Party did not correctly reference and apply the method provided in volume 4, chapter 4.2.2.1, of the 2006 IPCC Guidelines for estimating carbon stock change in DOM in forest land remaining forest land.

<i>ID#</i>	<i>Issue/problem classification^{a, b}</i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
L.2	4. General (LULUCF) – all gases (L.9, 2018) Transparency	<p>In order to maintain consistency between the applied methodologies and the explanation provided in the NIR, update the description in chapter 6 as follows:</p> <p>(a) For the living biomass pool in forest land remaining forest land (category 4.A.1), explain that the area of forest land remaining forest land from the land-use matrix was used as the area data for the stock difference method applied;</p> <p>(b) For the living biomass pool in forest land remaining forest land (category 4.A.1), include a new table of volume per species in the forest inventories for the Flemish Region;</p> <p>(c) For the living biomass pool in forest land remaining forest land (category 4.A.1), explain that the annual increment parameter of biomass for the gain–loss method applied for the Brussels-Capital Region was based on the net increment derived from the stock change approach applied for the Walloon Region;</p> <p>(d) For the deadwood pool in forest land remaining forest land (category 4.A.1), explain that the carbon stock change in deadwood is assumed to be in a stable state for the entire time series in accordance with the tier 1 method from the 2006 IPCC Guidelines (vol. 4, chap. 4.2.2.1, p.4.20). In addition, correct the reference in the NIR (section 6.2.2.1.B, p.217) where the Party made reference to the wrong section of the 2006 IPCC Guidelines (vol. 4, chap. 4.3.2.1, method for land converted to forest land);</p> <p>(e) For the living biomass pool in land converted to forest land (category 4.A.2), include information on the annual increment parameters for the Flemish and Walloon Regions;</p> <p>(f) For the DOM pool in land converted to cropland and grassland (categories 4.B.2 and</p>	<p>Belgium updated its explanations on some of the issues mentioned in the previous recommendation in the NIR as follows:</p> <p>(a) Not resolved. Belgium did not update the explanation on the area of forest land remaining forest land from the land-use matrix being used as the area data for the stock difference method applied for the living biomass pool in forest land remaining forest land (category 4.A.1);</p> <p>(b) Resolved. The Party included a new table of volume per species for the Flemish Region (table 6.5, p.221);</p> <p>(c) Resolved. Belgium explained that the average annual net biomass increment data for the Brussels-Capital Region were derived from the stock change approach in the beech forest of the Walloon Region (p.224);</p> <p>(d) Addressing. With regard to the deadwood pool in forest land remaining forest land (category 4.A.1), the Party updated the explanation that the carbon stock change in deadwood is assumed to be in a stable state for the entire time series in accordance with the tier 1 method from the 2006 IPCC Guidelines (vol. 4, chap. 4.2.2.1, p.4.20) but did not correct the reference to the wrong section of the 2006 IPCC Guidelines (vol. 4, chap. 4.3.2.1), which corresponds to land converted to forest land;</p> <p>(e) Not resolved. Belgium did not update the annual increment parameters for the Flemish and Walloon Regions for the living biomass pool in land converted to forest land (category 4.A.2);</p> <p>(f) Resolved. The Party explained (p.225) the methodologies applied in line with the tier 1 method of the 2006 IPCC Guidelines (vol. 4, chap. 5.3.2.1, p.5.31);</p> <p>(g) Not resolved. Belgium did not include an additional explanation on its assumption of the combustion factor as 1.0 in the case of forest fire for biomass burning in forest land (category 4(V)).</p> <p>During the review, the Party indicated that these recommendations have been implemented. The ERT considers that the recommendation has not yet been fully addressed because of the aforementioned missing components.</p>

ID#	Issue/problem classification ^{a, b}	Recommendation made in previous review report	ERT assessment and rationale
		4.C.2), explain the methodologies applied in line with the tier 1 method from the 2006 IPCC Guidelines when using country-specific carbon stocks for DOM pools in forest land; (g) For biomass burning in forest land (category 4(V)), include an additional explanation that the combustion factor was assumed as 1.0 in the case of forest fire.	
L.3	Land representation – all gases (L.11, 2018) Accuracy	Estimate land-use change areas before 1990 and construct land-use conversion categories on the basis of 20 years' accumulation of land-use change areas for the whole time series.	Not resolved. Belgium did not estimate land-use change areas before 1990 or construct land-use conversion categories on the basis of 20 years' accumulation of land-use change areas for the whole time series. During the review, the Party explained that no set of data using the same systematic and geolocated grid is available. Furthermore, considering that Belgium applies a 20-year transition time for soils, any change before 1990 would not have any effect on the inventory after 2010 or on LULUCF and KP-LULUCF accounting for the current commitment period. The Party indicated that for living biomass the effect could only be an increase in removals, as deforestation is accounted for in the year of the deforestation, while potential afforestation before 1990 could have an effect until 2009. In this regard, the lack of a land-use matrix before 1990 does not bring any overestimation of removals or underestimation of emissions. Hence, bearing in mind the considerable amount of work that would be needed to make a poor estimate of the past land-use changes, Belgium does not plan to apply this recommendation, as priority is given to other improvements in the inventory, following ERT recommendations, to ensure accuracy of estimates in the commitment period. The ERT recognizes that the current land-use change matrix does not ensure that emissions and removals for the time series 1990–2010 are neither over- nor underestimated in accordance with the UNFCCC Annex I inventory reporting guidelines. The ERT considers that the recommendation has not yet been addressed because Belgium did not estimate land-use change areas before 1990 or construct land-use conversion categories on the basis of 20 years' accumulation of land-use change areas for the whole time series.
L.4	4.A.1 Forest land remaining forest land – CO ₂ (L.12, 2018) Accuracy	Use the notation key “IE” for reporting CO ₂ emissions from biomass burning in wildfires in CRF table 4(V) for the years before the year of the latest forest inventory data.	Resolved. Belgium reported CO ₂ emissions from biomass burning in wildfires as “IE” in CRF table 4(V) for 1990–2003 and 2005–2007 and 2011 and included an explanation in the NIR (p.228). However, the ERT noted that CO ₂ emissions were reported as “NA” for 2004, 2008, 2009 and 2010, and as “NO” for 2012–2018. The ERT also noted that the reason for reporting “NA” was not explained in the NIR. Therefore, the ERT considers the accuracy issue to be resolved, but noted a new transparency issue related to the use of notation keys (see ID# L.19 in table 5).
L.5	4.A.2 Land converted to forest land – CO ₂	Estimate carbon stock changes in the DOM pool using the tier 1 approach outlined in the 2006 IPCC Guidelines and, if appropriate,	Resolved. Belgium estimated carbon stock changes in the DOM pool using the tier 1 approach outlined in the 2006 IPCC Guidelines (vol. 4, chap. 2.3.2.2, p.2.25) and revised the related explanation in the NIR (p.228).

<i>ID#</i>	<i>Issue/problem classification^{a, b}</i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
	(L.4, 2018) (L.11, 2016) (L.11, 2015) Accuracy	include a justification as to why emissions or removals from carbon stock changes in the DOM pool are insignificant as defined in paragraph 37 of the UNFCCC Annex I inventory reporting guidelines.	
L.6	4.A.2.3 Wetlands converted to forest land – CO ₂ (L.14, 2018) Accuracy	Apply the organic soils estimation method instead of the mineral soils estimation method for this type of land-use change, taking into consideration the occurrence of drainage practices for converted peatlands.	Not resolved. Belgium still applied the mineral soils estimation method for this subcategory (NIR, section 6.1.1, table 6.2, p.215, and section 6.2.2.2, p.228). During the review, the Party clarified that the recommendation was not implemented.
L.7	4.B.1 Cropland remaining cropland – CO ₂ (L.15, 2018) Accuracy	Investigate the growing phase for orchard trees and develop a country-specific annual increment parameter taking into account the average carbon stock of an orchard and the growing period necessary to reach a stable state; and estimate the carbon stock change of orchard using the country-specific annual increment with the total area of orchard in the growing period for the entire time series.	Addressing. Belgium provided information on the growing phase for orchard trees in the NIR (section 6.3.2.1.A, pp.230–232). The ERT noted that the Party continued to use an average carbon stock value published in the 2018 German NIR instead of the country-specific value. During the review, the Party clarified that the recommendation has been implemented. The ERT considers that the recommendation has not yet been fully addressed because the Party did not use the country-specific annual increment to estimate the carbon stock change of orchards.
L.8	4.B.2 Land converted to cropland – CO ₂ (L.6, 2018) (L.5, 2016) (L.5, 2015) (66, 2014) Transparency	Separately describe the processes causing the increasing area of cropland.	Not resolved. Belgium did not separately describe in the NIR the drivers of the increase in the total area of cropland over time. During the review, the Party provided additional information indicating that the rationale for the increase of cropland area is not yet clearly identified. The Party did not indicate any time frame for implementation of the recommendation.
L.9	4.C.1 Grassland remaining grassland – CO ₂ (L.16, 2018) Accuracy	Estimate CO ₂ emissions from drainage of organic soils under grassland remaining grassland for the Flemish Region only, but continue to report the total organic soils area for both the Flemish and Walloon Regions in CRF table 4.C and include a description in the NIR of how organic soils areas are treated or managed in the two regions.	Resolved. Belgium reported the CO ₂ emissions from drainage of organic soils in the Flemish Region only and the total organic soils area for both the Flemish and Walloon Regions in CRF table 4.C and provided an explanation on how organic soils areas are treated in the two regions in the NIR (section 6.3.2.1.B, pp.234–235).
L.10	4(III) Direct N ₂ O emissions from N mineralization/ immobilization – N ₂ O (L.17, 2018) Accuracy	Report “NO” in CRF table 4(III) for N ₂ O emissions under subcategory 4.A.2.3 (wetlands converted to forest land) and explain in the NIR how this small area of land is treated in the inventory.	Not resolved. Belgium still estimated and reported the direct N ₂ O emissions from N mineralization of soils associated with loss of soil organic matter under wetlands converted to forest land in CRF table 4(III) and did not provide any explanation in the NIR. During the review, the Party indicated that the recommendation was not implemented.

ID#	Issue/problem classification ^{a, b}	Recommendation made in previous review report	ERT assessment and rationale
L.11	4.G HWP – CO ₂ (L.8, 2018) (L.14, 2016) (L.14, 2015) Completeness	Estimate HWP from historical inflows since 1900 using the average value of the timber harvest for the first five years for which AD are available or by extrapolation of the data for HWP inflows for 2000–2014 as outlined in the 2006 IPCC Guidelines (vol. 4, chap. 12).	Resolved. The carbon stocks of the HWP pool in the initial period (1900–1961) were estimated applying equation 2.8.6 of the Kyoto Protocol Supplement (chap. 2.8.3, p.2.121) instead of equation 12.6 of the 2006 IPCC Guidelines (vol. 4, chap. 12.2.3, p.12.18) applied in the 2019 annual submission (NIR section 6.5.2, p.242). The Party used HWP AD from FAOSTAT (the statistical database of the Food and Agriculture Organization of the United Nations) for 1961–2018 in the calculations (NIR section 6.5.2, p.239), which took into account the estimates since 1900.
Waste			
W.1	5.A Solid waste disposal on land – CH ₄ (W.2, 2018) Transparency	Include a table in the NIR showing the different waste fractions used to calculate degradable organic carbon values for the period 1950–2016.	Addressing. In its NIR (p.253), with regard to the calculation of degradable organic carbon values for 1950–2016, the Party only reported the amount of waste disposed of by type for the Walloon Region. During the review, the Party clarified that the recommendation was partly implemented. Noting that there is no waste disposal site in the Brussels-Capital Region, the ERT considers that the recommendation has not yet been fully addressed because the Party did not provide information on waste composition in the Flemish Region used to calculate degradable organic carbon values for 1950–2016.
W.2	5.A.1.a Anaerobic – CH ₄ (W.3, 2018) Convention reporting adherence	Correct the notation key in CRF table 5.A from “NE” to “IE” for amount of CH ₄ flared.	Resolved. The Party reported the amount of CH ₄ flared as “IE” instead of “NE” in CRF table 5.A. The Party also reported in CRF table 9 that this amount is allocated to the amount of CH ₄ in energy recovery in the same category, as it is impossible to distinguish between the amounts of CH ₄ flared and energy recovered. The ERT is of the view that if CH ₄ recovery for flaring was not distinguished from energy recovery in the measurements, and the amount for aggregated CH ₄ recovery was used for energy recovery AD, it is not possible to distinguish between the amounts of CH ₄ flared and energy recovered, as mentioned by the Party.
W.3	5.B.1 Composting – CH ₄ and N ₂ O (W.4, 2018) Transparency	Explain in the NIR (e.g. in a footnote to table 7.4) that composting activities did not occur in the Walloon Region between 1990 and 1996 or in the Brussels-Capital Region between 1990 and 2001.	Resolved. The Party reported in footnote 23 to table 7-6 in its NIR (p.258) that composting activities did not occur in the Walloon Region between 1990 and 1996 or in the Brussels-Capital Region between 1990 and 2001.
W.4	5.B.1 Composting – CH ₄ and N ₂ O (W.5, 2018) Accuracy	Either justify why the country-specific CH ₄ and N ₂ O EFs are appropriate to the national circumstances or estimate emissions using the IPCC default values. In case the use of the country-specific CH ₄ and N ₂ O EFs is justified, plan improvements in the near future (e.g. pilot projects or a study at composting plants) to reduce the uncertainty and improve the accuracy of the CH ₄ and N ₂ O EFs.	Resolved. The Party provided justification for applying country-specific EFs of composting in its NIR (p.257). During the review, the Party clarified that it re-evaluated the uncertainty of the CH ₄ and N ₂ O EFs and the results will be reported in the next annual submission.

<i>ID#</i>	<i>Issue/problem classification^{a, b}</i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
W.5	5.D Wastewater treatment and discharge – CH ₄ (W.6, 2018) Transparency	Include in the NIR information on the amount of biogas (in m ³ , as for the other regions) used to produce electricity in the Flemish Region.	Resolved. The Party reported information on the amount of biogas (in m ³ , as for the other regions) used to produce electricity in the Flemish Region in its NIR (p.267).
W.6	5.D.1 Domestic wastewater – N ₂ O (W.7, 2018) Transparency	Include information in the NIR and in CRF table 5.D on the amount of sludge removed from wastewater and the associated N ₂ O emissions.	Addressing. The Party reported the amount of degradable organic component in sludge removed from domestic wastewater in CRF table 5.D (e.g. 52.90 kt degradable organic component in 2018) and the amount of N in sludge removed in Wallonia in its NIR (p.267). During the review, the Party clarified that the value of sludge removed reported in CRF table 5.D for this category is the amount of sludge removed which contains the N removed mentioned above. The ERT considers that the recommendation has not yet been fully addressed because the Party reported the amount of sludge removed without the amount of N in sludge removed in CRF table 5.D.
KP-LULUCF			
KL.1	General (KP-LULUCF) – all gases (KL.1, 2018) (KL.5, 2016) (KL.5, 2015) Transparency	Update the relevant sections in the NIR to reference the applicable methods from the 2006 IPCC Guidelines applied and the relevant decisions of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol used to estimate emissions and removals.	Resolved. The Party updated the relevant sections in chapter 10 of its NIR to reference correctly the applicable methods from the 2006 IPCC Guidelines. The ERT identified new issues relating to the provision of information and structure of reporting in relation to decision 2/CMP.8, annex II, (see ID#s KL.5–KL.7 below) and appropriate use of the 2006 IPCC Guidelines to estimate litter and deadwood stock changes for afforestation (see ID# KL.8 below).
KL.2	General (KP-LULUCF) – CO ₂ (KL.2, 2018) (KL.7, 2016) (KL.7, 2015) Consistency	Provide a summary of any methodological inconsistencies that may trigger a technical correction to the FMRL.	Resolved. The Party provided a summary of methodological inconsistencies that may trigger a technical correction to the FMRL in its NIR (section 10.5.4.4, pp.301–303).
KL.3	General (KP-LULUCF) – all gases (KL.11, 2018) KP reporting adherence	Structure the information in chapter 10 of the NIR to include the required reporting specified in decision 2/CMP.8, annex II, paragraph 2(g)(vi) and (vii).	Not resolved. The Party reported that the carbon stored in wood in solid waste disposal sites is not taken into account in its NIR (section 6.5.2, p.239). However, it did not provide information indicating whether CO ₂ emissions from HWP in solid waste disposal sites and from wood harvested for energy purposes were accounted for on the basis of instantaneous oxidation. In addition, Belgium did not provide information showing that emissions and removals resulting from changes in HWP accounted for do not include imported HWP. The ERT considers that the recommendation has not yet been addressed because the Party did not provide the required information in chapter 10 of the NIR.

<i>ID#</i>	<i>Issue/problem classification^{a, b}</i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
KL.4	General (KP-LULUCF) – all gases (KL.12, 2018) Transparency	Provide in the NIR information on minimum width of forest as an additional parameter of its forest definition.	Resolved. The Party reported information on minimum width of forest as an additional parameter of its forest definition in its NIR (section 10.1.1, p.283).
KL.5	General (KP-LULUCF) – all gases (KL.13, 2018) Transparency	Include information on the applied reporting method and geographical boundary in the section of the NIR relating to decision 2/CMP.8, annex II, paragraph 2(b), and also provide the reason why using a single national boundary is appropriate in the case of Belgium.	Not resolved. The Party did not provide any information on the applied reporting method and geographical boundary in its NIR. Also, the Party did not provide the reason why using a single national boundary is appropriate in the case of Belgium. During the review, the Party explained that general information on the approach is provided in section 6.1.1 of the NIR. However, the ERT noted that the Party's rationale for using a single national boundary was not provided in this section. The ERT considers that the recommendation has not yet been addressed because the Party did not provide any information on the applied reporting method and geographical boundary in the NIR, including the reason why using a single national boundary is appropriate in the case of Belgium.
KL.6	General (KP-LULUCF) – all gases (KL.14, 2018) KP reporting adherence	Structure the information in chapter 10 of the NIR to ensure that it includes the information specified in decision 2/CMP.8, annex II, paragraph 2(d).	Addressing. The Party reported the year of the onset of activities in its NIR (section 10.3.1.6, p.297). However, the Party did not provide information on emissions and removals for activities under Article 3, paragraph 3, FM under Article 3, paragraph 4 of the Kyoto Protocol, and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol for all geographical locations in NIR chapter 10. During the review, the Party stated that this recommendation has been implemented. The ERT considers that the recommendation has not yet been fully addressed because the Party's reporting in NIR chapter 10 did not cover all the required information specified in decision 2/CMP.8, annex II, paragraph 2(d).
KL.7	General (KP-LULUCF) – all gases (KL.15, 2018) KP reporting adherence	Structure the information in chapter 10 of the NIR to include the required reporting specified in decision 2/CMP.8, annex II, paragraph 5(d).	Not resolved. The Party did not report information on how all emissions arising from conversion of natural forests to planted forests are accounted for in NIR chapter 10. During the review, the Party indicated that it will check the reporting guidelines with regard to the future inclusion of the required reporting elements and referred to section 10.3.1.3 of its NIR. The ERT noted that NIR section 10.3.1.3 provides information on whether indirect and natural GHG emissions and removals have been factored out as specified in decision 2/CMP.8, annex II, paragraph 3. Furthermore, during the review, the Party indicated that it will rephrase the explanation in its future NIR to clarify the situation and ensure consistency with paragraph 5(d) of decision 2/CMP.8, annex II. The ERT considered that the recommendation has not yet been addressed because the Party did not include in its NIR the required reporting specified in decision 2/CMP.8, annex II, paragraph 5(d).
KL.8	AR – CO ₂ (KL.4, 2018) (KL.12, 2016) (KL.12, 2015) Completeness	Undertake a numerical evaluation (e.g. using a tier 1 approach from the 2006 IPCC Guidelines) of litter and deadwood stock changes in forest types elected under	Addressing. The Party explained in its NIR (pp.228 and 296) that a tier 1 approach presented in the 2006 IPCC Guidelines (vol. 4, chap. 2.3.2.2, p.2.25) was used for estimating litter and deadwood stock changes in forest types elected under afforestation, but it did not provide a numerical evaluation in CRF table 4(KP-I)A.1. During the review, the Party clarified that the recommendation was implemented and

<i>ID#</i>	<i>Issue/problem classification^{a, b}</i>	<i>Recommendation made in previous review report</i>	<i>ERT assessment and rationale</i>
		afforestation, or provide examples showing that these pools are not sources.	that information was provided in section 6.2.2.2 of its NIR under “Litter and deadwood” (p.228) and in its comments on the management of remnants (p.296). However, the ERT noted that the Party only provided an explanation of the method from the 2006 IPCC Guidelines in its NIR (p.228 and p.296) and still reported “NO” for litter and deadwood stock changes in CRF table 4(KP-I)A.1. Therefore, the ERT considers that the recommendation has not yet been fully addressed.
KL.9	FM – CO ₂ (KL.16, 2018) KP reporting adherence	Structure the information in chapter 10 of the NIR to include the reporting requirement specified in decision 2/CMP.8, annex II, paragraph 2(a), namely provide an explanation of the methodology applied for FM at the same level of detail as provided for AR and deforestation.	Resolved. The Party provided explanations of the methodology applied for FM at the same level of detail as provided for AR and deforestation in its NIR (section 10.3, pp.294–297). For example, the Party provided in the NIR average regional values for living biomass growth (p.294), parameters for estimating soil organic carbon (pp.295–296) and parameters for estimating DOM (pp.296–297).
KL.10	FM – CO ₂ (KL.17, 2018) KP reporting adherence	Structure the information in chapter 10 of the NIR to include the required reporting specified in decision 2/CMP.8, annex II, paragraph 2(e), namely by including information showing that DOM under FM is not considered a net source of emissions and by providing verifiable information.	Resolved. The Party provided a detailed explanation on FM practices in Belgium’s forests. The Party in its NIR (section 10.3.1.2, pp.296–297) stated that according to those practices, harvest residues should be left on-site to increase the carbon stock of DOM and maintain soil fertility. The ERT considers that the information provided to demonstrate that the DOM under FM is not a net source of emissions in Belgium is reasonably verifiable.
KL.11	HWP – CO ₂ (KL.8, 2018) (KL.9, 2016) (KL.9, 2015) Transparency	Include, in the annual submission, information confirming that there were no HWP accounted for in the first commitment period on the basis of instantaneous oxidation.	Resolved. The Party provided information confirming that there were no HWP accounted for in the first commitment period on the basis of instantaneous oxidation in its NIR (section 10.5.3, p.299).
KL.12	HWP – CO ₂ (KL.9, 2018) (KL.10, 2016) (KL.10, 2015) Transparency	Include, in the NIR, transparent information on how emissions from harvests from deforestation are estimated.	Resolved. The Party provided the information on how emissions from harvests from deforestation are estimated in its NIR (pp.242 and 295). Calculation of carbon stock change from deforestation is also described (p.294).
KL.13	HWP – CO ₂ (KL.10, 2018) (KL.14, 2016) (KL.14, 2015) Accuracy	Revise estimates for HWP pools using the 2006 IPCC Guidelines and the Kyoto Protocol Supplement, and include the correct estimates in the annual submission.	Resolved. The Party revised the estimates for HWP pools using the 2006 IPCC Guidelines (vol. 4, chap. 12) and the Kyoto Protocol Supplement (chap. 2.8.3, p.2.121) and included the correct estimates and an explanation of the estimation in its NIR (section 6.5, pp.239–242).

^a References in parentheses are to the paragraph(s) and the year(s) of the previous review report(s) in which the issue or problem was raised. Issues are identified in accordance with paras. 80–83 of the UNFCCC review guidelines and classified as per para. 81 of the same guidelines. Problems are identified and classified as problems of transparency, accuracy, consistency, completeness or comparability in accordance with para. 69 of the Article 8 review guidelines in conjunction with decision 4/CMP.11.

^b The report on the review of the 2019 annual submission of Belgium was not available at the time of this review. Therefore, the recommendations reflected in this table are taken from the 2018 annual review report. For the same reason, 2019 and 2017 are excluded from the list of review years in which issues could have been identified.

IV. Issues and problems identified in three or more successive reviews and not addressed by the Party

9. In accordance with paragraph 83 of the UNFCCC review guidelines, the ERT noted that the issues and/or problems included in table 4 have been identified in three or more successive reviews, including the review of the 2020 annual submission of Belgium, and had not been addressed by the Party at the time of publication of this review report.

Table 4

Issues and/or problems identified in three or more successive reviews and not addressed by Belgium

<i>ID#</i>	<i>Previous recommendation for the issue</i>	<i>Number of successive reviews issue not addressed^a</i>
General		
G.3	Report planned improvements in accordance with paragraph 50 of the UNFCCC Annex I inventory reporting guidelines.	3 (2015/2016–2020)
Energy		
E.1	Clearly document in the NIR any remaining differences between the regional and federal energy balances and provide explanations for these differences.	4 (2014–2020)
E.9	Include the regional and national energy statistics in the NIR in a similar format and explain in more detail how AD are allocated to the CRF categories.	3 (2015/2016–2020)
E.12	Collect country-specific carbon contents of gasoline and gas/diesel oil used in road transportation and use these data to calculate the CO ₂ emissions from road transportation.	3 (2015/2016–2020)
IPPU	No issues identified.	
Agriculture		
A.5	Provide accurate information in the NIR on the method used for estimating direct N ₂ O emissions from manure management.	3 (2015/2016–2020)
LULUCF		
L.1	Correctly apply and reference the section of the 2006 IPCC Guidelines used to derive removal and emission estimates for all gases in the LULUCF sector and indicate clearly the tier methods used for specific estimates.	3 (2015/2016–2020)
L.8	Separately describe the processes causing the increasing area of cropland.	4 (2014–2020)
Waste	No issues identified.	
KP-LULUCF		
KL.8	Undertake a numerical evaluation (e.g. using a tier 1 approach from the 2006 IPCC Guidelines) of litter and deadwood stock changes in forest types elected under afforestation, or provide examples showing that these pools are not sources.	3 (2015/2016–2020)

^a Reports on the reviews of the 2017 and 2019 annual submissions of Belgium have not yet been published. Therefore, 2017 and 2019 were not included when counting the number of successive years for this table. In addition, as the reviews of the Party's 2015 and 2016 annual submissions were conducted together, they are not considered successive reviews and 2015/2016 is counted as one year.

V. Additional findings made during the individual review of the Party's 2020 annual submission

10. Table 5 presents findings made by the ERT during the individual review of the 2020 annual submission of Belgium that are additional to those identified in table 3.

Table 5

Additional findings made during the individual review of the 2020 annual submission of Belgium

<i>ID#</i>	<i>Finding classification</i>	<i>Description of the finding with recommendation or encouragement</i>	<i>Is finding an issue/problem?^a</i>
General			
G.9	Archiving	<p>The ERT noted that Belgium reported very little information about its archiving arrangements in its NIR. Three very short comments on archiving were provided in the table in section 1.6.1.5 (p.44). The ERT noted that this is not in accordance with the UNFCCC Annex I inventory reporting guidelines, paragraph 50(j), and does not reflect the archiving elements defined in paragraph 27(a). During the review, the Party clarified some of the procedures used to archive the inventory, including the procedure for the main process in the Flemish Region, where a description is given of where and how the emissions inventory data are archived, namely on the server of the Flanders Environment Agency after evaluation of the data. The personnel responsible for the different sectors are also responsible for the archiving. In addition, all relevant emails are archived. The exact location on the server is recorded in the different forms used in the Flemish quality management system to follow up the inventory process for the different sectors (NIR, section 1.6.1.2, p.41). For the Walloon Region, calculation files, methodological descriptions and AD files are saved on a common server with a daily backup procedure. In addition, a backup is made on two external hard disks that are archived on a yearly basis. Every sectoral expert also archives their own files on their hard disk. Finally, the Walloon Air Pollutant Inventory software was developed in the Walloon Region to improve the quality of the regional and the national inventory. This software allows all data of a plant or an area source to be viewed across the complete time series and avoids mistakes during recalculations. It is also used to report under the Convention on Long-range Transboundary Air Pollution and other emissions of non-GHG pollutants and allows the archiving of the different submissions. The Walloon Air Pollutant Inventory software is located on a server with a daily backup.</p> <p>The ERT recommends that the Party provide the required information under the UNFCCC Annex I inventory reporting guidelines, paragraphs 50(j) and 27(a), including the archiving elements defined in the latter and the details on archiving provided to the ERT during the review.</p>	Yes. Transparency
G.10	QA/QC and verification	<p>The Party reported in its NIR on its use of several tier 3 models, including models used to estimate emissions from the iron and steel sector (section 3.2.7.2, p.101) and the cement and lime sectors (section 3.2.7.2, p.104); non-energy use of fuels (section 3.2.7.2, p.103); and off-road mobile machinery, using OFFREM (section 3.2.8.2, p.110). The ERT was not able to locate information about the approaches used to verify the use of these and other tier 3 models in the inventory. During the review, the Party clarified that these four categories are included in EU directive 2003/87/EC on establishing a scheme for GHG emission allowance trading, and that the NIR frequently refers to the directive and the use of verified EU ETS data in the inventory. The ERT noted that paragraph 41 of the UNFCCC Annex I inventory reporting guidelines requires Annex I Parties that prepare their estimates of emissions and/or removals using higher-tier (tier 3) methods and/or models to provide in the NIR verification information consistent with the 2006 IPCC Guidelines. The ERT further noted that the EU ETS has its own mechanisms of independent verification. The Party</p>	Yes. Transparency

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		<p>stated that it did not think it appropriate to provide extensive details of the EU ETS verification in the NIR, and the ERT agrees that this is not warranted.</p> <p>The ERT recommends that, where tier 3 methods and/or models are used in the inventory, the Party add in the NIR information on the work done to verify the methods and/or models and a summary of the relevant findings and conclusions.</p>	
G.11	QA/QC and verification	<p>The ERT noted that Belgium reported very little information about its peer review activities. There is one reference to peer review in section 1.6.1.6 of the NIR. The ERT noted that this is not in accordance with the UNFCCC Annex I inventory reporting guidelines, paragraph 19, which states that Annex I Parties should implement QA procedures by conducting a basic expert peer review of their inventories in accordance with the 2006 IPCC Guidelines, and paragraph 46, which encourages Annex I Parties to report on any peer review of their inventory, apart from the UNFCCC review. During the review, the Party clarified that, strictly speaking, the only relevant activities were those performed at the regional level; in 2016 and 2019, an audit of the emissions inventory of the Brussels-Capital Region was performed by Airparif.</p> <p>The ERT encourages the Party to conduct a basic expert peer review of its inventory in accordance with the 2006 IPCC Guidelines and report on any peer review of its inventory, apart from the UNFCCC review, to enhance the QA of its inventory.</p>	Not an issue/problem
G.12	Uncertainty analysis	<p>The Party reported an assessment of the uncertainty in its GHG inventory in annex 2 to its NIR. The ERT examined annex 2 and the NIR to ascertain what procedures Belgium used to ensure that the uncertainties in AD, EFs and modelled or measured emissions were reviewed and updated if methodologies were updated in the inventory and recalculations were made. The Party did not include any information in the NIR on the procedure to revise uncertainties. During the review, the Party clarified that there is no written procedure to ensure that the uncertainty analysis is updated, but each methodological change is discussed within the working group on emissions of the Coordination Committee for International Environmental Policy and, if necessary, any modification in the uncertainties associated with these modifications is also discussed. The Party referred to a specific example for the reporting of uncertainties for F-gas emissions. Belgium carries out annual updates, when the chapter on uncertainties in the final report is corrected if new gases are added or if there have been changes in the methodologies used. For the most significant sources of emissions and uncertainties, no change in the uncertainties has been needed in recent years. However, Belgium notes that for some recent recalculations, some uncertainties in AD or EFs should probably be updated. The Party aims to conduct this review for its next annual submission. The ERT noted that uncertainties should be identified and, where possible, quantified using sources of data and information in accordance with the 2006 IPCC Guidelines (vol. 1, chap. 3, section 3.2.1) if methodologies are updated in the inventory and recalculations are made.</p> <p>The ERT recommends that the Party review and revise the uncertainties associated with AD, EFs and modelled or measured emissions in all methods that have been updated or moved to higher-tier methods and emission recalculations, and then update the approach 1 and approach 2 uncertainty analyses accordingly, reporting the results in accordance with the UNFCCC Annex I inventory reporting guidelines, paragraph 42.</p>	Yes. Convention reporting adherence

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Energy			
E.15	1.A.2.c Chemicals – Other fossil fuels – CH ₄	<p>The Party reported the CH₄ IEFs for other fossil fuels under subcategory 1.A.2.c chemicals in CRF table 1.A.(a) (sheet 2) for the complete time series. From 2000 to 2018 (e.g. 1,012.39 kg CH₄/TJ in 2018) there is an extreme deviation from default CH₄ EF values (e.g. 1.0 kg/TJ for other oil (refinery gas) in the 2006 IPCC Guidelines, vol. 2, chap. 2, p.2.16). During the review, the Party clarified that, in contrast to CO₂ emissions being reported for the Walloon Region only, given that the Flemish Region allocated off-gas emissions/recovered fuels from cracking units and some other process (non-energy use) emissions to subcategory 2.B.8.b (ethylene production), CH₄ emissions from both regions are considered under subcategory 1.A.2.c. For the same reason, energy consumption from the Flemish Region (70.29 petajoule) is reported in CRF table 1.A(D) (feedstocks, reductants and other non-energy use) (naphtha and liquified petroleum gas). In the Walloon Region, two plants use other fuels (waste gas). The CH₄ IEF has been 1.0 kg/TJ since 2008 for these fuels. However, one plant used an incorrect IEF (2.5 kg/TJ instead of 1.0 kg/TJ) for 2002–2007. It will be corrected for the next annual submission and the CH₄ IEF will be 1.0 kg/TJ for the entire time series. The ERT considers that the extreme outliers of CH₄ IEFs are due to each region's AD allocation under this subcategory.</p> <p>The ERT recommends that the Party correct the CH₄ IEF to 1.0 kg/TJ for the entire time series and provide clear information in the NIR about each region's AD allocation under this subcategory.</p>	Yes. Comparability
E.16	1.A.3.b.iii Heavy-duty trucks and buses – Gaseous fuels – N ₂ O	<p>The Party reported CO₂ and CH₄ emissions of gaseous fuels from heavy-duty trucks and buses (subcategory 1.A.3.b.iii) for 1993–2010 and 2016–2018 in CRF table 1.A(a) (sheet 3). However, N₂O emissions for this subcategory for those years were reported as “NO”. The ERT considered that there may be N₂O emissions for this subcategory. During the review, the Party clarified that “NE” seems to be more appropriate for this subcategory. Belgium uses COPERT V, which is recommended by EEA to estimate N₂O emissions for subcategory 1.A.3.b. While there are hot and cold EFs for CNG buses in the <i>EMEP/EEA air pollutant emission inventory guidebook 2019</i> (pp.71–78 and more specifically tables 3-57, 3-58, 3-59 and 3-60) on which the COPERT V methodology is based, the Party did not find any hot N₂O EFs for CNG vehicles under subcategory 1.A.3.b.iii. Moreover, no cold start emissions are considered. As for the regulated pollutants, the Party assumed that the methodology used for CNG buses derives from that used for petrol cars. But it is unclear to the Party whether emissions occur only for CNG dual-fuel buses (default category in COPERT V) or are still valid for pure CNG buses. This needs to be checked but it seems that in the United Kingdom of Great Britain and Northern Ireland, no N₂O emissions are considered for pure CNG vehicles. Belgium assumes these emissions do exist but are certainly negligible. The ERT believes that future ERTs should consider this issue further to ensure that there is not an underestimation of emissions for this subcategory.</p> <p>The ERT recommends that the Party report N₂O emissions for subcategory 1.A.3.b.iii or demonstrate that they are below the significance threshold described in paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines when reporting “NE” in this subcategory.</p>	Yes. Completeness
E.17	1.A.3.b.iii Heavy-duty trucks and buses – Gaseous fuels – CO ₂ and CH ₄	<p>CO₂ and CH₄ emissions from heavy-duty trucks and buses using gaseous fuels were reported for 1993–1998, 2000–2004, 2006–2010 and 2016–2018; however, CO₂ and CH₄ emissions for 1990–1992, 1999, 2005 and 2011–2015 were reported as “NO” in CRF table 1.A(a) (sheet 3). The ERT considered this a possible inconsistency in the time series. During the review, the Party clarified that only a few buses from public transportation operators use natural gas for experimental purposes in Belgium. The bus operator from the Brussels-Capital Region did some testing during 1993–2010, while the bus operator from the Walloon Region has been carrying out testing since 2016. This handful of natural gas run buses necessarily leads to “NO” being reported without inconsistency in the time series. The ERT</p>	Yes. Completeness

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		<p>believes that future ERTs should consider this issue further to ensure that there is not an underestimation of emissions for this subcategory.</p> <p>The ERT recommends that the Party include in the NIR an explanation of why only a few buses from public transportation operators are using natural gas for experimental purposes in Belgium leading to “NO” being reported for CO₂ and CH₄ emissions in CRF table 1.A(a) (sheet 3). The ERT also recommends that Belgium estimate and report emissions for all years when natural gas was used in buses used for public transportation.</p>	
E.18	1.A.3.d Domestic navigation – Gas/diesel oil – CH ₄	<p>The Party reported in CRF table 1.A(a) (sheet 3) the CH₄ IEF for gas/diesel oil under subcategory 1.A.3.d domestic navigation in 2018 (2.1 kg CH₄/TJ), which is lower than the default value (7.0 kg CH₄/TJ, ranging from 3.5 to 10.5 kg CH₄/TJ) from the 2006 IPCC Guidelines (vol. 2, chap. 3, p.3.50). During the review, the Party clarified that this lower IEF is due to the methodology used in the Flemish Region. The EMMOSS model is used in the Flemish Region to calculate emissions from domestic navigation. CH₄ emissions are calculated as a fraction of the emissions of volatile organic compounds. These CH₄ emissions are calculated depending on the different classes of construction years and engines of the boats (g/kWh power of the engines). The methodology is based on the “emission registration and monitoring shipping” protocol applied in the Netherlands. It is not possible to express the EFs used in kg per TJ. Contrary to the CH₄ emissions, CO₂ and N₂O emissions are calculated on the basis of the 2006 IPCC Guidelines default EFs (vol. 2, chap. 3, p.3.50). The EFs of volatile organic compounds from the Netherlands are used to calculate inland marine transport emissions, with a distinction between type of engine and construction year. Here, the EFs are expressed in g per kg fuel. The values used in the EMMOSS model can be provided on request. The result from the calculations is a lower IEF in the Flemish Region for CH₄ than the IPCC default EF of 7.0 kg CH₄/TJ used in the other regions of Belgium. The emissions reported in subcategory 1.A.3.b in the Flemish Region are the sum of the domestic navigation and the inland marine transport.</p> <p>The ERT recommends that the Party include in the NIR the rationale for using a CH₄ IEF value for gas/diesel oil under subcategory 1.A.3.d domestic navigation that is lower than the 2006 IPCC Guidelines default value (vol. 2, chap. 3, p.3.50).</p>	Yes. Transparency
E.19	1.B.2.c Venting and flaring – Gas – CH ₄	<p>The Party reported CH₄ emissions from venting under subcategory 1.B.2.c.ii. CO₂ emissions for this subcategory were reported as “NO” in CRF table 1.B.2. During the review, the Party clarified that the CH₄ emissions from venting activities, as reported in subcategory 1.B.2.c.ii, are reported by Fluxys, the company responsible for the transport of gas that comes from Norway into Belgium, which reported very low emissions of CH₄, namely 10.38 t (originating from venting) (or 0.26 kt CO₂ eq) in 2018. The Party also reported that CO₂ emissions were allocated (together with the energy emission estimates of Fluxys) to subcategory 1.A.3.e.i. The CO₂ emissions in 2018 amount to 3,249 kt. Discussions with Fluxys indicate that the reporting was performed correctly. Subcategory 1.B.2.c deals with CO₂ emissions related to the separation (if there are some chemical processes involved to reduce the amount of CO₂ during the production of gas) and diffusion (venting for gas that does not meet the standards) of CO₂ which is contained in natural gas produced in natural gas production facilities when CO₂ contents do not meet the standard of non-combustion gas content provided by users. This means that CO₂ emissions need to be reported if ‘off-spec’ gas is vented. This is not the case in Belgium. The vented gas is always gas that meets the standards needed for the Fluxys network in Belgium. The pretreatment of the gas is performed in Norway.</p>	Yes. Transparency

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		The ERT recommends that the Party include in the NIR an explanation of the venting activities around the transport of gas from Norway into Belgium and of why the related CO ₂ emissions from venting (reported under subcategory 1.B.2.c.ii) were reported as “NO” in CRF table 1.B.2.	
IPPU			
I.19	2.A.4 Other process uses of carbonates – CO ₂	<p>The Party reported emissions for subcategory 2.A.4.d other for 1990–1992 as “NO” in CRF table 2(I)A-H (sheet 1). The Party stated in the NIR (p.149) that subcategory 2.A.4.d other includes CO₂ emissions from flue-gas desulfurization in electric power installations, sugar plants and chemical plants. During the review, the Party clarified that by extrapolation of the emissions of these plants, CO₂ emissions for subcategory 2.A.4.d other were estimated to be 0.5–1.0 kt in 1990, which is below the significance threshold described in paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines. The ERT considers that the Party cannot claim that emissions are insignificant for certain years of the time series and the emissions must be reported.</p> <p>The ERT recommends that the Party report CO₂ emissions for subcategory 2.A.4.d other for 1990–1992.</p>	Yes. Completeness
I.20	2.B.4 Caprolactam, glyoxal and glyoxylic acid production – N ₂ O	<p>The Party stated in its NIR (p.152) that emissions from caprolactam production for 1990 onward were estimated by the sole Belgian company involved in the process as accurately as possible and reported a constant value of 1.20 kt N₂O/year for 1990–1992 in CRF table 2(I) (sheet 1), with the reported values for subsequent years ranging from 0.69 to 2.43 kt N₂O/year. During the review, the Party clarified that emission figures were delivered by the company for 1990–1996 and that there is some uncertainty concerning these figures, and measurements performed by the company since 1997 have informed emission estimations for subsequent years. However, the ERT is of the view that using a constant value for 1990–1992 produces an inconsistency in the time series.</p> <p>The ERT recommends that the Party correct the inconsistency in the time series by accurately reporting estimated emissions from caprolactam production for 1990–1996.</p>	Yes. Consistency
I.21	2.B.8 Petrochemical and carbon black production – CO ₂ and CH ₄	<p>The Party reported CO₂ emissions for categories 2.B.8.c ethylene dichloride and vinyl chloride monomer and 2.B.8.d ethylene oxide as “IE”; however, CH₄ emissions were reported as “NO” for the whole time series in CRF table 2(I)A-H (sheet 1). During the review, the Party clarified that the use of the notation key “NO” for CH₄ emissions from ethylene dichloride and vinyl chloride monomer production is not correct and should be changed to “NA” because it may be assumed that non-combustion CH₄ emissions from ethylene dichloride and vinyl chloride monomer production are negligible. In addition, CH₄ emissions from ethylene oxide are allocated to category 2.B.10 and consequently the notation key should be changed from “NO” to “IE” (see issue ID# I.22 below). The ERT considers that the Party did not provide sufficient information showing that the likely level of emissions is below the significance threshold defined in paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines, and if these emissions are demonstrated to be insignificant, then the correct notation key to report is “NE”.</p> <p>The ERT recommends that the Party estimate and report CH₄ emissions for category 2.B.8.c ethylene dichloride and vinyl chloride monomer in accordance with the 2006 IPCC Guidelines (vol. 3, chap. 3.9.2.1, p.3.69) or include information in the NIR to demonstrate that these emissions are insignificant in accordance with paragraph 37(b) of the UNFCCC Annex I inventory reporting guidelines and use the correct notation key (“NE”). The ERT also recommends that the Party correctly report CH₄ emissions for category 2.B.8.d ethylene oxide as “IE”.</p>	Yes. Completeness

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I.22	2.B.10 Other (chemical industry) – CO ₂	<p>The Party explained in its NIR (p.153) that emissions for category 2.B.10 other include CO₂ emissions from the production of ethylene dichloride and vinyl chloride monomer and of carbon black that cannot be divided owing to confidentiality issues as there is only one carbon black plant in Belgium (in the Flemish Region). During the review, the Party clarified that the emissions from this plant are reported under category 2.B.10 for confidentiality reasons. The ERT considers that the current reporting undermines comparability.</p> <p>The ERT recommends that the Party estimate emissions from ethylene dichloride and vinyl chloride monomer and those from carbon black by using production data and default or plant-specific EFs and report them separately under the corresponding subcategories.</p>	Yes. Comparability
I.23	2.H Other (IPPU) – CO ₂	<p>The Party reported CO₂ emissions for category 2.H.1 pulp and paper as “NA” for 1990–2002 and the corresponding AD as “NE” for 1990–2018 in CRF table2(I).A-H (sheet 2). In the same table, CO₂ emissions for category 2.H.2 food and beverages industry and the corresponding AD were reported as “IE” and “NE”, respectively, for 1990–2018. During the review, the Party clarified that “NA” is used for category 2.H.1 for 1990–2002 because the processing of raw materials used in the paper industry started in 2003 before a new installation for combustion of sludge was built in mid-2003. The ERT noted that the notation key should be “NO” if the activity itself did not exist and the Party should not report “NO” for AD if corresponding emissions are reported.</p> <p>The ERT recommends that the Party correct the notation key for category 2.H.1 pulp and paper for 1990–2002 to “NO”. The ERT also recommends that the Party report the AD for CO₂ emissions for category 2.H.2 food and beverages industry.</p>	Yes. Convention reporting adherence
Agriculture			
A.9	3.A Enteric fermentation 3.B Manure management – CH ₄ and N ₂ O	<p>The Party used a tier 2 methodology to estimate CH₄ emissions from enteric fermentation for non-dairy cattle, a key subcategory under category 3.A. The ERT noted that country-specific information on the feeding situation and quality of feed in terms of the percentage of digestible energy is crucial for the tier 2 approach. The information provided on the feeding situation does not include a reference (NIR pp.186–187). During the review, the Party clarified that the feed digestibility value of 75 per cent used to estimate CH₄ emissions from enteric fermentation was obtained from the Netherlands. The Party clarified that this is justified as it is a neighbouring country with a comparable feeding situation. These feeding situations were applied for all regions in Belgium. During the review, the Party further clarified that in the Flemish Region a study is planned to revise the methodology for the calculation of CH₄ emissions (enteric fermentation and manure management). This covers the revision of the parameters used, including the feeding situations, feed intake of all animal categories and digestibility of feed using region-specific data. The study will start in January 2021 and results are expected at the end of 2021. The ERT considers that because the milk production (25.64 kg milk/head/day in the Flemish Region and 18.97 kg milk/head/day in the Walloon and Brussels-Capital Regions (NIR table 5.11, p.188)) and feeding situations in Belgium are quite different among the regions (e.g. in 2018 only 14 per cent of dairy cattle was on pasture in the Flemish Region while it was 43 per cent in the Walloon and Brussels-Capital Regions (NIR p.185)), there is a high possibility that the values of digestibility of feed and other related parameters are also different among the regions. Using feed intake and digestibility of feed values from the Netherlands and applying them for all regions in Belgium may not reflect accurately the national circumstances.</p>	Yes. Accuracy

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A.10	3.A Enteric fermentation 3.B Manure management – CH ₄ and N ₂ O	<p>The ERT recommends that, in a similar manner to the planned study for the Flemish Region, the Walloon and Brussels-Capital Regions determine the region-specific parameters (feeding situations, feed intake and digestibility of feed) and use them to estimate the emissions from enteric fermentation and manure management.</p> <p>Since 2011, Belgium has used data derived from the methodology “Belgian evolution” as published by Statbel (NIR p.180) instead of the data directly collected by Statbel as used in the Walloon Region (NIR table 5.4, p.179) to calculate CH₄ and N₂O emissions for the Brussels-Capital Region. During the review, Belgium explained that this methodology has been used by Statbel since 2011 in the allocation of agricultural surfaces and livestock numbers by region, based on the location of the headquarters of the holding instead of where the activity effectively takes place. This resulted in a nearly fourfold increase in the livestock population for the Brussels-Capital Region in the Statbel database in 2014 in comparison with 2010. Given that the Brussels-Capital Region is a highly densely populated region, this information seemed inaccurate and was not used for the estimation of the emissions from agriculture for the region. The estimate of emissions was then based on past data using the “Belgian evolution” methodology applied to the livestock numbers. This methodology allows a more stable livestock population to be allocated to the region. For example, in 2018, according to the Statbel “Belgian evolution” methodology, based on the Belgian total the number of dairy cattle was 70 and non-dairy cattle 209, whereas Statbel data indicated 213 dairy cattle and 491 non-dairy cattle. Since data from these two sources differ significantly, the ERT concluded that the Party must justify its selection of these AD for estimating emissions from enteric fermentation and manure management.</p> <p>The ERT recommends that the Party clarify the cause of such a difference and demonstrate in the NIR that the livestock population estimated by using the Statbel “Belgian evolution” methodology based on the Belgian total rather than actual Statbel data accurately represents the livestock population in the Brussels-Capital Region.</p>	Yes. Transparency
A.11	3.A Enteric fermentation – CH ₄	<p>The ERT noted that information on animal weight is important in deriving CH₄ EFs. NIR table 5.7 (p.185) provides, among other parameters, the average weight and weight gain for different cattle subcategories in Belgium. The weight gain data for mature animals are not in line with the 2006 IPCC Guidelines (vol. 4, chap. 10, p.10.13), which state that mature animals are generally assumed to have no net weight gain or loss over an entire year. It is not clear how the weight gain for cattle was determined. During the review, Belgium explained that the data on average weight and weight gain were obtained from the Department of Agriculture and Fisheries and are based on expert judgment. No data on time evolution (since 1990) are available. To be consistent with the 2006 IPCC Guidelines (vol. 4, chap. 10, table 10A.1), the weight gain factors for dairy cattle, brood cows and non-dairy cattle more than two years old will be adjusted to zero for the entire time series for the next annual submission. In the Flemish Region, on the basis of the new study planned in 2021 (see ID# A.9 above), these parameters will be revised and their fluctuations over time will be given if available. The ERT notes that the weight gain data in NIR table 5.7 could still be valid if these accurately represent the country circumstances and are verified by the study results in Belgium. The above-mentioned adjustment of weight gain factors for dairy cattle, brood cows and non-dairy cattle more than two years old to zero should, if possible, be implemented only after being verified by the results of studies such as the one planned in 2021 mentioned above.</p> <p>The ERT encourages the Party to determine weight gain factors for regions other than the Flemish Region. Until the results of the study are published, the ERT recommends that the Party follow the 2006 IPCC Guidelines (vol. 4, chap. 10, p.10.13) in deriving weight gain factors and report on its progress in obtaining these parameters.</p>	Yes. Accuracy

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A.12	3.A.1 Cattle – CH ₄	<p>The Party reported in its NIR (p.185) the activity coefficient values that were estimated on the basis of the feeding situation of cattle. However, the feeding situation used in deriving the activity coefficient value for dairy cattle in the Walloon Region was not provided. In addition, the activity coefficient values used for the Brussels-Capital Region were not provided. During the review, the Party clarified that in the Walloon Region the cattle spend 205 days in stall and the remaining 160 days on pasture. The activity coefficient values for dairy cattle in the Walloon Region were derived from this feeding situation. The Party also indicated that the feeding situations of the Brussels-Capital Region were the same as those in the Walloon Region and so the same activity coefficient values were used.</p> <p>The ERT recommends that the Party provide in the NIR the details of the feeding situation of dairy cattle that was used for deriving activity coefficient values for the Walloon and Brussels-Capital Regions.</p>	Yes. Transparency
A.13	3.D.b.1 Atmospheric deposition – N ₂ O	<p>The Party provided the methodology for estimating Frac_{GASM} in different regions in its NIR (pp.198–200). In the Flemish Region, Frac_{GASM} values were estimated using the EMAV version 2.1 model and in the Walloon and Brussels-Capital Regions by the methods described in the <i>EMEP/EEA air pollutant emission inventory guidebook 2019</i>. The ERT notes that these methodologies are considered to be tier 2 and not tier 1 as the Party mentioned in NIR table 5.13 (p.190). The Frac_{GASM} value ranges used by the Flemish Region (from 0.13 to 0.16 kg NH₃-N and NO_x-N/kg N excreted) (NIR, p.199) and by the Walloon and Brussels-Capital Regions (from 0.21 kg NH₃-N and NO_x-N/kg N excreted in 1990 to 0.22 kg NH₃-N and NO_x-N/kg N excreted in 2018) (NIR, p.200) are significantly lower than the default values provided in table 10.22 of the 2006 IPCC Guidelines (vol. 4, chap. 10, p.10.65). There is no detailed information on how these Frac_{GASM} values were estimated. In addition, according to the 2006 IPCC Guidelines, Frac_{GASM} values should be provided for each animal category and each manure management system when using a tier 2 methodology (vol. 4, chap. 10, p.10.56). However, this was not provided in the NIR. During the review, the Party explained that the three regions used a tier 2 methodology for the calculation of indirect N₂O emissions from manure management. NIR table 5.13 will be corrected for the next annual submission. Additional information on the methodology used to estimate Frac_{GASM} was also provided during the review. In the Flemish Region Frac_{GASM} was estimated with the EMAV version 2.1 model in relation to the N excreted by animals in the stable (calculated in the N₂O model). In the N₂O model no distinction was made among animal categories or animal waste management systems. In the EMAV version 2.1 model, on the other hand, NH₃ emissions were calculated taking into account different animal waste management systems/stable types/animal categories. The Frac_{GASM} values are lower in the Flemish Region than in the 2006 IPCC Guidelines because in the Flemish Region poultry and swine have to be housed in systems that are low in NH₃ emissions. The success of the implementation of these and other manure management techniques is reflected in the lower NH₃ emissions. The Party also reported that in 2021 a study will be performed to revise the N₂O model. This new integrated model will be an extension of the EMAV version 2.1 model and will calculate NH₃, N₂O and nitric oxide emissions. This will allow a Frac_{GASM} value to be derived for each animal category and each manure management system. Results are expected at the end of 2021. In the Walloon and Brussels-Capital Regions, the Frac_{GASM} values used were from tables 3.9 and 3.10 in the <i>EMEP/EEA air pollutant emission inventory guidebook 2019</i> (pp.31–32). The Frac_{GASM} values used for the 2018 inventory were as follows: for dairy slurry, 27 per cent for the Walloon and Brussels-Capital Regions; for dairy solid, 17 per cent for the Walloon Region and 18 per cent for the Brussels-Capital Region; for other cattle slurry, 27 per cent for the Walloon and Brussels-Capital Regions; for other cattle solid, 19 per cent for the Walloon and Brussels-Capital Regions; for swine slurry, 25 per cent for the Walloon Region and 28 per cent for the Brussels-Capital Region; and for swine solid, 29 per cent for the Walloon</p>	Yes. Transparency

<i>ID#</i>	<i>Finding classification</i>	<i>Description of the finding with recommendation or encouragement</i>	<i>Is finding an issue/problem?^a</i>
		<p>Region and 28 per cent for the Brussels-Capital Region. These values are within the ranges set out in table 10.22 of the 2006 IPCC Guidelines (vol. 4, chap. 10, p.10.65).</p> <p>The ERT recommends that the Party (1) correct the information on the methodology in NIR table 5.13 from tier 1 to tier 2; (2) for the Flemish Region, provide in the NIR the missing information on the methodology used to estimate Frac_{GASM} and, after the study to revise the N₂O model has been completed in 2021, provide the Frac_{GASM} value for each animal category and each manure management system; and (3) for the Walloon and Brussels-Capital Regions, report in the NIR the Frac_{GASM} values as provided during the review.</p>	
LULUCF			
L.12	4.A.2.1 Cropland converted to forest land – CO ₂	<p>Belgium reported carbon stock changes in DOM for cropland converted to forest land in CRF table 4.A for 2010–2018, while carbon stock changes in DOM were reported as “NO” for 1990–2009. During the review, the Party explained that this is because there was no conversion of cropland to forest land between 1990 and 2009 in the Walloon Region. However, the Party reported carbon stock change values in living biomass and mineral soils for cropland converted to forest land in CRF table 4.A for 1990–2009.</p> <p>The ERT recommends that the Party include in the NIR a clear explanation of why the carbon stock change in DOM for cropland converted to forest land was reported as “NO” for 1990–2009, while estimated values for other pools (living biomass and mineral soils) were provided.</p>	Yes. Transparency
L.13	4.B.2.1 Forest land converted to cropland – CO ₂	<p>Belgium reported carbon stock changes (gains) of living biomass in forest land converted to cropland in CRF table 4.B for 2010–2012 but used “NO” for other years. The Party reported the area and carbon stock change for other pools, namely losses of living biomass, DOM and mineral soils, in this subcategory for all years in the time series. During the review, the Party clarified that this is related to the inventory for the Flemish Region, where the years of the land transition matrix are 1989, 2009, 2012 and 2015, and that between 2010 and 2012 there were some changes in land-use determination, with land redetermined to its original land use (forest land); therefore, there is a gain in these years. The ERT considers that the Flemish Region’s land transition matrix is not in accordance with the 2006 IPCC Guidelines (vol. 4, chap. 3.2, p.3.5, and vol. 4, chap. 3.3, p.3.8) because some years are missing.</p> <p>The ERT recommends that the Party complete the land transition matrix of the Flemish Region for all years of the time series. The ERT also recommends that the Party provide in the NIR a clear explanation for reporting carbon stock change (gains) in living biomass during all years of the time series except 2010–2012 as “NO”, while reporting carbon stock changes in other pools for all years.</p>	Yes. Accuracy
L.14	4.C.2.1 Forest land converted to grassland – CO ₂	<p>Belgium reported carbon stock change (losses) in living biomass in forest land converted to grassland as “NO” for 2013–2015 in CRF table 4.C but reported the carbon stock change (losses) values for the other years. The Party reported the area and carbon stock change for other pools, namely gains of living biomass, DOM and mineral soils, in this subcategory for all years in the time series. During the review, the Party clarified that this is related to the inventory for the Flemish Region, where the years of the land transition matrix are 1989, 2009, 2012 and 2015, and that between 2012 and 2015 no changes in land use were determined from forest land to grassland in the Flemish Region; therefore, “NO” was reported. The Flemish Region’s land transition matrix is not in accordance with the 2006 IPCC Guidelines (vol. 4, chap. 3.2, p.3.5, and vol. 4, chap. 3.3, p.3.8) because some years are missing.</p> <p>The ERT recommends that the Party complete the land transition matrix of the Flemish Region for all years of the time series. The ERT also recommends that the Party provide in the NIR a clear explanation for reporting carbon stock</p>	Yes. Accuracy

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue/problem? ^a
		change (losses) in living biomass in forest land converted to grassland as “NO” for 2013–2015, while reporting carbon stock changes in other pools for all years.	
L.15	4(II) Emissions/removals from drainage and rewetting and other management of organic/mineral soils – CH ₄	<p>Belgium reported the area of organic soil and CO₂ emissions from organic soil drainage under cropland remaining cropland in CRF table 4.B but reported this area and CH₄ emissions in CRF table 4(II) as “NO” for cropland. The ERT recognizes that no method is provided in the 2006 IPCC Guidelines for CH₄ emissions from drained organic soils. However, according to the Wetlands Supplement (chap. 2.2.2, p.2.21), CH₄ emissions from drained organic soils may be estimated. During the review, the Party clarified that it assumed that CH₄ emissions from drainage are insignificant in accordance with the description provided in the 2006 IPCC Guidelines (vol. 4, chap. 7.2.1.2, p.7.14). The ERT believes that this assumption reflects the Party’s national circumstances.</p> <p>The ERT recommends that the Party report the same organic soil area of cropland in CRF table 4(II) as reported in CRF table 4.B to ensure that the area is consistent across CRF tables. The ERT also recommends that the Party explain in the NIR that CH₄ emissions from drainage are assumed to be insignificant in Belgium; alternatively, the ERT encourages the Party to use the tier 1 method described in the Wetlands Supplement (chap. 2.2.2, p.2.22) to estimate CH₄ emissions from drained inland organic soils.</p>	Yes. Transparency
L.16	4(III) Direct N ₂ O emissions from N mineralization/immobilization – N ₂ O	<p>For 2018, Belgium reported an area of 691.29 kha in CRF table 4.A for forest land remaining forest land, which does not match the area of mineral soil (689.29 kha) in CRF table 4(III). During the review, the Party clarified that this discrepancy comes from a problem in the aggregation of the data for the three regions and that the area of the Brussels-Capital Region was omitted from CRF table 4(III) by mistake. The Party reported N₂O emissions as “NO” for forest land remaining forest land in CRF table 4(III) and explained in its NIR (pp.215–216) that this is because there is no carbon stock change in forest land remaining forest land.</p> <p>The ERT recommends that the Party correct the areas for forest land remaining forest land in CRF table 4(III) so that they correspond to the areas included in the estimate of direct N₂O emissions from N mineralization and those reported in CRF table 4.A.</p>	Yes. Convention reporting adherence
L.17	4(III) Direct N ₂ O emissions from N mineralization/immobilization – N ₂ O	<p>For 2018, Belgium reported an area of 560.67 kha in CRF table 4.C for grassland remaining grassland, which does not match the area of mineral soil (561.22 kha) in CRF table 4(III). During the review, the Party clarified that this discrepancy comes from a problem in the aggregation of the data for the three regions and that the area of the Brussels-Capital Region was omitted from CRF table 4.C by mistake. The Party reported net carbon stock change in soils for 1990–2018 in CRF table 4.C.</p> <p>The ERT recommends that the Party correct the areas and recalculate the net carbon stock change in soils for grassland remaining grassland in CRF table 4.C so that they correspond to the areas included in the estimate of direct N₂O emissions from N mineralization and reported in CRF table 4(III).</p>	Yes. Accuracy
L.18	4(III) Direct N ₂ O emissions from N mineralization/immobilization – N ₂ O	<p>Belgium reported AD and indirect N₂O emissions from managed soils as “IE” in CRF table 4(IV) but no explanation for this was provided in its NIR. The ERT noted that according to note (4) in CRF table 4(IV), N mineralization associated with loss of soil organic matter resulting from change of land use or management on mineral soils in all land-use categories except for cropland remaining cropland should be included in the LULUCF sector. During the review, the Party clarified that these emissions are included in the agriculture sector. The Party also clarified that indirect N₂O emissions from N mineralization associated with loss of soil organic matter resulting from change of land use will be estimated for land uses other than cropland and included in the next annual submission.</p>	Yes. Completeness

<i>ID#</i>	<i>Finding classification</i>	<i>Description of the finding with recommendation or encouragement</i>	<i>Is finding an issue/problem?^a</i>
		The ERT recommends that the Party estimate the indirect N ₂ O emissions from N mineralization associated with loss of soil organic matter resulting from change of land use for land uses other than cropland in accordance with the 2006 IPCC Guidelines (vol. 4, chap. 11.2.2.1, p.11.19) and include the estimation in its annual submission. The ERT also recommends that the Party correctly allocate indirect N ₂ O emissions from all land-use categories in the LULUCF sector.	
L.19	4(V) Biomass burning – CO ₂ , CH ₄ and N ₂ O	<p>In CRF table 4(V) Belgium reported CO₂, CH₄ and N₂O emissions from wildfires in forest land remaining forest land as “NA” for 2004 and 2008–2010 and as “NO” for 2012–2018 and reported estimates for other years. The ERT noted that no explanation of the use of notation keys was provided in the NIR. During the review, the Party clarified that no wildfires occurred for 2004 and 2008–2010 and “NO” should be reported instead of “NA”, and that the use of “NA” could be linked to a bug in the aggregation procedure.</p> <p>The ERT recommends that the Party provide in the NIR an explanation on the use of notation keys in CRF table 4(V). The ERT also recommends that the Party correct the notation key “NA” to “NO” for emissions from wildfires in forest land remaining forest land for 2004 and 2008–2010 in CRF table 4(V).</p>	Yes. Transparency
L.20	4(V) Biomass burning – CH ₄ and N ₂ O	<p>Belgium reported CH₄ and N₂O emissions from wildfires in forest land remaining forest land for 1990–2003, 2005–2007 and 2011 in CRF table 4(V). The Party stated in its NIR (p.228) that equation 2.27 of the 2006 IPCC Guidelines (vol. 4, chap. 2.4, p.2.42) was applied for estimating emissions, using country-specific average biomass stock. However, the ERT noted that no clear explanation of the country-specific parameters used or reference for the CH₄ and N₂O EFs was provided in its NIR (pp.227–228). During the review, the Party clarified that for CH₄ and N₂O, it still used the emission ratios for CH₄ and N₂O from the IPCC good practice guidance for LULUCF (annex 3A.1, table 3A.1.15, p.3.185) and is planning to review these estimates in line with the 2006 IPCC Guidelines for the next annual submission. The ERT notes that the emission ratios for CH₄ and N₂O from the IPCC good practice guidance for LULUCF referred to by the Party are intended to be applied to equation 3.2.19 from the IPCC good practice guidance for LULUCF (chap. 3.2, p.3.49), and not to equation 2.27 from the 2006 IPCC Guidelines, to estimate CH₄ and N₂O emissions.</p> <p>The ERT recommends that the Party apply equation 2.27 from the 2006 IPCC Guidelines (vol. 4, chap. 2.4, p.2.42) and parameters provided therein and recalculate the CH₄ and N₂O emissions from wildfires for forest land remaining forest land.</p>	Yes. Accuracy
Waste			
W.7	5.C.1 Waste incineration – CO ₂	<p>The Party reported estimates for this category in the NIR for the three regions. The Flemish Region uses energy units for the AD (unit: petajoule, in NIR table 7.7, p.261) for waste incineration, in contrast to the Brussels-Capital and Walloon Regions, which use mass units for the AD (unit: tonne). The ERT notes that the 2006 IPCC Guidelines (vol. 5, chap. 5, p.5.6) provide a methodology to estimate GHG emissions for category 5.C.1, which uses only mass units for the AD. To ensure comparability, the ERT considered that for category 5.C.1, using mass units for the AD is more suitable than using energy units, as used in the energy sector. During the review, the Party provided to the ERT mass units for the AD for the Flemish Region. Comparing these AD with the data of the other two regions, the ERT considered these AD to be reasonable.</p> <p>The ERT recommends that the Party report in the NIR mass units for the AD for the entire time series for the Flemish Region instead of energy units, as it has already done for the Walloon and Brussels-Capital Regions.</p>	Yes. Transparency

<i>ID#</i>	<i>Finding classification</i>	<i>Description of the finding with recommendation or encouragement</i>	<i>Is finding an issue/problem?^a</i>
W.8	5.C.1 Waste incineration – N ₂ O	<p>The Party reported an amount of waste incinerated in CRF table 5.C that differs from that provided by Eurostat for Belgium (https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env_wastrt&lang=en). The ERT notes that the total amounts of waste incinerated sourced from incineration plants and reported in CRF table 5.C (both biogenic and non-biogenic municipal solid waste, industrial solid waste and clinical waste, but excluding flaring in the chemical industry) (e.g. 44.8 kt for 2018) are much smaller than those of the Eurostat data (e.g. 1,753.6 kt for 2018). During the review, the Party explained that it is very likely that most of the quantities in the Eurostat data cannot be compared with AD that the Party uses in this category since it is unclear how these Eurostat statistics are produced, including separation of energy recovery in waste incineration. The Party added that making a robust comparison between these statistics and the CRF figures would require a lot of research.</p> <p>The ERT recommends that the Party conduct research on the discrepancy between the data on amount of waste incinerated used by the Party in its calculations and the Eurostat data with the aim of verifying the AD used in category 5.C.1, and report on the results of the research in the NIR.</p>	Yes. Transparency
W.9	5.C.1 Waste incineration – N ₂ O	<p>The Party reported a country-specific N₂O EF (15 g N₂O/t waste) derived from in situ measurements (stack emissions) in the NIR (p.259) and used this value for the three regions. The Party also reported N₂O emissions from sewage sludge incinerated as “IE” in category 5.C.1 waste incineration (non-biogenic municipal solid waste) when there is energy recovery, and emissions are reported in subcategory 1.A.1.a.i (under other fossil fuels). However, the Party did not provide in the NIR detailed information on sewage sludge incineration in the country. The ERT considered that the regional distribution of sewage sludge incineration can influence N₂O EFs for each region, and that the amount of sewage sludge incinerated should be distinguished from that of municipal solid waste. During the review, the Party provided detailed information on sewage sludge incineration for the three regions. The ERT confirmed that the Party reasonably estimated N₂O emissions from incineration of municipal solid waste, including sewage sludge.</p> <p>The ERT recommends that the Party provide in the NIR detailed information on sewage sludge incineration for the three regions and an explanation for why incineration of municipal solid waste includes sewage sludge.</p>	Yes. Transparency
W.10	5.D.1 Domestic wastewater – CH ₄	<p>Belgium reported CH₄ emissions from domestic wastewater treatment in CRF table 5.D and explained in the NIR (p.266) that these emissions are from domestic wastewater treatment by septic tanks in the Flemish and Walloon Regions, calculated in accordance with the 2006 IPCC Guidelines (vol. 5, chap. 6.2.2.3, p.6.13). However, the Party did not provide details of the methodology used to estimate CH₄ emissions from this source in the NIR. During the review, Belgium provided the spreadsheet for the 2020 annual submission showing low values of reported CH₄ emissions for the Walloon Region in comparison with the other regions. The Party explained that the use of the methodology for the Walloon Region in the 2020 annual submission had to be corrected during the review of the EU effort-sharing decision in mid-2020. The Party also provided the revised spreadsheet that it intends to use for the 2021 annual submission, which shows that the corrected use of the methodology increases emissions; for example, for 2018 CH₄ emissions increased from 0.238 to 2.908 kt (i.e. an increase of 66.75 kt CO₂ eq), which is more consistent with the emissions in the other regions, considering the respective size of the Flemish and Walloon populations. The ERT notes that Belgium used lower values for the percentage of the population covered by individual wastewater treatment from 2002 onward (for 2018, the original value was 1.0 per cent and the revised value 12.2 per cent). Using the population and the percentage of the population covered by individual wastewater treatment estimations provided by the Party in the new calculation for 1990–2018, the ERT obtained a similar result to the one presented by Belgium in the new calculation. Belgium also added CH₄ emissions from wastewater discharged to river in the new calculation. These</p>	Yes. Transparency

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue/problem? ^a
		<p>emissions are relatively high (63.7 kt CO₂ eq) in 1990 and quite low (0.08 kt CO₂ eq) in 2018. The ERT considered this additional method to be reasonable. The ERT is of the view that the use of the methodology in the new calculation is reasonable and concluded that there is an underestimation of CH₄ emissions from domestic wastewater treatment by septic tanks in the 2020 annual submission, and that this underestimation is greater than the threshold of significance for Belgium (60.00 kt CO₂ eq). The ERT estimated the underestimation to be approximately 67 kt CO₂ eq in 2018 and included this issue in the list of potential problems and further questions raised by the ERT. In response to the list of potential problems and further questions, Belgium provided a spreadsheet showing the revised CH₄ emissions from domestic wastewater treatment in the Walloon Region as provided to the ERT during the review. The revised estimates for 1990–2018 were subsequently reported in an official resubmission of the 2020 CRF tables. The ERT noted that the corrected CH₄ emissions were appropriately reflected in the resubmitted CRF tables and the potential problem was resolved. The increases in emissions for the waste sector in the second commitment period compared with the previous estimates are as follows: 4.1 per cent (75.91 kt CO₂ eq) in 2013; 4.4 per cent (72.52 kt CO₂ eq) in 2014; 4.3 per cent (69.12 kt CO₂ eq) in 2015; 4.4 per cent (65.85 kt CO₂ eq) in 2016; 4.4 per cent (65.90 kt CO₂ eq) in 2017; and 4.8 per cent (66.76 kt CO₂ eq) in 2018. The increase in the total national emissions excluding LULUCF in the second commitment period compared with the previous estimate is approximately 0.1 per cent for each year.</p> <p>The ERT recommends that the Party provide details of the methodology used to estimate CH₄ emissions from wastewater treatment by septic tanks and from wastewater discharge for the whole of Belgium (all three regions), and in particular for the Walloon Region, where a new methodology will be implemented for the 2021 annual submission, as indicated during the review.</p>	
KP-LULUCF			
KL.14	General (KP-LULUCF) – N/A	<p>Belgium did not report activities not elected under Article 3, paragraph 4, of the Kyoto Protocol in the second commitment period of the Kyoto Protocol, such as CM, GM, RV and WDR, in CRF table NIR-2, leaving the cells blank instead of reporting “NA”, although these activities were reported as “NA” in the 2018 and 2019 annual submissions. During the review, the Party clarified that this was due to a problem with the importation of an Excel file in CRF Reporter after the last correction.</p> <p>The ERT recommends that the Party report the correct notation key (“NA”) in CRF table NIR-2 for reporting activities not elected under Article 3, paragraph 4, of the Kyoto Protocol in the second commitment period of the Kyoto Protocol.</p>	Yes. KP reporting adherence
KL.15	General (KP-LULUCF) – N/A	<p>Belgium reported information on key categories analysis for KP-LULUCF in the NIR (section 1.5.2, p.38) but did not report key categories for KP-LULUCF in CRF table NIR-3. The ERT noted that this is not in accordance with the Kyoto Protocol Supplement (chap. 2.3.6, p.2.33). During the review, the Party clarified that no key categories for KP-LULUCF were encoded in CRF Reporter because bugs remain in the software.</p> <p>The ERT recommends that the Party provide the missing information on key categories in CRF table NIR-3 to improve the reporting on KP-LULUCF.</p>	Yes. KP reporting adherence
KL.16	N ₂ O emissions from N mineralization/immobilization due to carbon loss/gain	<p>For 2018, Belgium reported an area of 24.41 kha in CRF table 4(KP-1)A.1 for AR, which does not match the area of mineral soil (18.89 kha) in CRF table 4(KP-II)3. During the review, the Party clarified that for AR, only the Flemish Region has N₂O emissions from N mineralization/immobilization due to carbon loss/gain associated with land-use</p>	Yes. Transparency

<i>ID#</i>	<i>Finding classification</i>	<i>Description of the finding with recommendation or encouragement</i>	<i>Is finding an issue/problem?^a</i>
	associated with land-use conversion and management change in mineral soils – N ₂ O	conversions; thus only the area for the Flemish Region is reported in CRF table 4(KP-II)3 to accurately reflect the reported IEF. The ERT recommends that the Party transparently explain the reason for the difference in areas reported in CRF tables 4(KP-I)A.1 and 4(KP-II)3 in the NIR to ensure transparency of the inventory.	
KL.17	N ₂ O emissions from N mineralization/immobilization due to carbon loss/gain associated with land-use conversion and management change in mineral soils – N ₂ O	Belgium provided information on the method and parameters used for calculating N ₂ O emissions from N mineralization/immobilization due to carbon loss/gain associated with deforestation in the NIR (pp.294–295) and reported direct N ₂ O emissions from N mineralization for deforestation in CRF table 4(KP-II)3 but did not estimate and report indirect N ₂ O emissions from N mineralization. The ERT noted that there is no explanation in the NIR on estimating indirect N ₂ O emissions from leaching and run-off relating to N mineralization associated with loss of soil organic matter resulting from deforestation. The ERT also noted that according to the Kyoto Protocol Supplement (chap. 2.4.4.2, p.2.67), for lands under CM, GM, RV, WDR, deforestation and FM activities, which are under cropland and managed grassland use in the Convention reporting, direct and indirect N ₂ O emissions from N mineralization associated with loss of soil organic matter resulting from change of land use and management of mineral soils are reported under the agriculture sector. During the review, the Party explained that indirect N ₂ O emissions from N mineralization associated with loss of soil organic matter resulting from change of land use will be estimated for a land use other than cropland. The ERT recommends that the Party estimate indirect N ₂ O emissions from N mineralization for deforestation activity in accordance with the 2006 IPCC Guidelines (vol. 4, chap. 11.2.2.1, pp.11.19–11.20) and include the estimate in its annual submission.	Yes. Completeness

^a Recommendations made by the ERT during the review are related to issues as defined in para. 81 of the UNFCCC review guidelines or problems as defined in para. 69 of the Article 8 review guidelines.

VI. Application of adjustments

11. The ERT did not identify the need to apply any adjustments for the 2020 annual submission of Belgium.

VII. Accounting quantities for activities under Article 3, paragraph 3, and, if any, activities under Article 3, paragraph 4, of the Kyoto Protocol

12. Belgium elected commitment period accounting and therefore the issuance and cancellation of units for KP-LULUCF is not applicable to the 2020 review.

VIII. Questions of implementation

13. No questions of implementation were identified by the ERT during the individual review of the Party's 2020 annual submission.

Annex I

Overview of greenhouse gas emissions and removals and data and information on activities under Article 3, paragraphs 3–4, of the Kyoto Protocol, as submitted by Belgium in its 2020 annual submission

1. Tables I.1–I.4 provide an overview of the total GHG emissions and removals as submitted by Belgium.

Table I.1

Total greenhouse gas emissions for Belgium, base year^a–2018

(kt CO₂ eq)

	Total GHG emissions excluding indirect CO ₂ emissions		Total GHG emissions including indirect CO ₂ emissions ^b		Land-use change (Article 3.7 bis as contained in the Doha Amendment) ^c	KP-LULUCF (Article 3.3 of the Kyoto Protocol) ^d	KP-LULUCF (Article 3.4 of the Kyoto Protocol)	
	Total including LULUCF	Total excluding LULUCF	Total including LULUCF	Total excluding LULUCF			CM, GM, RV, WDR	FM
FMRL								–2 499.00
Base year	144 969.12	148 206.80	NA	NA	NA		NA	
1990	143 236.76	146 474.44	NA	NA				
1995	151 968.67	154 557.13	NA	NA				
2000	148 008.00	149 762.73	NA	NA				
2010	133 699.28	134 401.13	NA	NA				
2011	123 247.44	123 864.84	NA	NA				
2012	120 288.66	121 001.90	NA	NA				
2013	119 793.69	121 025.22	NA	NA		83.87	NA	–1 405.87
2014	114 076.77	115 288.30	NA	NA		85.32	NA	–1 381.59
2015	118 225.17	119 487.52	NA	NA		86.75	NA	–1 431.92
2016	117 213.35	118 238.29	NA	NA		278.85	NA	–1 404.70
2017	117 048.77	118 071.00	NA	NA		285.72	NA	–1 408.69
2018	117 507.87	118 522.50	NA	NA		292.61	NA	–1 408.17

Note: Emissions and removals reported in the sector other (sector 6) are not included in the total GHG emissions.

^a “Base year” refers to the base year under the Kyoto Protocol, which is 1990 for CO₂, CH₄ and N₂O, and 1995 for HFCs, PFCs, SF₆ and NF₃. Belgium has not elected any activities under Article 3, para. 4, of the Kyoto Protocol. For activities under Article 3, para. 3, of the Kyoto Protocol and FM under Article 3, para. 4, only the inventory years of the commitment period must be reported.

^b The Party did not report indirect CO₂ emissions in CRF table 6.

^c The value reported in this column relates to 1990.

^d Activities under Article 3, para. 3, of the Kyoto Protocol, namely AR and deforestation.

Table I.2

Greenhouse gas emissions by gas for Belgium, excluding land use, land-use change and forestry, 1990–2018(kt CO₂ eq)

	<i>CO₂^a</i>	<i>CH₄</i>	<i>N₂O</i>	<i>HFCs</i>	<i>PFCs</i>	<i>Unspecified mix of HFCs and PFCs</i>	<i>SF₆</i>	<i>NF₃</i>
1990	120 309.34	12 278.87	10 072.88	NA, NO	2 191.05	NA, NO	1 622.30	NA, NO
1995	125 956.47	12 229.27	10 825.70	491.42	2 914.29	NA, NO	2 140.00	NA, NO
2000	126 735.30	11 085.55	10 211.42	1 139.96	446.11	NA, NO	144.40	NA, NO
2010	114 561.03	8 879.63	7 587.12	3 162.31	104.77	NA, NO	104.95	1.32
2011	105 046.06	8 613.15	6 374.29	3 562.48	157.05	NA, NO	109.34	2.48
2012	102 428.75	8 471.53	6 306.83	3 566.96	115.32	NA, NO	111.39	1.12
2013	102 674.40	8 312.56	6 146.26	3 638.44	134.93	NA, NO	117.38	1.24
2014	96 811.32	8 191.49	6 181.75	3 879.29	128.44	NA, NO	95.33	0.69
2015	100 981.34	8 196.50	6 035.06	4 037.28	143.74	NA, NO	92.76	0.85
2016	99 806.94	8 167.04	5 762.55	4 001.37	402.74	NA, NO	96.94	0.71
2017	99 456.28	7 998.01	5 978.51	4 356.88	179.17	NA, NO	101.52	0.63
2018	100 207.84	7 915.49	5 702.29	4 469.84	131.32	NA, NO	95.08	0.65
Percentage change 1990– 2018	–16.7	–35.5	–43.4	NA	–94.0	NA	–94.1	NA

Note: Emissions and removals reported in the sector other (sector 6) are not included in this table.

^a Belgium did not report indirect CO₂ emissions in CRF table 6.

Table I.3

Greenhouse gas emissions by sector for Belgium, 1990–2018(kt CO₂ eq)

	<i>Energy</i>	<i>IPPU</i>	<i>Agriculture</i>	<i>LULUCF</i>	<i>Waste</i>	<i>Other</i>
1990	103 793.07	26 039.67	12 242.95	–3 237.68	4 398.75	NO
1995	107 735.61	29 937.92	12 320.99	–2 588.46	4 562.61	NO
2000	106 183.68	28 224.51	11 346.97	–1 754.72	4 007.57	NO
2010	99 540.94	22 057.62	10 215.88	–701.85	2 586.70	NO
2011	89 951.22	21 437.21	10 104.64	–617.40	2 371.77	NO
2012	89 139.87	19 689.87	9 884.87	–713.24	2 287.29	NO
2013	88 844.95	20 371.63	9 900.54	–1 231.53	1 908.10	NO
2014	82 846.80	20 605.13	10 108.29	–1 211.53	1 728.07	NO
2015	86 947.85	20 759.69	10 110.27	–1 262.35	1 669.70	NO

	<i>Energy</i>	<i>IPPU</i>	<i>Agriculture</i>	<i>LULUCF</i>	<i>Waste</i>	<i>Other</i>
2016	85 416.49	21 291.08	9 979.47	–1 024.94	1 551.25	NO
2017	85 142.03	21 263.93	10 104.92	–1 022.23	1 560.12	NO
2018	85 559.90	21 554.76	9 960.88	–1 014.62	1 446.96	NO
Percentage change 1990–2018	–17.6	–17.2	–18.6	–68.7	–67.1	NA

Notes: (1) Belgium did not report emissions or removals in the sector other (sector 6); (2) Belgium did not report indirect CO₂ emissions in CRF table 6.

Table I.4

Greenhouse gas emissions and removals from activities under Article 3, paragraphs 3–4, of the Kyoto Protocol by activity, base year^a–2018, for Belgium
(kt CO₂ eq)

	<i>Article 3.7 bis as contained in the Doha Amendment^b</i>	<i>Activities under Article 3.3 of the Kyoto Protocol</i>		<i>FM and elected activities under Article 3.4 of the Kyoto Protocol</i>				
	<i>Land-use change</i>	<i>AR</i>	<i>Deforestation</i>	<i>FM</i>	<i>CM</i>	<i>GM</i>	<i>RV</i>	<i>WDR</i>
FMRL				–2 499.00				
Technical correction				1 940.00				
Base year	NA				NA	NA	NA	NA
2013		–140.32	224.19	–1 405.87	NA	NA	NA	NA
2014		–137.74	223.06	–1 381.59	NA	NA	NA	NA
2015		–135.18	221.93	–1 431.92	NA	NA	NA	NA
2016		–139.04	417.90	–1 404.70	NA	NA	NA	NA
2017		–135.20	420.92	–1 408.69	NA	NA	NA	NA
2018		–131.35	423.96	–1 408.17	NA	NA	NA	NA
Percentage change base year–2018					NA	NA	NA	NA

Note: Values in this table include emissions from land subject to natural disturbances, if applicable.

^a Belgium has not elected to report on any activities under Article 3, para. 4, of the Kyoto Protocol. For activities under Article 3, para. 3, of the Kyoto Protocol, and FM under Article 3, para. 4, only the inventory years of the commitment period must be reported.

^b The value reported in this column relates to 1990.

2. Table I.5 provides an overview of key relevant data from Belgium's reporting under Article 3, paragraphs 3–4, of the Kyoto Protocol.

Table I.5

Key relevant data for Belgium under Article 3, paragraphs 3–4, of the Kyoto Protocol from its 2020 annual submission

<i>Parameter</i>	<i>Data values</i>
Periodicity of accounting	(a) AR: commitment period accounting (b) Deforestation: commitment period accounting (c) FM: commitment period accounting (d) CM: not elected (e) GM: not elected (f) RV: not elected (g) WDR: not elected
Elected activities under Article 3, paragraph 4, of the Kyoto Protocol	None
Election of application of provisions for natural disturbances	Yes, for FM
3.5% of total base-year GHG emissions, excluding LULUCF	5 173.388 kt CO ₂ eq (41 387.106 kt CO ₂ eq for the duration of the commitment period)
Cancellation of AAUs, CERs and ERUs and/or issuance of RMUs in the national registry for:	
1. AR	NA
2. Deforestation	NA
3. FM	NA

Annex II

Information to be included in the compilation and accounting database

Tables II.1–II.6 include the information to be included in the compilation and accounting database for Belgium. Data shown are from the Party's annual submission, including the latest revised estimates submitted, adjustments (if applicable) and the final data to be included in the compilation and accounting database.

Table II.1

Information to be included in the compilation and accounting database for 2018, including on the commitment period reserve, for Belgium (t CO₂ eq)

	<i>Original submission</i>	<i>Revised estimate</i>	<i>Adjustment</i>	<i>Final</i>
CPR	525 805 662	–	–	525 805 662
Annex A emissions				
CO ₂	100 207 836	–	–	100 207 836
CH ₄	7 848 735	7 915 493	–	7 915 493
N ₂ O	5 702 287	–	–	5 702 287
HFCs	4 469 837	–	–	4 469 837
PFCs	131 321	–	–	131 321
Unspecified mix of HFCs and PFCs	NO, NA	–	–	NO, NA
SF ₆	95 076	–	–	95 076
NF ₃	646	–	–	646
Total Annex A sources	118 455 738	–	–	118 522 495
Activities under Article 3, paragraph 3, of the Kyoto Protocol				
AR	–131 348	–	–	–131 348
Deforestation	423 957	–	–	423 957
FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol				
FM	–1 408 166	–	–	–1 408 166

Table II.2

Information to be included in the compilation and accounting database for 2017 for Belgium (t CO₂ eq)

	<i>Original submission</i>	<i>Revised estimate</i>	<i>Adjustment</i>	<i>Final</i>
Annex A emissions				
CO ₂	99 456 275	–	–	99 456 275
CH ₄	7 932 116	7 998 014	–	7 998 014
N ₂ O	5 978 512	–	–	5 978 512
HFCs	4 356 879	–	–	4 356 879
PFCs	179 174	–	–	179 174
Unspecified mix of HFCs and PFCs	NO, NA	–	–	NO, NA
SF ₆	101 521	–	–	101 521
NF ₃	627	–	–	627
Total Annex A sources	118 005 105	–	–	118 071 003
Activities under Article 3, paragraph 3, of the Kyoto Protocol				
AR	–135 195	–	–	–135 195
Deforestation	420 917	–	–	420 917
FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol				
FM	–1 408 686	–	–	–1 408 686

Table II.3

Information to be included in the compilation and accounting database for 2016 for Belgium(t CO₂ eq)

	<i>Original submission</i>	<i>Revised estimate</i>	<i>Adjustment</i>	<i>Final</i>
Annex A emissions				
CO ₂	99 806 944	—	—	99 806 944
CH ₄	8 101 187	8 167 042	—	8 167 042
N ₂ O	5 762 549	—	—	5 762 549
HFCs	4 001 367	—	—	4 001 367
PFCs	402 737	—	—	402 737
Unspecified mix of HFCs and PFCs	NO, NA	—	—	NO, NA
SF ₆	96 937	—	—	96 937
NF ₃	715	—	—	715
Total Annex A sources	118 172 436	—	—	118 238 291
Activities under Article 3, paragraph 3, of the Kyoto Protocol				
AR	–139 045	—	—	–139 045
Deforestation	417 898	—	—	417 898
FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol				
FM	–1 404 703	—	—	–1 404 703

Table II.4

Information to be included in the compilation and accounting database for 2015 for Belgium(t CO₂ eq)

	<i>Original submission</i>	<i>Revised estimate</i>	<i>Adjustment</i>	<i>Final</i>
Annex A emissions				
CO ₂	100 981 344	—	—	100 981 344
CH ₄	8 127 371	8 196 495	—	8 196 495
N ₂ O	6 035 059	—	—	6 035 059
HFCs	4 037 277	—	—	4 037 277
PFCs	143 737	—	—	143 737
Unspecified mix of HFCs and PFCs	NO, NA	—	—	NO, NA
SF ₆	92 756	—	—	92 756
NF ₃	850	—	—	850
Total Annex A sources	119 418 394	—	—	119 487 518
Activities under Article 3, paragraph 3, of the Kyoto Protocol				
AR	–135 176	—	—	–135 176
Deforestation	221 926	—	—	221 926
FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol				
FM	–1 431 924	—	—	–1 431 924

Table II.5

Information to be included in the compilation and accounting database for 2014 for Belgium(t CO₂ eq)

	<i>Original submission</i>	<i>Revised estimate</i>	<i>Adjustment</i>	<i>Final</i>
Annex A emissions				
CO ₂	96 811 323	—	—	96 811 323
CH ₄	8 118 958	8 191 486	—	8 191 486
N ₂ O	6 181 750	—	—	6 181 750
HFCs	3 879 291	—	—	3 879 291
PFCs	128 436	—	—	128 436
Unspecified mix of HFCs and PFCs	NO, NA	—	—	NO, NA
SF ₆	95 326	—	—	95 326

	<i>Original submission</i>	<i>Revised estimate</i>	<i>Adjustment</i>	<i>Final</i>
NF ₃	690	—	—	690
Total Annex A sources	115 215 773	—	—	115 288 301
Activities under Article 3, paragraph 3, of the Kyoto Protocol				
AR	–137 743	—	—	–137 743
Deforestation	223 059	—	—	223 059
FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol				
FM	–1 381 587	—	—	–1 381 587

Table II.6

Information to be included in the compilation and accounting database for 2013 for Belgium(t CO₂ eq)

	<i>Original submission</i>	<i>Revised estimate</i>	<i>Adjustment</i>	<i>Final</i>
Annex A emissions				
CO ₂	102 674 404	—	—	102 674 404
CH ₄	8 236 656	8 312 564	—	8 312 564
N ₂ O	6 146 265	—	—	6 146 265
HFCs	3 638 439	—	—	3 638 439
PFCs	134 926	—	—	134 926
Unspecified mix of HFCs and PFCs	NO, NA	—	—	NO, NA
SF ₆	117 383	—	—	117 383
NF ₃	1 242	—	—	1 242
Total Annex A sources	120 949 314	—	—	121 025 222
Activities under Article 3, paragraph 3, of the Kyoto Protocol				
AR	–140 317	—	—	–140 317
Deforestation	224 190	—	—	224 190
FM and elected activities under Article 3, paragraph 4, of the Kyoto Protocol				
FM	–1 405 869	—	—	–1 405 869

Annex III

Additional information to support findings in table 2

Missing categories that may affect completeness

The categories for which estimation methods are included in the 2006 IPCC Guidelines that were reported as “NE” or for which the ERT otherwise determined that there may be an issue with the completeness of the reporting in the Party’s inventory are the following:

- (a) 1.A.3.b.iii heavy-duty trucks and buses (N₂O) (see ID# E.16 in table 5);
- (b) 1.A.3.b.iii heavy-duty trucks and buses (CO₂ and CH₄) (see ID# E.17 in table 5);
- (c) 2.C.5 lead production (CO₂) (see ID# I.9 in table 3);
- (d) 2.A.4 other process uses of carbonates (CO₂) (see ID# I.19 in table 5);
- (e) 2.B.8 petrochemical and carbon black production (CO₂ and CH₄) (see ID# I.21 in table 5);
- (f) 4(III) direct N₂O emissions from N mineralization/immobilization (N₂O) (see ID# L.18 in table 5);
- (g) AR (CO₂) (see ID# KL.8 in table 3);
- (h) N₂O emissions from N mineralization/immobilization due to carbon loss/gain associated with land-use conversion and management change in mineral soils (N₂O) (see ID# KL.17 in table 5).

Annex IV

Reference documents

A. Reports of the Intergovernmental Panel on Climate Change

IPCC. 2006. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. S Eggleston, L Buendia, K Miwa, et al. (eds.). Hayama, Japan: Institute for Global Environmental Strategies. Available at <http://www.ipcc-nggip.iges.or.jp/public/2006gl>.

IPCC. 2014. *2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol*. T Hiraishi, T Krug, K Tanabe, et al. (eds.). Hayama, Japan: Institute for Global Environmental Strategies. Available at <https://www.ipcc.ch/publication/2013-revised-supplementary-methods-and-good-practice-guidance-arising-from-the-kyoto-protocol/>.

IPCC. 2014. *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*. T Hiraishi, T Krug, K Tanabe, et al. (eds.). Geneva: IPCC. Available at <https://www.ipcc.ch/publication/2013-supplement-to-the-2006-ipcc-guidelines-for-national-greenhouse-gas-inventories-wetlands/>.

IPCC. 2003. *Good Practice Guidance for Land Use, Land-Use Change and Forestry*. J Penman, M Gytarsky, T Hiraishi, et al. (eds.). Hayama, Japan: Institute for Global Environmental Strategies. Available at <https://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.html>.

B. UNFCCC documents

Annual review reports

Reports on the individual reviews of the 2013, 2014, 2015, 2016 and 2018 annual submissions of Belgium, contained in documents FCCC/ARR/2013/BEL, FCCC/ARR/2014/BEL, FCCC/ARR/2015/BEL, FCCC/ARR/2016/BEL and FCCC/ARR/2018/BEL, respectively.

Other

Aggregate information on greenhouse gas emissions by sources and removals by sinks for Parties included in Annex I to the Convention. Note by the secretariat. Available at https://unfccc.int/sites/default/files/resource/AGI%202020_final.pdf.

Annual status report for Belgium for 2020. Available at https://unfccc.int/sites/default/files/resource/asr2020_BEL.pdf.

C. Other documents used during the review

Responses to questions during the review were received from Olivier Biernaux (Belgian Interregional Environment Agency), including additional material on the methodology and assumptions used. The following reference has been reproduced as received:

EEA. 2019. *EMEP/EEA air pollutant emission inventory guidebook 2019*. Luxembourg: Publications Office of the European Union. Available at <https://www.eea.europa.eu/publications/emep-eea-guidebook-2019>.