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Report on the individual review of the annual submission of the Netherlands submitted in 2015*

Note by the expert review team

Summary

Each Party included in Annex I to the Convention must submit an annual greenhouse gas (GHG) inventory covering emissions and removals of GHG emissions 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 required 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 inventory review of the 2015 annual submission of the Netherlands, 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 19 to 24 September 2016 in Bonn, Germany.

* In the symbol for this document, 2015 refers to the year in which the inventory was submitted, not to the year of publication.

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Contents

I. Introduction[1]

1. This report covers the review of the 2015 annual submission of the Netherlands organized by the UNFCCC secretariat, in accordance with the "Guidelines for review under Article 8 of the Kyoto Protocol" (decision 22/CMP.1, as revised by decision 4/CMP.11) (hereinafter referred to as the Article 8 review guidelines). As indicated in the Article 8 review guidelines, this review process also encompasses the review under the Convention, as described in the "Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention" (hereinafter referred to as the UNFCCC review guidelines) and particularly part III, "UNFCCC guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention". The review took place from 19 to 24 September 2016 in Bonn, Germany, and was coordinated by Ms. Kyoko Miwa (UNFCCC secretariat). Table 1 provides information on the composition of the expert review team (ERT) that conducted the review of the Netherlands.

Table 1
Composition of the expert review team that conducted the review of the Netherlands

Area of expertise	*Name*	*Party*
Generalist	Mr. Mikhail Gitarskiy	Russian Federation
	Ms. Batima Punsalmaa	Mongolia
Energy	Mr. Christo Christov	Bulgaria
	Mr. Amit Garg	India
	Ms. Brooke Elizabeth Perkins	Australia
IPPU	Mr. Samir Tantawi	Egypt
	Mr. David Glen Thistlethwaite	United Kingdom of Great Britain and Northern Ireland
Agriculture	Ms. Oksana Butrym	Ukraine
	Ms. Hongmin Dong	China
	Mr. Fredrick Kossam	Malawi
LULUCF	Ms. Rehab Ahmed Hassan	Sudan
	Ms. Esther Mertens	Belgium
	Mr. Koki Okawa	Japan
	Mr. Lucio Santos	Colombia
Waste	Mr. Pavel Gavrilita	Republic of Moldova

[1] At the time of publication of this report, the Netherlands had not yet submitted its instrument of ratification of the Doha Amendment, and the amendment had not yet entered into force. The implementation of the provisions of the Doha Amendment is therefore considered in this report in the context of decision 1/CMP.8, paragraph 6, pending the entry into force of the amendment.

Area of expertise	*Name*	*Party*
	Mr. Hiroyuki Ueda	Japan
Lead reviewers	Mr. Mikhail Gitarskiy	
	Ms. Batima Punsalmaa	

Abbreviations: IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry.

2. This report contains findings based on the assessment by the ERT of the 2015 annual submission against the Article 8 review guidelines. The ERT has made recommendations to resolve those findings related to issues,[2] including issues related to problems.[3] Other findings, and if applicable, the ERT's encouragements to resolve them, are also included.

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

4. Annex I shows annual greenhouse gas emissions for the Netherlands, including totals excluding and including the land use, land-use change and forestry sector, indirect carbon dioxide emissons and emissions by gas and by sector. Annex I also contains background data related to emissions and removals from activities under Article 3, paragraph 3, forest management under Article 3, paragraph 4, and additional activities under Article 3, paragraph 4, of the Kyoto Protocol, if elected, by gas, sector and activity for the Netherlands.

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

6. The ERT notes that the Netherlands' 2015 annual submission was delayed, consistent with decision 6/CMP.9, paragraph 4. As a result, the review of the 2015 annual submission is being held in conjunction with the review of the 2016 annual submission, in accordance with decision 10/CMP.11, paragraph 1. To the extent that identical information is presented in both annual submissions, the ERT has reviewed this information only once, and, as appropriate, has replicated the findings below in both the 2015 and the 2016 annual review report.

II. Summary and general assessment of the 2015 annual submission

7. Table 2 provides the ERT assessment of the 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 below.

[2] Issues are defined in decision 13/CP.20, annex, paragraph 81.

[3] Problems are defined in decision 22/CMP.1, annex, paragraphs 68 and 69, as revised by decision 4/CMP.11.

Table 2
Summary of review results and general assessment of the inventory of the Netherlands

Assessment				*Issue or problem ID #(s) in tables 3 and/or 5*[a]
Dates of submission	Original submission: 15 June 2016 (NIR), 15 June 2016, version 5 (CRF tables), 14 April 2016 (2014 and 2015 SEF tables) Revised submission: 7 February 2017, version 3 (CRF tables) The values from the latest submission are used in this report			
Review format	Centralized			
Application of the requirements of the UNFCCC Annex I inventory reporting guidelines and Wetlands Supplement (if applicable)	Have any issues been identified in the following areas:			
	1.	Identification of key categories	Yes	
	2.	Selection and use of methodologies and assumptions	Yes	E.15, I.16, I.22, L.2, L.3, L4
	3.	Development and selection of emission factors	Yes	E.21, I.13, W.10
	4.	Collection and selection of activity data	Yes	E.10, E.17, I.11, I.13, I.14, L.5, L.6, L.8, L.9, L.10
	5.	Reporting of recalculations	Yes	I.7
	6.	Reporting of a consistent time series	Yes	W.11
	7.	Reporting of uncertainties, including methodologies	Yes	G.4, G.5
	8.	QA/QC	QA/QC procedures were assessed in the context of the national system (see below)	
	9.	Missing categories/completeness[b]	Yes	L.1, L.2, L.3, W.12
	10.	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?		No	
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 the Kyoto Protocol	Have any issues been identified in the following areas:			
	1.	National system:		
		(a) The 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	
	2.	National registry:		

Assessment			*Issue or problem ID #(s) in tables 3 and/or 5[a]*
	(a) Overall functioning of the national registry	No	
	(b) Performance of the functions of the national registry and the technical standards for data exchange	No	
	3. ERUs, CERs, AAUs and RMUs and on information on discrepancies reported in accordance with decision 15/CMP.1, annex, chapter I.E, taking into consideration any findings or recommendations contained in the SIAR	No	
	4. Matters related to Article 3, paragraph 14, of the Kyoto Protocol, specifically problems related to the transparency, completeness or timeliness of reporting on the Party's activities related to the priority actions listed in decision 15/CMP.1, annex, paragraph 24, including any changes since the previous annual submission	No	
	5. LULUCF activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol:		
	(a) Reporting in accordance with the requirements of decision 2/CMP.8, annex II, paragraphs 1–5	Yes	KL.2, KL.6
	(b) The Party has demonstrated methodological consistency between the reference level and reporting on forest management in accordance with decision 2/CMP.7, annex, paragraph 14	Yes	KL.6
	(c) The Party has reported information in accordance with decision 6/CMP.9	No	
	(d) The Party plans to apply the provisions for natural disturbances to afforestation and reforestation	No	
	(e) The Party plans to apply the provisions for natural disturbances to forest management	No	
	(f) Country-specific information has been reported to support provisions for natural disturbances, in accordance with decision 2/CMP.7, annex, paragraphs 33 and 34	Yes	KL.6
	(g) Other issues	No	
CPR	Was the CPR reported in accordance with the annex to decision 18/CP.7, the annex to decision 11/CMP.1 and decision 1/CMP.8, paragraph 18?	No	G.8
Adjustments	Has the ERT applied an adjustment under Article 5, paragraph 2, of the Kyoto Protocol?	No	
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 the assessment of conformity with the UNFCCC Annex I inventory reporting guidelines and any	Yes	

Assessment			*Issue or problem ID #(s) in tables 3 and/or 5[a]*
	further guidance adopted by the Conference of the Parties?		
Recommendation for an exceptional in-country review	On the basis of the issues identified, does the ERT recommend that the next[c] review be conducted as an in-country review?	Yes	Please refer to annex III to this document for a list of questions and issues to be considered during this in-country review
Questions of implementation	Did the ERT list a question of implementation?	No	

Abbreviations: AAU = assigned amount unit, CER = certified emission reduction, CPR = commitment period reserve, CRF = common reporting format, ERT = expert review team, ERU = emission reduction unit, LULUCF = land use, land-use change and forestry, NA = not applicable, NIR = national inventory report, QA/QC = quality assurance/quality control, RMU = removal unit, SEF = standard electronic format, SIAR = standard independent assessment report, 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", Wetlands Supplement = *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*.

[a] The ERT identified additional issues in the general, industrial processes and product use, agriculture, LULUCF and waste sectors, as well as for LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol that are not specifically listed in table 2 but are included in table 3 and/or 5.

[b] Missing categories, for which methods are provided in the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*, may affect completeness and are listed in annex III to this document.

[c] Owing to the timing of the review of the 2015 annual submission, "next" in this context refers to the review of the 2017 annual submission.

III. Status of implementation of issues and/or problems raised in the previous review report

8. Table 3 compiles all the recommendations made in the previous review report, published on 10 December 2014. For each issue and/or problem, the ERT specified whether it believes the issue and/or problem has been resolved by the conclusion of the review of the 2015 annual submission and provided the rationale for its determination, taking into consideration the publication date of the previous review report and national circumstances.

Table 3
Status of implementation of issues and/or problems raised in the previous review report of the Netherlands

ID#	*Issue and/or problem classification[a,b]*	*Recommendation made in previous review report*	*ERT assessment and rationale*
General			
G.1	Inventory management (14, 2014) Transparency	Include additional information in the NIR regarding the quality management system, particularly information on the archiving process, including the Oracle database system and ISO 9001 quality management systems	Resolved. In the NIR, sections 1.2.3.2 and 1.2.3.3 on QA/QC and verification for the CRF tables and the NIR include a description of the data storage system and its inclusion in the ISO 9001 quality management system.

ID#	*Issue and/or problem classification*[a,b]	*Recommendation made in previous review report*	*ERT assessment and rationale*
			The enhancement of data archiving is ongoing
G.2	National registry (67, 2014) (80, 2013) Transparency	Include in the annual submission information on any discrepancy that has been identified by the ITL relating to transactions initiated by the Party in accordance with decision 22/CMP.1, annex, paragraph 88(j)	Resolved. The information on accounting of Kyoto Protocol units has been provided in chapter 12 of the NIR
Energy			
E.1	1. General (energy sector) – all fuels – CO_2, CH_4 and N_2O (19, 2014) (23, 2013) Consistency*	Improve the QC procedures to ensure that all the information provided in the CRF tables and the NIR is consistent (e.g. regarding the methods used to estimate CO_2 emissions from manufacture of solid fuels and other energy industries)	Addressing. The Party has included an elaborated description of its QA/QC procedures in the NIR (section 1.2.3.2, p. 36). However, the ERT noted several discrepancies between the CRF tables and the NIR. The ERT also noted that the Party has indicated in the NIR (p.42) the difficulties encountered in using the new CRF Reporter tool, explaining that, as the CRF Reporter software was still not fully fit for purpose during the compilation of the NIR, the QA/QC process was hampered and the process of preparing the NIR was delayed
E.2	1. General (energy sector) – all fuels – CO_2, CH_4 and N_2O (20, 2014) Transparency	Provide a clearer indication of the origin of its EFs in future NIRs	Resolved. In the NIR, section 3.2.4.2 on methodological issues (pp. 79–82) and the table in annex 5 (pp. 308–312) provide tables of EFs and their sources (i.e. default or country-specific). The Party states that: the country-specific CO_2 EFs for fuels are sourced from the Netherlands Enterprise Agency: the CH_4 EFs are from Scheffer and Jonker[c] and ENINA[d]; and the IPCC defaults were used for N_2O EFs. (See also ID# E.7 in table 5)
E.3	1. General (energy sector) – all fuels	Provide information on the verification process performed using EU ETS data	Resolved. The Party addressed this

ID#	*Issue and/or problem classification*[a,b]	*Recommendation made in previous review report*	*ERT assessment and rationale*
	– CO_2, CH_4 and N_2O (21, 2014) Transparency		recommendation by providing information in the NIR (section 3.2.4.4 on category-specific QA/QC and verification), and by providing a reference, i.e. methodologies report, ENINA[e]
E.4	1.A.1.a Public electricity and heat production – liquid fuels – CO_2 (27, 2014) (31, 2013)(47, 2012) Transparency	Provide a more transparent description, including additional information on the AD and EF used, to justify the low value of the CO_2 IEF in the NIR	Resolved. The Party provided a more elaborated description in the NIR, section 3.2.4.1 (category description)
E.5	1.A.3.e Other transportation – gaseous fuels – CO_2, CH_4 and N_2O (22, 2014) Adherence to UNFCCC Annex I inventory reporting guidelines	Correct the notation key in the fuel consumption row for gaseous fuels under the other transportation category from "IE" to "NO"	Resolved. CRF table 1.A(a)s3 reports "NO" for fuel consumption
E.6	1.B.2.b Natural gas – gaseous fuels – CO_2 (29, 2014) Consistency	Report on the progress made to develop a revised time series for CO_2 emissions from natural gas transmission	Resolved. The consistency of the time series was ensured by applying the recalculation of the whole time series for 1.B.2.b.4 (natural gas transmission), which was made by implementing new data (derived from direct measurement) obtained through the Leak Detection and Repair programme of Gasunie (see p. 119 of the NIR 2014). See also ID# E.21 in table 5
IPPU			
I.1	2.F. Product uses as substitutes for ozone depleting substances – HFCs, PFCs and SF_6 (33, 2014) (43, 2013)	Ensure the consistency of the information reported in the NIR and CRF tables for potential emissions of HFCs, PFCs and SF_6 for the period 1990–2011	No longer relevant. The issue refers to reporting on potential F-gas emissions, which is no longer relevant under the

ID#	*Issue and/or problem classification*[a,b]	*Recommendation made in previous review report*	*ERT assessment and rationale*
	Consistency		UNFCCC Annex I inventory reporting guidelines
I.2	2.F. Product uses as substitutes for ozone depleting substances – HFCs and SF_6 (34, 2014) Adherence to UNFCCC Annex I inventory reporting guidelines	Improve the QC procedures to ensure the consistency of the information reported in the NIR (table 4.7) and the CRF tables 2(I)	Resolved. The two issues in the CRF tables regarding F-gases noted in the previous review report (FCCC/ARR/2014/NLD) are now resolved
I.3	2.F.1 Refrigeration and air conditioning – HFCs (32, 2014) Comparability	Change the notation keys "NA", "NE" and "NO" to "C" in the reporting of the AD and IEFs for emissions from stocks in industrial refrigeration and mobile air conditioning	Resolved. The Party now reports all data on stocks in 2.F.1, and did not use notation keys
I.4	2.G.1 Electrical equipment – SF_6 (36, 2014) Transparency	Include information on the method used for time-series consistency	Resolved. The Party has added text to clarify the method used to ensure time-series consistency for this source
I.5	2.H Other (industrial processes and product use) – CO_2 (35, 2014) Comparability	Change the notation key "NA" to "C" when reporting the AD and IEFs for food and drink	Resolved. The activity data and IEF for CO_2 emissions for the subcategory 2.H.2 food and drink are now reported as "C"
Agriculture			
A.1	3.A.1 Cattle – CH_4 (39, 2014) (49, 2013) Transparency*	Include information on the key parameters (weight, milk production, feed intake, diet composition) in the NIR and in CRF table 4.A	Resolved. Table 5.4 of the NIR (p. 163) includes the information about milk production (kg milk/cow/year) only
A.2	3.B Manure management – CH_4 and N_2O (41, 2014) (52, 2013) Accuracy*	Continue and enhance efforts to improve the consistency between the CH_4 and N_2O emission estimates, and report correct values for the fractions of the different manure management systems in the NIR and the CRF tables	Addressing. CRF tables 3.B(a)s2 and 3.B.(b) include information about manure management systems, but there is no information in the NIR
A.3	3.B.4 Other livestock – CH_4 (40, 2014) (54, 2013) Adherence to UNFCCC Annex I	Correct the notation key CH_4 emissions from manure management for buffalos to "NO"	Resolved. The NIR (section 5.3.1, p. 165) explains that the notation key "NO" has been used because buffalos do not occur in the Netherlands

ID#	*Issue and/or problem classification*[a,b]	*Recommendation made in previous review report*	*ERT assessment and rationale*
	inventory reporting guidelines		
A.4	3.D.a Direct N_2O emissions from managed soils – N_2O (42, 2014) Transparency*	Include the method and related parameters used to derive the country-specific N excretion and $Frac_{GRAZ}$	Not resolved. In response to a question raised by the ERT during the review, the Netherlands submitted additional material[e,f] that includes the description of methodology approaches, including soil management, EFs and supporting references
LULUCF			
L.1	4. General (LULUCF) (table 3, 2014) (59, 2013) (120–123, 2012) Completeness*	Obtain the data and report the estimates for all mandatory categories (currently reported as "NE") for which methodologies and EFs are available: (a) CSCs in living biomass (losses) in forest land remaining forest land (TOF); (b) CSCs in DOM in land converted to forest land; (c) CSCs in organic soils in forest land remaining forest land and land converted to forest land; (d) CSCs in living biomass (losses) in wetlands, settlements and other land converted to forest land; (e) CSCs in living biomass in cropland remaining cropland; (f) CSCs in DOM in forest land (TOF), grassland, wetlands, settlements and other land converted to cropland; (g) CSCs in living biomass (losses) in wetlands, settlements and other land converted to cropland; (h) CSCs in organic soils in land converted to cropland; (i) CSCs in living biomass and soils (subdivision "Nature") in grassland remaining grassland; (j) CSCs in DOM in forest land (TOF), cropland, wetlands, settlements and other land converted to grassland; (k) CSCs in organic soils in land converted to grassland; (l) CSCs in living biomass (losses) in wetlands, settlements and other land converted to grassland; (m) CSCs in living biomass (gains) in land converted to wetlands; (n) CSCs in living biomass (losses) in settlements and other land converted to wetlands;	Addressing. The HWP category and the organic content for the remaining soils in the regions with former organic soil have been estimated and reported The following mandatory categories are still reported as "NE": (a) CSCs in living biomass (gains and losses) under cropland remaining cropland; (b) CSCs in DOM under land converted to cropland, except for forest land converted to cropland; (c) CSCs in living biomass (losses) under wetlands, settlements and other land converted to cropland; (d) CSCs in DOM under cropland, wetlands, settlements and other land converted to grassland; (e) CSCs in living biomass (losses) under wetlands, settlements and other land converted to grassland; (f) CSCs in living biomass (gains) under land converted to other wetlands; (g) CSCs in living biomass (gains) under land converted to settlements; (h) CSCs in living biomass (losses) under wetlands and

ID#	Issue and/or problem classification[a,b]	Recommendation made in previous review report	ERT assessment and rationale
		(o) CSCs in living biomass (gains) in land converted to settlements; (p) CSCs in living biomass (losses) in wetlands and other land converted to settlements; (q) CSCs in living biomass (gains) in land converted to other land; (r) CSCs in living biomass (losses) in wetlands and settlements converted to other land	other land converted to settlements; (i) CSCs in living biomass (gains) under land converted to other land; (j) CSCs in DOM under land converted to settlements, except for forest land converted to settlements; (k) CSCs in DOM under cropland, grassland, wetlands and settlements converted to other land
L.2	4.C.1 Grassland remaining grassland – CO_2 (45, 2014) (60, 2013) (83, 2012) Completeness*	Obtain the data and report the estimates for the carbon pools (living biomass and DOM) reported as "NE", for which methods and EFs are available	Addressing. The Netherlands currently uses the tier 1 approach, which assumes that carbon stocks in living biomass, DOM and litter are at equilibrium in most of grassland remaining grassland
Waste			
W.1	5. General (waste) (51, 2014) Adherence to UNFCCC Annex I inventory reporting guidelines	Enhance the QC procedures to prevent inconsistencies between the CRF tables and the NIR (e.g. for total emissions from the waste sector and for total organic product in industrial wastewater) and typographical errors for incidental venting of CH_4 in wastewater handling	Resolved
W.2	5.A Solid waste disposal on land – CH_4 (52, 2014) Transparency*	Include important AD, such as the amount and composition of disposed waste, in the NIR	Not resolved. Important AD, such as the amount and composition of disposed waste, are not included in the NIR
W.3	5.B. Biological treatment of solid waste – CH_4 and N_2O (56, 2014) Transparency*	Report a complete time series of AD of separately collected organic waste from households for CH_4 and N_2O emissions from composting and digesting for the period 2009–2012	Not resolved. AD for composting and digestion are reported as "NO" in CRF table 5.B even though emissions are reported from composting/municipal solid waste. The AD are not included in the NIR
W.4	5.D.1 Domestic wastewater – CH_4 (54, 2014) Adherence to UNFCCC Annex I inventory reporting	Improve the QC procedures to ensure the consistency of the information on the EFs used for the calculations and reported in the NIR when compared with the Monitoring Protocols (for CH_4 emissions from sludge fermenters in communal wastewater treatment plants)	Resolved. The information provided in the NIR and the Monitoring Protocols is consistent suggesting that QC procedured have been improved

ID#	*Issue and/or problem classification*[a,b]	*Recommendation made in previous review report*	*ERT assessment and rationale*
	guidelines		
W.5	5.D.2 Industrial wastewater – CH_4 (55, 2014) Adherence to UNFCCC Annex I inventory reporting guidelines	Change the notation key to "NE" in case no estimate of the recovered methane is available	Resolved. The notation key for recovery in industrial wastewater is reported as "NE"
W.6	5.D.2 Industrial wastewater – CH_4 (55, 2014) Accuracy*	Provide an numerical estimate of the recovered methane in anaerobic industrial wastewater treatment plants	Not resolved. Recovered methane in anaerobic industrial wastewater treatment plants is reported as "NE"
KP-LULUCF			
KL.1	Biomass burning – CO_2, CH_4, N_2O (62, 2014) Transparency	Enhance the QC procedures to identify inconsistencies in the reporting of emissions from biomass burning under afforestation and reforestation between table NIR1 and table 5(KP-II)5	Resolved. Reporting in CRF tables NIR-1 and 4(KP-II)4 is consistent

Abbreviations: AD = activity data, C = confidential, CRF = common reporting format, CSC = carbon stock changes, DOM = dead organic matter, EF = emission factor, ERT = expert review team, EU ETS = European Union Emissions Trading System, F-gas = fluorinated gas, $Frac_{GRAZ}$ = fraction of livestock nitrogen excreted and deposited onto soil during grazing, HWP = harvested wood products, IE = included elsewhere, IEF = implied emission factor, IPCC = Intergovernmental Panel on Climate Change, IPPU = industrial processes and product use, ISO = International Organization for Standardization, ITL = international transaction log, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, N = nitrogen, NA = not applicable, NE = not estimated, NIR = national inventory report, NO = not occurring, QA/QC = quality assurance/quality control, TOF = trees outside forests, 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", 2006 IPCC Guidelines = *2006 IPCC Guidelines for National Greenhouse Gas Inventories*.

[a] References in parentheses are to the paragraph(s) and the year(s) of the previous review report(s) where the issue was raised. Issues are further classified as defined in decision 13/CP.20, annex, paragraph 81. In the review of the supplementary information reported in accordance with Article 7, paragraph 1, of the Kyoto Protocol, the ERT has applied the classification in decision 22/CMP.1, annex, paragraph 69, in conjunction with decision 4/CMP.11.

[b] An asterisk is included next to each issue type for all issues that are also problems, as defined in decision 22/CMP.1, annex, paragraphs 68 and 69, including those that lead to an adjustment or a question of implementation.

[c] Scheffer CB and Jonker WJ. 1997. *Uittreksel van interne TNO-handleiding voor het vaststellen van verbrandingsemissies*, herziening January 1997 (in Dutch).

[d] ENINA. 2016. *Methodology Report on the Calculation of Emissions to Air from the Sectors Energy, Industry and Waste*. RIVM Report 2016-0055.

[e] Vonk J, Bannink A, van Bruggen C, Groenestein CM, Huijsmans JFM, van der Kolk JWH, Luesink HH, Oude Voshaar SV, van der Sluis SM and Velthof GL. 2015. *Methodology for Estimating Emissions from Agriculture in the Netherlands. Calculations of CH_4, NH_3, N_2O, NOx, PM10, PM2.5 and CO_2 with the National Emission Model for Agriculture (NEMA)*. WOT Nature and Environment, Wageningen, the Netherlands.

IV. Issues identified in three 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 included in table 4 have been identified in three successive reviews,

including the review of the 2015 annual submission of the Netherlands, and have not been addressed by the Party.

Table 4
Issues identified in three successive reviews and not addressed by the Netherlands

ID#[a]	*Previous recommendation for the issue identified*	*Number of successive reviews issue not addressed*
General		
	No such general issues were identified	
Energy		
	No such issues for the energy sector were identified	
IPPU		
	No such issues for the IPPU sector were identified	
Agriculture		
	No such issues for the agriculture sector were identified	
LULUCF		
L.1*	Obtain the data and report the estimates for all mandatory categories (currently reported as "NE") for which methodologies and EFs are available	4 (2012–2015/2016)
L.2*	Obtain the data and report the estimates for the carbon pools (living biomass and dead organic matter under grassland remaining grassland) reported as "NE", for which methods and EFs are available	4 (2012–2015/2016)
Waste		
	No such issues for the waste sector were identified	
KP-LULUCF		
	No such issues for KP-LULUCF activities were identified	

Abbreviations: EF = emission factor, IPPU = industrial processes and product use, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NE = not estimated, NIR = national inventory report.

[a] An asterisk is included after any issue ID# where the underlying issue is related to accuracy or completeness of a key category, a missing category or a potential key category, as indicated in decision 13/CP.20, annex, paragraph 83.

V. Additional findings made during the 2015 technical review

10. Table 5 contains findings made by the ERT during the technical review of the 2015 annual submission of the Netherlands that are additional to those identified in table 3 above.

Table 5

Additional findings made during the 2015 technical review of the annual submission of the Netherlands [a]

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and/or a problem[c]? If yes, classify by type*
General			
G.3	Key category analysis	The ERT noted that, in annex I to the NIR, the outcomes of the key category analysis are presented not in accordance with paragraph 39 of the UNFCCC Annex 1 inventory reporting guidelines, (i.e. tables 4.2 and 4.3 of the 2006 IPCC Guidelines, vol. 1, are not used in reporting). In response to a question raised by the ERT, the Netherlands indicated its intention to provide the revised key category analysis in the next annual submission The ERT encourages the Netherlands to provide the key category analysis using the 2006 IPCC Guidelines (vol. 1, tables 4.2 and 4.3) as suggested by the UNFCCC Annex I inventory reporting guidelines	Not an issue
G.4	Uncertainty analysis	The ERT noted that the information in the NIR is not sufficiently transparent for it to assess whether the uncertainty analysis was conducted in accordance with the 2006 IPCC Guidelines, because table A.2.3 in the NIR is not fully consistent with table 3.3 of volume 1 of the 2006 IPCC Guidelines. The ERT further noted that the level and trend uncertainty estimates have not been provided in the NIR, which makes it difficult to compare the results of the uncertainty assessment with those of the other Parties. In response to a question raised by the ERT, the Netherlands confirmed that the uncertainty assessment was performed in accordance with the methodology in the 2006 IPCC Guidelines. The Party acknowledged the lack of resulting uncertainty estimates for the level and trend and indicated its intention to provide the correct uncertainty assessment in the next annual submission The ERT recommends that the Netherlands provide the level and trend uncertainty assessment as required by paragraphs 15 and 42 of the UNFCCC Annex I inventory reporting guidelines	Yes. Adherence to UNFCCC Annex I inventory reporting guidelines
G.5	Uncertainty analysis	The ERT noted that the Netherlands reported in the NIR the uncertainty analysis excluding the LULUCF sector only, although paragraph 15 of the UNFCCC Annex I inventory reporting guidelines requires Parties to provide the uncertainty analysis excluding and including the LULUCF sector. During the review, the Netherlands informed the ERT that the LULUCF sector was excluded from the uncertainty analysis by mistake, and provided the results of the uncertainty analysis performed including the LULUCF sector The ERT recommends that, in the next annual submission, the Netherlands report on the	Yes. Comparability*

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and/or a problem[c]? If yes, classify by type*
		uncertainty analysis including the LULUCF sector	
G.6	National registry	The ERT noted that the national registry of the Netherlands continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and continues to adhere to the technical standards for data exchange between registry systems. The ERT further noted that incorrect links to publicly available information have been identified in the SIAR. In response to the issue raised in the SIAR, the Netherlands informed the ERT about the recent website changes and indicated its intention to update the publicly available information in a month timeframe The ERT recommends that the Netherlands update the publicly available information in the national registry in accordance with the recommendations in the SIAR	Not an issue
G.7	Kyoto Protocol units	The ERT noted that the Netherlands did not provide information on the application of decision 1/CMP.8, paragraphs 23–26, related to carry-over and the PPSR account in its report to facilitate the calculation of the assigned amount for the second commitment period of the Kyoto Protocol, and did not provide this information in its 2015 annual submission. The ERT further noted that the Party has not provided any specific information on the calculation of the difference between the assigned amount for the second commitment period and the average annual emissions for the first three years of the first commitment period under Article 3, paragraph 7 ter, of the Doha Amendment In response to the question raised by the ERT, the Party stated that it had submitted the SEF tables, where the carry-over operations were reported as "NO" in SEF table 5a. The Party also explained that "NO" was used because the European Union Registry was not yet functioning to make the carry-over operational. The Netherlands further informed the ERT that the PPSR account would be made available in the next version of the registry to be released by the end of 2016. Furthermore, the Party informed the ERT that, in accordance with annex I to European Commission decision 2015/1339/EU, the calculation pursuant to Article 3, paragraph 7 ter, of the Doha Amendment shall apply to the joint assigned amount of the European Union, its member States and Iceland for the second commitment period The ERT recommends that the Netherlands include in the next annual submission the information on the application of decision 1/CMP.8, paragraphs 23–26, related to carry-over and the PPSR account	Yes. Transparency*
G.8	Commitment	The ERT noted that the CPR of the Netherlands (832 300 112 t CO_2 eq) was calculated in accordance with the annex to decision 18/CP.7, the annex to decision 11/CMP.1 and decision	Yes.

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and/or a problem[c]? If yes, classify by type*
	period reserve	1/CMP.8, paragraph 18. The ERT further noted that, for the purposes of calculating the CPR, the Netherlands used the assigned amount determined in accordance with the terms of the joint fulfilment agreement of the European Union, its member States and Iceland, and that the net emissions in relation to deforestation in the LULUCF sector in 1990 were taken into account in that calculation in accordance with decision 13/CMP.1, annex, paragraph 5(b), in conjunction with decision 3/CMP.11 and decision 2/CMP.7, annex, paragraph 22. Furthermore, the ERT noted that the assigned amount for the Netherlands is fixed based on annex II to European Commission decision 2013/162/EU and as adjusted by Commission implementing decision 2013/634/EU However, the ERT notes that the Netherlands has not included the numerical value of the CPR, calculated as 100% of the most recently reviewed inventory in the NIR and refers to its report to facilitate the calculation of assigned amount The ERT recommends that the Netherlands provide the calculated value of the CPR using the next annual submission	Transparency*
G.9	National system	The ERT noted that the Netherlands reports on the changes in the national system associated with the introduction of five methodology reports to replace the set of 'monitoring protocols'. The ERT further noted that the review of the methodology reports resulted in transparency issues which are summarized in ID#s G.14 and G.15 below and annex III to this document and described in the sectoral sections below. See ID#s E.9, E.20, I.6, I.7, I.21 and W.7 below	Not an issue
G.10	QA/QC and verification	The ERT noted that the Netherlands has improved the description of QA/QC activities for the national inventory in the NIR, in accordance with the recommendation made in the ARR 2014. In particular, the 2015 submission includes a description of the QA/QC programme development and implementation. But the ERT noted that the information on the QA/QC plan was not included in the NIR, as required by paragraph 19 of the UNFCCC Annex I inventory reporting guidelines. The Party provided its 2015/2016 QA/QC programme in response to a request made by the ERT during the review The ERT encourages the Netherlands to include the information on the QA/QC plan in the next submission, or provide a reference to the website where the information of QA/QC plan is available	Not an issue
G.11	QA/QC and verification	The ERT noted that the QA/QC system of the Netherlands follows the UNFCCC Annex I inventory reporting guidelines and the provisions of the 2006 IPCC Guidelines. However, the ERT was unable to identify whether the QA activities include an independent (third party) peer review of the inventory. Furthermore, the NIR does not include a description of the responsibilities of the institutions involved in the national system for specific QA/QC	Yes. Transparency*

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and/or a problem[c]? If yes, classify by type*
		activities. During the review, in response to a question raised by the ERT, the Netherlands provided the QA/QC programme, where institutional and inter-agency responsibilities for particular procedures were described. The Party further informed the ERT that the implementation of the QA activities in its inventory has been postponed owing to problems with the CRF Reporter software	
		The ERT recommends that the Netherlands include in the NIR the information on the QA activities for the national inventory, including information on an independent peer review of the inventory and a description of the responsibilities of institutions involved in the national system for specific QA/QC activities	
G.12	Inventory planning	The ERT noted that the information on how the Party uses the results of the key category analysis and uncertainty assessment in developing its inventory improvement plan in order to prioritize its effort to improve the inventories has not been included in the NIR. During the review, in response to a question raised by the ERT, the Netherlands stated that it does not have a separate inventory improvement plan. Planned improvements arise from internal and external reviews and ongoing scientific deliberations in the task forces and these then become a part of the annual work plan for inventory preparation. The Netherlands further indicated that the improvements planning results from consensus between all task forces, inventory stakeholders and budget availability. The general inventory work plan is available in Dutch and was provided to the ERT	Not an issue
		The ERT encourages the Party to explain in the NIR how the results of the key category analysis and uncertainty assessment are used in prioritizing improvements to the national inventory, noting that the descriptions in the work plan and the national inventory submission were not sufficient to identify this information	
G.13	Recalculations	The Netherlands submitted its original 2015 submission under the Convention on 5 November 2015. On 15 June 2016, the Party resubmitted the NIR and CRF tables of its 2016 submission, indicating that its official submission of 2016 constitutes a submission under the Convention for the year 2016, a resubmission under the Convention for the year 2015 and a submission under the Kyoto Protocol for the years 2015 and 2016. The ERT noted that the 2016 submission contains only information on recalculations between the original 2015 submission and the 2016 submission, and that information on the recalculations between the 2014 submission and the final 2015 submission is not included. The ERT concludes that the reporting is not transparent but notes that this situation is related to the unique circumstances referred to in paragraph 6 of this document	Not an issue
G.14	Annual submission	The ERT noted that the Netherlands provided limited information on methods, assumptions and parameters used for the GHG emission estimates for all sectors in the NIR and provided	Not an issue

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[b] and/or a problem[c]? If yes, classify by type
		only a limited explanation of the use of notation keys in the CRF tables. The ERT further noted that the majority of AD for categories under chemical industries (2.B) and non-energy products from fuels and solvents use (2.D) (which constitute 3.6% of the national total net emissions including indirect CO_2 and LULUCF) are considered to be confidential making it impossible for the ERT to reproduce the inventory estimates and verify the adequacy of the methods applied by the Party. Additional information provided by the Netherlands in response to a request by the ERT was partly in Dutch, and the ERT was unable to assess it during the centralized review. (See also ID#s E.21, I.6, I.7, I.16 and I.20 below)	
		Owing to the lack of transparency of the NIR and the CRF tables for the 2016 annual submission, the ERT recommends that the next review be an in-country review organized in the Netherlands. See annex III to this document	
G.15	NIR	The key reference document for the energy, IPPU and waste sectors (ENINA[c]) was not available from the Netherlands inventory website prior to the review week, although an incomplete suite of (out-of-date) IPPU method statements had been left online, and available for download. The ERT noted that there are several similar issues, for example, highlighting the need to provide detailed information on methodologies separately from the NIR and the absence of sufficient explanations on the methods in the NIR (see ID#s E.9, E.19, I.6, I.7, I.21 and W.7 below). The absence of information on the methodologies used for the Party's 2015 submission, combined with the fact that the CRF tables were predominantly being left blank because of data confidentiality, significantly delayed the initial review activities of the ERT, and meaningful analysis of the IPPU sector was limited to the review week itself as and when data were made available by the Party. During the review, the Netherlands provided the ENINA report[c] and clarified that the incomplete set of method statements on the inventory website was no longer relevant because the method statements had not been updated since 2014	Yes. Transparency*
		In order to improve the transparency of the submission, the ERT recommends that the Party either include all underlying data and methodological information directly within the NIR (particularly for the energy, IPPU and waste sectors), or/and ensure that all required documentation in support of the NIR is provided in the public domain in a timely manner and remove any obsolete documentation from the inventory website	
Energy			
E.7	1. General (energy sector)	The ERT commends the Party for improving the transparency of its reporting in the energy sector, in response to a recommendation made in the 2014 review report (see ID# E.2 in table 3), by providing a table of CO_2 EFs and carbon content factors for each EF type (by indicating default, country-specific and plant-specific) in the annex to the NIR. However, the ERT found	Yes. Transparency*

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and/or a problem[c]? If yes, classify by type*
		that three important pieces of information were missing from the table in annex 5 to the NIR regarding the values and sources of used EFs To further improve transparency, the ERT recommends that the Party add the following information to the table in annex 5 to the NIR: (a) a clarification on whether the carbon content factors are reported in terms of gross calorific value or net calorific value; (b) CH_4 and N_2O EFs; and (c) direct references for each of the country-specific and plant-specific EFs provided	
E.8	1. General (energy sector)	The ERT identified that not all categories for which methods are provided in the 2006 IPCC Guidelines are included for discussion in the NIR. For example, the categories 1.C CO_2 transport and storage (reported as "NO" in CRF table 1.C) and 1.B.2.a.6 other (reported as "NE" for CO_2 and CH_4 emissions) are not discussed in the NIR. In response to a request for the information on these missing categories made by the ERT during the review, the Party explained that there are no emissions reported under category 1.B.2.a.6 other because all known emissions are already included in other categories In order to transparently demonstrate completeness in the inventory, the ERT recommends that the Party include explanations in the NIR to describe the categories or sources and sinks that are reported as "NO" or "NE", and any other relevant information for all categories for which methodologies are provided in the 2006 IPCC Guidelines. The ERT further encourages the Party to include information, such as if there is evidence that emissions may arise in future from a category that is currently reported as "NO", and how such emissions might be detected by the national system and reported in the inventory in the future if the activity commences	Yes. Transparency*
E.9	1. General (energy sector)	The ERT found that many methodologies in various categories within the energy sector were not described in detail in the NIR; instead they were contained in external methodology reports. Some of these reports were available online, as indicated in annex 3 to the NIR, while others were not. In response to a question from the ERT during review week, the Party provided methodology reports (including ENINA,[c] Jansen et al.[d] and Klein et al.[e]). For the recommendation on this issue, see ID# G.14 above	Not an issue
E.10	Comparison with international data – all fuels – all gases	The ERT noted various discrepancies when comparing the AD and emission estimations reported in the CRF tables and the IEA data. For example, there are large discrepancies in the trade of several liquid fuel products such as naphtha, gas/diesel oil and LPG in the period 1990–1994. In addition, the Party has reported data on petroleum coke during this period in the CRF tables, but the IEA data do not include data on petroleum coke for the same period. As a result, a 3–4% difference between the respective values for total apparent consumption is observed for these years. Some of these discrepancies are in different directions, so	Yes. Accuracy*

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		differences in product classification may also be at play; however, differences in product classifications cannot explain the absolute differences. During the review, in response to a question raised by the ERT, the Party clarified that revised energy statistics for the period 1990–1994 had been used in its submission to calculate emissions; however, the AD in the submitted CRF tables had not been updated to reflect the new numbers and these new numbers had not yet been submitted to IEA (i.e. the incorrect AD were submitted, resulting in the large discrepancies observed). The ERT notes that the incorporation of a mixture of two different time series of AD (old preliminary data in the CRF tables versus updated, recalculated AD used to calculate emissions in the CRF tables) affected many parts of the submission, including the accuracy of: (a) the AD reported in the CRF tables for fuel combustion (e.g. 1.A(a)s1 and 1.A(a)s2); (b) estimation results for the reference approach; and (c) IEFs for several categories under fuel combustion (1.A) for the sectoral approach (including key categories)	
		The ERT recommends that the Party improve the QA/QC processes to ensure the use of accurate and consistent fuel data throughout the GHG inventories. To improve transparency, the ERT also encourages the Party to identify discrepancies between the Party's submission and the IEA data and document them clearly in the NIR	
E.11	Comparison with international data – all fuels – all gases	The ERT found several unexplained discrepancies between the fuel allocations used in the reference approach between the IEA data and the CRF tables. In response to several questions raised during the review (see ID# E.10 above), the Party clarified the fuel allocations used in the reference approach, including additives and biogasoline and bituminous coal, specifically: additives are included under gasoline in the reference approach; the biogasoline is excluded from the gasoline for the reference approach (by subtracting this from the gasoline imports); and coking coal, lignite and anthracite are included in the bituminous coal data in the CRF tables while in the IEA data they are shown separately	Yes. Transparency*
		The ERT recommends that the Party specify in the NIR the allocation of all fuels used in the reference approach, and ensure that these allocations correspond with the fuel lists in the national balances and IEA data	
E.12	Feedstocks, reductants and other NEU of fuels – liquid fuels – CO_2	The Netherlands reported CO_2 emissions from NEU of fuels in CRF table 1.A(d) for feedstocks, reductants and other NEU of fuels. However, the cells provided in the CRF table for reporting the category where the emissions are included have been left blank. During the review, in response to a question raised by the ERT, the Netherlands indicated that other improvements had been prioritized over this issue	Yes. Transparency*
		To ensure the transparency of reporting, the ERT recommends that the Party provide, in the next submission, the information in CRF table 1.A(d) to clarify which category or categories	

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and/or a problem[c]? If yes, classify by type*
		have been used to report the CO_2 emissions from NEU of fuels or, if that is not possible for the Party, update the category-specific planned improvements for this category in the NIR to demonstrate that this improvement is planned for future submissions	
E.13	1.A.1.a Public electricity and heat production – liquid fuels – CO_2, CH_4 and N_2O	The ERT noted that the allocation of emissions from incinerated waste oils and solvents is not reported clearly under any of the energy, IPPU and waste sectors, and that this is not specifically described in the NIR or CRF tables. During the review, in response to a question raised by the ERT, the Netherlands clarified that the emissions from incinerated waste oils and solvents were included in 1.A.1.a public electricity and heat production up to 2002, when the only plant using this source closed	Yes. Transparency*
		The ERT recommends that the Netherlands clarify, in the NIR, the allocation of emissions from incinerated waste oils and solvents and justify the applicable AD, EFs and emissions trend	
E.14	1.A.1.a Public electricity and heat production – solid fuel – CO_2	The ERT noted that the CO_2 IEF fluctuated significantly (for example, ranging between 103.56 t/TJ in 1990 and 111.8 t/TJ in 2011; the IEF in 2009 of 104.4 t/TJ is 5.67 % lower than that in 2008 of 110.6 t/TJ) throughout the time series for this category. However, no explanation for this variable trend is provided in the NIR. During the review, the Party clarified the reasons behind the fluctuations in the CO_2 IEF, which include the reduced use of blast furnace gas in 2009, resulting in the decreasing trend in the CO_2 IEF in recent years because EFs for new coal-fired power plants are lower than the EF for the blast furnace gas	Yes. Transparency*
		The ERT recommends that the Party provide in the NIR the reasons behind the fluctuations in the CO_2 IEF throughout the time series	
E.15	1.A.1.a Public electricity and heat production – other fossil fuels – CH_4	The ERT noted that, in reporting emissions from the incineration of waste under the subcategory other fossil fuels under public electricity and heat production, the Party reports "NO" for CH_4 emissions, although both CO_2 and N_2O emissions are reported for this fuel type. During the review, the Party provided information on the study used for the EFs for N_2O and CH_4 emissions from the incineration of waste in 2010;[f] and a report by Rijkswaterstaat.[g] The Party also indicated that the rough calculation results in a lower CH_4 calculation in the discharge air than in the intake air; thus, the EF for CH_4 is considered to be 0 g CH_4/tonne of fresh waste, and therefore "NO" is reported. However, the ERT considers that the additional information is unclear and noted that the information on the calculation of the CH_4 EF is not mentioned at all in the NIR	Yes. Transparency*
		The ERT recommends that the Netherlands document in the NIR the factor of zero for CH_4 and include the underlying methods and assumptions used in reporting on the CH_4 emissions from other fossil fuels in the NIR. The ERT believes that this issue should be considered	

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[b] and/or a problem[c]? If yes, classify by type
		further in future reviews to confirm that there is not an underestimate of emissions	
E.16	1.A.1.c Manufacture of solid fuels and other energy industries – gaseous fuels – CO_2	The ERT noted that the CO_2 IEF fluctuated significantly throughout the time series for this category, paricularly for recent years. IEFs are (for example, ranging between 103.56 t/TJ in 1990 and 111.8 t/TJ in 2011; and the IEF in 2009 of 104.4 t/TJ is 5.67 % lower than that in 2008 of 110.6 t/TJ). However, no explanation for this variable trend is provided in the NIR. During the review, the Party clarified that the fluctuations in the CO_2 IEF throughout the gas combustion time series were due to variations in gas composition and the mix of country-specific and company-specific factors used in the calculations The ERT recommends that the Party provide in the NIR the reasons behind the fluctuations in the CO_2 IEF throughout the gas combustion time series [and explain how the consistency of the time series and EFs are ensured in estimating CO_2 emissions from this category	Yes. Transparency*
E.17	1.A.2.c Chemicals – liquid fuels – CO_2, CH_4 and N_2O	The ERT noted that the description in the ENINA report[c] indicates that 1995 data were used throughout the time series to derive the EFs where company-specific data gaps were evident. The ERT further noted that the description in the NIR of the derivation of the time series of EFs for chemical waste gases is not transparent. During the review, the Party indicated that the AERs for the Netherlands or EU ETS data could possibly be used in future submissions to improve company-specific EFs, but that updating the time series was not a priority because the affected years are in the middle of the time series The ERT recommends that the Party use more up-to-date data from the most recently available data sources, such as AERs or EU ETS data, in order to improve the time-series consistency of CO_2, CH_4 and N_2O emission estimates from chemical waste gases (if the data are suitable to use for previous years) or, if that is not possible, include in the NIR a detailed category-specific improvement plan, and explain how the time-series consistency for the AD is ensured for the emission estimates for this category	Yes. Consistency*
E.18	1.A.4.c Agriculture/Forestry/Fishing – gaseous fuels – CH_4	The ERT noted that the CH_4 IEF fluctuated significantly throughout the time series for this category; for example, in the period 1990–2004, the IEFs fluctuate within the range of 12.4 t/TJ in 1990 and 37.75 t/TJ before increasing to a peak in 2011 (291.96 t/TJ). However, no explanation is provided in the NIR. During the review, the Party clarified that the variation in the CH_4 IEF is due to the varying quantities of natural gas combusted in gas engines and other appliances The ERT recommends that the Netherlands explain in the NIR the reasons for the variation in the CH_4 IEF for gaseous fuels, including the quantities of natural gas combusted in gas	Yes. Transparency*

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and/or a problem[c]? If yes, classify by type*
		engines and other appliances for the whole time series	
E.19	1.B.1.b Solid fuel transformation – solid fuels – CH_4	The ERT identified that, between 1990 and 1997, the CH_4 IEF is consistently above 50 kg/t; however, between 1998 and 2010 the CH_4 IEF is consistently below 0.04 kg/t, and from 2011 onwards, "NO" is reported for CH_4 emissions under this category. The significant change in this IEF was not explained in the NIR. During the review, the Party explained that the significant differences in the CH_4 IEF in the period 1990–1997 compared with the post-1997 period were caused by changes in charcoal production throughout the time series. The Party pointed to this information being available in its 2012 NIR and the ENINA report[c] The ERT recommends that the Party include the explanation of the trend in the AD affecting the CH_4 IEF for solid fuels, including for charcoal production, in the relevant section of the NIR	Yes. Transparency*
E.20	1.B.2 Oil and natural gas and other – liquid and gaseous fuels – CO_2, CH_4 and N_2O	In response to questions relating to the use of notation keys raised during the review by the ERT, the Netherlands indicated that its NIR is the leading source for explanations of notation keys, in the absence of a completed CRF table 9, noting that latter was due to problems with the CRF Reporter software. However, the ERT noted that the descriptions in the energy production section of the NIR are not clear enough for the ERT to assess the background of some notation keys reported under 1.B.2 oil, natural gas and other emissions For example, "IE" is reported for AD and emissions for exploration (1.B.2.a.1), for which the Party clarifies in the NIR (p. 116) that combustion emissions are reported under manufacture of solid fuels and other energy industries (1.A.1.c), although the NIR does not indicate where the non-combustion exploration emissions are included; "NE" and "NO" for AD and emissions for distribution of oil products (1.B.2.a.5); "NE" and "NO" for AD and emissions for other (1.B.2.a.6); and "IE" for AD for both venting and flaring (1.B.2.c.iii) To improve the transparency of the use of notation keys and to demonstrate the complete reporting of all sources, the ERT encourages the Netherlands to include the information in CRF table 9 and in the relevant sections of the NIR to ensure that the allocation of emissions is traceable and that the rationale for the notation keys are readily accessible	Not an issue
E.21	1.B.2.b Natural gas – gaseous fuels – CO_2, CH_4 and N_2O	The ERT commends the Party for addressing the recommendation made in the previous review report (see ID# E.6 in table 3 above) by reporting on a revised method for 1.B.2.b.5 – distribution and for including details of the revised method on pages 118–119 of the NIR. The ERT, however, could not identify from the description of the revised method in the NIR the scope of the revised EFs, or the reference for the study that was undertaken to revise the method. During the review, the Party provided the ERT with two background publications in Dutch by Kiwa Technology[h] which explain the scope and the improved method as a result of	Yes. Transparency*

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and/or a problem[c]? If yes, classify by type*
		additional leakage measurements During the review, the ERT informed the Party that, although it was clear from the text in the NIR that pipeline length, pressure and type were taken into account in the EFs, it was not clear from the NIR or references provided whether other subsources of distribution (including fugitive releases from incidents, maintenance, above-ground installations, flanges and connectors) were included within the analysis to derive the new suite of EFs The ERT recommends that the Party expand the text in the NIR on the revised method by detailing the scope of the revised method (to clearly demonstrate completeness) including justification for the applied EFs, and specifically reference all relevant reports. The ERT believes that this issue should be considered further in future reviews to confirm that there is not an underestimate of emissions	
E.22	1.B.2.c Venting and flaring – liquid and gaseous fuels – CO_2, CH_4 and N_2O	The ERT noted that the Party reported "NE" for indirect GHGs (NO_x, CO, NMVOCs and SO_2) for oil and natural gas venting and flaring in CRF table 1s2, and that this was not clearly explained in the NIR or the CRF tables. During the review week, the Netherlands indicated that emissions of indirect GHGs from oil and natural gas venting and flaring were reported under 1.A. in CRF table 1s1 The ERT recommends that the Party change the relevant notation keys in CRF table 1s2 for this category from "NE" to "IE", and include the explanation of this in both the NIR and CRF table 9 in the next submission	Yes. Comparability*
IPPU			
I.6	2. General (IPPU) – All GHGs	The ERT noted that the Party's submission did not provide transparent documentation of the AD, EFs and methodological details for several categories under the IPPU sector, within the NIR and supplementary references such as the ENINA report.[c] The ERT also observed that, for several categories, the NIR contains only limited methodological information, with further details of source data, methods and references held within supplementary reference documents. For example, there is no methodological information provided in the NIR for the sources such as: fire extinguishers, aerosols/metered dose inhalers and solvents under 2.F product uses as substitutes for ozone-depleting substances; and ureum use in selective catalytic reduction under 2.D.3 other (non-energy products from fuels). Further, the ERT noted that the ENINA report[c] does not present methodological information in a thorough, consistent way for several categories, including those identified as key in the national inventory (e.g. inconsistencies include the emissions allocation in table 1 and the methodology guidance in sections 2.2.13 and 2.2.3.11). See for example ID#s I.19 and I.22 below and annex III to this document, and the recommendation on this issue in ID# G.14	Not an issue

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and/or a problem[c]? If yes, classify by type*
		above	
I.7	2. General (IPPU) – all gases	The ERT noted that the description of the recalculations in the category-specific sections in the IPPU chapter of the NIR and the ENINA report[c] are not transparent for caprolactam production (2.B.4a), lubricant use (2.D.1) under the category non-energy products from fuels and food and beverages industry (2.H.2). For the recalculations to emissions from lubricant use and food and beverages industry, very limited information is provided in the NIR (chapter 10) which indicates that revisions to energy statistics led to changes in the IPPU sector estimates. In response to ERT questions raised during the review, the Netherlands provided a time series of the AD and EFs for coke use in food and beverages industry, and a time series of changes to the AD for lubricant use. However, the ERT notes that the recalculations to emissions from food and beverages industry are primarily due to the correction of the time series of EFs for 1991–1994, rather than the changes to energy statistics that are indicated on page 234 of the NIR. The ERT also notes that the revisions made to AD for lubricants are variable across the time series (–59% from the previous AD in 1990, +86% in 1993, more stable at an average of –25% over more recent years) and that no detailed rationale for such large percentage revisions to energy statistics is provided. Further, the NIR, in section 4.5.5 for non-energy products from fuels, states "No recalculations have been made", which is inconsistent with the supplementary information provided to the ERT by the Party during the review The Netherlands reported that the recalculation was implemented following "a consultation between the Company the competent authority and the Dutch PRTR". The ERT notes that the recalculations appear to be the result of access to better plant-specific data, through new, more detailed N_2O emissions monitoring at one or more of the emission sources on the plant (i.e. the hyam preparation and/or the catalytic combustion of ammonia). However, the reasons for the recalculations are not transparently described in the NIR The ERT recommends that the Party report full and detailed explanations of all recalculations to the IPPU sector in the next submission, providing information on changes to AD and EFs across all years and the rationale for the recalculation, and ensure that the information provided in the NIR, the CRF tables and ENINA, or any reference to the methodologies used, are internally consistent for all recalculations	Yes. Transparency*
I.8	2. General (IPPU) – all gases	Further to the issue explained in ID# I.7 above, the caprolactam production data were not provided to the ERT during the review, because, according to the response provided by the Netherlands, there is one producer and the production data are commercially confidential	Yes. Transparency*

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[b] and/or a problem[c]? If yes, classify by type
		Noting the recommendation made in ID#I.7 above, in the event that recalculations affect emission sources where the underlying data are commercially confidential, the ERT recommends that the Party strengthen its QA/QC procedures and institutional arrangements to: (a) ensure that the ENINA Task Force can access the commercially confidential data in order to assess the recalculations and determine the time series of IEFs on a production basis (where necessary for comparability); (b) where applicable, compare the annual EU ETS and/or emissions reported in the Party's AERs with recalculated inventory estimates; and (c) report on all findings of QA/QC activities transparently in the NIR, or directly provide the information to the ERT, while protecting commercially sensitive data	
I.9	2.A.2 Lime production – CO_2	The ERT noted that in CRF table 2(I).A-Hs1 the AD for lime production (2.A.2) were reported as "NE" while the CO_2 emissions were reported as "NO, IE" and the NIR states that CO_2 emissions from lime production are included under the category food processing, beverages and tobacco (1.A.2e), whereas table 1 of the ENINA report,[c] that the Party provides as a reference on the methodological information, indicates that CO_2 emissions from lime production are included in the category other (2.H.2). However, the ERT did not find detailed methodological information either in the NIR or the ENINA report[c] to indicate how the emissions from decarbonization of mineral feedstocks in lime production are estimated and reported in the inventory, under the category food processing, beverages and tobacco or the category other	Yes. Transparency*
		In order to improve transparency and ensure inventory completeness, the ERT recommends that the Netherlands provide AD, EFs and details of the methodology used to estimate emissions from lime production in the NIR	
I.10	2.A.2 Lime production – CO_2	In addition to the inconsistency of notation keys in the CRF tables and the description in the NIR in which the CO_2 emissions from lime production are indicated to be included under the category food processing, beverages and tobacco (1.A.2e), the ERT noted that table 1 of the ENINA report[c] indicates that CO_2 emissions from lime production are "Included in the category 'other (2.H.2)'". In response to questions raised by the ERT, the Party confirmed that emissions from lime production are only known to occur at four sugar production sites and that all emissions from these sites are reported under the category food processing, beverages and tobacco	Yes. Transparency
		The ERT recommends that the Party resolve the inconsistencies in the information provided in the NIR, the ENINA report and the notation keys in the CRF tables on the allocation of emissions from lime production	
I.11	2.A.2 Lime production	Further to the issue raised in ID# I.9 above, the ERT notes that the reporting of emissions	Yes. Comparability

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and/or a problem[c]? If yes, classify by type*
	– CO_2	from lime production is not in accordance with the allocation in the 2006 IPCC Guidelines The ERT recommends that the Party work with industrial operators and competent authorities to obtain additional data to enable the correct allocation of the emissions from lime production under the lime production category, in order to report in accordance with the 2006 IPCC Guidelines and to improve comparability. In the event that these data are commercially confidential, the ERT encourages the Netherlands to prepare detailed justifications for the emission estimates in order to maintain data confidentiality	
I.12	2.A.4 Other process uses of carbonates – CO_2	The ERT noted that, although this is a key category the emission estimates for several subsources are based on tier 1 methods, and for some subcategories the submission is not transparent, because it does not provide sufficient information on data availability and QC against other datasets (e.g. EU ETS) to enable the ERT to verify the completeness and accuracy of the methods used. In response to the questions raised by the ERT during the review, the Netherlands clarified that: (a) default EFs and methods are applied for ceramics (2.A.4.a) because there are insufficient data to derive country-specific EFs from use of clays and other minerals in ceramic manufacture; and (b) the estimates of emissions from flue gas desulphurization (2.A.4.d)are based on AERs from coal-fired power stations and verified against the EU ETS data. The Netherlands further stated that flue gas desulphurization with $CaCO_3$ (limestone) as the alkaline sorbent is not used within industries other than at power stations and in the iron and steel sector; hence the submission is complete for the flue gas desulphurization source category The ERT recommends that the Netherlands include the explanation of methodology choices, provide references for all data used across the time series (including for extrapolations) along with examples of validation to justify the data and methods used for all of the subcategories under other process uses of carbonates	Yes. Transparency
I.13	2.A.4 Other process uses of carbonates – CO_2	The ERT noted that for the category other process uses of carbonates, the access to AD sources is limited, but the NIR does not transparently explain the reasons behind these data gaps nor the Party's plan to address them. In response to questions during the review the Party indicated that limited import–export data are used to derive the estimates for the entire time series for soda ash (2.A.4.b), because no activity and plant capacity data are available from 1994 onwards. The ERT recommends that, in order to ensure completeness and the accuracy of estimates, the Party conduct further research and consultation with industry and/or statistical agencies to either access additional AD and EFs or seek verification of the current method and emission estimates. The ERT encourages the Party to report on progress in future NIRs. The ERT believes that this issue should be considered further in future reviews to confirm that there is	Yes. Accuracy*

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[b] and/or a problem[c]? If yes, classify by type
		not an underestimate of emissions	
I.14	2.B.1 Ammonia production – CO_2	The ERT noted that the method descriptions for ammonia production and urea application in the agriculture sector (3.H) in the NIR and the ENINA report[c] are not transparent because there is no mention (in either the IPPU or agriculture sections of the NIR) of the methodological approaches used to address: (a) CO_2 that is sequestered into urea produced in the Netherlands (using CO_2 emitted from the ammonia production plant); and (b) the CO_2 released to atmosphere from the application of urea to land (in 3.H). In response to questions raised by the ERT, the Netherlands clarified that there are currently no statistics available on total urea production, import, export and the use of urea in the agriculture and other sectors, and therefore it is assumed that the amount of CO_2 recovered from ammonia production for downstream use is zero. (See also the description of the issue for urea application under the agriculture sector in ID# A.9 below.) The Party also indicated that there are plans to collect new data and also that the current estimates are likely to be an overestimate across categories 2.B.1 and 3.H. The ERT notes that there are only two ammonia producers and that plant capacity data for co-located urea plants are in the public domain In order to improve accuracy and the comparability of emission estimates, the ERT recommends that the Netherlands estimate emissions from ammonia production taking into account CO_2 emissions and sequestration from urea production by collecting new AD (annual urea production, urea imports and exports and urea application to soils) through research and/or consultation with industry and statistical agencies	Yes. Accuracy *
I.15	2.B.1 Ammonia production – CO_2	The ERT notes the lack of transparency in reporting methodological approaches used for estimating CO_2 emissions from ammonia production under the IPPU sector and from urea application under the agriculture sector and the recommendation made in ID# I.14 above Therefore, the ERT further recommends that the Netherlands document full details of the inventory data and methodologies for all categories affected in this cross-sectoral issue in future submissions and encourages the Party to provide future ERTs with carbon balances for ammonia and urea production and urea application sources, while protecting commercially sensitive data	Yes. Transparency*
I.16	2.B.1 Ammonia production – CO_2	The CO_2 emission estimates under this category exclude the emissions from natural gas used as a fuel, which are allocated in the energy sector. This is not consistent with the 2006 IPCC Guidelines (section 3.2.2, p. 3.11) which state that: "in the case of ammonia production no distinction is made between fuel and feedstock emissions with all emissions accounted for in the IPPU sector". The ERT noted that, owing to data confidentiality the Party was not able to provide the annual ammonia production data to the ERT, and therefore the IEF from the ammonia production source is not comparable against data from other reporting Parties.	Yes. Comparability*

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and/or a problem[c]? If yes, classify by type*
		During the review, the Netherlands provided a time series of natural gas use for both fuel and feedstock in ammonia production and stated that confidential ammonia production data can only be accessed by ENINA Task Force members or inventory reviewers at the premises of the two companies The ERT recommends that the Netherlands report CO_2 emissions from ammonia production using a method that is consistent with the 2006 IPCC Guidelines, reporting emissions from all natural gas uses (i.e. both fuel and feedstock use) within this category. The ERT also encourages the Party to work with chemical companies and national energy statistics compilers to avoid gaps or double counting in the natural gas energy balance data	
I.17	2.B.1 Ammonia production – CO_2	With reference to ID# I.16 above, in response to initial questions by the ERT, the Netherlands stated that as regards the QA/QC of the ammonia estimates "…Because the energy and emission data from some EU ETS companies are not detailed enough it was not possible to compare them against the sector data from Statistics Netherlands (AD) and the national inventory (emissions)". In response to subsequent questions from the ERT, during the review, the Party further explained that: "The energy and emission data from the EU ETS companies have been compared with the sector data from Statistics Netherlands (AD) and the national inventory (emissions). No differences were found." The ERT considers that the submission of the Netherlands is not comparable with that of other Parties and that the current arrangements for QA/QC of parallel reporting datasets (i.e. natural gas AD, emissions or EF data, ammonia production data) are unclear and are potentially not robust enough (for inventory compilers and reviewers alike) to ensure that the estimates are accurate and complete The ERT recommends that the Party review and strengthen the QA/QC procedures for this category, including by: (a) providing the ENINA Task Force with access to the confidential production data and derive a time series of annual production-based IEFs; (b) comparing the annual inventory and EU ETS estimates for ammonia production; and (c) reporting on the findings of QA/QC activities transparently in the next submission or directly to future ERTs while protecting commercially sensitive data	Yes. Accuracy*
I.18	2.B.8 Petrochemical and carbon black production – CO_2	The ERT noted that the emissions from the subcategories under petrochemical and carbon black production are reported as "IE" in CRF table 2(I).A-H and the IPPU chapter of the NIR text is not transparent regarding the scope and method for the CO_2 emission estimates from petrochemical and carbon black production, in part because of internal inconsistencies outlined in ID#s I.6 and I.7 above. The NIR states that the GHG emissions from fuel combustion in the IPPU sector are included in the energy sector, which is not consistent with the 2006 IPCC Guidelines (section 3.9.1) which state that: "combustion emissions from fuels	Yes. Comparability*

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[b] and/or a problem[c]? If yes, classify by type
		obtained from the feedstocks should be allocated to the source category in the IPPU sector". During the review, the Netherlands clarified that emissions from the subcategories for production of methanol (2.B.8.a), ethylene (2.B.8.b) and carbon black (2.B.8.f) are included in the energy sector "because of transparency and consistency reasons", while non-energy-related emissions from industrial activities are reported in the IPPU sector. A limited time series of AD were provided for these three production activities during the review, and the Party stated that company-level data are confidential and can be viewed only at Statistics Netherlands To remain consistent with the 2006 IPCC Guidelines, the ERT recommends that the Netherlands report emission estimates for ethylene, methanol and carbon black production under the category petrochemical and carbon black production, and encourages the Party to work with chemical companies and national energy statistics compilers to avoid gaps or double counting in the energy balance. The ERT encourages the Party to obtain the product-specific data (production, emissions, IEFs), and, if the confidential data cannot be disclosed in the submission, then the Party should make provisions such that the confidential data can be made available to the ERT well in advance of the review week in order to facilitate the review process	
I.19	2.B.8 Petrochemical and carbon black production – CO_2	With regard to the issue of the Netherlands' inclusion of CO_2 emissions from fuel combustion in the IPPU sector in the energy sector for reporting raised in ID# I.18 above, in order to improve transparency and provide evidence that the estimates are complete and consistent with the energy balance and (where appropriate) country-specific EFs and emissions data (e.g. derived from AERs or EU ETS data), the ERT recommends that the Party document the QA/QC activities and outcomes for the chemical and petrochemical sources in the IPPU sector in the next submission Further, the ERT encourages the Party to: (a) describe in the NIR how the inventory methodology ensures completeness of inventory estimates and avoids double counting with emission estimates in the energy sector; (b) conduct quality checks (where appropriate) against other reporting mechanisms (e.g. AERs, EU ETS data, the national energy balance for fuels and feedstocks), and report the findings in the NIR; (c) outline in the NIR how the AD for the petrochemical sector are gathered (e.g. EFs and emissions data reported by operators to AERs/EU ETS/national energy statistics agency) for inclusion within the national energy balance (i.e. to derive the energy balance data for NEU of commodities used as feedstock) as well as the national inventory; (d) if applicable, document how the AD and emissions data are determined between different emission sources on integrated production complexes (e.g. refineries and co-located petrochemical plant where feedstock and fuels flow between individual units/companies)	Yes. Transparency*

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and/or a problem[c]? If yes, classify by type*
I.20	2.B.9 Fluorochemical production – HFCs	The ERT noted that the NIR contains an overview of the estimation method; however, the AD and EFs for this source are commercially confidential and are not provided in the NIR or in the CRF tables, and hence the estimates are neither transparent nor comparable. This source is a key category, and also shows a significant decline across the time series, the reasons for which are outlined transparently in the NIR (page 134). During the review, the Netherlands clarified that detailed data for fluorochemical production (the HFC-23 load in the untreated flow, and the removal efficiency of the thermal converter) can be viewed only by the ENINA Task Force and reviewers at the companies' premises. The Party also outlined the process by which the operators' data in annual environmental reports are verified annually by the competent authority and then at the companies by the Dutch inventory IPPU expert Noting the Party's efforts to verify the annual data from this key category, the ERT recommends that the Party include the procedural clarifications, provided during the review week, in the NIR to improve transparency. The ERT encourages the Party to overcome commercial confidentiality issues and describe the QA/QC procedures transparently in the NIR	Yes. Transparency*
I.21	2.F.1 Refrigeration and air conditioning – HFCs, PFCs and SF_6	The ERT noted that in CRF table 2(II)B-Hs2 the Netherlands reported on all emissions from product manufacture and disposal/decommissioning as "NA", although emissions from stocks are reported for industrial refrigeration and mobile air conditioning. The ERT further noted that the reporting on the refrigeration and air conditioning in the NIR and the ENINA report[c] do not transparently describe the overall methodology or the use of "NA" for these categories. In response to ERT questions during the review, the Party clarified that it is not possible to include all information of individual subcategories in CRF table 2(II)B-Hs2 because of data limitations, and therefore the sum of all emissions is included in the field "emissions from stocks" for industrial refrigeration and mobile air conditioning. The Netherlands further acknowledged that the use of "NA" is incorrect and stated that it will be changed to "IE" in the next submission The ERT recommends that the Party correct the notation key "NA" to "IE" in accordance with paragraph 37 of the UNFCCC Annex I inventory reporting guidelines	Yes. Adherence to UNFCCC Annex I inventory reporting guidelines
I.22	2.F.1 Refrigeration and air conditioning – HFCs, PFCs and SF_6	The ERT noted that the description of the methodologies for sources under this category within the ENINA report[c] indicates that the model method and assumptions are likely to generate inaccurate emission estimates. For example, the ENINA report[c] indicates that: • Based on a study of data published in 2001, the model used by the Netherlands does not perform calculations of leaks from across the product life cycle (i.e. production, working losses, disposal/decommissioning) for individual subsectors of refrigeration and air-conditioning units (e.g. residential, commercial, industrial), but applies an average	Yes. Accuracy*

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[b] and/or a problem[c]? If yes, classify by type
		leakage rate of 5%. The Party indicates that the total F-gas fluid sales figures cannot be broken down by economic sub-sector because only sales figures of individual HFCs to the total cooling sector in the Netherlands are available; • A higher leakage rate of 10% is used for the 1995 base-year estimates, according to the back-calculation of leakage estimates as presented in section 2.2.3.9 (page 62) of the ENINA report[c], but there is no information provided to verify these higher leakage rates and no basis for the extrapolation to pre-1999 years is provided The ERT noted that the stock of refrigeration and air-conditioning units in the Netherlands is likely to change through time, and different subsectors will exhibit a range of leakage characteristics because of stock and management practices for different types/size of units The ERT also noted that the 2006 IPCC Guidelines include operational leakage rates that are notably higher than the 5% value applied in the Netherlands (e.g. 10–35% operational emissions for medium/large commercial refrigeration, 7–25% for industrial refrigeration). During the review week, the Party clarified that the 5% factor was taken from the 2001 study, and it is an average leakage percentage for HCFCs/HFCs from refrigeration systems, freezers and stationary air conditioning for the Netherlands for the year 1999. The Party further provided information on the country-specific circumstances and regulations including: (a) stringent approval requirements by a specific F-gas foundation ("STEK") for all companies working with F-gases in the Netherlands; and (b) a specific 1997 Regulation on "Leak-tight cooling installations" which requires all installations to be at least annually checked. Further, the Netherlands indicated that it is working on the replacement of this method by a new method which will use a "refrigerants registration system" with information about leakages, filling of new installation, dismantling, and so on The ERT commends the Party on its plans to develop a new method. Whether a new method is used in the next submission or not, the ERT recommends that the Netherlands conduct QA/QC and verification of the method used to estimate emissions from refrigeration and air conditioning, in accordance with paragraph 41 of the UNFCCC Annex I inventory reporting guidelines, and report on the outcomes thereof	
Agriculture			
A.5	3.B Manure management – CH_4	The ERT noted that the reporting in CRF table 3.B(a)s2 for CH_4 emissions is incomplete and the table does not contain data for horses and mules. During the review week, the Netherlands explained that the incomplete reporting was caused by the problem with the CRF Reporter software platform, and the Party provided the ERT with the missing data on horses and mules along with their assessment	Yes. Adherence to UNFCCC Annex I inventory reporting guidelines

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and/or a problem[c]? If yes, classify by type*
		The ERT recommends that the Netherlands improve its QC to ensure consistency between the CRF tables and the NIR when reporting on emissions from manure management systems in the next submission	
A.6	3.B Manure management – CH_4	The Netherlands reported that it has undertaken national research to determine the parameters necessary to assess the CH_4 emissions from manure management and, in response to a question raised by the ERT, the Party provided these details in a report by Vonk et al.[i] The ERT noted that table 3.1 of the above-mentioned report provides the MCF values used per animal category for temperature values 15 ºC and 20 ºC (for temperate climate) which are higher than the value for cool climate (maximum 14 ºC). However, the ERT noted that, for the liquid manure category the same report provides the values that are the average of the IPCC default values for lagoon and liquid/slurry (73% and 25% respectively for 14 ºC (i.e. cool climate), in table 10A-4 of the 2006 IPCC Guidelines). The ERT considers that the use of the IPCC default values for cool climate may result in an underestimation of CH_4 emissions from liquid manure for cattle, pigs and poultry, which are key categories, as noted on page 29 of the report by Vonk et al. During the review, the Netherlands further provided an additional reference,[j] which justified the methodology and parameters used in the inventory. Furthermore, the Party informed the ERT about the new research launched on methane producing potential (B_0) and MCFs, which will be completed by the end of 2017	Yes. Transparency*
		The ERT recommends that the Netherlands enhance the methodology description of this category by providing in the NIR additional information and references on MCFs and include the outcomes of the new research on B_0 and MCFs as soon as they become available	
A.7	3.B.3 Swine – CH_4	The ERT noted an inverse trend between the swine population numbers and the related CH_4 emissions from 2006 to 2013 the subcategory swine. In particular, the swine population increased by more than 7.5% (from 11 355 970 to 12 212 303 head), while the corresponding CH_4 emissions decreased by 13.1% (from 94.4 to 83.5 kt CH_4). The ERT further noted that the country-specific values of B_0 (0.34 m^3 CH_4/kg VS) were kept constant throughout the time series, and were 24.4% lower than the IPCC default value of 0.45 m^3 CH_4/kg VS (2006 IPCC Guidelines, table 10A-7, p. 10.91)	Yes. Transparency*
		In response to the list of potential problems and further questions raised by the ERT during the review, the Netherlands provided the requested additional information: more detailed information on animal populations; explanations on each parameter used for estimation and their sources; additional explanation of the IEFs of each animal category, for the whole time series; and the scientific research supporting the original estimates made by the Party (Vonk et al.,[i] van Bruggen et al.,[k] and Zom and Groenestein[l]). However, the ERT noted that this information indicates that, although swine numbers including piglets increased by 7.5 % in	

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		the time series 2006–2013, swine numbers excluding piglets only increased by 2.6% in 2013 compared with 2006, and several other animal types such as boars and gilts have a decreasing trend (e.g. gilts not yet in pig decreased by 15.4 % from 273 120 to 231 068 heads, in 2006 – 2013). In its response, the Netherlands stated that "manure production of piglets is included in manure production of sows and the IEF calculated with animal numbers including piglets is technically incorrect"; therefore, the VS value for piglets is included in the VS value for sows, whereas only the increase in animal numbers excluding piglets is relevant to the calculation of CH_4 emissions. Further, the decrease in VS per animal through the time series explains the decreasing trend of the CH_4 emissions for swine The ERT recommends that the Netherlands include in the NIR the explanation of different trends between CH_4 emissions and changes in the swine population	
A.8	3.D Direct and indirect N_2O emissions from agricultural soils – N_2O	The ERT noted that page 64 of the additional document that includes a description of the methodologies[i] includes characteristics of AD for "crop residues applied to soils"; however, it was not clear enough what percentage of the residues was annually removed from the fields. During the review week, in response to a request by the ERT, the Party provided numeric data on annual removal of agricultural crop residues from fields The ERT recommends that the Netherlands include the numeric data on annual removal of agricultural crop residues in the NIR	Yes. Transparency*
A.9	3.H Urea application – CO_2	The ERT noted that the CO_2 emissions for urea application are reported as "IE" in CRF tables 3s2 and 3.G-I, and the AD on the amount of urea applied are reported as "NE" with a comment in the documentation box that the emissions have been reported under ammonia production owing to the unavailability of separate data on urea application. However, page 156 of the NIR indicates that urea application (3.H) has been included in CRF table 3.D for direct and indirect N_2O emissions from agricultural soils, for the subcategory 3.D.a.1 inorganic N fertilizers, with the numeric data on urea application provided. The NIR has no specific section on urea application included under the agriculture sector with further explanations on the methods used for the estimates During the review, the Netherlands clarified that an assumption was made that each year the urea applied to soils was exactly equal to national urea production, and it was reported under the direct and indirect N_2O emissions from agricultural soils from urea application as "IE" in the CRF tables, with no supporting documentation in the IPPU or agriculture sections of the NIR. In response to the questions raised by the ERT on the emissions from ammonia production under the IPPU sector, the Netherlands further clarified that there are currently no statistics available on total urea production, import, export and use of urea in the agriculture and other sectors, and therefore it is assumed that the amount of CO_2 recovered from ammonia production for	Yes. Transparency*

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		downstream use is zero, which is why no emissions are reported under the urea application to land (3.H) in the agriculture sector. The Party provided no justification for these assumptions in its NIR, which are not consistent with good practice in accordance with the 2006 IPCC Guidelines (vol. 3, section 3.2.2.1, p. 3.12). (See also the description of the issue for ammonia production under the IPPU sector in ID# I.14 above) In order to improve accuracy and the comparability of emission estimates, the ERT recommends that the Netherlands include a section in the NIR with the information on the methodology used for the estimation of CO_2 emissions from urea application under the agriculture sector, allocation of emissions in accordance with the 2006 IPCC Guidelines and link with the reporting of emissions from ammonia production under the IPPU sector	
LULUCF			
L.3	4. General (LULUCF) – CO_2	As indicated in ID# L.1 in table 3, the ERT noted that the Netherlands reported carbon stock changes as "NE" in living biomass, dead organic matter and in mineral soils pools under the land conversion categories that are identified as key, applying the IPCC tier 1 method which assumes zero carbon stock changes in those pools. In response to the question raised by the ERT during the review, the Party provided some additional explanations. For example, it indicated that the data on grassland renovation activity show, on average, a decreasing trend since 1990 because less grassland has been renewed and so less carbon is lost, therefore, the reporting of zero carbon stock changes in mineral soils under the grassland category is a conservative estimate. The wetlands subcategory mainly includes open water and flooded land for which no carbon stock changes in living biomass, dead organic matter and soil are considered, and in addition, other land subcategories does not have a substantial amount of carbon The ERT recommends that, in its next submission, the Netherlands correct the notation key "NE" to "NO" for those pools in which the Party considers no carbon stock changes occur, provide estimates for those pools and categories for which it believes zero carbon change does not apply, or provide the justification for reporting "NE" for the pools in which the amount of carbon stock changes is insignificant in line with paragraph 37 of the UNFCCC Annex I reporting guidelines	Yes. Transparency*
L.4	4. General (LULUCF) – CO_2	The ERT noted that the Netherlands uses tier 1 approaches for key land conversion categories, such as: carbon stock changes in living biomass (gains and losses) under cropland remaining cropland; and carbon stock changes in dead organic matter under land converted to cropland, except for forest land converted to cropland. The ERT recommends that the Party transparently report in its next NIR which pools of key	Yes. Accuracy*

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		categories are significant, and obtain the data and report the estimates of emissions and removals for those significant pools under the key categories, using higher-tier methodologies	
L.5	4.A.1 Forest land remaining forest land – CO_2	The ERT noted that the IEFs for carbon stock change per area in forest land remaining forest land and the area of forest management under the Kyoto Protocol are particularly high in 2013 (2.58 t C/ha, while 2.04 t C/ha in 2012). The ERT also noted that the net carbon stock change in dead wood has decreased significantly since the previous submission, from 19.85 kt C in 2012 to 5.35 kt C in 2013, although the total area of land (in kha) used in the calculation was almost the same in the three consecutive years of the inventory. The Party explained that the values reported for 2013 were the result of projections using the EFISCEN model, which was used to calculate changes in carbon stocks from 2013 onwards, and the Party is aware that, in particular, the mortality effects were not well included in this model. The Netherlands further explained that the pre-2013 data were derived directly from the NFIs. The Party also indicated that an improved model calibration will be used for its next submission	Yes. Accuracy*
		The ERT recommends that the Party calibrate the 2013 values, and take historical trends into account, to ensure the accuracy and time-series consistency in the estimates of removals	
L.6	4.A.1 Forest land remaining forest land – CO_2	Noting the mixed use of historical data from the NFI and the data obtained by projections for recent years in its estimate of carbon stock change per area in forest land remaining forest land and the area of forest management under the Kyoto Protocol (see ID# L.5 above), the ERT also recommends that the Party periodically update the carbon stock changes on land areas involving forest land as and when the new information from the next NFI becomes available	Yes. Accuracy*
L.7	4.A.1 Forest land remaining forest land – CO_2	In chapter 6.4.2.1 of the NIR (p. 196), the Netherlands states that all harvests were calculated as thinning, with regard to the effects of wood harvest on biomass gains and losses. In response to a request from the ERT for clarification on this statement, the Netherlands explained that selective felling is the common practice for harvesting, as opposed to clear felling. Under this practice, harvested biomass (excluding the part from deforestation) is spread over the whole area of forest land remaining forest land. The Party further explained that in the calculations for each forest pixel, a small amount of biomass is subtracted from the total	Yes. Transparency*
		The ERT recommends that, in the next NIR, the Netherlands provide an explanation of the implication of carbon stock change in forests and the assumptions made for their estimates and provide references to justify this assumption	
L.8	4.A.1 Forest land remaining forest	The ERT noted that removals from forest land remaining forest land have increased since 2010. During the review, the Netherlands explained that this is because the transfer of land	Yes. Consistency*

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and/or a problem[c]? If yes, classify by type*
	land – CO_2	from land converted to forest land to forest land remaining forest land started 20 years after 1990. The Netherlands takes into account the carbon stock changes in young forests after being transferred to the forest land remaining forest land category in which their carbon stock does not yet reach the carbon stock of an average forests in forest land remaining forest land. This effect explains the increase in the carbon stock change. The Party also indicated a planned evaluation of methodological alternatives to improve its reporting of carbon stock changes in land converted to forest land to make the conversion from "land converted to forest land" to "forest land remaining forest land" smoother The ERT recommends that the Party revise the land-use representation by correcting the increase of removals in forest land remaining forest land and by improving the consistency of reporting over time in accordance with the methodology of the 2006 IPCC Guidelines	
L.9	4.B Cropland – CO_2	The ERT noted that the area of organic soil under the category (93.17 kha for 2013) reported in CRF table 4.B and under the category grassland (289.08 kha for 2013) do not match with the area of cultivated organic soil in the agriculture sector reported in CRF table 3.D (222.28 kha). In response to a question raised by the ERT, the Netherlands explained that the area of organic soils reported in CRF table 3.D under the agriculture sector is for histosols and does not include peaty soils; however, the reported emissions in CRF table 3.D include those from both histosols and peaty soils (the total area of 374.29 kha). The Party further explained that, in the LULUCF sector, under the category grassland, the area of organic soils in grassland in nature (7.97 kha in 2013) is included. The ERT considers the inconsistency in reporting areas and associated emissions in CRF table 3.D and the exclusion of peaty soil in CRF table 3D create the lack of consistency and accuracy The ERT recommends that the Party correct the mistakes in reporting land-use area data in the CRF tables and ensure complete and consistent coverage of land areas within the country	Yes. Adherence to UNFCCC Annex I inventory reporting guidelines
L.10	4.C.1 Grassland remaining grassland – CO_2	In the NIR2015, the Netherlands states that carbon stock changes in mineral soils under grassland remaining grassland are not expected, and therefore they are not estimated, except for organic soils under grassland. However, the ERT noted that the net carbon stock change in mineral soils (+0.24 kt C) is taken into account when estimating CO_2 emissions from soils under this category. Further, it was not clear to the ERT where the removals in grassland remaining grassland on mineral soil were reported in the NIR and it could not find the reference material for the LULUCF inventory. During the review, the Netherlands informed the ERT that the above-mentioned carbon stock changes resulted from land that was converted to grassland before reaching the 20-year transition period and further explained that this was aggregated under grassland remaining grassland erroneously, and that it should have been reported under land converted to grassland. The Party indicated its intention to further	Yes. Adherence to UNFCCC Annex I inventory reporting guidelines

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[b] and/or a problem[c]? If yes, classify by type
		evaluate this issue and improve this for the next submission The ERT recommends that the Party correct the errors in the allocation of areas and the estimates of emissions/removals between grassland remaining grassland and land converted to grassland, and enhance the QA/QC procedures to ensure accurate reporting on this issue in the NIR and the CRF tables	
L.11	4(I) Direct N_2O emissions from nitrogen inputs to managed soils – N_2O	The ERT noted that N_2O emissions from inorganic N fertilization under the category settlements are reported as "NE" and "IE" for the application of the organic N fertilizers. In the NIR, the Netherlands explained that the direct N_2O emissions under settlements (4.E) are reported under other organic fertilizers applied to soils (including compost) (3.D.a.2.c). Therefore, in CRF table 4(I), direct N_2O emissions from N inputs for settlements are reported as "IE". However, no explanation is provided for the "NE" reporting of inorganic N fertilization. The ERT also noted that in CRF table 3.D, it is indicated that the estimated emissions include N input from the application of inorganic fertilizers to cropland and grassland. In response to the question raised in the early stage of the review, the Netherlands explained that all N_2O emissions from use of N fertilizers are reported in the agriculture sector, including the indirect N_2O emissions. The relevant explanation is also provided in the documentation box of CRF table 4(I) The ERT recommends that, in the next submission, the Netherlands revise the notation key "NE" to "IE" for those indirect N_2O emissions that are reported in the agriculture sector, and provide a more transparent explanation	Yes. Transparency*
Waste			
W.7	5.A Solid waste disposal on land – CH_4	The ERT noted that the Netherlands has applied a FOD model that corresponds to a tier 2 method in the 2006 IPCC Guidelines. The parameters used in the FOD model and the reason for their selection are explained in the NIR and the ENINA report.[c] However, no explanations are included for the parameter of delay time and the rationale for the selection of the parameter of the MCF The ERT recommends that the Party provide in the NIR an explanation of its selection of the delay time and MCF	Yes. Transparency*
W.8	5.A Solid waste disposal on land – CH_4	The Netherlands reported "IE" for the subcategory semi-aerobic in CRF table 5.A. In response to a question raised by the ERT during the review, the Party explained that there is no semi-aerobic solid waste disposal site in the Netherlands, and stated that the notation key	Yes. Adherence to UNFCCC Annex I inventory reporting

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and/or a problem[c]? If yes, classify by type*
		"IE" for semi-aerobic in the CRF table 5.A is used instead of "NO" or "NA"	guidelines
		The ERT recommends that, in the next submission, the Party correct the notation key in CRF table 5.A in accordance with paragraph 37 of the UNFCCC Annex I inventory reporting guidelines	
W.9	5.A Solid waste disposal on land – CH_4	The ERT noted that, for the period 1990–2000, to estimate CH_4 emissions from SWDS, the Netherlands uses a country-specific value (60%) for the fraction of CH_4 in generated landfill gas based on the measurement at several Dutch SWDS conducted in 1993, and for the period 2005–2014, the Party has used the default value of 50% as provided in the 2006 IPCC Guidelines for the fraction of CH_4. The values that were obtained by interpolating those two values (50% and 60%) are applied for the period 2001–2004. During the review, the Party explained that the default value of 50% was selected for the period 2005–2014 taking into account the changes in waste composition of landfilled waste	Yes. Transparency*
		The ERT noted that the 2006 IPCC Guidelines indicate on page 3.15 that it is good practice to adjust for the CO_2 absorption in seepage water if the fraction of CH_4 in generated landfill gas is based on the measurement of CH_4 concentrations measured in landfill gas emitted from the SWDS. In response to a question raised by the ERT during the review, the Party admitted that its country-specific values of 60% obtained in 1993 did not consider CO_2 absorption in landfill because the data were based on measurements outside SWDS. Furthermore, the ERT notes that the 2006 IPCC Guidelines (p. 3.15) encourage the use of the IPCC default value of 50% because most waste in SWDS generates a gas with approximately 50% CH_4 and only material including substantial amounts of fat or oil can generate gas comprising substantially more than 50% CH_4	
		Therefore, the ERT concluded that this case presented a potential overestimation of CH_4 emissions from solid waste disposal on land for 1990 and included this issue in the list of potential problems and further questions raised by the ERT. In response, the Netherlands provided references (Coops et al.[m] and Oonk and Boom[n]) and revised the country-specific value of the CH_4 fraction in landfill gas for the period 1990–2000 from 60% to 57.4%, taking the CO_2 absorption in seepage water into consideration based on the expert judgment, and submitted the revised CRF tables for the whole time series. The ERT agreed with the Netherlands on the use of the country-specific value supported by the reference documents provided by the Party	
		The ERT recommends that the Party include in the NIR the background information on its use of country-specific values for the fraction of CH_4 in generated landfill gas	
W.10	5.A Solid waste	The Netherlands, in response to the request in the list of potential problems and further	Yes. Consistency*

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[b] and/or a problem[c]? If yes, classify by type
	disposal on land – CH_4	questions raised by the ERT, provided references for its use of the default value of 50% for the period 2005–2014.[o] However, the ERT noted that the Party has not undertaken any research that would allow it to update the country-specific value for the fraction of CH_4 in generated landfill gas that is applied for the period 1990–2000, as indicated in ID# W.9 above. The ERT further noted that neither the NIR nor any other reference provided by the Party sufficiently documented changes in the composition of waste and the amount of waste sent to landfill. Noting that, in the guidance on time-series consistency, the 2006 IPCC Guidelines indicate (vol. 1, chapter 5, section 5.2.3, p. 5.7) that "since a general assumption is that EF or other estimation parameters do not change over time unless otherwise indicated, countries should clearly document the reason for using different factors or parameters in the time series", the ERT is of the view that time-series consistency is not achieved in the Party's estimates of CH_4 from SWDS, leading to a potential underestimation of CH_4 emissions for the years 2013 and 2014 Therefore, the ERT recommends that in the next submission the Netherlands provide justifications of: (a) why the default value of fraction of CH_4 in generated landfill gas was used for the years 2005–2014; (b) why the Party considers that the interpolation between country-specific and default values for fraction of CH_4 in generated landfill gas for the years 2001–2004 is the best approach to perform the CH_4 emission estimates and to maintain time-series consistency; and (c) how the approaches to estimate CH_4 emissions from SWDS applied by the Netherlands correspond to the guidance provided in the 2006 IPCC Guidelines If the Netherlands is unable to provide the justifications referred to above, and is not able to obtain a country-specific value for the fraction of CH_4 in generated landfill gas for the period 2001–2014, the ERT recommends that the Party continue to use the country-specific value (57.4%) for the fraction of CH_4 in generated landfill gas, and recalculate the CH_4 emissions from waste disposal on land using the same country-specific value (57.4%) for the fraction of CH_4 in generated landfill gas for the entire time series, 1990–2014	
W.11	5.B.1 Composting – CH_4 and N_2O	The Party developed a country-specific CH_4 EF for composting based on a large-scale monitoring programme during the 1990s and research by DHV.[f] In the NIR, the Party reports that, before 2008, 2 400 g CH_4/tonne of composted waste is applied whereas 750 g CH_4 /tonne of composted waste is applied after 2009. The ERT noted that the ENINA report[c] explains that, in 2010, an independent study was carried out and that the EF for CH_4 reflecting the result of this study has been used by the Party since the 2011 submission. The Party further explained that it is not possible to modify EFs retroactively on the basis of this study. The ERT commends the Netherlands for undertaking an investigation and for developing the country-specific EF based on measurement. However, the reason for the decrease in the CH_4 EF after 2009 is not clearly explained and justified in conjunction with,	Yes. Consistency*

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and/or a problem[c]? If yes, classify by type*
		for example, technical improvement in composting facilities in the Netherlands	
		The ERT recommends that the Party ensure the consistency of the reported time-series for the CH_4 EF and include in the NIR the reason for the decrease in the CH_4 EF after 2009	
W.12	5.B.2 Anaerobic digestion at biogas facilities – CH_4 and N_2O	The ERT noted that, according to the above-mentioned reference document (see ID# W.11 above), there is also a study estimating CH_4 and N_2O emissions from fermentation of biodegradable waste using the EFs of 1 100 g CH_4/t and 46 g N_2O/t of fermented biodegradable waste. However, in reporting the emissions in CRF table 5.B, the Party has used the notation key "NA" for CH_4 and N_2O emissions	Yes. Completeness*
		The ERT recommends that in the next submission the Party report emissions of CH_4 and N_2O from anaerobic digestion at biogas facilities using the available country-specific EFs to ensure complete reporting of this category	
W.13	5.C.1 Waste incineration – CO_2	The ERT noted that emissions from waste incineration are reported as "IE" in table 5.C. The ERT also noted that the waste chapter of the NIR (section 7.4) does not provide the explanation on the methodology, EFs and AD for CO_2 emissions from incineration of waste oil. See also ID# E.13 above	Not an issue
		The ERT encourages the Party to provide the information on the incineration of waste oil in the NIR	
W.14	5.D Wastewater treatment and discharge – N_2O	The ERT noted that the Netherlands uses a country-specific definition of the N in effluents as the amount of total N load in domestic, industrial and commercial wastewater. In response to the question raised by the ERT during the review, the Netherlands explained that it uses a country-specific methodology for indirect N_2O emissions from wastewater based on the amount of N discharged into surface water from possible sources including the effluent of domestic and industrial wastewater treatment plants and septic tanks, rainwater drains and overflows. The ERT considers that the Party's country-specific methodology for indirect N_2O emissions from wastewater is well developed and justified. However, the ERT noted that neither the NIR nor the ENINA report[c] provide the explanation that demonstrates how the country-specific method is consistent with the methodology provided in the 2006 IPCC Guidelines and better reflects the Party's situation	Yes. Transparency*
		The ERT commends the Netherlands for developing a country-specific method for indirect N_2O emissions from wastewater. However, the ERT recommends that the Netherlands provide the clearly documented country-specific methodology and the background information in the NIR to improve the transparency of the reporting	

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and/or a problem[c]? If yes, classify by type*
W.15	5.D Wastewater treatment and discharge – CH_4 and N_2O	The Netherlands uses a well-developed country-specific methodology, EFs and AD for estimating CH_4 and N_2O emissions from wastewater. However, some minor potential emission sources in this category, such as CH_4 emissions from sludge from industrial wastewater and sludge treatment and N_2O emissions from septic tanks, are still missing because country-specific methodologies for these potential emission sources are not yet developed	Not an issue
		The ERT encourages the Party to estimate CH_4 emissions from the treatment of sludge from industrial wastewater and N_2O emissions from septic tanks using the default EFs and methods in order to improve the completeness of the inventory and the reporting if country-specific methodologies and EFs are not yet developed	
KP-LULUCF			
KL.2	General (KP-LULUCF) – All gases	The ERT noted that the total areas for the elected activities of afforestation, reforestation, deforestation and forest management at the end of the current inventory year (2013) and the previous inventory year (2012) do not match. The total area of those lands reported for 2012 is 448.56 kha and for 2013 it is 451.83 kha. During the review, the Party explained that this mismatch occurred when the transitions from land to afforestation and reforestation have been erroneously omitted from the table in the NIR while working with the new CRF Reporter software, and the observed area omitted for the case of 2014 is equal to 4.11 kha, and shown in the column "land to AR" in table 11.1 of the NIR	Yes. Accuracy*
		The ERT recommends that the Netherlands provide the correct areas of land in 2012 and 2013 where necessary and include them in the land matrix for its next submission	
KL.3	General (KP-LULUCF) – CO_2	In CRF table 4(KP) net emissions are reported for 2013. However, in CRF tables 4(KP-I) A.1 and A.2, the total for net CO_2 emissions is reported as "NO", "IE", while the cells for net carbon stock change in litter and dead wood are blank. Similarly, in CRF table 4(KP) net emissions under forest management are reported for 2013; however, in CRF table 4(KP-I)B.1, net CO_2 emissions under the total for activity B.1 are reported as "NO". The ERT also noted that the information on the FMRL is not reported in CRF table 4(KP-I)B.1.1 although the Party indicates its FMRL in the NIR (i.e. –1 578 Gg CO_2 eq by using the instantaneous oxidation for HWPs and –1 539 Mt CO_2 eq by applying the FOD function for HWP) (see ID# KL.7 below). Similarly, the related information on the FMRL is not provided in the accounting table. In CRF table 4(KP-I)C, total HWP from land subject to forest management is reported, while the cells for carbon stock changes and the net CO_2 emissions are blank. In response to a question in the early stage of the review, the Netherlands explained that this occurred as a consequence of the CRF Reporter software problem. The Party further explained that it made an effort to, at least, fill the summary and other tables, but not in all	Yes. Consistency*

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and/or a problem[c]? If yes, classify by type*
		cases. The Netherlands told the ERT that the notation keys will be checked once the software is properly functioning, and the information and values in the NIR should be considered as correct and foremost for the purpose of the review The ERT recommends that the Netherlands enhance its QA/QC procedures to ensure the consistency of the information reported across the CRF tables relating to the KP-LULUCF sector, including the summary table CRF 4(KP) and tables for individual activities and background information	
KL.4	General (KP-LULUCF) – CH_4 and N_2O	The CH_4 and N_2O emissions from drained, rewetted and other soils under afforestation and reforestation, deforestation and forest management activities are reported as "NE" in CRF table 4(KP-II)2. During the review, the Party reported that the CH_4 emissions from drained organic soils have been assumed to be negligible in the Netherlands. The Party also explained that emissions might occur from ditches, which are not separately mapped; however, these ditches are included in the land use cropland and grassland under organic soils so the emissions from organic soils are reported in the organic soils under the cropland and grassland category in the LULUCF sector, for which the EFs are much higher compared with the CH_4 EF for ditches. The Party further explained that the notation key "NE" is therefore a conservative estimate of the emissions. The Party also indicated that a marginally small area of rewetted organic soils exists in the Netherlands, but these are also not mapped; therefore, these soils are included under organic soils with their related CH_4 and N_2O emissions The ERT recommends that the Netherlands correct the notation key "NE" to "IE" for those CH_4 and N_2O emissions that are reported under organic soils. The ERT further recommends that the Party specify the organic soils where the related CH_4 and N_2O emissions are reported. Furthermore, the ERT encourages the Netherlands to undertake efforts to map the areas of ditches and areas of rewetted organic soils and to report on the emissions from these separately in CRF table 4(KP-II)2	Yes. Transparency*
KL.5	Deforestation – CO_2	The ERT noted that the carbon stock change per area of the litter pool under deforestation in the Netherlands in 1990 (27.25 t C/ha) is much higher than for any other reporting Parties (ranging between 0.09 t C/ha (Poland) and 27.25 t C/ha (Netherlands)). During the review, the Party explained that a large share of forest area in the Netherlands is on poor Pleistocene soils that are characterized by a relatively thick litter layer, and that in this context the Netherlands has a characteristic combination of geomorphological and climate conditions which may explain the differences with other countries. The Party also indicated that the assessment of carbon stocks and changes thereof in litter in Dutch forests have been based on extensive datasets on litter thickness and carbon content in litter, and provided supporting	Yes. Transparency*

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[b] and/or a problem[c]? If yes, classify by type
		reference materials[p] The ERT recommends that the Party include the justification for the high value of carbon stock change per area of litter pool for the area of deforestation in 1990 in the NIR	
KL.6	Forest management – CO_2, CH_4 and N_2O	The ERT noted that the report of the technical assessment of the FMRL submitted by the Netherlands in 2011 (FCCC/TAR/2011/NLD) recommended that the Netherlands ensure consistency in the use of EFs for the construction of the FMRL and the estimation period, if different EFs are used in the future. The ERT further noted that the need for a technical correction of the FMRL also arises from the background level of natural disturbances, because the Party's FMRL reported in "Submission of information on FMRL by the Netherlands" does not reflect historical emissions from natural disturbances. During the review, in response to a question raised by the ERT, the Netherlands explained that so far as it intends to apply the accounting of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol at the end of the commitment period, it believes that detailed technical corrections are only due by that time. The Netherlands further informed the ERT that it is currently preparing the technical corrections, which will be reported in the future submissions before the end of the second commitment period of the Kyoto Protocol In response to the ERT's question on the discrepancies between the information in the NIR 2016 on natural disturbances for the period 1990–2009 to construct the background level plus margin, and methodologies to establish the background levels and the "Submission of information on FMRL by the Netherlands", the Party explained that at the time that the FMRL was elaborated and submitted, the Netherlands did not yet report emissions from forest fires owing to a lack of data and the expected very low emissions associated with it. In addition, the ERT noted that, in response to the recommendation made in the 2012 annual review report, the Netherlands has estimated and reported emissions from wildfires since the NIR 2013. The Party further indicated its intention to take this issue into consideration The ERT recommends that the Party, when it conducts technical corrections of the FMRL, address the recommendation made in the report of the technical assessment of the FMRL submitted by the Netherlands and reflect historical emissions from natural disturbance (see also document FCCC/IRR/2016/NLD, table 3, ID# 5)	Yes. Accuracy*
KL.7	Harvested wood products – CO_2	The ERT noted that the reporting on methodologies and assumptions for the estimation of CO_2 emissions from HWP in the NIR (chapters 6 and 11) is limited and not transparent. The information in the NIR is mainly the reference to the Kyoto Protocol Supplement. The FMRL of the Netherlands was published in 2011 (FCCC/TAR/2011/NLD); however, the NIR does not explain how the requirements referred to in decision 2/CMP.8 have been taken into	Yes. Transparency*

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[b] and/or a problem[c]? If yes, classify by type*
		account to improve the transparency of HWP reporting. In response to the question raised by the ERT during the review, the Netherlands provided the additional information and clarification requested in paragraph 2(g)(i–vii) of annex II to decision 2/CMP.8, including the default values of half-lives from table 2.8.2 of the Kyoto Protocol Supplement which were used in estimating emissions and removals in accordance with decision 2/CMP.7. The Party explained that it would consider whether to include emissions from HWP from forests prior to the start of the second commitment period accounting, after a technical correction has been applied to the FMRL. Regarding the information on HWP, the Party indicated that the emissions from HWP in SWDS are not separately accounted for, and it excludes fuel wood from the estimation of CO_2 emissions from HWP based on instantaneous oxidation, and imported HWP is not accounted for. The Party further explained that, regarding the information on how the emissions from the HWP pool that have been accounted for during the first commitment period on the basis of instantaneous oxidation have been excluded from the accounting for the second commitment period, the Party considers this is not relevant information for the Netherlands because it did not account for forest management during the first commitment period and also because no harvest in afforested/reforested land is assumed (see document FCCC/IRR/2016/NLD, table 3, ID# 4)	
		The ERT recommends that, for the next submission, the Netherlands provide information on the methodologies, parameters (e.g. half-lives) and assumptions used for the estimation of CO_2 emissions from HWP, the explanation of the treatment of HWP in the NIR, including what is included or excluded as the emissions from HWP, and on which assumption their estimation is based, in accounting those emissions; and, in particular, of the adherence to IPCC guidance in terms of the exclusion of imports and deforestation, inherent HWP, and of the relationship between the reporting under the Convention and the projection of HWP in the FMRL	
KL.8	Direct and indirect N_2O emissions from N fertilization – N_2O	The direct and indirect N_2O emissions from N fertilization are reported as "NO" for afforestation, reforestation and forest management, and as "IE" for deforestation in CRF table 4(KP-II)1. In the NIR, it is indicated that such management practices are not frequently applied in the Netherlands. During the review, the Party explained that because, in general, N fertilization is not part of forest management practices in the Netherlands, the indirect N_2O emissions are not monitored. The Netherlands is of the view that, given high background levels of atmospheric N deposition, the application of additional N to forests is not economically valuable. As for deforestation, the Party explained that all N_2O emissions from soil were related to fertilization. Thus, the deforested areas converted to cropland and grassland are reported under the agriculture sector; therefore, "IE" is reported under KP-LULUCF	Yes. Transparency*

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[b] and/or a problem[c]? If yes, classify by type
		To improve the transparency and completeness of the next submission, the ERT recommends that the Netherlands provide the reasons for the exclusion of direct and indirect N_2O emissions from N fertilization from the KP-LULUCF reporting, as explained during the review	

Abbreviations: AD = activity data, AER = annual environmental report, CPR = commitment period reserve, CRF = common reporting format, EF = emission factor, ERT = expert review team, EU = European Union, EU ETS = EU Emissions Trading System, F-gas = fluorinated gas, FMRL = forest management reference level, FOD = first-order decay, GHG = greenhouse gas, HWP = harvested wood products, IE = included elsewhere, IEA = International Energy Agency, IEF = implied emission factor, IPCC = Intergovernmental Panel on Climate Change, IPPU = industrial processes and product use, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, Kyoto Protocol Supplement = *2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol*, LPG = liquefied petroleum gas, LULUCF = land use, land-use change and forestry, MCF = methane correction factor, N = nitrogen, NA = not applicable, NE = not estimated, NEU = non-energy use, NFIs = national forest inventories, NIR = national inventory report, NMVOCs = non-methane volatile organic compounds, NO = not occurring, PPSR = previous period surplus reserve, QA/QC = quality assurance/quality control, SEF = standard electronic format, SIAR = standard independent assessment report, SWDS = solid waste disposal sites, 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", VS = volatile solids, 2006 IPCC Guidelines = *2006 IPCC Guidelines for National Greenhouse Gas Inventories*.

[a] Recommendations are related to issues as defined in decision 13/CP.20, annex, paragraph 81, or problems as identified in decision 22/CMP.1, annex, paragraph 69, identified by the ERT during the review. Encouragements are made to the Party to address all findings not related to such issues.

[b] An asterisk is included next to each issue type that is also a problem, as defined in decision 22/CMP.1, annex, paragraphs 68 and 69, including those that lead to an adjustment or a question of implementation.

[c] ENINA. 2016. *Methodology Report on the Calculation of Emissions to Air from the Sectors Energy, Industry and Waste*. RIVM Report 2016-0055. As used by the Dutch Pollutant Release and Transfer Register for the reporting of GHG emissions under UNFCCC, Kyoto Protocol, EU Monitoring Mechanism Regulation (MMR) and EU Effort Sharing Decision (ESD) and for international reporting obligations of other pollutants under CLRTAP and the NEC Directive.

[d] Jansen BI et al. 2016. *Methods Used for the Dutch Emission Inventory, Product Usage by Consumers, Construction and Services*. Working group for emissions from services and product use, Netherlands' Pollutant Release and Transfer Register.

[e] Klein J et al. 2016. *Methods for Calculating the Emissions of Transport in the Netherlands 2016*. Statistics Netherlands, PBL Netherlands Environmental Assessment Agency, TNO, RWS Centre for Transport and Navigation (WVL).

[f] DHV. 2010. *Update of Emission Factors for N_2O and CH_4 for Composting, Anaerobic Digestion and Waste Incineration*. Report MD-AF20100263/mk, July 2010. DHV, Amersfoort.

[g] Rijkswaterstaat. 2013. *Methodiekrapport werkveld 66, AVI's Lucht IPCC*: update 2013 (Method report work package 66, WIPs Air IPCC). Rijkswaterstaat, Utrecht. ISBN 978-94-91750-05-2. In Dutch.

[h] Kiwa Technology[NV]. 2015. *Evaluatie emissiefactoren*, GT-140219 28-1-2015 (in Dutch).

[i] Vonk J, Bannink A, van Bruggen C, Groenestein CM, Huijsmans JFM, van der Kolk JWH, Luesink HH, Oude Voshaar SV, van der Sluis SM and Velthof GL. 2015. *Methodology for Estimating Emissions from Agriculture in the Netherlands. Calculations of CH_4, NH_3, N_2O, NOx, PM10, PM2.5 and CO_2 with the National Emission Model for Agriculture (NEMA)*. WOt-report 2015.xxx. WOT Natuur & Milieu, Wageningen, the Netherlands.

[j] Dämmgen U, Amon B, Hutchings NJ, Haenel H-D and Rösemann C. 2012. Data sets to assess methane emissions from untreated cattle and pig slurry and solid manure storage systems in the German and Austrian emission inventories. Landbauforschung-vTI *Agriculture and Forestry Research*. 1/2 (62)1–20.

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[l] Zom RLG and Groenestein CM. 2015. Excretion of volatile solids by livestock to calculate methane production from manure In *RAMIRAN 2015*; 16th International Conference Rural-Urban Symbiosis, 8–10 September 2015, Hamburg, Germany.

[m] Coops O, Luning L, Oonk H and Boon J. 1995. *Emissies van Stortplaatsen*. Report no. 28, Official Emissieregistratie, Ministry of Housing, Spatial Planning and the Environment.

[n] Oonk H and Boom J. 1995. *Landfill Gas Formation, Recovery and Emissions*. Report no. 410 100 036, TNO/IMET.

[o] Supporting documents including: Oonk H. 2011-a. Peer review 2011 Dutch national inventory report (NIR), Oonkay!; Oonk H. 2011-b. *De bioreactor: Demonstratie op werkelijk schaal*, TNO-MEP – R 2000/060 (in Dutch); and Bingemer HG and Crutzen PJ. 1987. The production of methane from solid wastes. *Journal of Geophysical Research*. Vol. 92, No. D2, pp. 2181–2187.

[p] Supporting documents: Schulp CJE et al. 2008. Effect of tree species on carbon stocks in forest floor and mineral soil and implications for soil carbon inventories. *Forest Ecology and Management*. No. 256, pp. 482–490. Available at http://dx.doi.org/10.1016/j.foreco.2008.05.007; and de Waal et al. 2012. Soil Carbon Dynamics and Variability at the Landscape Scale: its relation to aspects of spatial distribution in national emission databases. The report on the project of the Dutch National Research Programme Climate Changes Spatial Planning co-financed by the Ministry of Infrastructure and the Environment. Available at http://edepot.wur.nl/289947.

VI. Application of adjustments

11. The ERT has not identified the need to apply any adjustments to the 2015 annual submission of the Netherlands.

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

12. The Netherlands has elected commitment period accounting and therefore the issuance and cancellation of units for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol are not applicable for the 2015 review.

VIII. Questions of implementation

13. No questions of implementation were identified by the ERT during the review.

Annex I

Overview of greenhouse gas emissions and removals for the Netherlands for submission year 2015 and data and information on activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

1. Tables 6–9 provide an overview of total greenhouse gas emissions and removals, as reported by the Netherlands.

Table 6
Total greenhouse gas emissions for the Netherlands, Base year[a]–2013[b]
(kt CO_2 eq)

	Total GHG emissions excluding indirect CO_2 emissions		*Total GHG emissions including indirect CO_2 emissions[c]*		*Land-use change (Article 3.7 bis as contained in the Doha Amendment)[d]*	*KP-LULUCF activities (Article 3.3 of the Kyoto Protocol)[e]*	*KP-LULUCF activities (Article 3.4 of the Kyoto Protocol)*	
	Total including LULUCF	*Total excluding LULUCF*	*Total including LULUCF*	*Total excluding LULUCF*			*CM, GM, RV, WDR*	*FM[f]*
FMRL								
Base year	228 613.12	222 532.09	229 279.53	223 198.40	752.27		NA	
1990	226 977.59	220 896.56	227 643.90	221 562.87				
1995	237 492.79	231 169.83	237 960.39	231 637.43				
2000	225 703.34	219 497.72	226 037.92	219 832.30				
2010	219 530.16	213 523.12	219 767.36	213 760.31				
2011	205 914.51	199 800.72	206 147.47	200 033.68				
2012	201 322.87	195 068.68	201 550.13	195 295.94				
2013	201 135.74	194 825.15	201 350.00	195 039.41				

Abbreviations: CM = cropland management, FM = forest management, FMRL = forest management reference level, GHG = greenhouse gas, GM = grazing land management, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NA = not applicable, RV = revegetation, WDR = wetland drainage and rewetting.

[a] Base year refers to the base year under the Kyoto Protocol, which is 1990 for CO_2, CH_4 and N_2O, and 1995 for HFCs, PFCs, SF_6 and NF_3. The Netherlands has not elected any activities under Article 3, paragraph 4, of the Kyoto Protocol. For activities under Article 3, paragraph 3, of the Kyoto Protocol and forest management under Article 3, paragraph 4, only the inventory years of the commitment period must be reported.

[b] Emissions/removals reported in the sector other (sector 6) are not included in total GHG emissions.

[c] The Party has reported indirect CO_2 emissions in common reporting format table 6.

[d] The value reported in this column refers to 1990.

[e] Activities under Article 3, paragraph 3, of the Kyoto Protocol, namely afforestation and reforestation, and deforestation.

[f] The Party has not reported FMRL in the common reporting format tables. In the national inventory report, the Party indicates its FMRL as –1 578 Gg CO_2 eq by using the instantaneous oxidation for harvested wood products (HWP) and –1 539 Mt CO_2 eq by applying the first-order decay function for HWP.

Table 7
Greenhouse gas emissions by gas for the Netherlands, excluding land use, land-use change and forestry 1990–2013[a]
(kt CO_2 eq)

	CO_2[b]	*CH_4*	*N_2O*	*HFCs*	*PFCs*	*Unspecified mix of HFCs and PFCs*	*SF_6*	*NF_3*
1990	163 163.87	32 286.61	17 636.51	5 606.33	2 662.85	NO	206.70	NO, IE
1995	173 663.89	30 194.36	17 667.76	7 570.53	2 279.92	NO	260.96	NO, IE
2000	172 394.39	24 924.29	15 638.74	4 713.27	1 902.81	NO	258.79	NO, IE
2010	182 766.98	19 991.02	8 049.92	2 484.84	313.77	NO	153.78	NO, IE
2011	170 025.10	19 508.81	7 855.25	2 244.17	275.20	NO	125.17	NO, IE
2012	165 892.28	19 178.51	7 672.69	2 191.50	188.45	NO	172.51	NO, IE
2013	165 690.14	19 166.69	7 684.82	2 234.13	143.76	NO	119.87	NO, IE
Per cent change 1990–2013	**101.6**	**–40.6**	**–56.4**	**–60.2**	**–94.6**	**NA**	**–42.0**	**NA**

Abbreviations: IE = included elsewhere, NA = not applicable, NO = not occurring.
[a] Emissions/removals reported in the sector other (sector 6) are not included in total greenhouse gas emissions.
[b] CO_2 emissions include indirect CO_2 emissions reported in common reporting format table 6.

Table 8
Greenhouse gas emissions by sector for the Netherlands, 1990–2013[a,b]
(kt CO_2 eq)

	Energy	*IPPU*	*Agriculture*	*LULUCF*	*Waste*	*Other*
1990	156 548.67	25 569.15	25 264.26	6 081.03	14 180.80	NO
1995	167 806.81	26 799.54	24 454.76	6 322.96	12 576.33	NO
2000	166 058.08	22 788.85	21 170.88	6 205.62	9 814.48	NO
2010	178 515.66	12 318.33	18 421.11	6 007.04	4 505.21	NO
2011	165 149.53	12 548.42	18 097.06	6 113.79	4 238.68	NO
2012	161 569.13	11 825.96	17 889.94	6 254.19	4 010.91	NO
2013	161 384.56	11 641.08	18 203.51	6 310.59	3 810.26	NO
Per cent change 1990–2013	**103.1**	**–54.5**	**–28.0**	**103.78**	**–73.1**	**NA**

Abbreviations: IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry, NA = not applicable, NO = not occurring.

[a] Emissions/removals reported in the sector other (sector 6) are not included in total greenhouse gas emissions.

[b] Totals include indirect CO_2 emissions reported in common reporting format table 6.

Table 9

Greenhouse gas emissions/removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol by activity, base year[a,b]–2013, for the Netherlands

(kt CO_2 eq)

	Article 3.7bis as contained in the Doha Amendment[c]	*Article 3.3 of the Kyoto Protocol*		*Forest management and elected Article 3.4 activities of the Kyoto Protocol*				
	Land-use change	*Afforestation and reforestation*	*Deforestation*	*Forest management*	*Cropland management*	*Grazing land management*	*Revegetation*	*Wetland drainage and rewetting*
FMRL[d]								
Technical correction[e]								
Base year	752.27				NA	NA	NA	NA
2013		5.87	5.68	3.38	NA	NA	NA	NA
Per cent change Base year–2013					NA	NA	NA	NA

Abbreviations: FMRL = forest management reference level, NA = not applicable.

[a] Base year refers to the base year under the Kyoto Protocol, which is 1990 for CO_2, CH_4 and N_2O, and 1995 for HFCs, PFCs, SF_6 and NF_3. The Netherlands has not elected any activities under Article 3, paragraph 4, of the Kyoto Protocol. For activities under Article 3, paragraph 3, of the Kyoto Protocol, and forest management under Article 3, paragraph 4, only the inventory years of the commitment period must be reported.

[b] Values in this table include emissions on lands subject to natural disturbances, if applicable.

[c] The value reported in this column refers to 1990.

[d] The Party has not reported FMRL in the common reporting format tables. In the national inventory report, the Party indicates its FMRL as –1 578 Gg CO_2 eq by using the instantaneous oxidation for harvested wood products (HWP) and –1 539 Mt CO_2 eq by applying the first-order decay function for HWP.

[e] The Party has not reported a technical correction in its 2015 submission.

2. Table 10 provides an overview of relevant key data for the Netherlands' reporting under Article 3, paragraphs 3 and 4, of the Kyoto Protocol.

Table 10
Key relevant data for the Netherlands under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

Key parameters	*Values*
Periodicity of accounting	(a) Afforestation/reforestation: commitment period accounting
	(b) Deforestation: commitment period accounting
	(c) Forest management: commitment period accounting
	(d) Cropland management: not elected
	(e) Grazing land management: not elected
	(f) Revegetation: not elected
	(g) Wetland drainage and rewetting: not elected
Election of activities under Article 3, paragraph 4	None
Election of application of provisions for natural disturbances	Yes, for afforestation and reforestation and forest management
3.5% of total base-year GHG emissions, excluding LULUCF and including indirect CO_2 emissions	7,811.943 kt CO_2 eq (62 495.551 kt CO_2 eq for the duration of the commitment period)
Cancellation of AAUs, ERUs, CERs and/or issuance of RMUs in the national registry for:	
1. Afforestation and reforestation in 2013	NA
2. Deforestation in 2013	NA
3. Forest management in 2013	NA
4. Cropland management in 2013	NA
5. Grazing land management in 2013	NA
6. Revegetation in 2013	NA
7. Wetland drainage and rewetting in 2013	NA

Abbreviations: AAU = assigned amount unit, CER = certified emission reduction, ERU = emission reduction unit, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry, NA = not applicable, RMU = removal unit.

Annex II

Information to be included in the compilation and accounting database

Table 11 includes the information to be included in the compilation and accounting database for the Netherlands. Data shown are from the original annual submission of the Party, including the latest revised estimates submitted, adjustments (if applicable), as well as the final data to be included in the compilation and accounting database.

Table 11
Information to be included in the compilation and accounting database for 2013, including the commitment period reserve, for the Netherlands
(t CO_2 eq)

	Original submission	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Commitment period reserve	832 300 112			832 300 112
Annex A emissions for 2013				
CO_2[c]	165 690 142			165 690 142
CH_4	19 166 690			19 166 690
N_2O	7 684 823			7 684 823
HFCs	2 234 128			2 234 128
PFCs	143 757			143 757
Unspecified mix of HFCs and PFCs	NO			NO
SF_6	119 867			119 867
NF_3	NO, IE			NO, IE
Total Annex A sources	**195 039 408**			**195 039 408**
Activities under Article 3, paragraph 3, of the Kyoto Protocol for 2013				
3.3 Afforestation and reforestation	5 867			5 867
3.3 Deforestation	5 684			5 684
Forest management and elected activities under Article 3, paragraph 4, of the Kyoto Protocol for 2013				
3.4 Forest management	3 383			3 383

Abbreviations: Annex A sources = sources included in Annex A to the Kyoto Protocol, IE = included elsewhere, NO = not occurring.

[a] "Adjustment" is relevant only for Parties for which the expert review team has calculated one or more adjustment(s).

[b] "Final" includes revised estimates, if any, and/or adjustments, if any.

[c] CO_2 emissions include indirect CO_2 emissions reported in common reporting format table 6.

Annex III

Additional information to support findings in table 2

A. Missing categories that may affect completeness

1. The categories for which methods are included in the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the 2006 IPCC Guidelines) were reported as "NE" (not estimated) or for which the expert review team (ERT) otherwise determined that there may be an issue with the completeness of reporting in the Party's inventory are the following:

Land use, land-use change and forestry (LULUCF) sector:

(a) Carbon stock changes in living biomass (gains and losses) under cropland remaining cropland (see ID# L.1(a) in table 3);

(b) Carbon stock changes in living biomass (losses) under wetlands, settlements and other lands converted to cropland (see ID# L.1(c) in table 3);

(c) Carbon stock changes in dead organic matter under land converted to cropland, except for forestland converted to cropland (see ID# L.1(b) in table 3);

(d) Carbon stock changes in dead organic matter under cropland remaining to cropland (see ID# L.4 in table 5);

(e) Carbon stock changes in living biomass (losses) under wetlands, settlements and other lands converted to grassland (see ID# L.1(e) in table 3);

(f) Carbon stock changes in dead organic matter under grassland, except for forest land converted to grassland (see ID# L.1(d) in table 3);

(g) Carbon stock changes in living biomass (gains) under land converted other wetlands (see ID# L.1(f) in table 3);

(h) Carbon stock changes in living biomass (gains) under land converted to settlements (see ID# L.1(g) in table 3);

(i) Carbon stock changes in dead organic matter under lands converted to settlements, except for forest land converted to settlements (see ID# L.1(j) in table 3);

(j) Carbon stock changes in living biomass (gains) under land converted to other land (see ID# L.1(i) in table 3);

(k) Carbon stock changes in living biomass (losses) under wetlands and other land converted to settlements (see ID# L.1(h) in table 3);

(l) Carbon stock changes in dead organic matter under cropland, grassland, wetlands and settlements converted to other land (see ID# L.1(k) in table 3);

Waste sector:

CH_4 and N_2O from anaerobic digestion at biogas facilities (5.B.2) (see ID# W.12 in table 5);

B. Recommendation for an in-country review: list of issues

2. The ERT has recommended that the next review for the Netherlands be conducted as an in-country review for the reasons indicated in paragraphs 3 and 4 below.

3. The ERT noted that the Netherlands provided limited information on methods, assumptions and parameters used to derive the greenhouse gas (GHG) emission estimates for all sectors in the national inventory (NIR) and on the explanation of the use of notation keys in the common reporting format tables. Additional methodological information has been provided in methodology documents available at the national system website. The ERT is of the view that the provision of methods, assumptions and parameters used for the GHG inventory preparation in a set of stand-alone documents instead of providing the information in the NIR prominently affects the transparency of the national inventory of the Netherlands and makes it difficult to review it and to assess its quality during the centralized review (see ID#s G.14, G.15, E.9, E.19, I.6, I.7, I.21 and W.7 in table 5).

4. The ERT further noted that a considerable proportion of the activity data used for the GHG emission estimates are confidential, making it impossible for the ERT to reproduce the inventory estimates and verify the adequacy of methods applied by the Party. Furthermore, the ERT noted that additional information provided by the Netherlands in response to requests made by the ERT during the review was, in part, in Dutch, and the ERT was unable to assess it within the centralized review (see ID#s G.14, G.15, E.20, E.21, I.6, I.7, I.16, I.18 and I.20 in table 5).

5. In accordance with decision 13/CP.20, annex, paragraph 64, the ERT has provided a list of questions and issues to be addressed during this in-country review, as set out below, that are in addition to the list of issues identified in tables 3 and 5.

6. The inventories of the energy and industrial processes and product use (IPPU) sectors are not sufficiently transparent. The methods and recalculations in the energy and IPPU sectors are not transparently described within the NIR, the ENINA reference document (see annex IV.B) and the other underlying reference documents justifying country-specific parameters and models, especially those that are only available in Dutch (see ID#s G.14 and E.21 in table 5). Required information related to this issue to be reviewed during the in-country review is as follows:

(a) GHG emission estimates from source categories in the IPPU sector made based on the activity data that are sparse or considered commercially confidential (see ID#s I.8, I.11, I.16, I.18, I.20 and I.22 in table 5;

(b) Key categories in the IPPU sector that rely on the data available at company premises, in particular those that need access to the (confidential) iron and steel carbon balance (noted in the NIR, p. 86, as being available to the ERT) (see ID# I.15 in table 5);

(c) All underlying methods, activity data and implied emission factors, including for natural gas distribution (1.B.2.b) under fugitive emissions, caprolactam production (2.B.4.a) under chemical industry, product uses as substitute for ozone-depleting substances (ODS) (2.F), all iron and steel source categories (including 2.A.1a, 2.A.1b and 2.A.1c) under iron and steel production (2.C).

7. The ERT faced difficulties in assessing the approach used by the Party to manage and report the CO_2 data from ammonia production to be reported under the IPPU and agriculture sectors. Required information related to this issue to be reviewed during the in-country visit is as follows:

(a) Consistency between the 2006 IPCC Guidelines and the country-specific approach to managing and reporting the CO2 data from ammonia production that is then

sequestered into urea production (at co-located production facilities) and subsequently applied to agricultural soils is not transparent and needs to be checked closely. The Netherlands' simple assumption is that for every year of the time series the urea applied to soils is exactly equal to national urea production. This approach is indicated in the CRF tables for category 3.D, where emissions from urea application are reported as "IE" with the assumption documented, but without transparent documentation in the IPPU or agriculture sections of the NIR;

(b) The Party's wider institutional arrangements and cross-sectoral inventory quality assurance/quality control procedures (see ID#s I.8, I.17 and I.19 in table 5).

8. The ERT faced difficulties in reviewing the accuracy of the estimates using a country-specific model for emissions from the product uses as ODS substitutes (2.F). The data on the sources for refrigeration and air conditioning are aggregated, and limited information is provided within the NIR and the ENINA reference document regarding the methodology. Required information related to this issue is as follows:

(a) Data on the sources under refrigeration and air conditioning and detailed information on the methodologies for emission factors (EFs) applied for the emissions of fluorinated gases throughout the product lifecycle (production, operation, disposal/decommissioning);

(b) The background information on the "average" leakage factor cited from a 2001 country-specific reference document, based on 1999 data which is 5 per cent for all stationary subsources from refrigeration and air conditioning, which is below the range of EFs in the 2006 IPCC Guidelines for working losses for many major subsectors of this category;

(c) The Party's model and country-specific circumstances (see ID# I.22 in table 5).

9. For the LULUCF sector, the ERT faced difficulties in reviewing the accuracy of the information on the land-use matrix. The information may need to be reviewed in conjunction with other aspects (e.g. age class and species distribution of forests) (see ID#s L.5 and KL.2 in table 5). Required information related to this issue is as follows:

(a) The consistent representation of land use;

(b) The time-series consistency of model projection;

(c) Verification of carbon stocks in the litter pool, for the estimation of emissions and removals in forest land.

Annex IV

Documents and information used during the review

A. Reference documents

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 <http://unfccc.int/resource/webdocs/agi/2015.pdf>.

Annual status report for the Netherlands for 2015. Available at <http://unfccc.int/resource/docs/2015/asr/nld.pdf>.

FCCC/ARR/2014/NLD. Report on the individual review of the annual submission of the Netherlands submitted in 2014. Available at <http://unfccc.int/resource/docs/2015/arr/nld.pdf>.

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

FCCC/ARR/2012/NLD. Report of the individual review of the annual submission of the Netherlands submitted in 2012. Available at <http://unfccc.int/resource/docs/2012/arr/nld.pdf>.

"Guidelines for national systems for the estimation of anthropogenic greenhouse gas emissions by sources and removals by sinks under Article 5, paragraph 1, of the Kyoto Protocol". Decision 19/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=14>.

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

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories". Annex to decision 24/CP.19. Available at <http://unfccc.int/resource/docs/2013/cop19/eng/10a03.pdf#page=4>.

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

"Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention". Annex to decision 13/CP.20. Available at <http://unfccc.int/resource/docs/2014/cop20/eng/10a03.pdf#page=6>.

"Implications of the implementation of decisions 2/CMP.7 to 4/CMP.7 and 1/CMP.8 on the previous decisions on methodological issues related to the Kyoto Protocol, including those relating to Articles 5, 7 and 8 of the Kyoto Protocol, part I: implications related to accounting and reporting and other related issues". Decision 3/CMP.11. Available at <http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf#page=5>.

"Implications of the implementation of decisions 2/CMP.7 to 4/CMP.7 and 1/CMP.8 on the previous decisions on methodological issues related to the Kyoto Protocol, including those relating to Articles 5, 7 and 8 of the Kyoto Protocol, part II: implications related to review

and adjustments and other related issues". Decision 4/CMP.11. Available at <http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf#page=30>.

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

Intergovernmental Panel on Climate Change. 2014. *2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol*. Available at <http://www.ipcc-nggip.iges.or.jp/public/kpsg>.

Intergovernmental Panel on Climate Change. 2014. *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*. Available at <http://www.ipcc-nggip.iges.or.jp/public/wetlands/index.html>.

Standard independent assessment report, part 1, for the Netherlands for 2015. Available at <http://unfccc.int/files/kyoto_mechanisms/application/pdf/siar_2015_nzl_1_2.pdf>.

Standard independent assessment report, part 2, for the Netherlands for 2015. Available at <http://unfccc.int/files/kyoto_mechanisms/application/pdf/siar_2015_nzl_1_2.pdf>.

B. Additional information provided by the Party

Responses to questions during the review were received from Mr. Harry Vreuls and Mr. Peter Zijlema (Netherlands Enterprise Agency), including additional material on the methodology and assumptions used. The following documents[1] were also provided by the Netherlands:

Arets, E.J.M.M. et al. 2015 *Greenhouse gas reporting for the LULUCF sector in the Netherlands.* WOt-technical report 52.

Arets, E.J.M.M., J, et Al., 2012. *Greenhouse Gas Reporting for the LULUCF Sector in the Netherlands*. The WOt-technical report – June 2016, Statutory Research Tasks Unit for Nature & the Environment. Wageningen UR.

Calculations of CH4, NH3, N2O, NOx, PM10, PM2.5 and CO_2 with the National Emission Model for Agriculture (NEMA). The WOt-technical report 53 – May 2016, Statutory Research Tasks Unit for Nature & the Environment Wageningen UR.

Dämmgen, U., Amon, B., Hutchings, N. J., Haenel, H.-D., Rösemann, C. (2012). *Data sets to assess methane emissions from untreated cattle and pig slurry and solid manure storage systems in the German and Austrian emission inventories*. Landbauforschung - vTI Agriculture and Forestry Research 1/2 2012 (62)1-20.

de Waal et al (2012) - *Soil carbon dynamics and variability at the landscape scale: its relation to aspects of spatial distribution in national emission databases*. The report on the project of the Dutch National Research Programme Climate Changes Spatial Planning co-financed by the Ministry of Infrastructure and the Environment. Available at <http://edepot.wur.nl/289947>.

DHV B.V. 2010. *Update of emission factors for N2O and CH4 for composting, anaerobic digestion and waste incineration*. Report MD-AF20100263/mk, July. DHV, Amersfoort.

ENINA (2016) Methodology report on the calculation of emissions to air from the sectors Energy, Industry and Waste, as used by the Dutch Pollutant Release and Transfer Register for the reporting of GHG (GHG) emissions under UNFCCC, Kyoto Protocol, EU Monitoring Mechanism Regulation (MMR) and EU Effort Sharing Decision (ESD) and for

[1] Reproduced as received from the Party.

international reporting obligations of other pollutants under CLRTAP and the NEC Directive. RIVM Report 2016-0055Kiwa N.V. (2015). *Evaluatie emissiefactoren,* GT-140219 28-1-2015.

Klein, J., et al., (2016). *Methods for calculating the emissions of transport in the Netherlands 2016*. Statistics Netherlands, PBL Netherlands Environmental Assessment Agency, TNO, RWS Centre for Transport and Navigation (WVL).

Oonk, H., (2010) *Literature Review: Methane from landfills methods to quantify generation, oxidation and emission. Sustainable Landfill Foundation*.

Schulp, C.J.E., et al., (2008). *Effect of tree species on carbon stocks in forest floor and mineral soil and implications for soil carbon inventories*. Forest Ecology and Management 256 (2008) pp. 482–490. Available at http://dx.doi.org/10.1016/j.foreco.2008.05.007.

Vonk, J., et al., (2016) *Methodology for estimating emissions from agriculture in the Netherlands Calculations of CH_4, NH_3, N_2O, NOx, PM10, PM2.5 and CO_2 with the National Emission Model for Agriculture (NEMA)*. WOT Nature and Environment, Wageningen, the Netherlands.

Annex V

Acronyms and abbreviations

AAU	assigned amount unit
AD	activity data
CER	certified emission reduction
CH_4	methane
CM	cropland management
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
CPR	commitment period reserve
CRF	common reporting format
DOC	degradable organic carbon
EF	emission factor
ERT	expert review team
ERU	emission reduction unit
EU ETS	European Union Emissions Trading System
FM	forest management
FMRL	forest management reference level
FOD	first-order decay
GHG	greenhouse gas
GM	grazing land management
HFC	hydrofluorocarbon
IE	included elsewhere
IEA	International Energy Agency
IEF	implied emission factor
IPCC	Intergovernmental Panel on Climate Change
IPPU	industrial processes and product use
KP-LULUCF	LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol
kt	kilotonne
LULUCF	land use, land-use change and forestry
NA	not applicable
NCV	net calorific value
N_2O	nitrous oxide
NE	not estimated
NEU	non-energy uses
NF_3	nitrogen trifluoride
NFI	national forest inventory
NIR	national inventory report
NO	not occurring
PFC	perfluorocarbon
PPSR	previous period surplus reserve account
QA/QC	quality assurance/quality control
RMU	removal unit
SEF	standard electronic format
SF_6	sulphur hexafluoride
SIAR	standard independent assessment report
SWDS	solid waste disposal sites

UNFCCC	United Nations Framework Convention on Climate Change
WDR	wetland drainage and rewetting