COMPLIANCE COMMITTEE **CC/ERT/ARR/2017/39**
3 July 2017

Report of the individual review of the annual submission of Poland submitted in 2016

Note by the secretariat

The report of the individual review of the annual submission of Poland submitted in 2016 was published on 20 June 2017. For purposes of rule 10, paragraph 2, of the rules of procedure of the Compliance Committee (annex to decision 4/CMP.2, as amended by decisions 4/CMP.4 and 8/CMP.9), the report is considered received by the secretariat on the same date. This report, FCCC/ARR/2016/POL, contained in the annex to this note, is being forwarded to the Compliance Committee in accordance with section VI, paragraph 3, of the annex to decision 27/CMP.1.

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Report on the individual review of the annual submission of Poland submitted in 2016*

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 2016 annual submission of Poland, 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 12 to 17 September 2016 in Bonn, Germany.

* In the symbol for this document, 2016 refers to the year in which the inventory was submitted, not to the year of publication.

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I. Introduction[1]

1. This report covers the review of the 2016 annual submission of Poland 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 12 to 17 September 2016 in Bonn, Germany, and was coordinated by Mr. Matthew Dudley (UNFCCC secretariat). Table 1 provides information on the composition of the expert review team (ERT) that conducted the review of Poland.

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

Area of expertise	*Name*	*Party*
Generalist	Mr. Justin Goodwin	United Kingdom of Great Britain and Northern Ireland
	Ms. Melanie Hobson	United Kingdom
Energy	Ms. Rianne Dröge	Netherlands
	Mr. Naofumi Kosaka	Japan
	Ms. Tian Wang	China
	Mr. Benon Bibbu Yassin	Malawi
IPPU	Mr. Joseph Amankwa Baffoe	Ghana
	Mr. Vladimir Danielik	Slovakia
	Ms. Qing Tong	China
Agriculture	Mr. B. Jacques Kouazounde	Benin
	Mr. Chang Liang	Canada
LULUCF	Mr. Kevin Black	Ireland
	Mr. Markus Didion	Switzerland
	Mr. Agustin José Inthamoussu	Uruguay
	Mr. Dinh Hung Nguyen	Viet Nam
Waste	Mr. Philip Acquah	Ghana

[1] At the time of publication of this report, Poland 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*
	Ms. Irina Yesserkepova	Kazakhstan
Lead reviewers	Mr. Philip Acquah	
	Mr. Justin Goodwin	

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 2016 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 Poland, 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 Poland, including totals excluding and including the land use, land-use change and forestry sector, indirect carbon dioxide emissions 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 Poland.

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

6. The ERT notes that Poland's 2015 annual submission was delayed, consistent with decision 6/CMP.9, paragraph 4. As a result, the review of this 2016 annual submission is being held in conjunction with the review of the 2015 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 reports.

II. Summary and general assessment of the 2016 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 Poland

Assessment			*Issue or problem ID#(s) in tables 3 and/or 5*[a]
Dates of submission	Original submission: 15 April 2016 (NIR), 15 April 2016, Version 4 (CRF tables), 15 April 2016 (SEF tables) Revised submissions: 23 May 2016 (NIR), 23 May 2016, Version 1 (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:		
	Identification of key categories	No	
	Selection and use of methodologies and assumptions	Yes	E.9, A.5, L.13, L.14, L.28, L.30, L.31, KL.5
	Development and selection of emission factors	Yes	E.8, E.19, L.8, L.10, L.11, L.22, L.26, L.29, W.6
	Collection and selection of activity data	Yes	E.2, I.8, L.12, W.5, KL.4
	Reporting of recalculations	Yes	L.1
	Reporting of a consistent time series	Yes	E.5, E.20, A.24, L.5, L.7, L.21
	Reporting of uncertainties, including methodologies	Yes	G.5, G.7, A.11, L.4
	QA/QC	QA/QC procedures were assessed in the context of the national system (see below)	
	Missing categories/completeness[b]	Yes	A.23, L.2
	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?	The Party did not report "NE" for any insignificant categories	
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	No	

Assessment			*Issue or problem ID#(s) in tables 3 and/or 5[a]*
	institutional, procedural and legal arrangements		
	(b) Performance of the national system functions	No	
	2. National registry:		
	(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.4, 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.5
	(c) The Party has reported information in accordance with decision 6/CMP.9	No	
	(d) Country-specific information has been reported to support provisions for natural disturbances, in accordance with decision 2/CMP.7, annex, paragraphs 33 and 34	No	
	(e) 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?	Yes	
Adjustments	Has the ERT applied an adjustment under Article 5, paragraph 2, of the Kyoto Protocol?	No	

Assessment			*Issue or problem ID#(s) in tables 3 and/or 5*[a]
	The ERT accepts that the revised estimate submitted by Poland in its 2016 submission can replace a previously applied adjustment in the compilation and accounting database	NA	
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 further guidance adopted by the Conference of the Parties?	Yes	
Recommendation for an exceptional in-country review	On the basis of the issues identified, does the ERT recommend that the next review be conducted as an in-country review?	No	
Questions of implementation	Did the ERT list 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, NE = not estimated, 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 energy, industrial processes and product use, agriculture, LULUCF and waste sectors and 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.

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. Owing to the unique circumstances of the 2015 annual submission described in paragraph 6 above, the latest available review report was for the review of the 2014 annual submission, published on 20 March 2015. 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 2016 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 Poland

ID#	*Issue and/or problem classification*[a, b]	*Recommendation made in previous review report*[c]	*ERT assessment and rationale*
General			
G.1	Methods (table 3, 2014), (table 3, 2013) Transparency	Continue to improve the transparency of the NIR by including in the sectoral chapters more detailed information on the sources of AD and EFs, recalculations applied, and QA/QC and verification	Resolved. The ERT commends Poland for its efforts to improve transparency. Areas in which

ID#	*Issue and/or problem classification*[a, b]	*Recommendation made in previous review report*[c]	*ERT assessment and rationale*
		procedures	the Party can further enhance the transparency of information reported in the NIR and CRF tables are identified in this table and in table 5
G.2	QA/QC and verification (table 3, 2014), (table 3, 2013) Adherence to UNFCCC Annex I inventory reporting guidelines	Enhance the QA/QC and verification procedures so as to avoid inconsistencies between the information in the NIR and in the CRF tables and errors in the input of data	Resolved. The ERT identified inconsistencies between the NIR and the CRF tables (see table 5). During the review Poland explained that these were due to CRF Reporter problems
G.3	Inventory planning (13, 2014), (12, 2013) Transparency	Further elaborate the description of the institutional arrangements in chapter 1.2 of the NIR	Resolved. Poland included in the NIR a detailed description of its institutional arrangements
G.4	Uncertainty analysis (15, 2014), (15, 2013) Adherence to UNFCCC Annex I inventory reporting guidelines	Provide overall uncertainty for the trend	Resolved. Poland reported this information in the NIR
G.5	Uncertainty analysis (15, 2014), (15 and 123, 2013) Adherence to UNFCCC Annex I inventory reporting guidelines	Include the uncertainty for the KP-LULUCF activities	Not resolved. During the review Poland explained that CRF Reporter issues delayed the delivery of uncertainty estimates for KP-LULUCF
G.6	Uncertainty analysis (15, 2014), (15, 2013) Transparency	Include a description of how the uncertainty assessment results were used to prioritize the inventory improvements	Resolved. Poland reported in the NIR how the uncertainty (and key category) analysis is used to prioritize improvement in the GHG inventory
G.7	Uncertainty analysis (16, 2014), (52, 2013) Adherence to UNFCCC Annex I inventory reporting guidelines	Improve the uncertainty data for F-gases, distinguishing between the AD and EFs	Not resolved. During the review Poland explained that CRF Reporter issues delayed the delivery of uncertainty estimates for F-gases
G.8	National registry (138, 2014)	Report in the annual submission any change(s) in the national registry	Resolved. Poland included in its NIR changes in its national

ID#	*Issue and/or problem classification*[a, b]	*Recommendation made in previous review report*[c]	*ERT assessment and rationale*
	Transparency		registry
Energy			
E.1	1. General (energy sector) (24, 2014), (23, 2013), (55, 2012) Transparency	Improve the transparency of the description of the methods used to estimate fugitive emissions	Resolved. Methods for estimating fugitive emissions from coal, oil and gas are sufficiently described in the NIR
E.2	1. General (energy sector) (25, 2014), (24, 2013), (39, 2012) Consistency*	Elaborate on the description of how the Party maintains time-series consistency while using different sources of AD	Addressing. During the review Poland explained that the large variation in emissions from 1989 to 1990 is mainly due to a dramatic decrease in fuel consumption triggered by significant economic changes related to political transformation rather than to the use of different AD sources. Poland will include this information in its next NIR submission
E.3	1. General (energy sector) (25, 2014), (26, 2013), (41, 2012) Transparency*	Improve the reporting of the details of the annual QA/QC measures implemented in the energy sector and provide information on the cross-checks made among the national statistics data, the Eurostat data and the EU ETS data, as well as information on any validations of EFs by comparison with the EU ETS data	Not resolved. The description of QA/QC measures is still not fully transparent and it is difficult to determine how data from various sources are harmonized
E.4	Fuel combustion – reference approach (28, 2014), (29, 2013), (43, 2012) Transparency	When the difference between the sectoral and reference approaches is greater than 2 per cent, include an explanation for this in the documentation box of CRF table 1.A(c) and in the NIR	No longer relevant. Poland provided some general reasons for the difference in approaches in the NIR but not a specific explanation for the years in which the difference was greater than 2 per cent. The Party will enhance the explanations in the next NIR. The ERT notes that this is not a mandatory reporting requirement
E.5	International aviation (29, 2014), (30, 2013) Consistency*	Document any recalculations of the emissions from international aviation for the years 1988 to 2011 undertaken to ensure time-series consistency in accordance with the IPCC good practice guidance	Addressing. The ERT accepts the reasoning behind Poland's split of international and domestic aviation using Eurocontrol data on the share of jet kerosene used for

ID#	*Issue and/or problem classification*[a, b]	*Recommendation made in previous review report*[c]	*ERT assessment and rationale*
			international aviation in the country
E.6	International navigation (30, 2014), (31, 2013), (47, 2012) Transparency*	Include in the NIR information on the split between domestic and international navigation and provide details of the trend in international and domestic bunker fuel use across the time series	Addressing. The ERT accepts the information provided by Poland during the review on the data source for international navigation and the time series of these data. The Party will include this information in the next NIR
E.7	Feedstocks, reductants and other NEU of fuels (31, 2014), (32, 2013), (48, 2012) Transparency*	Further clarify the reporting of feedstocks and NEU of fuels in CRF table 1.A(d) and in the NIR, and provide detailed information on the allocation of the associated emissions in the inventory	Addressing. The ERT accepts the information provided by Poland during the review on how the emissions from lubricants are allocated. The Party indicated that the missing AD would be included in the next NIR
E.8	1.A.1 Energy industries – all fuels – CO_2 (32, 2014), (34, 2013), (49, 2012) Accuracy*	Complete and report on the planned development of country-specific CO_2 EFs for the significant fuels in the energy sector, and consider applying the country-specific CO_2 EF for gasoline used in road transportation to stationary combustion	Addressing. The ERT commends Poland for prioritizing this improvement in its GHG inventory, but also notes that the Party continues to use default EFs for key categories. During the review Poland explained that budget constraints limit the development of country-specific EFs such as CO_2 EFs for natural gas combustion
E.9	1.A.1 Energy industries – solid fuels, biomass – CH_4 (34, 2014), (40, 2013) Accuracy*	Apply a tier 2 method to estimate CH_4 emissions from stationary combustion (solid fuels and biomass)	Addressing. The ERT commends Poland for prioritizing improvement in its GHG inventory, but also notes that the Party continues to use default EFs for key categories. During the review Poland explained that budget constraints limit the development of country-specific EFs such as CH_4 EFs for stationary combustion
E.10	1.A.3.e.i Pipeline transport – liquid and gaseous fuels – CO_2, CH_4 and N_2O	Ensure the consistency of the time series for CO_2, CH_4 and N_2O emissions from pipeline transport	Resolved. The ERT accepted Poland's reasoning behind the time-series consistency issue, and acknowledged the Party's efforts to locate other sources

ID#	*Issue and/or problem classification*[a, b]	*Recommendation made in previous review report*[c]	*ERT assessment and rationale*
	(39, 2014), (47, 2013) Consistency		for these data so as to verify that there was no fuel consumption before 1994
E.11	1.A.3.e.i Pipeline transport – liquid and gaseous fuels – CO_2, CH_4 and N_2O (39, 2014), (47, 2013), (54, 2012) Consistency	Follow the guidance set out in the IPCC good practice guidance for the extrapolation of the volumes of fuel used in pipeline transport and recalculate the emissions for both the category other transportation and the category manufacture of solid fuels and other energy industries and explain these recalculations in the NIR	Resolved. The ERT accepted Poland's explanation on the extrapolation of the volumes of fuel used in pipeline transport and the explanation for the subsequent recalculation
E.12	1.B.2 Oil and natural gas and other – gaseous and liquid fuels – CO_2, CH_4 and N_2O (36, 2014), (44, 2013), (55, 2012) Transparency*	Use the correct notation key for other leakages in the residential and commercial sectors and provide in the NIR and documentation box of CRF table 1.B.2 an adequate explanation for the key used	Not resolved. During the review Poland indicated that it would correct the reporting of notation keys in the next NIR and also enhance the explanation for the use of the notation keys in both the NIR and the documentation box of CRF table 1.B.2
E.13	1.B.2.a Oil – liquid fuels – CO_2 and CH_4 (37, 2014), (44, 2013), (55, 2012) Transparency	Reconsider the reporting of "NA" for CO_2 and CH_4 emissions from the distribution of oil products	Resolved. Poland indicated during the review that it would use notation key "NE" (not estimated) instead of "NA" (not applicable) in the NIR and CRF tables for CO_2 and CH_4 emissions from this subcategory
IPPU			
I.1	2. General (IPPU) (41, 2014), (49, 2013), (59, 2012) Transparency	Transparently document in the NIR the impact of each change on the overall recalculation and the emission trend for a given category and its impact across the inventory in cases of cross-sectoral categories	Resolved. The ERT commends Poland for its efforts to enhance the documentation of recalculations in the NIR
I.2	2. General (IPPU) (45, 2014), (51, 2013) Transparency	Improve the transparency of the NIR for cement production, nitric acid production, consumption of F-gases (particularly the emissions from fire extinguishers), adipic acid production for the years 1988-1993 and primary aluminium production to prove that the Party has applied the relevant IPCC methodologies	Resolved. Poland improved the transparency of information in the NIR
I.3	2.A.1 Cement production – CO_2 (46, 2014), (53, 2013), (64, 2012)	Provide detailed information on the estimation method used under the EU ETS, and the comparison of the Central Statistical Office of Poland (GUS) data with the EU ETS data on	Resolved. The NIR includes some background information on the estimation methods used under the EU ETS. The ERT considers that the

ID#	*Issue and/or problem classification*[a, b]	*Recommendation made in previous review report*[c]	*ERT assessment and rationale*
	Transparency	clinker production provided during the review	information provided by Poland during the review on the verification of data by a comparison of GUS and EU ETS data for clinker production should be included in the NIR
I.4	2.A.2 Lime production – CO_2 (47, 2014) Accuracy	Collect the necessary data so as to be able to consistently use a tier 2 method for the years before 2005	Resolved. Poland used a tier 2 method from the 2006 IPCC Guidelines consistently
I.5	2.A.4 Other process uses of carbonates (42, 2014) Transparency	Increase the transparency of the recalculations for the category limestone and dolomite use made in response to the review process	No longer relevant. The ERT accepts that this recommendation is no longer relevant as a result of the new methodology introduced by the 2006 IPCC Guidelines for this category that is described in the NIR
I.6	2.B.2 Nitric acid production – N_2O (48, 2014) (59, 2013) Transparency	Clarify in the NIR that for the years 2005 to 2011, plant-specific production data are available, and include in the NIR the supplementary information provided during the review	Resolved. The ERT received this information from Poland during the review as confidential data
I.7	2.B.3 Adipic acid production – N_2O (56, 2014) Transparency	Provide, in a category-specific subchapter of the NIR, a description of the method and data source used for the calculation of N_2O emissions from adipic acid production	Resolved. Information on the method and data sources for N_2O emissions from adipic acid production was provided in the NIR
I.8	2.C Metal industry – SF_6 (58, 2014) Accuracy*	Implement the new data from the Polish Geological Institute and ensure the consistent reporting of SF_6 used in aluminium and magnesium foundries across the time series	Addressing. The ERT commends Poland for its efforts to locate a new data source for this category. The Party advised the ERT during the review that this source has been validated, but use of its data in the GHG inventory is still being investigated
I.9	2.C.3 Aluminium production – CO_2 (57, 2014) Transparency	Improve the transparency of the NIR by including a trend description for primary aluminium production	Resolved. The NIR provides the required information
I.10	2.F.1 Refrigeration and air conditioning (43, 2014)	Further enhance the explanation of the recalculations for F-gases from refrigeration and air conditioning, including by specifying the	Resolved. Poland provided an explanation of the recalculations and time series

ID#	*Issue and/or problem classification*[a, b]	*Recommendation made in previous review report*[c]	*ERT assessment and rationale*
	Transparency	impact of each change on the estimates and providing information on the impact of the recalculations over the entire time series, and ensure the consistency of information provided in different sections of the NIR	consistency for F-gases in the NIR
I.11	2.F.1 Refrigeration and air conditioning – HFCs (49 and 50, 2014), (63(b), 2013), (72, 2012) Transparency*	Change the notation key used for HFC-23 and HFC-152a under the subcategory refrigeration and air-conditioning equipment in CRF table 2(II), and include in the NIR a relevant analysis of the national F-gas market and an explanation for the lack of HFC-23 and HFC-152a emissions from refrigeration and air-conditioning equipment	Addressing. During the review Poland advised the ERT that difficulties with the CRF Reporter resulted in blank cells for these gases. The Party also explained during the review that there was a domestic law prohibiting the import of HFC-23 and HFC-152a, and that F-gas importers and distributors confirmed that blends are restricted. It indicated that this information would be included in the next NIR
I.12	2.F.1 Refrigeration and air conditioning – HFCs (49 and 52, 2014) Transparency*	Include the information provided to the ERT during the review on the data QC checks undertaken for the subcategory transport refrigeration	Not resolved. Information on QC checks and verification for F-gases other than HFC-134a was not provided in the NIR for the subcategory transport refrigeration
I.13	2.F.1 Refrigeration and air conditioning – HFCs (49 and 53, 2014), (63(c), 2013) Transparency*	Justify in the NIR the 15-year lifetime used by the Party for transport refrigeration	Not resolved. Poland did not provide in the NIR a justification of the lifetime used for transport refrigeration equipment
Agriculture			
A.1	3. General (agriculture) (63, 2014), (73, 2013) Transparency*	Document the main findings of the sector-specific QA/QC activities, particularly the reasons for any discrepancies between EFs applied in Poland and those applied in other countries and international literature, in the category-specific subchapters of the NIR	Not resolved. Poland continues to report in the NIR that EFs and methodologies are compared with the international literature and that EFs and methods from other countries are applied, but there is no information on the main findings of this QA/QC comparison, particularly on whether any discrepancies were identified

ID#	*Issue and/or problem classification*[a, b]	*Recommendation made in previous review report*[c]	*ERT assessment and rationale*
A.2	3. General (agriculture) (65, 2014), (76, 2013) Transparency*	Provide a transparent explanation for the use of specific livestock census statistics, including the additional information provided during the review indicating that reference date population data from the summer census (June, July) are chosen mainly because there are no consistent time series for other census data and that the summer census data also correspond to the data reported to FAO	Not resolved. The explanation provided to the previous ERT was not included in the NIR. Instead, Poland justifies the summertime livestock population as representative of the average population in a year
A.3	3.A Enteric fermentation – CH_4 (66, 2014), (79, 2013) Transparency*	Include additional information on the methods and assumptions used to derive the gross energy intake values by livestock subcategory	Not resolved. During the review Poland explained that this additional information could not be provided in the CRF tables owing to difficulties with the CRF Reporter
A.4	3.A Enteric fermentation – CH_4 (67, 2014), (79, 2013) Transparency*	Provide data justifying the lower body weight of dairy cattle used in the inventory	Not resolved. Poland did not include in the NIR (or in CRF table 3.As2) a justification for the reported body weight of dairy cattle used to estimate the enteric CH_4 EF using a tier 2 method, and therefore has not justified the lower body weight of dairy cattle used in the GHG inventory
A.5	3.A Enteric fermentation – CH_4 (68, 2014) Accuracy*	Report a weighted Ym for sheep in the CRF tables and provide a corresponding explanation in the NIR	Resolved. The ERT accepts the rationale provided by Poland during the review for using a tier 1 method to estimate CH_4 emissions from sheep. The relative contribution of CH_4 emissions from sheep is minor (0.4 per cent) toward total GHG emissions from enteric fermentation
A.6	3.B Manure management – CH_4, N_2O (69, 2014), (81, 2013), (90, 2012) Transparency*	Provide additional information that justifies the distribution of animal waste management systems used (including, for example, information on general agricultural structures and policies)	Not resolved. Poland did not provide in the NIR the required information on the assumptions (based on, for example, general agricultural structures and policies) that support the approach to determine the distribution of manure management systems used in the country
A.7	3.B Manure	Report the correct values for the allocation of	Resolved. The values reported

ID#	*Issue and/or problem classification*[a, b]	*Recommendation made in previous review report*[c]	*ERT assessment and rationale*
	management – CH_4, N_2O (70, 2014) Transparency	animal waste management systems in CRF table 4.B(a)s2	in CRF table 3.B(a) for the allocation of manure management systems are correct
A.8	3.B Manure management – N_2O (71, 2014), (82, 2013) Transparency*	Separately report CH_4 emissions from anaerobic digesters	Not resolved. Poland did not report in the NIR CH_4 emissions from anaerobic digesters. During the review the Party explained that comprehensive data from anaerobic digesters are not currently available
A.9	3.B Manure management – N_2O (72, 2014), (80, 2013) Transparency	Include in the NIR additional information on the Nex rate of swine	Resolved. Poland updated values for the Nex rate of swine in table 10.1 of the NIR (p.250), following weight aggregation as in national statistics
A.10	3.D Direct and indirect N_2O emissions from agricultural soils- N_2O (64, 2014). Adherence to UNFCCC Annex I inventory reporting guidelines	Revise the uncertainty of the N_2O emissions from agricultural soils	Resolved. Annex 8 to the NIR includes revised uncertainties for direct and indirect N_2O emissions from agricultural soils
A.11	3.D Direct and indirect N_2O emissions from agricultural soils - N_2O (64, 2014), (71, 2013) Adherence to UNFCCC Annex I inventory reporting guidelines	Report the assumptions and methods used to estimate the uncertainty and apply methods, as provided in the IPCC good practice guidance, to combine uncertainties	Not resolved. Poland included general information in the NIR and in annex 8 on uncertainties for AD and EFs. The ERT identified that information on the assumptions supporting the approach to determine uncertainties for AD and EFs (i.e. rationale, scientific evidence, references) could be improved. The ERT also noted the advice provided by Poland during the review that the required information is readily available
A.12	3.D.a.2.b Sewage sludge applied to soils – N_2O (74, 2014) Transparency	Explain in the NIR the trend interpolation used for the application of sewage sludge in agriculture	Resolved. Poland provided a detailed explanation in the NIR of how the AD for the amount of sewage sludge applied on fields since 1988

ID#	*Issue and/or problem classification*[a, b]	*Recommendation made in previous review report*[c]	*ERT assessment and rationale*
			were derived from the annual mean changes of AD in the period 2003−2012
A.13	3.D.a.3 Crop residues – N_2O (73, 2014) Transparency	Consistently report crop production across all emission categories and between the CRF tables and the NIR	Resolved. Poland consistently reported crop production and crop residues between CRF table 3.F and the NIR (tables 5.14 and 5.20). The same crop residue data were used for GHG emission estimates from field burning of agriculture residues (category 4.F) and for direct soil emissions related to nitrogen-fixing crops (category 3.D.1.3) and crop residues returned to soils (category 3.D.1.4), as shown in table 5.20 in the NIR
A.14	3.F Field burning of agricultural residues – N_2O (76, 2014), (89, 2013) Transparency	Include more information in the NIR about the assumptions used to estimate N_2O emissions from field burning of agricultural residues	Resolved. Poland reported the required information in the NIR
LULUCF			
L.1	4. General (LULUCF) (78, 2014), (94, 2013), (98, 2012) Transparency*	Provide detailed information on the rationale for and impact of the recalculations for the LULUCF sector	Not resolved. Poland did not provide sufficient information in the NIR on the rationale for and impact of the recalculations when changing from the gain–loss method to the stock-change method (see ID#L.27 in table 5 for ERT recommendation)
L.2	4. General (LULUCF) (table 3 and para. 79, 2014), (table 3, 2013) Completeness*	Estimate and report the carbon stock changes from all mandatory categories	Not resolved. Poland reported land converted to cropland and land converted to settlements as “NO”; (not occurring) however, the ERT believes this is a completeness issue because these conversions do occur in Poland
L.3	4. General (LULUCF) (81, 2014), (99, 2013) Transparency	Include in the NIR the information on the data discrepancy in the total forest land area reported to in the CRF tables with the data from FAO	Resolved. Poland provided relevant information in chapter 6.2.1.1 of the NIR

ID#	*Issue and/or problem classification*[a, b]	*Recommendation made in previous review report*[c]	*ERT assessment and rationale*
L.4	4. General (LULUCF) (82, 2014) Adherence to UNFCCC Annex I inventory reporting guidelines	Provide in the NIR the data sources used for the uncertainty assumptions of the AD and EFs for each category or carbon pool	Not resolved. Poland did not provide in the NIR the data sources used for the uncertainty assumptions of the AD and EFs for each category or carbon pool
L.5	Land representation (80, 2014), (105, 2012) Consistency*	Include the land-use transition matrices (approach 2) in the NIR and revise the time series of the land-use change data to ensure that the total territorial area is consistent for the entire inventory period since 1988	Not resolved. The land-use transition matrices were reported in annex 6 to the NIR. The total territorial area remains inconsistent over the inventory period
L.6	4.A.1 Forest land remaining forest land – CO_2 (87, 2014) Transparency*	Provide more detailed information on how the national forest inventory data were factored into the calculation to estimate the growing stock volume since 2009	Addressing. Poland indicated during the review that the relevant information will be included in the next NIR
L.7	4.A.1 Forest land remaining forest land – CO_2 (87, 2014) Consistency*	Seek to resolve the issue regarding time-series consistency between 2008 and 2009 for the gross timber resources using the IPCC approaches	Addressing. Poland indicated during the review that a new approach will be introduced for the next NIR
L.8	4.A.1 Forest land remaining forest land – CO_2 (88, 2014) Accuracy*	Explore the possibility of using country-specific values for the biomass expansion factor and the root-to-shoot ratio, and indicate the results of such an attempt and its limitations in the NIR	Addressing. Poland indicated during the review that a new approach will be introduced for the next NIR
L.9	4.A.1 Forest land remaining forest land – CO_2 (89, 2014) Consistency	Ensure time-series consistency of the reported estimates for both litter and dead wood using the appropriate IPCC approaches	Resolved. To ensure time-series consistency, Poland has reverted to using a tier 1 method for the entire inventory. However, the ERT notes that doing so leads to another issue: the Party is not using the appropriate IPCC approach (which is tier 2 or higher) (see ID#L.28 in table 5 for ERT recommendation regarding the IPCC approach)
L.10	4.A.1 Forest land remaining forest land – CO_2 (90, 2014) Consistency*	Use consistent regions when selecting the default values among the categories or derive a country-specific adjustment factor reflecting the effect of the change from the previous forest type to the new one, using, as an interim measure, the results from the available literature	Addressing. Modifications have been applied to the approach used but Poland is also exploring the possibility of using country-specific adjustment factors, reflecting the effect of the carbon stock change on forest soils

ID#	*Issue and/or problem classification*[a, b]	*Recommendation made in previous review report*[c]	*ERT assessment and rationale*
L.11	4.A.2 Land converted to forest land – CO_2 (92, 2014) Accuracy*	Revise the default biomass increment value for living biomass	Not resolved. Poland continued to use the unit m^3/ha/year rather than t d.m./ha/year in the NIR. During the review Poland acknowledged the necessity for using the correct biomass increment unit (see ID#L.32 in table 5 for ERT recommendation)
L.12	4.A.2 Land converted to forest land – CO_2 (93, 2014), (104, 2013) Accuracy*	Further analyse the national forest inventory data and use data exclusively from age class I (1–20 years) for the estimation of the carbon stock changes in living biomass and dead wood for land converted to forest land	Addressing. Poland did not use national forest inventory data exclusively from age class I (1–20 years) for the estimation of the carbon stock changes, but stated in the NIR (p.256) that a new approach would be introduced for the next NIR
L.13	4.A.2 Land converted to forest land – CO_2 (94, 2014) Accuracy*	Apply the gain–loss method (tier 2), which follows a more disaggregated approach and allows for more precise estimates of the carbon stock changes in biomass	Addressing. Poland stated in the NIR (p.256) that a new approach would be introduced for the next NIR (see ID#L.30 in table 5 for ERT recommendation)
L.14	4.A.2 Land converted to forest land – CO_2 (94, 2014) Accuracy*	Disaggregate the area converted by species and clarify in the NIR why the conversion occurs only for extensively managed forests and not intensively managed forests, as would be the case for plantations	Addressing. Poland stated in the NIR (p.256) that a new approach would be introduced for the next NIR
L.15	4.A.2 Land converted to forest land – CO_2 (95, 2014) Transparency*	Provide in the NIR more detailed information on the estimation methods used for the carbon stock changes in the dead organic matter and soil pools	Not resolved. Although information on the estimation methods used for carbon stock changes in dead organic matter is provided in chapter 6.2.5.4 of the NIR (p.204), information on the estimation methods for carbon stock changes in soils is not provided
L.16	4.A.2.1 Cropland converted to forest land (86, 2014) Transparency*	Provide evidence that no orchards have been converted to forest land	Addressing. Poland indicated during the review that the relevant information will be included in the next NIR
L.17	4.B.1 Cropland	Provide the interpolated and extrapolated results	Addressing. Poland indicated

ID#	*Issue and/or problem classification*[a, b]	*Recommendation made in previous review report*[c]	*ERT assessment and rationale*
	remaining cropland – CO_2 (96, 2014) Transparency*	for the area of cropland under different soil types	during the review that it would provide interpolated and extrapolated results in the next NIR
L.18	4.B.2 Land converted to cropland – CO_2 (96, 2014) Transparency	Include justification for the use of the management factor of 1.09 (for temperate wet climates)	No longer relevant. During the review Poland explained that the recommendation is no longer relevant because of the change to using the 2006 IPCC Guidelines. In the NIR, the Party has applied the correct default management factor for cropland in accordance with the 2006 IPCC Guidelines
L.19	4.B.2 Land converted to cropland – CO_2 (98, 2014) Transparency*	Provide an explanation for why the gain in carbon stock in living biomass occurred only in 2003 and clarify why the loss of living biomass occurred in 2004 (one year after the conversion)	Addressing. During the review Poland explained that it has revised estimates for the entire inventory period 1998–2014, but the information is not provided in the current submission
L.20	4.C.1 Grassland remaining grassland – CO_2 (99, 2014) Transparency*	Provide details in the NIR regarding the calculation of carbon stock changes in soils	Addressing. Poland indicated during the review that it intends to provide more specific information regarding the calculation of carbon stock changes in soils in the next NIR
L.21	4.C.2 Land converted to grassland – CO_2 (100, 2014) Accuracy*	Include information on the extrapolated results from 2000 for the area of grassland under different soil types	Addressing. Poland indicated during the review that it intends to provide interpolated and extrapolated results for the area of grassland under different soil types in the next NIR
L.22	4.C.2 Land converted to grassland – CO_2 (100, 2014) Accuracy*	Use the relative stock change factors from the IPCC good practice guidance	Not resolved. Poland applied an inconsistent climate zone for grassland, using the warm temperate–dry climate zone for the default biomass stock, and the boreal–cold temperate climate zone for the default annual EF for drained organic soils
L.23	4.C.2.2 Cropland converted to grassland	Provide estimates for the net carbon stock changes in organic soils for cropland converted to grassland	Resolved. Cropland converted to grassland for organic soils

ID#	*Issue and/or problem classification*[a, b]	*Recommendation made in previous review report*[c]	*ERT assessment and rationale*
	(83, 2014) Transparency	(reported as "IE" (included elsewhere)) or clearly indicate the subcategory to which these emissions/removals have been allocated	is reported as "NO"; therefore, the estimates for the net carbon stock changes in organic soils for this category of land is also "NO"
L.24	4.E.2.2 Cropland converted to settlements (84, 2014), (98, 2013) Transparency*	Clearly explain the allocation of the emissions and removals from all carbon pools in the category cropland converted to settlements	Addressing. Poland included some relevant information in the NIR and indicated during the review that it intends to include further explanation in future submissions
L.25	4 (V) Biomass burning – CO_2 (101, 2014) Transparency*	Provide more information on the values used for mass of available fuel, fraction of biomass combusted and EFs to estimate non-CO_2 emissions from wildfires	Addressing. Poland indicated during the review that it intends to provide additional information on the fraction of biomass combusted and mass of fuel available in the next NIR
Waste			
W.1	5.A Solid waste disposal on land – CH_4 (107, 2014), (115, 2013) Transparency	Include information on the method used to estimate the degradable organic carbon value for solid waste disposal on land	Resolved. Poland reported the required information on the emission estimates in the NIR
W.2	5.A Solid waste disposal on land – CH_4 (108, 2014) Transparency	Correct the information in CRF summary table 3 to indicate that a tier 2 method was used, and improve the corresponding QA/QC procedures	Resolved. No discrepancies were identified in CRF summary table 3, suggesting that QA/QC procedures were improved
W.3	5.D.1 Domestic wastewater – CH_4 (110, 2014) Transparency	Report the practices related to CH_4 recovery in the NIR	Resolved. Poland included this information in the NIR
W.4	5.D.1 Domestic wastewater – CH_4 (111, 2014) Accuracy	Report revised estimates for the CH_4 emissions from domestic and commercial wastewater (sludge), as planned	Resolved. Poland recalculated CH_4 emissions from domestic and commercial wastewater (sludge) using new data and information
W.5	5.D.1 Domestic wastewater – N_2O (112, 2014) Accuracy*	Update the values of protein consumption to the latest available data in FAOSTAT	Not resolved. Poland advised the ERT during the review that FAO is yet to update its data on protein consumption

ID#	*Issue and/or problem classification*[a, b]	*Recommendation made in previous review report*[c]	*ERT assessment and rationale*
KP-LULUCF			
KL.1	General (KP-LULUCF) – CO_2 (121, 2014) Transparency*	Provide more detailed information in the NIR on the methodologies and assumptions applied for each pool	Addressing. Poland indicated during the review that it intends to provide more specific information regarding carbon stock changes in each pool in the next NIR

Abbreviations: AD = activity data, CRF = common reporting format, d.m. = dry matter, EF = emission factor, ERT = expert review team, EU ETS = European Union Emissions Trading System, FAO = Food and Agriculture Organization of the United Nations, F-gas = fluorinated gas, GHG = greenhouse gas, IPCC = Intergovernmental Panel on Climate Change, IPCC good practice guidance = *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, IPCC good practice guidance for LULUCF = *Good Practice Guidance for Land Use, Land-Use Change and Forestry*, 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, NEU = non-energy use, NIR = national inventory report, QA/QC = quality assurance/quality control, 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] The review of the 2016 annual submission is being held in conjunction with the review of the 2015 annual submission, and as such, the 2015 annual review report was not available at the time of this review. Therefore, the recommendations reflected in table 3 are from the 2014 annual review report. For the same reason, the year 2015 is excluded from the list of years in which the issue has been identified.

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 2016 annual submission of Poland, and have not been addressed by the Party.

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

ID#[a]	*Previous recommendation for the issue identified*	*Number of successive reviews issue not addressed*[b]
General		
G.5	Include the uncertainty for the KP-LULUCF activities	3 (2013–2015/2016)
G.7	Improve the uncertainty data for F-gases, distinguishing between the AD and EFs	3 (2013–2015/2016)
Energy		

ID#[a]	*Previous recommendation for the issue identified*	*Number of successive reviews issue not addressed*[b]
E.2	To improve transparency, elaborate on the description of how the Party maintains time-series consistency while using different sources of AD	4 (2012–2015/2016)
E.3	Improve the reporting of the details of the annual QA/QC measures implemented in the energy sector and provide information on the cross-checks made among the national statistics data, the Eurostat data and the EU ETS data, as well as information on any validations of EFs by comparison with the EU ETS data	3 (2013–2015/2016)
E.5	Document any recalculations of the emissions from international aviation for the years 1988 to 2011 undertaken to ensure time-series consistency in accordance with the IPCC good practice guidance	3 (2013–2015/2016)
E.6	Include in the NIR information on the split between domestic and international navigation and provide details of the trend in international and domestic bunker fuel use across the time series	4 (2012–2015/2016)
E.7	Further clarify the reporting of feedstocks and non-energy use of fuels in CRF table 1.A(d) and in the NIR, and provide detailed information on the allocation of the associated emissions in the inventory	4 (2012–2015/2016)
E.8*	Complete and report on the planned development of country-specific CO_2 EFs for the significant fuels in the energy sector, and consider applying the country-specific CO_2 EF for gasoline used in road transportation to stationary combustion	4 (2012–2015/2016)
E.9*	Apply a tier 2 method to estimate CH_4 emissions from stationary combustion (solid fuels and biomass)	3 (2013–2015/2016)
E.12	Use the correct notation key for other leakages in the residential and commercial sectors and provide in the NIR and documentation box of CRF table 1.B.2 an adequate explanation for the key used	4 (2012–2015/2016)
IPPU		
I.11	Change the notation key used for HFC-23 and HFC-152a under the subcategory refrigeration and air-conditioning equipment in CRF table 2(II), and include in the NIR a relevant analysis of the national F-gas market and an explanation for the lack of HFC-23 and HFC-152a emissions from refrigeration and air-conditioning equipment	4 (2012–2015/2016)
I.13	Justify in the NIR the 15-year lifetime used by the Party for transport refrigeration	3 (2013–2015/2016)
Agriculture		

ID#[a]	*Previous recommendation for the issue identified*	*Number of successive reviews issue not addressed*[b]
A.1	Document the main findings of the sector-specific QA/QC activities, particularly the reasons for any discrepancies between EFs applied in Poland and those applied in other countries and international literature, in the category-specific subchapters of the NIR	3 (2013–2015/2016)
A.2	Provide a transparent explanation for the use of specific livestock census statistics, including the additional information provided during the review indicating that reference date population data from the summer census (June, July) are chosen mainly because there are no consistent time series for other census data and that the summer census data also correspond to the data reported to FAO	3 (2013–2015/2016)
A.3	Include additional information on the methods and assumptions used to derive the gross energy intake values by livestock subcategory	3 (2013–2015/2016)
A.4	Provide data justifying the lower body weight of dairy cattle used in the inventory	3 (2013–2015/2016)
A.6	Provide additional information that justifies the distribution of animal waste management systems used (including, for example, information on general agricultural structures and policies)	4 (2012–2015/2016)
A.8	Separately report CH_4 emissions from anaerobic digesters	3 (2013–2015/2016)
A.11	Report the assumptions and methods used to estimate the uncertainty and apply methods, as provided in the IPCC good practice guidance, to combine uncertainties	3 (2013–2015/2016)
LULUCF		
L.1	Provide detailed information on the rationale for and impact of the recalculations for the LULUCF sector	4 (2012–2015/2016)
L.2*	Estimate and report the carbon stock changes from all mandatory categories	3 (2013–2015/2016)
L.5	Include the land-use transition matrices (approach 2) in the NIR and revise the time series of the land-use change data to ensure that the total territorial area is consistent for the entire inventory period since 1988	4 (2012–2015/2016)
L.12*	Further analyse the national forest inventory data and use data exclusively from age class I (1–20 years) for the estimation of the carbon stock changes in living biomass and dead wood for land converted to forest land	3 (2013–2015/2016)
L.24	Clearly explain the allocation of the emissions and removals from all carbon pools in the category cropland converted to settlements	3 (2013–2015/2016)

ID#[a]	*Previous recommendation for the issue identified*	*Number of successive reviews issue not addressed*[b]
Waste		
	No such issues for the waste sector were identified	
KP-LULUCF		
	No such issues for KP-LULUCF activities were identified	

Abbreviations: AD = activity data, CRF = common reporting format, EF = emission factor, EU ETS = European Union Emissions Trading System, FAO = Food and Agriculture Organization of the United Nations, F-gases = fluorinated gases, IPCC = Intergovernmental Panel on Climate Change, IPCC good practice guidance = *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, 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, NIR = national inventory report, QA/QC = quality assurance/quality control.

[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.

[b] The review of the 2016 annual submission is being held in conjunction with the review of the 2015 annual submission. As the reviews of the 2015 and 2016 annual submissions are not "successive" reviews, but are rather being held in conjunction, for the purpose of counting successive years in table 4, 2015/2016 is considered as one year. The ERT noted that this table 4 is the same as that in the 2015 annual review report for Poland, modified to reflect the combined 2015/2016 review.

V. Additional findings made during the 2016 technical review

10. Table 5 contains findings made by the ERT during the technical review of the 2016 annual submission of Poland that are additional to those identified in table 3 above.

Table 5
Additional findings made during the 2016 technical review of the annual submission of Poland

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[a] and/or a problem? If yes, classify by type*
General			
G.9	Consistency	The ERT noted that while data are largely consistent between the NIR and CRF summary table 10, the following inconsistencies are present: (1) reported categories of the IPPU sector between table 2.2 of the NIR and CRF table 10; (2) reported values and notation keys for CH_4 and N_2O emissions from cropland, wetlands, settlements and other land between table 2.2 of the NIR and CRF tables 10s3 and 10s4; (3) N_2O emissions for the LULUCF sector between table 2.2 of the NIR (reported as 0.06) and CRF table 10s4 (reported as 0.22); and (4) total GHG emissions for category 1.A.5 (other) between table 2.8 of the NIR (reported as 0.00) and CRF table 10s1 (reported as "NO","IE" (not occurring, included elsewhere))	Yes. Adherence to UNFCCC Annex I inventory reporting guidelines
		During the review, Poland acknowledged that there were a number of inconsistencies between the NIR and the CRF tables, and confirmed that the CRF table values are correct. The Party explained that the NIR had not been fully updated because of resource demands arising from the poor functioning and frequent updates of the CRF Reporter software. Poland will address this situation in future submissions	
		The ERT recommends that Poland improve its QA/QC procedures so that inconsistencies between the NIR and the CRF tables are minimized in future submissions	
G.10	Uncertainty analysis	The ERT noted that Approach 1 was used for the level and trend uncertainty analysis in the NIR. In response to questions raised by the ERT during the review on Approach 2 and improvements for F-gases and the LULUCF sector, Poland explained that, addressing the recommendation of the previous review, the uncertainty analysis for 2015 and 2016 (including for F-gases and LULUCF) was done using Monte Carlo sampling (Approach 2), which was updated to include methodological changes introduced by the 2006 IPCC Guidelines. However, the results of the Approach 2 analysis are still being checked by the Party and so were not included in the NIR. The delay resulted from ongoing CRF Reporter problems, as the uncertainty analysis relies on output tables from the CRF Reporter	Not an issue
		The ERT encourages Poland to include the results and a description of the methodology for its Approach 2 uncertainty analysis in the NIR	
G.11	Inventory management	During the review, Poland indicated that its improvement plan for inventory management is under development. The ERT notes that the Party provided details of planned improvements under category chapters of the NIR but did not compile a consolidated, prioritized plan	Not an issue

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[a] and/or a problem? If yes, classify by type*
		The ERT encourages Poland to consolidate improvements for inventory management into a plan that is prioritized by key category analysis and that highlights the status of the listed improvements	
G.12	Key category analysis	Poland has not yet undertaken a tier 2 key category analysis. During the review, the Party explained that the key category analysis calculation model requires CRF tables as a data source, and late delivery of the CRF Reporter and problems with values and data mapping in CRF tables caused a delay in the processing and incorporation of results of the uncertainty analysis into the key category analysis model. The key category analysis is currently being verified and undergoing the QA/QC process. Poland highlighted during the review that the key category analysis together with the uncertainty analysis is used to identify areas of the inventory for further examination and potential improvement	Not an issue
		The ERT encourages Poland to complete its tier 2 key category analysis and include it in the NIR, along with a brief statement on how the key category analysis is used to identify areas of the inventory for further examination and potential improvement	
Energy			
E.14	Feedstocks, reductants and other NEU of fuels – liquid fuels – CO_2	Poland explained in the NIR (p.57) that emissions related to feedstocks and NEU of fuels were calculated and reported under category 2.D (non-energy products from fuels and solvent use). However, the ERT noted that under this category there are only emissions data that are also given in CRF table 2(I)A-G under the category other and therefore tracking of AD and EFs is difficult. During the review, the Party explained that the script for filling the CRF tables did not import AD and that this problem would be corrected in the next submission	Yes. Transparency*
		The ERT recommends that Poland improve the transparency of the NIR by including more detailed information for AD and EFs for feedstocks and NEU of fuels in the NIR	
E.15	1.A.2.c Chemicals – solid fuels – CO_2, CH_4 and N_2O	The ERT noted a large gap in AD in this category. During the review, Poland explained that there was a significant increase in fuel consumption between 1994 and 1995 in this category resulting from an algorithm change in the classification of fuel consumption for particular parts of the national energy balance. For the years before 1995, all fuels consumed for energy and heat production in autoproducer CHP plants were included in transformation input in autoproducer CHP plants and reported under subcategory 1.A.1.a. Starting from 1995, fuel consumption for non-commercial heat production (heat not sold to third parties) was classified as part of the final energy consumption in individual subsectors and reported in the CRF tables under category 1.A.2	Not an issue
		The ERT encourages Poland to improve the transparency of the NIR by including the information on fuel consumption between 1994 and 1995 provided to the ERT during the review and detailed	

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[a] and/or a problem? If yes, classify by type
		information on the reallocation of data	
E.16	1.A.3.b Road transportation – gaseous fuels – CO_2	The ERT noted that Poland used the notation key "NO" for gaseous fuels used in road transportation. However, there are several LNG/CNG stations in the country for urban buses to use. During the review, Poland explained that the number of urban buses is still quite small (384 in 2014) and statistical information on LNG/CNG consumption by them is not yet available. Nevertheless, the number of such buses is expected to grow and the Party intends to include the relevant data in the national inventory as soon as they become available. While the number of LNG/CNG buses is small and it can be assumed that GHG emissions are insignificant, Poland agreed to use the notation key "NE" (not estimated) instead of "NO" until data become available	Yes. Transparency*
		The ERT recommends that Poland improve the transparency of the NIR by including information in accordance with decision 24/CP.19, paragraph 37(b), to demonstrate that emissions from gaseous fuels are insignificant and change the notation key to "NE" for gaseous fuels in road transportation. Further, the ERT encourages Poland to check on data availability of LNG/CNG consumption by urban buses	
E.17	1.A.3.d Domestic navigation – liquid fuels – CO_2, CH_4 and N_2O	The ERT commends Poland for its efforts to split international and domestic navigation and to provide the time-series emission trend. During the review, the Party explained that domestic navigation is calculated on the basis of a questionnaire and that the share of cargo activity is used for the estimation of emissions. However, the NIR lacks information on how cargo activity is related to fuel consumption and on what cross-checking is done when both cargo activity and Eurostat data are used for estimating emissions from navigation	Yes. Transparency*
		The ERT recommends that Poland provide detailed information on the correlation between cargo activity and emissions from navigation and on the cross-checks between emissions estimated using cargo activity and emissions estimated using Eurostat data	
E.18	1.B.1 Solid fuels – CO_2 and CH_4	The ERT noted that Poland reported "NE" in CRF table 1.B.1 for CH_4 recovery/flaring and CO_2 emissions from coal mines. During the review, Poland explained that potential data sources for this subcategory, including a national database on emissions and mining agencies, are regularly checked but a lack of relevant data on the amounts of CH_4 drained (recovered), utilized or flared remains for the entire time series	Not an issue
		The ERT encourages Poland to continue its efforts to collect data for CH_4 recovery/flaring and CO_2 emissions from coal mines	
E.19	1.B.1.a Coal mining and handling – solid fuels – CH_4	For CH_4 emission estimates from coal mining and handling, Poland's CH_4 IEF (4.556 kg/t) for the entire time series is below the lowest value in the range of IPCC default values (6.7–16.75 kg/t). During the review, the Party explained that a tier 1 method is used for the	Yes. Accuracy*

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[a] and/or a problem? If yes, classify by type*
		calculation of fugitive emissions from underground mines, and a country-specific EF. Poland explained that the country-specific EF is from a study on which the defaults from the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* were based. The ERT expressed concern that the country-specific EF used by Poland is not fully justified or transparently described, and is potentially outdated, having been replaced with a more recent default range in the 2006 IPCC Guidelines. Although the ERT accepted the Party's reporting as the EF used by the Party is 32 per cent lower than the lowest value in the default range from the 2006 IPCC Guidelines, the ERT believes that this issue should be considered further in future reviews to confirm that there is not an underestimate of CH_4 emissions from coal mining and handling	
		The ERT recommends that Poland either justify that the CH_4 EF applied appropriately reflects the CH_4 content of coal in Poland or use the default EF from the 2006 IPCC Guidelines (12.06 kg/t for average CH_4 emissions) to calculate CH_4 emissions from underground mines for the entire time series	
E.20	1.B.1.a Coal mining and handling – solid fuels – CH_4	The ERT noted that the default EF for abandoned coal mines ranges from 0.4 to 0.6 (2006 IPCC Guidelines, table 4.1.6, p.4.25), but the IEF used by the Party is 0.09. During the review, Poland explained that the script for filling the CRF tables imported incorrect AD and that this problem would be corrected in the next submission, and provided a detailed datasheet showing the number of abandoned coal mines in each inventory year	Yes. Accuracy*
		In addition, the ERT noted that Poland did not apply specific EFs corresponding to the years in which coal mines closed. With reference to calculation sheets provided by the Party, the Party used the EF in column "1976–2000" for all 13 mines, which is not consistent with the 2006 IPCC Guidelines. For the 10 mines closed before 2000, the EF in column "1976–2000" should be applied, while for the three mines closed after 2000, the EF in column "2001–Present" should be applied	
		The ERT recommends that Poland use the correct AD and EFs for abandoned coal mines	
E.21	International aviation – liquid fuels – CO_2, CH_4 and N_2O	The ERT commends Poland for its efforts to split domestic and international aviation across the time series for the first time using data for the share of international aviation from the Eurocontrol database. Because of a lack of Eurocontrol data for the years before 2005, the share for the years 1988 to 2004 was assumed by the Party as a five-year average of the years 2005 to 2009. During the review, Poland provided information on the rationale for using Eurocontrol data for 2005–2009 to represent the percentage of the domestic share of aviation before 2005	Yes. Transparency*
		The ERT recommends that Poland improve the transparency of the NIR by including the information on the source of data used to calculate the share of international aviation from	

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[a] and/or a problem? If yes, classify by type*
		national statistics provided to the ERT during the review, as well as the rationale for applying 2005–2009 average data from Eurocontrol to the years 1988 to 2004	
IPPU			
I.14	2.A.1 Cement production – CO_2	Previous ERTs have made recommendations that Poland provide the EU ETS data, country-specific methods, EFs and other background information used in the calculation of CO_2 emissions from cement production, together with information on data verification activities, and Poland has previously responded that the information would be included in the next annual submission. However, little information on the calculation of these emissions was provided in the 2016 submission. Poland provided some information on the methods applied for CO_2 emissions estimation from clinker production under the EU ETS, as described in annex VII to Commission Decision 2007/589/EC, but no information on the verification process. During the review, Poland provided information on the verification process, which includes on-site visits and checking that reports are in line with the installation monitoring plan (approved by a competent authority) and with monitoring and reporting guidelines from Commission Decision 2007/589/EC. The Party also explained its emission report verifier checks, which include checks on the monitoring plan, emission sources, calibration activities, data management and technology. The ERT commends Poland for providing information on the verification process	Yes. Transparency*
		The ERT encourages Poland to include the information on the verification process provided to the ERT during the review in the next NIR	
I.15	2.A.1 Cement production – CO_2	Poland reported CO_2 emissions from clinker production for the years 2005 to 2014 from installations that participate in the EU ETS. For the years 1988 to 2000, emissions were estimated based on clinker production and an average EF of 529 kg CO_2/t of clinker, with this average EF based on country-specific EFs used for the years 2001 to 2004. In response to a question raised by the ERT, the Party clarified the source of the country-specific EFs used for the years 2001 to 2004, and explained why country-specific EFs could not be obtained for the earlier years 1988 to 2000. The CO_2 EF for the years before 2005 were based on a Polish study. Poland further explained that the study contains an analysis of CO_2 emissions from cement production in Poland for the period 1988–2004 but only emissions calculations for the period 2001–2004 were based on country-specific data (for chemical analysis of clinker, kiln input, etc.). The CO_2 emissions for the period 1988–2000 were estimated from published reports based on a default calcination factor (525 kg CO_2/t clinker) because of a lack of adequate country-specific data, and it is for this reason that Poland uses in the inventory an average EF value for the period 2001–2004 and country-specific EFs for the years before 2001	Yes. Transparency*
		The ERT recommends that Poland include the information clarifying the calculation of CO_2	

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[a] and/or a problem? If yes, classify by type*
		emissions from clinker production, including the derivation of the CO_2 EF. It also recommends that Poland make an effort to collect data so as to be able to calculate country-specific EFs for the period 1988–2000	
I.16	2.F.1 Refrigeration and air conditioning – HFCs	In the NIR, emissions from industrial refrigeration are included under the subcategories commercial refrigeration and stationary air conditioning. Previous ERTs have encouraged Poland to improve the transparency of its reporting by presenting the emissions from industrial refrigeration separately. During the review, the Party informed the ERT that data that would allow industrial refrigeration to be reported separately from other categories were not available during preparation of the 2016 submission, but that the inventory team is undertaking an ongoing analysis of available data sources in order to improve the transparency of reporting for this category	Not an issue
		The ERT, while welcoming the information on the Party's efforts to improve the transparency of reporting provided during the review, encourages Poland to report emissions from industrial refrigeration separately from those from commercial refrigeration and stationary air conditioning	
Agriculture			
A.15	3.A Enteric fermentation – CH_4	In the NIR Poland reported using a tier 2 method for cattle and a tier 1 method for other animals for estimating CH_4 emissions from enteric fermentation. But in CRF summary table 3s2, the Party reported using tier 2 and tier 3 methods to estimate enteric CH_4 emissions from livestock. During the review, Poland confirmed that only tier 1 and 2 methods were applied to estimate CH_4 emissions from livestock and that there was an error in the CRF tables	Yes. Transparency*
		The ERT recommends that Poland ensure consistency between the NIR and the CRF tables when reporting the methods used for its emission estimates	
A.16	3.B Manure management – CH_4	Poland reported using a tier 2 method to establish a domestic CH_4 EF for manure management for swine. The ERT noted, however, that the Party used IPCC default values for VS, maximum methane producing capacity and the methane conversion factor to determine this EF. Only the fraction of livestock category manure in given animal waste management systems is from country-specific data. The method used by the Party is not a tier 2 method. Poland has improved the default EF by using more appropriate country-specific data for manure management systems, which suggests that the Party used a tier 1 method, in accordance with the 2006 IPCC Guidelines (chapter 10.4.5, p.10.51)	Yes. Transparency*
		The ERT recommends that Poland correctly label the method as a tier 1 method for the estimation of CH_4 emissions from manure management for swine	

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[a] and/or a problem? If yes, classify by type*
A.17	3.B Manure management – CH_4	The ERT noted that the values reported in table 5.9 of the NIR for the CH_4 EFs for manure management for cattle and for swine are lower than the IPCC default values (tables 10A-4, 10A-5 and 10A-7). During the review, Poland informed the ERT that there were some errors in table 5.9 of the NIR; namely, in the CH_4 EF and VS for dairy cattle, which are 11.64 kg CH_4/animal/year and 2.09 kg d.m./animal/day in 2014, respectively. Poland explained that proper parameters are given in CRF table 3.B(a)s1 and those have been used for CH_4 emissions calculation The ERT recommends that Poland improve its reporting by correcting the errors in the CH_4 EFs for manure management for cattle and swine presented in table 5.9 in the NIR	Yes. Transparency*
A.18	3.B Manure management – CH_4	For the estimation of CH_4 emissions from manure management, Poland reported in the NIR that poultry manure management systems were established at 11 per cent liquid systems and 89 per cent solid storage. The ERT noted that the default CH_4 EF used for manure management for poultry reflects only dry systems (table 5.9 in the NIR). During the review, Poland informed the ERT that poultry is managed in dry systems with differentiation only for "with litter" and "litter-free" systems, and that the description in the NIR is not correct on this matter as the word "liquid" should be changed to "litter-free". Therefore, the CH_4 EF for dry systems is used for the emissions calculation for poultry. At the same time, N_2O emissions are for poultry "with litter" and "without litter" (0.001 kg N_2O-nitrogen/kg nitrogen excreted) not for liquid/slurry The ERT recommends that Poland improve the transparency of its reporting on CH_4 emissions from manure management by including the information on the manure management system for poultry provided to the ERT during the review in the next annual submission	Yes. Transparency*
A.19	3.B Manure management – N_2O	The ERT noted that Poland reported in CRF summary table 3 having used tier 1 and tier 2 methods to estimate N_2O emissions from manure management. But no information was provided in the NIR on the level of method used. During the review, Poland explained that a tier 1 method was used only for fur-bearing animals and a tier 2 method was used for livestock (cattle, swine, sheep, goats, horses and poultry) because of the application of country-specific Nex rates and shares for manure management systems The ERT encourages Poland to include the level of method used for estimating N_2O emissions from manure management in the NIR	Not an issue
A.20	3.B Manure management – N_2O	Poland reported in the NIR that country-specific Nex rates (table 5.10) are generally in line with the parameters published in the 2006 IPCC Guidelines (table 10.19) for most livestock categories. During the review, the Party provided the ERT with a comparison sheet for country-specific Nex rates against the IPCC default values. Contrary to what was reported in the NIR, the ERT notes that for dairy cattle and horses, country-specific Nex rates are higher than the IPCC defaults. For	Not an issue

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[a] and/or a problem? If yes, classify by type*
		other cattle, sheep and goats, the country-specific EFs are much lower than the IPCC defaults. During the review, Poland explained the reasons for these divergences	
		The ERT encourages Poland to report the findings of the comparison of country-specific Nex rates with the IPCC defaults and the rationale for divergences observed in the NIR	
A.21	3.B Manure management – N_2O	Poland reported in the NIR that an update of country-specific Nex rates is planned as is collection of data on liquid systems management with differentiation for crust (with or without). During the review, Poland provided the ERT with information on a project, "Pilot surveys aiming at methodological improvement in agri-environmental statistics and the development of grasslands statistics", which was concluded in June 2016 by the Central Statistical Office of Poland in cooperation with agricultural research institutes and Eurostat	Not an issue
		The ERT encourages Poland to report in the NIR on the findings of the project on agri-environmental statistics, in particular the possibility of using these data to support methodological improvement and country-specific Nex rates	
A.22	3.B Manure management – CH_4 and N_2O	In the NIR, Poland indicated the revision according to national statistics of the livestock populations for 2012 and 2013 as a reason for the recalculation of CH_4 and N_2O emissions from manure management. During the review, Poland informed the ERT that the recalculations relate to the fact that livestock numbers changed in 2013 for swine and in 2012 for fur-bearing animals. The ERT noted, however, that Poland did not provide any information on the population trend for fur-bearing animals in the NIR. The Party reported that default Nex rates from the 2006 IPCC Guidelines (table 10.19) were used for rabbits and other fur-bearing animals in the NIR, while the notation key "NA" (not applicable) was used for fur-bearing animals in CRF table 3.B(b). Poland also informed the ERT that fur-bearing animals include rabbits, foxes, minks and polecats, and provided the population trend for fur-bearing animals	Yes. Transparency*
		The ERT recommends that Poland improve the transparency of its characterization of fur-bearing animals by reporting the population trend for rabbits, foxes, minks and polecats in the NIR. It also recommends that the Party ensure the consistency of reporting between the NIR and the CRF tables for rabbits and other fur-bearing animals	
A.23	3.D.a Direct N_2O emissions from managed soils – N_2O	In the NIR Poland reported that nitrogen from bedding material was not accounted for under animal manure applied to soils; it is covered by the nitrogen returned to soils as crop residues. During the review, Poland informed the ERT that the $Frac_R$ (fraction of above-ground residues of crop removed annually for various purposes) used by the Party includes the fraction removed from the field and also covers straw used later for bedding. The ERT concludes that the bedding material was not taken into account for organic nitrogen fertilizers ($FRAC_{ON}$) or crop residues	Yes. Completeness*

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[a] and/or a problem? If yes, classify by type*
		($FRAC_{CR}$). The ERT believes that this issue should be considered further in future reviews to confirm that there is not an underestimate of emissions	
		The ERT recommends that Poland account for the additional nitrogen from bedding material as part of the managed manure nitrogen applied to soils, in accordance with the 2006 IPCC Guidelines, in the next annual submission	
A.24	3.D.a Direct N_2O emissions from managed soils – N_2O	Poland indicated in the NIR that consistent public reporting of data on the application of sewage sludge in agriculture commenced in 2003; therefore, application data since 1988 have been supplemented with annual mean changes in AD for the period 2003–2012. The ERT noted that the amount of sewage sludge applied in agriculture consistently increases over the period 2003–2009 while it decreases from 2009 to 2012	Yes. Consistency*
		The ERT recommends that Poland consider explaining in the NIR how the trend in the annual mean changes in AD for the period 2003–2009 has been used to estimate the amount of sewage sludge application from 1988 to 2002	
A.25	3.D.a Direct N_2O emissions from managed soils – N_2O	The ERT noted that Poland did not indicate in the NIR the source of nitrogen content of below-ground residues for crops and total annual harvested area of crops. Poland reported in the NIR that data on nitrogen content of above-ground residues, on the ratio of above-ground residues in dry matter to harvested yield for crops and on the fraction of crops burned come from country studies in which experimental data as well as data from the literature and default EFs were used. The NIR states that the nitrogen data are given in table 5.23; however, the table is missing in the NIR. The NIR also states that the AD for crop production are reported in table 5.12, but this table relates to changes in CH_4 emissions from manure management due to recalculations. In response to a question raised by the ERT during the review, Poland provided the missing information and suggested a correction for the erroneous reference to table 5.12	Yes. Transparency*
		The ERT recommends that Poland improve its QA/QC to ensure that the reference to the table containing AD for crop production is correct and that table 5.23 is included in the NIR	
A.26	3.G Liming – CO_2	Poland reported in the NIR (p.192) that for the estimation of CO_2 emissions from liming, it assumed that lime–magnesium fertilizers ($CaMg(CO_3)_2$) contain 89.1 per cent $CaCO_3$ and 10.9 per cent $MgCO_3$, but the rationale supporting this assumption was not provided. During the review, Poland could not justify the assumption, but explained that oxides of lime (CaO) are also used for soil liming in limited amounts, which is not reported in the NIR. As the amount of lime fertilizers used by Poland in order to estimate CO_2 emissions from liming was expressed in terms of pure nutrient (CaO) in the national statistics (NIR, p.192), it was necessary for the Party to exclude the amount of oxides of lime that was used for soil liming from the amount of CaO reported in the national statistics prior to the estimation of the amount of dolomite ($CaMg(CO_3)_2$) used. Poland	Yes. Transparency*

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[a] and/or a problem? If yes, classify by type*
		also explained that oxides of lime were excluded from the national statistics in the calculation of the amount of dolomite used for soil liming The ERT recommends that Poland provide more information on the different types of lime applied to soils as well as the rationale for the assumptions used to derive the amounts of each applied	
LULUCF			
L.26	4. General (LULUCF) – CO_2	Poland estimated soil organic carbon stock changes using default reference soil organic carbon stocks (SOC_{ref}) and default stock change factors (FLU, FMG, FI) for all land-use categories (2006 IPCC Guidelines, equation 2.25). As indicated in the NIR and confirmed during the review, the SOC_{ref}, FLU, FMG and FI values used by the Party were the same for determining SOC_{t0} and SOC_{t1} and so there was no carbon stock change over the transition period The ERT recommends that Poland apply different FLU or FMG values for different land-use or management categories, in accordance with the 2006 IPCC Guidelines	Yes. Accuracy*
L.27	4. General (LULUCF) – All gases	The previous ERT recommended that Poland provide detailed information on the rationale for and impact of the recalculations in the next annual submission. The main reason for this recommendation was that Poland made recalculations between the 2013 submission and later annual submissions for the LULUCF sector. The three most significant recalculations were in the forest land, cropland and grassland categories. The recalculations were made for the entire inventory period following changes in the methodology used to estimate carbon stock changes in living biomass in forest land from the default (gain–loss) method to the stock-change method; as a result of the revision of biomass increments on land converted to forest land; as a result of the revision of soil classification; and following the introduction of new country-specific soil organic carbon stock estimates. Compared with the 2013 annual submission, the recalculations in the 2016 annual submission resulted in an increase in removals in the LULUCF sector of 17,377.42 Gg CO_2 eq (79.3 per cent) for 2011. Moreover, the change for 1992 was –12,553.99 Gg CO_2 eq (–153 per cent) while the changes during the period 1996–1999 were more than 400 per cent. Responding to the recommendation, the Party provided the rationale for the recalculations as well as the percentage change and the net effect (in CO_2 eq) at the category level in chapter 6.6.7 of the NIR. However, the information was for changes in 2016 only. Despite the large changes in total emissions/removals in the LULUCF sector between the 2013 submission and later annual submissions, sufficient information on the rationale, the impacts and the change from the gain–loss to the stock-change method for estimating CO_2 emissions/removals in forest land remaining forest land has not been provided The ERT recommends that Poland include in its NIR sufficient information on the rationale, the	Yes. Transparency*

ID#	Finding classification	Description of the finding with recommendation or encouragement	Is finding an issue[a] and/or a problem? If yes, classify by type
		impacts and the change from the gain–loss to the stock-change method for estimating CO_2 emissions/removals in forest land remaining forest land for all years	
L.28	4.A.1 Forest land remaining forest land – CO_2, CH_4 and N_2O	As noted in ID#L.9 in table 3, Poland has reverted to using a tier 1 method for the entire inventory to achieve time-series consistency in emissions from both litter and dead wood carbon pools. However, the ERT notes that the Party is not using the appropriate IPCC approach (which is tier 2 or higher)	Yes. Accuracy*
		The ERT recommends that Poland use a tier 2 or higher IPCC approach to estimate emissions from both the litter and dead wood carbon pools	
L.29	4.A.1 Forest land remaining forest land – CO_2, CH_4 and N_2O	The title of table 6.10 of the NIR (p. 203) indicates that the reference for EFs is table 2.5 of the 2006 IPCC Guidelines (volume 4, p.2.47). During the review, Poland acknowledged that the EFs in table 6.10 are EFs for biofuel burning rather than for extra-tropical forests. The ERT notes that under table 2.5 in the 2006 IPCC Guidelines, the information states that for forests other than tropical, extra-tropical forest EFs should be applied	Yes. Accuracy*
		The ERT recommends that Poland apply the correct EFs for estimating emissions from biomass burning	
L.30	4.A.2 Land converted to forest land – CO_2	To estimate emissions/removals in land converted to forest land, Poland uses a default value of 4 m^3/ha/year, which is a reasonable and conservative value for new forest land areas in the ecological region of Poland. However, the ERT determined that the Central Statistical Office of Poland has national data for growing stock volumes per age class from which IEFs can be obtained for land converted to forest land. The Party informed the ERT during the review that it is exploring the possibility of estimating carbon stock changes in the biomass pool of newly established forests with an empirical model of growing stock over age on a unit area of afforestation	Yes. Accuracy*
		The ERT recommends that Poland use a higher-tier method (e.g. using national forest inventory data exclusively from age class I (1–20 years)) to estimate a country-specific biomass increment value to increase the accuracy of the estimate for the land converted to forest land category, and provide the results and the limitations encountered in the next NIR	
L.31	4.A.2 Land converted to forest land – CO_2	Poland reports dead wood and litter emissions/removals as "NO" in land converted to forest land. Given the explanations and stock values of dead wood provided by the Party during the review, the ERT acknowledges that these pools can probably be a net sink. The ERT found that the national forest inventory has data available on dead wood stocks	Yes. Accuracy*
		The ERT, given that this is a key category, recommends that Poland account for emissions and removals from dead wood and litter following the 2006 IPCC Guidelines (volume 4, chapter	

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[a] and/or a problem? If yes, classify by type*
		2.3.2) with the highest possible tier approach	
L.32	4.A.2 Land converted to forest land – CO_2	In the 2014 submission, Poland applied an incorrect default biomass increment unit for estimating CO_2 emissions/removals from land converted to forest land. Table 6.11 of the NIR (p.203) refers to a default biomass increment unit of 4 m^3/ha/year. However, the correct default biomass increment unit from the 2006 IPCC Guidelines is 4 t d.m./ha/year (volume 4, table 4.12, p.4.63). During the review, the Party agreed on the necessity for using the correct default biomass increment unit of 4 t d.m./ha/year	Yes. Transparency*
		The ERT recommends that Poland correct the default biomass increment unit used for estimating CO_2 emissions/removals from land converted to forest land in the next annual submission	
L.33	4.E.2 Land converted to settlements – CO_2	In 2014, 20.76 kha of wetlands were converted to settlements (CRF table 4.E); however, the corresponding net CO_2 emissions/removals were reported as "NO". This issue was also noted by the ERT for other years. During the review, Poland explained that reporting of this category is not mandatory but it proposed changing the notation key from "NO" to "NA"	Not an issue
		The ERT encourages Poland to estimate and report the carbon stock changes from wetlands converted to settlements or change the notation key to "NE"	
Waste			
W.6	5.C.1 Waste incineration – CO_2	During the review, Poland acknowledged an error in the calculation of CO_2 emissions from the incineration of non-biogenic municipal solid waste and advised that CO_2 emission estimates have been corrected and will be reported in the next annual submission. Although the ERT accepted the Party's reporting for the 2016 submission, the ERT believes that this issue should be considered further in future reviews to confirm that there is not an underestimate of emissions	Yes. Consistency*
		The ERT recommends that Poland report the corrected estimates for municipal solid waste incineration in the next annual submission. The ERT further recommends that the recalculation is appropriately described in the NIR	
KP-LULUCF			
KL.2	Biomass burning – CO_2, CH_4 and N_2O	The ERT noted inter-annual changes in the CO_2, CH_4 and N_2O IEFs for 1994/1995, 1995/1996, 2005/2006 and 2011/2012 from biomass burning/wildfires in afforestation and reforestation. The ERT concluded, after consulting with Poland during the review, that the magnitude of values is reasonable. The Party agreed to a suggestion of the ERT to provide more evidence of forest fire events in future submissions	Not a problem
		The ERT encourages Poland to provide more evidence of forest fire events affecting afforestation and reforestation in the country for the entire time series as well as a description of the magnitude	

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[a] and/or a problem? If yes, classify by type*
		and inter-annual variation of IEFs resulting from these events	
KL.3	Biomass burning – CO_2, CH_4 and N_2O	The ERT noted that inter-annual changes in the CO_2, CH_4 and N_2O IEFs for 1992/1993, 2003/2004, 2012/2013 and 2013/2014 from biomass burning/wildfires in forest management had outlier values. The ERT concluded, after consulting with Poland during the review, that the magnitude of values is reasonable. The Party agreed to a suggestion of the ERT to provide more evidence of forest fire events in future submissions	Not a problem
		The ERT encourages Poland to provide more evidence of forest fire events affecting forest management in the country for the entire time series as well as a description of the magnitude and inter-annual variation of IEFs resulting from these events	
KL.4	General (KP-LULUCF) – CO_2	Total land area values are different throughout the time series. This issue does not affect areas or emissions and removals under afforestation, reforestation, deforestation or forest management activities; however, there were small differences in these areas due to rounding, as confirmed by the Party during the review	Yes. Accuracy*
		The ERT recommends that Poland provide consistent values for land area for the entire time series and correct the rounding errors in order to ensure compliance with decision 2/CMP.8, annex II, paragraph 2(d), noting also footnote 7 to CRF table NIR-2, which states that "the total land area should be the same for the current inventory year and the previous inventory year"	
KL.5	General (KP-LULUCF) – All gases	Since the adoption of the FMRL, there have been substantial changes in the methodologies used to calculate biomass, soil, dead organic matter and harvested wood product stock changes as a result of the development of new methodologies and the application of the 2006 IPCC Guidelines and the Kyoto Protocol Supplement. During the review, Poland indicated that a technical correction is planned. The ERT notes that it is good practice to specify methodological elements or historical activity used in the reporting of forest management emissions and removals that are different from those used for constructing the FMRL, as outlined in decision 2/CMP.7, annex, paragraphs 14 and 15 (Kyoto Protocol Supplement, chapter 2.7.5.2)	Yes. Accuracy*
		The ERT recommends that Poland provide a list in the NIR summarizing any methodological inconsistencies that may trigger a technical correction	
KL.6	Forest management – CO_2	Dead wood and litter in the category forest management is reported with the notation key "NO". During the review, the ERT acknowledged that the dead wood and litter pool has been reported in previous submissions using the default values for litter in the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry* and a transition period of 20 years. However, the use of these default values is applicable only when the forest land is transitioning from one state to	Yes. Transparency*

ID#	*Finding classification*	*Description of the finding with recommendation or encouragement*	*Is finding an issue[a] and/or a problem? If yes, classify by type*
		another (for instance, because of a change in management intensity or practices, a change in disturbance regime or a change in forest type). Therefore, considering that the carbon stock changes from dead wood and litter under forest management activities under Article 3, paragraph 4, of the Kyoto Protocol are not a net source of CO_2 emissions, Poland decided not to estimate emissions or removals under this pool and category. During the review, the Party justified the fact that dead wood and litter under forest management is not a net source of CO_2 emissions in the country	
		The ERT recommends that Poland provide a more detailed explanation to demonstrate that the pool dead wood and litter in the category forest management is not a net source of CO_2 emissions	

Abbreviations: AD = activity data, CHP = combined heat and power, CRF = common reporting format, d.m. = dry matter, EF = emission factor, ERT = expert review team, EU ETS = European Union Emissions Trading System, FMRL = forest management reference level, GHG = greenhouse gas, 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*, LNG/CNG = liquefied natural gas/compressed natural gas, LULUCF = land use, land-use change and forestry, NEU = non-energy use, Nex = nitrogen excretion, NIR = national inventory report, QA/QC = quality assurance/quality control, 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.

VI. Application of adjustments

11. The ERT has not identified the need to apply any adjustments to the 2016 annual submission of Poland.

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

12. Poland 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 2016 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 Poland for submission year 2016 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 submitted by the Party.

Table 6
Total greenhouse gas emissions for Poland, base year[a]–2014[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*
FMRL								–27 133.00
Base year	564 027.39	580 020.01	564 027.39	580 020.01	NA		NA	
1990	447 265.79	472 995.97	447 265.79	472 995.97				
1995	429 929.16	445 272.75	429 929.16	445 272.75				
2000	358 860.93	392 275.76	358 860.93	392 275.76				
2010	370 990.74	403 598.93	370 990.74	403 598.93				
2011	363 981.59	403 271.36	363 981.59	403 271.36				
2012	358 203.24	396 983.55	358 203.24	396 983.55				
2013	352 232.42	393 091.87	352 232.42	393 091.87		–2 572.73	NA	–43 597.03
2014	347 534.19	380 037.57	347 534.19	380 037.57		–2 597.35	NA	–36 135.67

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 1988 for CO_2, CH_4 and N_2O, 1995 for HFCs, PFCs and SF_6, and 2000 for NF_3. Poland 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 not 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.

Table 7
Greenhouse gas emissions by gas for Poland, excluding land use, land-use change and forestry, 1988–2014[a]
(kt CO_2 eq)

	CO_2[b]	*CH_4*	*N_2O*	*HFCs*	*PFCs*	*Unspecified mix of HFCs and PFCs*	*SF_6*	*NF_3*
1988	473 954.84	76 734.40	29 032.34	NA, NO	147.26	NA, NO	NA, NO	NA, NO
1990	378 782.54	67 064.04	27 007.52	NA, NO	141.87	NA, NO	NA, NO	NA, NO
1995	363 885.78	58 255.23	22 833.31	97.34	171.97	NA, NO	29.12	NA, NO
2000	319 120.41	49 402.95	22 271.83	1 280.83	176.68	NA, NO	23.07	NA, NO
2010	334 026.15	43 166.37	19 571.19	6 782.77	17.07	NA, NO	35.37	NA, NO
2011	333 713.65	42 128.02	19 924.84	7 449.61	16.22	NA, NO	39.02	NA, NO
2012	326 597.79	42 588.03	20 019.95	7 720.45	15.41	NA, NO	41.92	NA, NO
2013	322 440.49	42 357.11	20 140.19	8 091.92	14.64	NA, NO	47.54	NA, NO
2014	310 307.30	41 330.22	19 746.42	8 586.93	13.90	NA, NO	52.79	NA, NO
Per cent change 1988–2014	**–34.5**	**–46.1**	**–32.0**	**NA**	**–90.6**	**NA**	**NA**	**NA**

Abbreviations: 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] Poland did not report indirect carbon dioxide emissions in common reporting format table 6.

Table 8
Greenhouse gas emissions by sector for Poland, 1988–2014[a, b]
(kt CO_2 eq)

	Energy	*IPPU*	*Agriculture*	*LULUCF*	*Waste*	*Other*
1988	483 409.87	33 962.29	47 528.62	–15 992.62	14 968.05	NO
1990	386 321.00	25 114.87	46 848.19	–25 730.18	14 711.92	NO
1995	372 528.10	24 560.80	34 482.09	–15 343.59	13 701.77	NO
2000	322 219.07	25 499.26	30 792.17	–33 414.83	13 765.26	NO
2010	335 488.42	26 599.60	29 550.59	–32 608.19	11 960.32	NO
2011	332 354.30	29 500.65	29 930.44	–39 289.77	11 485.97	NO
2012	327 420.19	28 465.19	29 807.24	–38 780.31	11 290.93	NO
2013	323 062.86	28 399.27	30 401.02	–40 859.45	11 228.72	NO
2014	308 848.16	30 015.11	30 409.64	–32 503.37	10 764.66	NO
Per cent change 1988–2014	**–36.1**	**–11.6**	**–36.0**	**103.2**	**–28.1**	**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] Poland did not report indirect carbon dioxide emissions 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]–2014, for Poland

(kt CO_2 eq)

	Article 3.7 bis 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				–27 133.00				
Technical correction				NA				
Base year	NA				NA	NA	NA	NA
2013		–2 817.75	245.01	–43 597.03	NA	NA	NA	NA
2014		–2 855.32	257.98	–36 135.67	NA	NA	NA	NA
Per cent change base year–2014					**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 1988 for CO_2, CH_4 and N_2O, 1995 for HFCs, PFCs and SF_6, and 2000 for NF_3. Poland 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.

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

Table 10
Key relevant data for Poland 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	No
3.5% of total base-year GHG emissions, excluding LULUCF	20 300.700 kt CO_2 eq (162 405.602 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 2014	NA
2. Deforestation in 2014	NA
3. Forest management in 2014	NA
4. Cropland management in 2014	NA
5. Grazing land management in 2014	NA
6. Revegetation in 2014	NA
7. Wetland drainage and rewetting in 2014	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

Tables 11 and 12 include the information to be included in the compilation and accounting database for Poland. 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 2014, including the commitment period reserve, for Poland
(t CO_2 eq)

	Original submission	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Commitment period reserve	1 425 544 942			1 425 544 942
Annex A emissions for 2014				
CO_2	310 307 297			310 307 297
CH_4	41 330 224			41 330 224
N_2O	19 746 424			19 746 424
HFCs	8 586 931			8 586 931
PFCs	13 903			13 903
Unspecified mix of HFCs and PFCs	NA, NO			NA, NO
SF_6	52 786			52 786
NF_3	NA, NO			NA, NO
Total Annex A sources	**380 037 566**			**380 037 566**
Activities under Article 3, paragraph 3, of the Kyoto Protocol for 2014				
3.3 Afforestation and reforestation	–2 855 325			–2 855 325
3.3 Deforestation	257 979			257 979
Forest management and elected activities under Article 3, paragraph 4, of the Kyoto Protocol for 2014				
3.4 Forest management for 2014	–36 135 670			–36 135 670

Abbreviations: Annex A sources = sources included in Annex A to the Kyoto Protocol, NA = not applicable, 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.

Table 12
Information to be included in the compilation and accounting database for 2013, for Poland
(t CO_2 eq)

	Original submission	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Annex A emissions for 2013				
CO_2	322 440 487			322 440 487
CH_4	42 357 105			42 357 105
N_2O	20 140 189			20 140 189
HFCs	8 091 919			8 091 919
PFCs	14 635			14 635
Unspecified mix of HFCs and PFCs	NA, NO			NA, NO
SF_6	47 537			47 537
NF_3	NA, NO			NA, NO
Total Annex A sources	**393 091 872**			**393 091 872**
Activities under Article 3, paragraph 3, of the Kyoto Protocol for 2013				
3.3 Afforestation and reforestation	–2 817 747			–2 817 747
3.3 Deforestation	245 014			245 014
Forest management and elected activities under Article 3, paragraph 4, of the Kyoto Protocol for 2013				
3.4 Forest management for 2013	–43 597 032			–43 597 032

Abbreviations: Annex A sources = sources included in Annex A to the Kyoto Protocol, NA = not applicable, 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.

Annex III

Additional information to support findings in table 2

Missing categories that may affect completeness

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

(a) Direct N_2O emissions from managed soils (see ID#A.23 in table 5);

(b) CO_2 emissions from land converted to cropland and land converted to settlements (see ID#L.2 in table 3).

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 Poland for 2016. Available at <http://unfccc.int/resource/docs/2016/asr/pol.pdf>.

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

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

FCCC/ARR/2012/POL. Report of the individual review of the annual submission of Poland submitted in 2012. Available at <http://unfccc.int/resource/docs/2013/arr/pol.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 Poland for 2014. Available at <https://unfccc.int/files/kyoto_protocol/application/pdf/iar_2014_pol_1_v2.0.pdf>.

Standard independent assessment report, part 2, for Poland for 2014. Available at <https://unfccc.int/files/kyoto_protocol/application/pdf/iar_2014_pol_2_v2.0.pdf>.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Anna Olecka (Institute of Environmental Protection), including additional material on the methodology and assumptions used.

Annex V

Acronyms and abbreviations

AAU	assigned amount unit
AD	activity data
CER	certified emission reduction
CH_4	methane
CHP	combined heat and power
CM	cropland management
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
CPR	commitment period reserve
CRF	common reporting format
EF	emission factor
ERT	expert review team
ERU	emission reduction unit
EU ETS	European Union Emissions Trading System
FAO	Food and Agriculture Organization of the United Nations
F-gas	fluorinated gas
FM	forest management
FMRL	forest management reference level
GHG	greenhouse gas
GM	grazing land management
HFCs	hydrofluorocarbons
IE	included elsewhere
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
LNG/CNG	liquefied natural gas/compressed natural gas
LULUCF	land use, land-use change and forestry
NA	not applicable
NE	not estimated
NEU	non-energy use
NF_3	nitrogen trifluoride
NIR	national inventory report
NO	not occurring
N_2O	nitrous oxide
PFCs	perfluorocarbons
QA/QC	quality assurance/quality control
RMU	removal unit
RV	revegetation
SEF	standard electronic format
SF_6	sulphur hexafluoride
SIAR	standard independent assessment report
UNFCCC	United Nations Framework Convention on Climate Change
WDR	wetland drainage and rewetting