Advance Version

COMPLIANCE COMMITTEE

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5 June 2015

Report on the individual review of the annual submission of the Russian Federation submitted in 2014

Note by the secretariat

The report on the individual review of the annual submission of the Russian Federation submitted in 2014 was published on 5 June 2015. 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/2014/RUS, 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 the Russian Federation submitted in 2014*

* In the symbol for this document, 2014 refers to the year in which the inventory was submitted, and not to the year of publication.

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I. Introduction and summary

1. This report covers the review of the 2014 annual submission of the Russian Federation, coordinated by the UNFCCC secretariat, in accordance with the "Guidelines for review under Article 8 of the Kyoto Protocol" (decision 22/CMP.1) (hereinafter referred to as the Article 8 review guidelines). The review took place from 8 to 13 September 2014 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: generalists – Ms. Elena Gavrilova (the former Yugoslav Republic of Macedonia) and Ms. Batimaa Punsalmaa (Mongolia); energy – Ms. Lea Kai Aboujaoudé (Lebanon), Ms. Rana Humbatova (Azerbaijan), Ms. Lungile Manzini (South Africa) and Mr. Ioannis Sempos (Greece); industrial processes and solvent and other product use– Ms. Valentina Idrissova (Kazakhstan), and Mr. Mauro Meirelles de Oliveira Santos (Brazil); agriculture – Ms. Yauheniya Bertash (Belarus) and Mr. Sorin Deaconu (Romania); land use, land-use change and forestry (LULUCF) – Mr. Sandro Federici (San Marino), Mr. Markus Haakana (Finland) and Ms. Takako Ono (Japan); and waste – Mr. Pavel Gavrilita (Republic of Moldova) and Ms. Detelina Petrova (Bulgaria). Ms. Batimaa and Mr. Sempos were the lead reviewers. The review was coordinated by Mr. Tomoyuki Aizawa (UNFCCC secretariat).

2. In accordance with the Article 8 review guidelines, a draft version of this report was sent to the Government of the Russian Federation, which provided comments that were considered and incorporated, as appropriate, into this final version of the report. All encouragements and recommendations in this report are for the next annual submission, unless otherwise specified. The expert review team (ERT) notes that the 2013 annual review report of the Russian Federation was published after 15 April 2014, which may have affected the Party's ability to implement recommendations and encouragements made in the previous review report.

3. All recommendations and encouragements included in this report are based on the ERT's assessment of the 2014 annual submission against the Article 8 review guidelines. The ERT has not taken into account the fact that for the submissions due by 15 April 2015 Parties will report using the revised "Guidelines for the preparation of national communications by Parties include in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories" (hereinafter referred to as the UNFCCC Annex I inventory reporting guidelines) adopted through decision 24/CP.19. Therefore, when preparing the next annual submissions, Parties should evaluate the implementation of the recommendations and encouragements in this report, in the context of those guidelines.

4. In 2012, the main greenhouse gas (GHG) emitted by the Russian Federation was carbon dioxide (CO_2), accounting for 72.2 per cent of total GHG emissions[1] expressed in CO_2 equivalent (CO_2 eq), followed by methane (CH_4) (21.9 per cent) and nitrous oxide (N_2O) (5.0 per cent). Hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6) collectively accounted for 0.9 per cent of the overall GHG emissions in the country. The energy sector accounted for 82.2 per cent of total GHG emissions, followed by the industrial processes sector (7.9 per cent), the agriculture sector (6.3 per cent), the waste sector (3.7 per cent), and the solvent and other product use sector (0.02 per cent). Total GHG emissions amounted to 2,297,151.80 Gg CO_2 eq and decreased by 31.4

[1] In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of CO_2 eq excluding LULUCF, unless otherwise specified.

per cent between the base year[2] and 2012. The ERT concluded that the description in the national inventory report (NIR) of the trends for the different gases and sectors is reasonable.

5. Tables 1 and 2 show GHG emissions from sources included in Annex A to the Kyoto Protocol (hereinafter referred to as Annex A sources), emissions and removals from the LULUCF sector under the Convention and emissions and removals from activities under Article 3, paragraph 3, and, if any, elected activities under Article 3, paragraph 4, of the Kyoto Protocol (KP-LULUCF), by gas and by sector and activity, respectively.

6. Information to be included in the compilation and accounting database can be found in annex I to this report.

[2] "Base year" refers to the base year under the Kyoto Protocol, which is 1990 for CO_2, CH_4 and N_2O, and 1995 for HFCs, PFCs and SF_6. The base year emissions include emissions from sources included in Annex A to the Kyoto Protocol only.

Table 1

Greenhouse gas emissions from Annex A sources and emissions/removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol by gas, base year[a] to 2012

			Gg CO_2 eq							*Change (%)*
		Greenhouse gas	*Base year*	*1990*	*1995*	*2008*	*2009*	*2010*	*2011*	*2012*	*Base year –2012*
Annex A sources		CO_2	2 509 802.42	2 509 802.42	1 582 139.60	1 619 918.48	1 537 147.61	1 604 573.82	1 650 267.31	1 658 872.05	–33.9
		CH_4	593 414.93	593 414.93	461 168.65	492 925.69	464 724.26	491 221.26	506 770.66	502 555.57	–15.3
		N_2O	223 271.62	223 271.62	143 719.86	116 321.76	116 882.68	113 400.91	116 945.28	115 949.50	–48.1
		HFCs	12 214.24	28 409.78	12 214.24	14 462.33	10 198.50	10 960.01	9 405.74	11 337.58	–7.2
		PFCs	10 019.27	11 680.24	10 019.27	3 720.57	2 524.58	2 677.57	2 544.15	2 468.29	–75.4
		SF_6	416.27	1 202.49	416.27	830.88	790.63	667.52	509.42	5 968.81	1 333.9
KP-LULUCF	Article 3.3[b]	CO_2				12 102.77	11 128.88	10 647.10	10 091.50	9 126.29	
		CH_4				48.91	48.43	47.31	46.24	46.32	
		N_2O				39.94	39.55	38.64	37.76	37.83	
	Article 3.4[c]	CO_2	NA			–494 627.87	–556 288.82	–563 558.38	–543 350.76	–549 284.78	NA
		CH_4	NA			15 052.81	15 162.02	12 843.42	12 912.38	12 800.94	NA
		N_2O	NA			13 907.37	14 004.65	11 984.92	12 160.73	12 070.48	NA

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol, KP-LULUCF = land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, NA = not applicable.

[a] The base year for Annex A sources refers to the base year under the Kyoto Protocol, which is 1990 for CO_2, CH_4 and N_2O, and 1995 for HFCs, PFCs and SF_6. 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] Activities under Article 3, paragraph 3, of the Kyoto Protocol, namely afforestation and reforestation, and deforestation.

[c] Elected activities under Article 3, paragraph 4, of the Kyoto Protocol, including forest management, cropland management, grazing land management and revegetation.

Table 2
Greenhouse gas emissions by sector and activity, base year[a] to 2012

		Gg CO_2 eq								*Change (%)*
	Sector	*Base year*	*1990*	*1995*	*2008*	*2009*	*2010*	*2011*	*2012*	*Base year–2012*
Annex A sources	Energy	2 725 170.34	2 725 170.34	1 786 867.47	1 842 609.80	1 745 838.45	1 828 458.31	1 883 106.29	1 887 257.48	–30.7
	Industrial processes	239 605.24	258 247.97	154 989.94	182 543.76	160 326.80	175 003.00	177 601.38	181 144.89	–24.4
	Solvent and other product use	561.61	561.61	511.68	543.67	557.59	564.92	570.87	573.43	2.1
	Agriculture	322 679.48	322 679.48	213 924.86	148 156.95	147 365.99	141 340.76	144 004.89	144 222.05	–55.3
	Waste	61 122.07	61 122.07	53 383.93	74 325.53	78 179.44	78 134.10	81 159.12	83 953.95	37.4
	LULUCF	NA	164 571.01	–130 503.15	–534 467.11	–578 743.98	–567 241.73	–573 436.71	–542 016.78	NA
	Total (with LULUCF)	**NA**	**3 532 352.50**	**2 079 174.74**	**1 713 712.60**	**1 553 524.28**	**1 656 259.36**	**1 713 005.84**	**1 755 135.01**	**NA**
	Total (without LULUCF)	**3 349 138.75**	**3 367 781.48**	**2 209 677.89**	**2 248 179.72**	**2 132 268.26**	**2 223 501.09**	**2 286 442.55**	**2 297 151.80**	**–31.4**
	Other[b]	NA	NA	NA	NA	NA	NA	NA	NA	NA
KP-LULUCF	Article 3.3[c] Afforestation and reforestation				–5 201.79	–5 166.69	–5 082.33	–5 000.15	–5 011.48	
	Article 3.3[c] Deforestation				17 393.42	16 383.55	15 815.38	15 175.64	14 221.91	
	Total (3.3)				**12 191.62**	**11 216.86**	**10 733.05**	**10 175.49**	**9 210.44**	
	Article 3.4[d] Forest management				–465 667.68	–527 122.14	–538 730.04	–518 277.65	–524 413.37	
	Article 3.4[d] Cropland management	NA			NA	NA	NA	NA	NA	NA
	Article 3.4[d] Grazing land management	NA			NA	NA	NA	NA	NA	NA
	Article 3.4[d] Revegetation	NA			NA	NA	NA	NA	NA	NA
	Total (3.4)	**NA**			**–465 667.68**	**–527 122.14**	**–538 730.04**	**–518 277.65**	**–524 413.37**	**NA**

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol, 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.

[a] The base year for Annex A sources is the base year under the Kyoto Protocol, which is 1990 for CO_2, CH_4 and N_2O, and 1995 for HFCs, PFCs and SF_6. 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 7) are not included in Annex A to the Kyoto Protocol and are therefore not included in national totals.

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

[d] Elected activities under Article 3, paragraph 4, of the Kyoto Protocol, including forest management, cropland management, grazing land management and revegetation.

II. Technical assessment of the annual submission

A. Overview

1. Annual submission and other sources of information

7. The 2014 annual submission was submitted on 15 April 2014; it contains a complete set of common reporting format (CRF) tables for the period 1990–2012 and an NIR submitted on 27 May 2014. The Russian Federation further submitted revised CRF tables on 26 May 2014. The Russian Federation also submitted the information required under Article 7, paragraph 1, of the Kyoto Protocol, including information on: activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, accounting of Kyoto Protocol units, changes in the national system and in the national registry and the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol. The standard electronic format (SEF) tables were submitted on 15 April 2014. The ERT noted that the NIR was submitted after the deadline of 15 April. Although, under decision 15/CMP.1, there is a six-week period before any consequences resulting from a late submission come into effect, the ERT recommends that the Russian Federation submit its inventories by 15 April of each year, as required by decision 24/CP.19, taking into account the provisions for the decision 24/CP.19.

8. The Russian Federation submitted revised emission estimates on 28 October 2014 in response to the list of potential problems and further questions raised by the ERT (see paras. 27, 28 and 43 below). The values used in this report are those submitted by the Russian Federation on 28 October 2014.

9. The list of other materials used during the review is provided in annex II to this report.

2. Questions of implementation raised in the 2013 annual review report

10. The ERT noted that no questions of implementation have been raised in the 2013 annual review report.

3. Overall assessment of the inventory

11. Table 3 contains the ERT's overall assessment of the annual submission of the Russian Federation. For recommendations for improvements for specific categories, please see the paragraphs cross-referenced in the table.

Table 3
The expert review team's overall assessment of the annual submission

Issue	*Expert review team assessment*	*General findings and recommendations*
The ERT's findings on completeness		
Annex A sources[a]	Complete	Mandatory: none
		Non-mandatory: "NE" was reported for CO_2 emissions from coal mining and handling
		Please see paragraph 19 below for category-specific findings
		The ERT encourages the Party to estimate and

Issue	*Expert review team assessment*	*General findings and recommendations*
		report emissions from all non-mandatory categories
Land use, land-use change and forestry[a]	Complete	Mandatory: none
		Non-mandatory: CH_4 and N_2O from drainage of soils and wetlands on flooded lands
		The ERT encourages the Party to estimate and report emissions from all non-mandatory categories
KP-LULUCF	Complete	
The ERT's findings on recalculations and time-series consistency		
Transparency of recalculations	Sufficiently transparent	The ERT recommends that the Russian Federation provide more detailed explanations on recalculations in the agricultural sector. Please see paragraph 54 below for category-specific findings
Time-series consistency	Sufficiently consistent	The ERT recommends that the Russian Federation provide more detailed explanations on inter-annual fluctuations. Please see paragraphs 21, 25, 32, 35, 38 and 42 below for category-specific findings
The ERT's findings on QA/QC procedures	Sufficient	Party has elaborated a QA/QC plan and has implemented tier 1 QA/QC procedures in accordance with that plan. The ERT finds that the large number of mistakes in multiple sectors suggests that tier 1 QC procedures are not appropriately implemented
		Please see paragraphs 19, 28, 36, 40, 43, 44, 49, 61, 69, 74 and 78 below for category-specific recommendations
The ERT's findings on transparency	Sufficiently transparent	The ERT reiterates the recommendations made in the previous review report that the Russian Federation include in its NIR more detailed information on activity data, emission factors and background information for methodologies used
		Please see paragraphs 23, 24, 29, 37, 48, 52, 54, 59, 66 and 67 below for category-specific recommendations

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol, ERT = expert review team, KP-LULUCF = land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, NE = not estimated, NIR = national inventory report, QA/QC = quality assurance/quality control, QC = quality control.

[a] The assessment of completeness by the ERT considers only the completeness of reporting of mandatory categories (i.e. categories for which methods and default emission factors are provided in the Intergovernmental Panel on Climate Change (IPCC) *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* or the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*).

4. Description of the institutional arrangements for inventory preparation, including the legal and procedural arrangements for inventory planning, preparation and management

Inventory planning

12. The NIR described the national system for the preparation of the inventory. As indicated by the Party in its NIR, there were no changes to the inventory planning process. The description of the inventory planning process, as contained in the report of the individual review of the annual submission of the Russian Federation submitted in 2013,[3] remains relevant.

Inventory preparation

13. Table 4 contains the ERT's assessment of the Russian Federation's inventory preparation process. For improvements related to specific categories, please see the paragraphs cross-referenced in the table.

Table 4
Assessment of inventory preparation by the Russian Federation

Issue	*ERT assessment*	*ERT findings and recommendations*
Key category analysis		
Was the key category analysis performed in accordance with the IPCC good practice guidance and the IPCC good practice guidance for LULUCF?	Yes	Level and trend analysis performed, including and excluding LULUCF
Approach followed?	Tier 1	
Were additional key categories identified using a qualitative approach?	No	
Has the Party identified key categories for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol following the guidance on establishing the relationship between the activities under the Kyoto Protocol and the associated key categories in the UNFCCC inventory?	Yes	Deforestation and forest management have been identified as key
Does the Party use the key category analysis to prioritize inventory improvements?	Yes	
Assessment of uncertainty analysis		
Approach followed?	Both tier 1 and tier 2	
Was the uncertainty analysis carried out in accordance with the IPCC good practice guidance and the IPCC good practice guidance for LULUCF?	Yes	

[3] FCCC/ARR/2013/RUS, paragraphs 12 and 13.

Issue	*ERT assessment*	*ERT findings and recommendations*
Quantitative uncertainty (including LULUCF)	Level = 11.8 % (tier 1) Trend = 8.3 % (tier 1)	
Quantitative uncertainty (excluding LULUCF)	Level = not provided Trend = not provided	The ERT reiterates the encouragement of the previous ERT that the Party estimate the quantitative uncertainty introduced in the level and the trend excluding LULUCF

Abbreviations: ERT = expert review team, IPCC good practice guidance = the Intergovernmental Panel on Climate Change (IPCC) *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, IPCC good practice guidance for LULUCF = IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*, LULUCF = land use, land-use change and forestry.

Inventory management

14. There were no changes to the inventory management process carried out by the Party for the 2014 annual submission, as indicated by the Party in its NIR. The description of the inventory management process, as contained in the report of the individual review of the annual submission of the Russian Federation submitted in 2013,[4] remains relevant.

5. Follow-up to previous reviews

15. The ERT recognizes that the 2013 annual review report was not finalized prior to the submission of the Russian Federation's 2014 annual submission and, therefore, it may not have been possible for the Party to take into account in full the recommendations from the review of the 2013 annual submission. The ERT noted that there are recommendations made in previous review reports that have not yet been addressed by the Party. The ERT has reiterated recommendations made in the previous review reports in the relevant chapters of this report.

16. Recommendations from previous reviews that have not yet been implemented, as well as issues the ERT identified during the 2014 annual review, are discussed in the relevant sectoral chapters of the report and in table 9 below.

B. Energy

1. Sector overview

17. The energy sector is the main sector in the GHG inventory of the Russian Federation. In 2012, emissions from the energy sector amounted to 1,887,257.48 Gg CO_2 eq, or 82.2 per cent of total GHG emissions. Since 1990, emissions have decreased by 30.7 per cent. The key drivers for the fall in emissions are economic factors that led to the decrease in the consumption of fossil fuels in 1990–1998. Since 1998 economic growth has taken place as a result of the increase in energy efficiency in the country. Within the sector, 48.6 per cent of the emissions were from energy industries, followed by 19.2 per cent from oil and natural gas, 12.8 per cent from transport and 8.4 per cent from manufacturing industries and construction. Other sectors accounted for 6.6 per cent and solid fuels accounted for 2.6 per cent. The remaining 1.8 per cent were from other (fuel combustion).

18. The Russian Federation has made recalculations between the 2013 and 2014 annual submissions for this sector. The significant recalculations made by the Russian Federation

[4] FCCC/ARR/2013/RUS, paragraph 15.

between the 2013 and 2014 annual submissions for 2011 were in the following categories: transport, energy industries and other (fuel combustion). The total impact of recalculations in 2011 was a decrease in the emissions from the energy sector of –37,295.18 Gg CO_2 eq (–1.9 per cent). This decrease was mostly due to the recalculations in the transport category, for which the decrease in emissions amounted to 41,596.76 Gg CO_2 eq (–14.7 per cent). The recalculations were adequately explained.

19. The ERT noted that the use of notation keys is not consistent through the time series for some categories as noted in previous review reports. For example, activity data (AD) and emissions for CO_2, CH_4 and N_2O from aviation gasoline used for civil aviation are reported as "IE" (included elsewhere) for 1990, 1991 and 2002–2012, and reported with figures for 1992–2001. The ERT reiterates the recommendation made in previous review reports that the Russian Federation review the use of notation keys for all categories in the energy sector and ensure the appropriate selection of notation keys for the complete time series.

2. Reference and sectoral approaches

20. Table 5 provides a review of the information reported under the reference approach and the sectoral approach, as well as comparisons with other sources of international data. Issues identified in table 5 are more fully elaborated in paragraphs 21–25 below.

Table 5
Review of reference and sectoral approaches

Issue	*Expert review team assessment*	*Paragraph cross references*
Difference between the reference approach and the sectoral approach	Energy consumption: 382.24 PJ, 1.67% CO_2 emissions: 59,647.06 Gg CO_2, 4.07%	
Are differences between the reference approach and the sectoral approach adequately explained in the NIR and the CRF tables?	Yes	See paragraph 21 below
Are differences with international statistics adequately explained?	No	See paragraph 22 below
Is reporting of bunker fuels in accordance with the UNFCCC reporting guidelines?	Yes	See paragraph 23 below
Is reporting of feedstocks and non-energy use of fuels in accordance with the UNFCCC reporting guidelines?	No	See paragraph 24 below

Abbreviations: CRF = common reporting format, NIR = national inventory report, UNFCCC 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 inventories".

Comparison of the reference approach with the sectoral approach and international statistics

21. The difference between the reference and sectoral approaches in CO_2 emissions is very high and fluctuating in the period 1990–2012 (all fuels: –1.3 to 10.5 per cent; liquid fuels: –5.13 to 15.1 per cent; solid fuels: –11.7 to 11.1 per cent and gaseous fuels: 0.9 to 16.6 per cent). In 2012, the differences between the two approaches for CO_2 emissions were 4.1 per cent for all fuels, 15.1 per cent for liquid fuels, –4.69 per cent for solid fuels and 6.62 per cent for gaseous fuels. The Russian Federation reported in its NIR that the differences are attributed to loss of fuel during the refining process and the principal feature

of the reference approach, which involves the estimation of CO_2 emissions on the basis of the calculated apparent consumption of fuels, resulting in national conditions of the Russian Federation in overestimation of primary liquid fuel and underestimation of secondary fuels. The ERT reiterates the recommendation made in the previous review report that the Party investigate further the underlying reasons for the discrepancies for the whole time series for all fuels.

22. The apparent consumption reported in the CRF tables differs by up to about 7 per cent from that reported to the International Energy Agency (IEA) for the most recent reported years, with consistently lower values in the CRF tables, except for 1990 and 1991 (when the data in the CRF tables are 10 and 13 per cent higher, respectively). Moreover, from 2010 to 2012, the data for apparent consumption in the CRF tables are 9–10 per cent less than those of IEA. Furthermore, the total amount of fuel consumed by Russian and non-Russian aircraft for domestic/international flights reported to the secretariat for the Russian Federation differs from that reported to IEA from 45.6 per cent in 1993 to 55.5 per cent in 2007, with values in the CRF tables consistently lower than data provided by IEA. In response to a question raised by the ERT, the Russian Federation emphasized that Rosstat has been authorized to cooperate with IEA and to consider discussing this issue with IEA. The ERT recommends that the Party investigate the reason of these differences and report accordingly in the next NIR.

International bunker fuels

23. The fuel consumption for Russian and non-Russian aircraft to distinguish between domestic/international flights was calculated based on annual flying times (by aircraft type) and average fuel flow rates (by aircraft type). For the period from 1990 to 1999, the data were extrapolated according to the number of passengers per year and was the result of the extrapolation presented in table 3.42 of the NIR. The methodology used to estimate emissions from domestic/international aviation is not clearly explained in the NIR, for example it is not clear whether the fuel flow rates include the landing and take-off phases as well as the cruising phases. In response to questions raised in the previous review report, the Russian Federation confirmed that both phases are taken into account in the fuel flow rates and provided information on the data on average fuel flow rates by aircraft type, which are used in the calculations. The Party also provided for this year information on annual flying time for domestic/international flights for the period 2000–2012; however, the data on annual flying time by aircraft type are considered by the Russian Federation as confidential. The ERT commends the Party for its improvements in its reporting transparency and recommends that the Russian Federation include in the NIR information on average annual flying times and the calculated annual average flow rate for the entire time series.

Feedstocks and non-energy use of fuels

24. The NIR provides information on the use of the NEAT (non-energy accounting tables) model to calculate feedstock and non-energy use of fuels; however, no detailed explanation was provided on the methodology used to estimate the country-specific fractions of carbon stored in products. In response to a question raised by the ERT, the Russian Federation provided detailed calculations on the country-specific fractions of carbon stored in products for 2009. To improve transparency of reporting, the ERT recommends that the Russian Federation enrich the NIR with more information about the methodology and assumptions related to the calculations of the NEAT model for the estimation of country-specific fractions of carbon stored in products for non-energy use; and provide specific examples of detailed calculations as an appendix to the NIR.

3. Key categories

Stationary combustion: all fuels – CO_2, CH_4 and N_2O

25. Following the recommendations made in previous review reports, the Russian Federation has reallocated fuel consumption, and hence CO_2 emissions (as well as CH_4 and N_2O emissions), by autoproducers from the energy industries category to the manufacturing industries and construction category. The NIR (p. 56) indicates that for the period 1990–2004 all emissions from autoproducers were included in specific sub-categories under manufacturing industries and construction, but for the period 2005–2012, due to changes in methodology used for data collection (energy balance), the data were aggregated and reported under other (manufacturing industries and construction). The Party's comments on this matter provided during the previous stage of this review indicate that this will be disaggregated and reported adequately in subsequent submissions by the Russian Federation. In order to improve time-series consistency, the ERT recommends that the Russian Federation continue to explore the ways to reallocate the emissions from autoproducers for the period 2005–2012 to the appropriate sub-categories under manufacturing industries and construction.

26. CO_2 emissions from the stationary combustion of fuels are calculated using Intergovernmental Panel on Climate Change (IPCC) default CO_2 emission factors (EFs) for most of the categories and fuels (country-specific CO_2 EFs for coal, natural gas, diesel oil and residual fuel oil as well as a plant-specific oxidation factor are only used for the energy industries category). In the NIR, the Party explains that, although it has explored the possibility of applying the improved country-specific EFs for coal for energy industries to other stationary combustion categories in line with the recommendations made in previous review reports, it was not possible to do so because it cannot be assumed that the mixture of coal used in electricity generation can be applied to other categories. Annex 3.4 of the NIR provides information on the development of a country-specific CO_2 EF for natural gas and a detailed explanation of the methodology used. The NIR indicates that the Party will apply a country-specific CO_2 EF for the entire time series. The ERT reiterates the recommendations made in previous review reports that the Russian Federation make efforts to gather further information on the use of coal and natural gas in order to allow for the development of country-specific CO_2 EFs for all stationary combustion categories using coal, and that the Party use these data to estimate CO_2 emissions for all stationary combustion categories.

Stationary combustion: liquid fuels – CO_2

27. The ERT noted that the Russian Federation did not include in its national total any CO_2 emissions that are associated with the emissive part of the non-energy uses of lubricants. In response to questions raised by the ERT during the review week, the Russian Federation replied that "the emissions from lubricant use are not accounted for under the Revised 1996 IPCC Guidelines. These emissions will be accounted for in accordance with the 2006 IPCC Guidelines in the next inventory submission in 2015". Concerning non-energy uses of gas/diesel oil and liquefied petroleum gas (LPG), the Russian Federation did not provide a justification for this indicating that the final end uses of these fuels are not associated with the release of GHG emissions. The ERT is of the view that in cases where the final non-energy use of fuels is not known, not reporting associated emissions for those fuels could result in a potential underestimation of emissions. The ERT also noted that according to the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the Revised 1996 IPCC Guidelines), there is a tier 1 method to account for the emissive part of carbon contained in fuels from non-energy use under the sectoral approach, which is included in: volume 3, reference manual, page 1.32, paragraph entitled "Carbon release during the non-energy-use of fuels" and volume 2, workbook, section 1.2.2 entitled "CO_2 Emissions by Source Categories", pages 1.9–1.14; and

workbook 1-2, pages 1.38–1.53. The ERT considers this to be a potential underestimation of emissions and this issue was included in the list of the potential problems and further questions raised by the ERT during the review week.

28. In the response to the list of the potential problems and a further question raised by the ERT, the Russian Federation provided a detailed explanation of the estimation and revised estimates on 28 October 2014. The revised estimates include CO_2 emissions from non-energy use of liquid fuels (lubricants, gas/diesel oil and LPG). According to the response provided by the Party, national statistics of the Russian Federation do not provide data on the consumption of the above-mentioned fuels by different source categories, thus these emissions are included under the category other (fuel combustion (1.A.5)) and are not specified elsewhere. Emissions associated with non-energy use of lubricants, gas/diesel oil and LPG were accounted for using the country-specific storage factor presented in the NEAT model in the NIR. As a result of the submission of the revised estimates, the increases in emissions from the energy sector compared with the submission before the review week were 4,422.36 Gg CO_2 (0.2 per cent) in 1990 and 2,097.86 Gg CO_2 (0.1 per cent) in 2012. The ERT considers that the revised estimates resolved the issue. The ERT recommends that the Russian Federation strengthen the quality assurance/quality control (QA/QC) procedures related to identifying source categories which emit CO_2 emissions from non-energy use of liquid fuels (lubricants, gas/diesel oil and LPG) and include information on the estimation method provided in the response to the list of potential problems in its NIR.

Stationary combustion: solid fuels – CO_2

29. The NIR and the CRF tables indicate that the Russian Federation uses tier 1 and default CO_2 EFs for the estimation of emissions from solid fuels for the category manufacturing industries and construction. Data on fuel consumption provided in table 3.16 of the NIR includes AD on "mineral coal" (translation of «каменный уголь») consumption. The definition of "mineral coal" is not in line with the definitions of coal types provided in the Revised 1996 IPCC Guidelines. In response to a question raised by the ERT on the correctness of the fuel type definition used and the choice of the default CO_2 EF used by the Party in order to calculate emissions from the category, the Party replied that the statistical data on coal combustion by sector are available only as a total for bituminous coal (also can be translated as "mineral coal") and lignite. Separate statistical data for anthracite, coking coal and other bituminous coal are available only for their bulk production. To improve transparency of reporting, the ERT recommends that the Russian Federation provide information on the definition of fuel types in its NIR.

Coal mining and handling: solid fuels – CO_2 and CH_4

30. The Party has reported CO_2 emissions from coal mining and handling as "NE" (not estimated). The IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC good practice guidance) indicates that "Countries with significant quantities of CO_2 in their coal seam gas should make efforts to evaluate or quantify these emissions", although no method is provided by the Revised 1996 IPCC Guidelines or the IPCC good practice guidance. In addition, the IPCC good practice guidance refers to CO_2 emissions from coal fires, combustion and oxidation of waste coal and other carbonaceous materials, indicating that those emissions "could be significant", but does not provide a method with which to calculate the corresponding emissions. The ERT encourages the Russian Federation to investigate the possibility of estimating CO_2 emissions from coal mining and handling.

4. Non-key categories

Road transportation: liquid fuels – N_2O

31. The ERT noted that the Party used default N_2O EFs from the Revised 1996 IPCC Guidelines in order to estimate N_2O emissions of liquid fuels from road transportation. The N_2O emissions from road transportation is the first non-key category by trend analysis by the Russian Federation. The ERT encourages the Russian Federation to make efforts to develop and use a country-specific N_2O EF and the tier 2 method.

Other transportation: liquid fuels – CO_2

32. The ERT noted some inconsistencies in the AD and CO_2 emissions from pipeline transport – liquid fuel, reported under other transportation. For 1990 and 1991, the AD and CO_2 emissions were reported as "NO" (not occurring), while for the period 1992–2011, actual values for AD and CO_2 emissions were reported. During the review, the Russian Federation confirmed that this activity occurred in the country in 1990 and 1991; however, owing to changes in the structure of the Federal Energy Balance of the Russian Federation (FEB), the amount of these emissions could probably be accounted for in another emission category and that it should probably use the "IE" notation key for the category in 1990 and 1991. In order to improve the time-series consistency of emissions from pipeline transportation, the ERT recommends that the Russian Federation estimate those emissions in 1990 and 1991, using extrapolation techniques if necessary.

C. Industrial processes and solvent and other product use

1. Sector overview

33. In 2012, emissions from the industrial processes sector amounted to 181,144.89 Gg CO_2 eq, or 7.9 per cent of total GHG emissions, and emissions from the solvent and other product use sector amounted to 573.43 Gg CO_2 eq, or 0.02 per cent of total GHG emissions. Since 1990, emissions have decreased by 29.9 per cent in the industrial processes sector, and increased by 2.1 per cent in the solvent and other product use sector. The key drivers for the fall in emissions in the industrial processes sector are decreases of 86.0 per cent in HFC-23 emissions from HCFC-22 production, 22.6 per cent in CO_2 emissions from iron and steel production, 63.2 per cent in CO_2 emissions from limestone and dolomite use, 79.9 per cent in PFC emissions from aluminium production, and 24.1 per cent in CO_2 emissions from cement production. Within the industrial processes sector, 50.7 per cent of the emissions were from metal production, followed by 27.3 per cent from mineral products, 12.4 per cent from the chemical industry and 5.4 per cent from the production of halocarbons and SF_6. The remaining 4.3 per cent were from the consumption of halocarbons and SF_6.

34. The Russian Federation has made recalculations between the 2013 and 2014 annual submissions for the industrial processes sector. The two most significant recalculations made by the Russian Federation between the 2013 and 2014 annual submissions were in the following categories: CO_2 from direct reduced iron production and HFC-134a emissions from refrigeration and air-conditioning. The recalculations were made following changes in AD and EFs in order to rectify identified errors. Compared with the 2013 annual submission, the recalculations for 2011 increased emissions in the industrial processes sector by 2,624.57 Gg CO_2 eq (1.5 per cent), and increased total national emissions by 0.1 per cent.

2. Key categories

Iron and steel production – CO_2

35. The implied emissions factor (IEF) CO_2 for pig iron in 2012 decreased by 9.8 per cent since 2011. In response to a question raised by the ERT during the review regarding this issue, the Russian Federation explained that this was due to about ten joint implementation (JI) projects on iron production efficiency developed in the country since 2008, which were verified in 2012. The NIR does not note this increase in efficiencies which resulted from these projects, nor was the ERT provided with the verification reports. The ERT recommends that the Russian Federation include the information on such significant changes in IEFs in its NIR.

36. The Russian Federation has reported CO_2 emissions from coke production as "NE". The Party confirmed to the ERT that these emissions are accounted for under the manufacture of solid fuels and other energy industries of the energy sector. The ERT recommends that the Russian Federation change the notation key to "IE" and improve its QA/QC procedures.

37. Regarding CH_4 emissions, the ERT noticed that the CRF tables present AD and EFs with incorrect units, although not changing the calculation, according to the Party. AD are expressed in Mt instead of kt and EFs in t/kt instead of t/t, for the whole time series. The ERT recommends that the Russian Federation use appropriate units to increase the transparency and comparability of its reporting.

Production of halocarbons and SF_6 – HFCs, PFCs and SF_6

38. Fugitive emissions of HFC-23 from HCFC-22 production is the largest subcategory in this category. Since 1990, in this subcategory, equipment for the collection and destruction of leakage HFC-23 emissions has been installed and the HFC-23 emissions have been further reduced since 2008 owing to two JI projects on HFC-23 destruction in two of the three plants operating in the Russian Federation. From the NIR, the ERT assessed that HFC-23 destruction varied from 8.2 per cent in 1990 to 81.3 per cent in 2012 of the total HFC-23 generation as a by-product from HCFC-22 production in the Russian Federation. The ERT encourages the Russian Federation to include information on the fluctuation in the destruction ratio of HFC-23 in its NIR.

39. Other than the generation of HFC-23 from HCFC-22 production, HFC-23 is also intentionally produced as a main product in the Russian Federation, which generates some fugitive emissions, which are reported in the NIR. The Russian Federation estimates that 40 per cent of domestic production together with imports are used as feedstock for organic synthesis. The ERT encourages the Russian Federation to explore a possible source of fugitive emissions from this usage as the feedstock.

40. According to the NIR, SF_6 production has generally increased since 1995, but the fraction of SF_6 released as fugitive emissions had a generally decreasing tendency in the period 1995–2011, from 18.4 per cent to 1.1 per cent, but was 20.1 per cent in 2012. In response to a question raised by the ERT during the review, the Russian Federation informed the ERT that the figures were collected directly from the two manufacturers and that the fugitive emissions depend on the purity of the SF_6 produced, which depends, in turn, on the market situation. The ERT encourages the Russian Federation to provide more information on this issue in its NIR, taking into account the confidentiality. Although the NIR indicates that emissions were collected from manufacturers for the entire time series in this 2014 submission, the ERT noticed no recalculations in the CRF tables, and was informed by the Party that this was a mistake in the report. The ERT recommends that the Russian Federation improve its QA/QC procedures on this matter.

Consumption of halocarbons and SF_6 – HFCs

41. This category is identified as a trend key category, and has increased by 14,290.7 per cent since 1995, with HFCs increasing by 38,201.7 per cent, recalculated in the 2014 annual submission. Such increases are not uncommon for these gases in this period, caused by ozone-depleting substances (ODS) substitution. Recalculations for HFCs emissions have been applied in the subcategory mobile air conditioning, to include international car trade for the whole time series, and in the commercial and industrial refrigeration subcategories, for 2009 to 2011. In 2011, these recalculations increased HFC-134a emissions by 9.5 per cent from the previous submission. The ERT commends the Russian Federation for these improvements and encourages the Party to continue making improvements in this category.

3. Non-key categories

Other (mineral products) – CO_2

42. CO_2 emissions from glass production are estimated based on the amount of limestone and dolomite used. The IEF provided in the CRF tables is calculated with glass production as AD for this category, and the time series shows significant inter-annual changes. The ERT asked for clarification on these changes and the Party provided the amount of carbonate rocks (limestone plus dolomite) used yearly, along with the amount of glass production. The ERT noted that the ratio of carbonate rocks/product was not the constant value of 0.26:1 as stated in the NIR, although the EF applied to the feedstock was constant. The ERT recommends that the Russian Federation provide the necessary explanation regarding this category, particularly for IEF inter-annual changes, in its NIR.

Other (chemical industry) – CH_4

43. The Russian Federation has made recalculations in this category regarding CH_4 emissions from the upgrading of petrol coke for the whole time series, by removing all the CH_4 emissions reported in the 2013 annual submission with no justification in the NIR. The ERT notes that petrol coke consumption for production of silicon carbide is reported in the NIR (table 4.21) and in CRF table 2(I)A-Gs1. During the review week, in response to a question raised by the ERT, the Russian Federation confirmed that it omitted CH_4 emissions from petrol coke production by mistake. The ERT notes that the Revised 1996 IPCC Guidelines provide methodologies to be used to estimate CH_4 emissions from coke production in the chemical industry (see page 2.22 of the workbook and table 2-9 for default EFs). The ERT considers that this is a potential underestimation of emissions. This issue was included in the list of potential problems and further questions raised by the ERT. In response to the list of potential problems, on 28 October 2014, the Russian Federation provided revised estimates of CH_4 emissions from the upgraded petrol coke production for the complete time series. For these revised estimates, for the period 1990–1996, the AD were derived from the proportion of coke production to petroleum refined in 1997, which was applied to petroleum refined from 1990–1996. The emissions presented for the period 1990–1996 are equal to those in the final 2013 submission although they are lower than the figures presented in the resubmitted CRF tables. The ERT considers that the revised estimates resolved the issue and recommends that the Russian Federation enhance its QA/QC procedures for checking the completeness of its inventory.

Aluminium production – PFCs

44. The Russian Federation has reported as "NE" PFCs emissions from aluminium production namely perfluoropropane (C_3F_8), perfluorobutane (C_4F_{10}), perfluorocyclobutane (c-C_4F_8), perfluoropentane (C_5F_{12}) and perfluorohexane (C_6F_{14}) in CRF table 2(II). In response to a question raised by the ERT during the review, the Russian Federation stated that there is no evidence of the occurrence of these emissions and that it would

change the notation key to "NO" in the NIR. The ERT recommends that the Russian Federation use the appropriate notation keys for these gases in the CRF tables.

D. Agriculture

1. Sector overview

45. In 2012, emissions from the agriculture sector amounted to 144,222.05 Gg CO_2 eq, or 6.3 per cent of total GHG emissions. Since 1990, emissions have decreased by 55.3 per cent. The key drivers for the fall in emissions are decreases in livestock population, in cultivated areas and in synthetic fertilizers applied to soils. Within the sector, 55.3 per cent of the emissions were from agricultural soils, followed by 27.0 per cent from enteric fermentation and 16.9 per cent from manure management. The remaining 0.7 per cent were from rice cultivation.

46. The Russian Federation has made recalculations between the 2013 and 2014 annual submissions for this sector. The two most significant recalculations made by the Russian Federation between the 2013 and 2014 annual submissions were in the following categories: enteric fermentation and agricultural soils. The recalculations were made following changes in: AD on animal livestock populations, regional data on feed intake for cattle, nitrogen excretion rates for some animals during the implementation of the QA/QC procedures, inclusion of a new type of cultivated crops in the inventory as well as the use of country-specific EFs for the estimation of CH_4 emissions from enteric fermentation for swine and N_2O emissions from the cultivation of histosols in order to improve the completeness and accuracy of the inventory. Compared with the 2013 annual submission, the recalculations decreased emissions in the agriculture sector by 38.96 Gg CO_2 eq (0.03 per cent) and decreased total national emissions by 0.002 per cent.

47. In the 2014 annual submission, the Russian Federation made major improvements in the agriculture sector compared with the previous annual submission. These improvements were implemented in the following categories: enteric fermentation (owing to the calculation of country-specific CH_4 EFs from enteric fermentation for non-significant animals such as swine); agricultural soils (owing to the inclusion of a new type of crop when estimating emissions from crops residues, as well as using country-specific N_2O EF from the cultivation of histosols based on latest studies). The ERT welcomes the efforts made by the Russian Federation to improve its inventory.

48. Generally, reporting of the inventory in the agriculture sector is transparent. However, some issues should be clarified in the NIR (see paras. 52, 54 and 55 below). Therefore, the ERT recommends that the Russian Federation improve the transparency of its reporting by providing additional information that supports the use of country-specific EFs, as well as that describes the reasons for the fluctuations in the trend of IEFs.

49. The ERT notes that, in spite of the fact that QA/QC-specific procedures are in place in the agriculture sector, there are some inconsistencies in the information provided in the CRF tables and the NIR in the agriculture sector. In particular, the value for the CH_4 conversion rate for swine is reported as "NE" for the entire time series in the CRF tables. However, the NIR states that its value of 0.006 was applied to calculate a country-specific CH_4 EF from enteric fermentation for swine. The ERT concludes that this inconsistency does not affect the CH_4 emission estimates from enteric fermentation for swine; however, the ERT recommends that the Russian Federation improve the consistency of its reporting between the CRF tables and its NIR and establish better QA/QC activities in the agriculture sector.

2. Key categories

Enteric fermentation – CH_4

50. The Russian Federation estimates country-specific CH_4 EFs from enteric fermentation for cattle for each of the Party's 78 regions based on data on the amount and type of feed consumed by cattle in each region. According to the data provided in the NIR, the minimum value for the CH_4 EF for dairy cattle of 28.83 kg CH_4/head/year was observed in 2012 for Kalmikiya Republic and its maximum value of 165.08 kg CH_4/head/year was observed for Moscow region. Such significant variations of CH_4 EFs for dairy cattle are caused by a variety of breeding conditions, the amount of feed intake and the rations of diet in the south and north regions in the country, as well as being dependent on the proportion of large agricultural enterprises and private households in these regions. Additionally, IEFs for dairy cattle fluctuate across the time series. From 1990 to 2000, the CH_4 EF for dairy cattle decreased from 101.00 kg CH_4/head/year to 92.33 kg CH_4/head/year, then over the period 2001–2009 a general increase of CH_4 EF for dairy cattle took place (peaking in 2009 at 103.13 kg CH_4/head/year). In 2010, the CH_4 EF for dairy cattle decreased to 101.29 kg CH_4/head/year and then considerably increased over the period 2011–2012 and peaked in 2012 with a value of 104.00 kg CH_4/head/year. The inter-annual fluctuations in CH_4 IEF from dairy cattle generally depend on the overall economic situation in the agriculture sector.

51. In response to the recommendation made in previous review reports to improve the transparency of the reporting, the Russian Federation provides in the NIR supporting information on the estimation of country-specific CH_4 EFs for cattle, including explanatory information regarding recalculations, which occurred because of corrections to AD for gross feed intake for cattle, milk yield, CH_4 EF for enteric fermentation of dairy cattle and non-dairy cattle for each region. In addition, in the NIR, the Party has performed an analysis of the key drivers influencing the trend of IEFs. The ERT commends the Russian Federation for these improvements.

52. In the 2014 annual submission, the Russian Federation estimates country-specific CH_4 EF from enteric fermentation for livestock with small contribution to emissions, such as swine, on the basis of data on gross energy intake, which are used in the calculations of the country-specific CH_4 EF for swine from manure management, and reports it for the first time. The ERT welcomes the Russian Federation's efforts to improve the consistency of the estimates between these categories. In addition, the ERT notes that the value of the CH_4 IEF from enteric fermentation for swine fluctuates over the time series. The value in 1990 of 1.28 kg CH_4/head/year increased to 1.55 kg CH_4/head/year in 2006, and then decreased significantly to 1.33 kg CH_4/head/year in 2012. The IPCC default value is 1.5 kg CH_4/head/year. The ERT also notes that very limited information supported the calculations made to estimate country-specific EF for swine. The ERT also noted that explanations on the trend and its fluctuations were equally limited. During the review, the Russian Federation explained that the trend of the IEF primarily depends on variations in the rate of feed concentrates in the diet between the years due to the economic situation of regions and farms. The ERT recommends that the Russian Federation improve the transparency of its reporting and include in the NIR data-supported calculations for the CH_4 EF from enteric fermentation for swine and that the Party describe the reasons for its change over the reporting period.

Agricultural soils – N_2O

53. In response to a recommendation made in previous review reports on indications of the IPCC levels (tiers) which are used in the inventory, the Russian Federation provided clarifications in its NIR on the methods applied to estimate direct N_2O emissions from agricultural soils, which are: the tier 1b IPCC method for estimations of N_2O emissions

from synthetic fertilizers; the tier 1a IPCC method for organic fertilizers; the country-specific method for crops residue application; and the tier 1 IPCC method for cultivation of histosols. The ERT commends the Party for these improvements in the transparency of its reporting.

54. In the 2014 annual submission, the Russian Federation updated the N_2O EF from the cultivation of organic soils and applied a country-specific N_2O EF for perennial grasses cultivated on three types of organic soils of highlands (7 ± 2kg N_2O-N/ha) based on the latest study (Pavlik, 2012). The ERT notes that the country-specific EF for organic soils is lower than the IPCC default value of 8 kg N_2O-N/ha; however, it is within the range of 0.96–9.09 N_2O-N/ha, the range for reporting Parties with a temperate climatic zone. The ERT also notes that the NIR includes very limited information on the scientific basis for the development of a country-specific EF for the cultivation of perennial grasses on organic soils. During the review, the Russian Federation provided a reference to the relevant research. The ERT was entirely satisfied with the information provided; however, the ERT recommends that the Russian Federation improve the transparency of its reporting and include a clearer description of the derivation of the N_2O EF from the cultivation of histosols by providing all relevant supporting information, including the period of measurement, a description of the process by which this EF is derived and a description of the source as required by the Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, part I: UNFCCC reporting guidelines on annual inventories.

3. Non-key categories

Rice cultivation – CH_4

55. The Russian Federation used a conservative approach to estimate a scaling factor (SFo) that incorporates information on the type and amount of organic amendment applied (fermented or non-fermented) and adjusted it for the amounts of organic amendments, which is double that applied in the country on the basis of data on amount of organic amendments for Krasnodarsky Krai. These data most accurately capture the practice of the application of fertilizers during rice cultivation. Additionally, the ERT notes that the Russian Federation does not distinguish data on the basis of the type of organic amendments and uses the IPCC default value of SFo for non-fermented organic amendments, which is six times higher than that for fermented organic amendments. The ERT conclude that this could lead to the overestimation of CH_4 emissions from rice cultivation. During the review, the Russian Federation informed the ERT that statistical data on the type of organic amendments are not available in the country and that the manure after the solid storage is apparently used as part of the organic amendments. The ERT recommends that the Russian Federation further investigate this issue by collecting data on the type of organic amendments applied, as well as transparently explain the practice of fertilizer application during rice cultivation.

E. Land use, land-use change and forestry

1. Sector overview

56. In 2012, net removals from the LULUCF sector amounted to 542,016.78 Gg CO_2 eq. In 1990, net emissions from this sector amounted to 164,571.01 Gg CO_2 eq. The key drivers for the the change from net emissions to net removals are: the reduction in forest harvesting between the late 1990s and early 2000s, resulting in an increase in gains in living biomass, and the accumulation of dead organic matter (DOM) and soil carbon; changes in cropland management, predominantly caused by the abandonment of agricultural areas, leading to a large decrease in CO_2 emissions from soils; and the

conversion of significant areas of cropland to grassland in the 1990s and as a consequence causing a remarkable increase in CO_2 removals. Within the sector, 650,974.43 Gg CO_2 eq of net removals were from forest land, followed by 80,905.28 Gg CO_2 eq from grassland. Net emissions were reported from cropland (164,710.04 Gg CO_2 eq), wetlands (15,197.13 Gg CO_2 eq), settlements (9,588.16 Gg CO_2 eq) and other land (367.58 Gg CO_2 eq).

57. The Russian Federation has made recalculations between the 2013 and 2014 annual submissions for this sector. The two most significant recalculations made by the Russian Federation between the 2013 and 2014 annual submissions were in the following categories: cropland remaining cropland and land converted to grassland. The recalculations were made following changes in AD, EFs and in order to rectify identified errors. Compared with the 2013 annual submission, the recalculations for 2011 decreased removals in the LULUCF sector by 54,998.15 Gg CO_2 eq (8.8 per cent). The recalculations were adequately explained.

58. The Russian Federation improved the completeness of its reporting. Specifically, there are notable improvements in AD and EFs, and emissions/removals from all mandatory categories were reported. The Party reported carbon stock changes (CSC) from the following categories for the first time, which were previously reported as "NE": cropland converted to grassland (biomass, also DOM which was previously reported as "'NA'"); other land converted to grassland; cropland converted to other land; wetlands converted to other land; settlements converted to other land; non-CO_2 emissions from the drainage of soils and wetlands; and CH_4 and N_2O emissions from biomass burning. For conversion of croplands to other lands in biomass and DOM pools, the notation key "NA" (not applicable) is used based on the assumption that the land-use conversions concerned are not anthropogenic, or conversions to other land were explained to have no changes in carbon pools as they are bare land. From non-mandatory categories, CH_4 and N_2O emissions from biomass burning on other land were reported as "NA" (previously "NE") and "NE" for CH_4 and N_2O from the drainage of soils and wetlands on flooded lands. CSC for living biomass was also estimated for settlements remaining settlements. The ERT commends the Party for the improvements in its reporting and encourages the Russian Federation to continue to improve its estimation of AD and EF for non-mandatory pools as well.

59. The ERT noted that the Russian Federation improved the transparency of its reporting and included information on newly reported categories and pools in line with recommendations made in the previous review report. The Party emphasized in the response to the ERT that transparency of forest AD and parameters disaggregated by species, age category and regions are provided in the NIR 2014. The Party has also improved the structure in the NIR. However, the ERT recommends that the Party make further revisions to the NIR text structure in chapter 7.2 concerning the methodologies used for estimating CSC so as to be organized by individual carbon pools within individual land-use categories instead of separate subchapters on absorption and emissions encompassing all carbon pools, as presented in the most recent NIR.

60. The ERT acknowledges the efforts undertaken by the Party to provide adequate, consistent, complete and transparent information on land use and land-use transitions in the Russian Federation. In response to questions raised by the ERT during the review, the Party provided additional information describing the input data from statistics and the compilation of the land representation matrix. The area of current land use and the net change of conversions are provided in the reports of Rosreestr (Federal Service for State Registration, Cadastre and Cartography); whereas for forest land, all conversions in both directions are estimated by Rosleshos (Russian Forestry Agency). The ERT takes note of this information, and recommends that the Russian Federation continue its efforts in

improving the accuracy of its land representation matrix by detecting actual land-use changes instead of net changes.

61. The ERT recognizes the improvements made by the Russian Federation in rectifying errors and inconsistencies, and in resolving issues identified in previous review reports. However, there are still some inconsistencies and unexpected trends in AD and emissions, which require more transparent explanation in the NIR with relation to changes between managed and unmanaged lands. Due to changes in the structure of the NIR, there were incorrect references to NIR chapters. The ERT recommends that the Party continue to strengthen its QA/QC procedures in the LULUCF sector, paying particular attention to checking that any unexpected trends in AD relating to managed and unmanaged lands and emissions across the time series are explained in the NIR, and that references in the NIR are correct and consistent with the CRF tables.

2. Key categories

Forest land remaining forest land – CO_2

62. The accuracy of the estimates has significantly improved following the work undertaken by the Party based on recommendations made in previous review reports. In particular, the NIR contains detailed information and AD on the areas and volumes of forest stands, as well as the conversion factors, disaggregated at the regional level by age category, major tree species and climatic zones. However, further efforts are still required by the Russian Federation in reporting and using disaggregated data at the regional level (see para. 59 above) in order to ensure the sufficient accuracy of the emission estimate calculations.

Cropland remaining cropland – CO_2

63. The ERT recognizes that the Russian Federation has made improvements to the estimates of the CSC in mineral soils, namely the correction of detected inconsistencies and crop residues data. In addition, the Party has included country-specific EFs for organic soils for the first time in this annual submission. The ERT commends the Russian Federation for its progress in improving emission estimates of CSCs in the category cropland remaining cropland for both mineral and organic soils as a result of its adoption of country-specific EFs and improved AD. The Russian Federation uses a tier 1 approach with default EFs to calculate the emissions from the above-ground biomass pool for cropland remaining cropland. The Party indicated during the review that the biomass pool is not a significant category. However, as cropland remaining cropland is a key category, the ERT recommends that the Russian Federation continue its efforts in developing and verifying country-specific EFs for the estimation of the carbon stock accumulation and losses in the above-ground biomass pool.

64. The area of cropland remaining cropland decreased until 2007 and after it had previously been at a rather steady level, involving temporary changes between grassland and cropland, as explained in the NIR. However, the area of organic soils has increased since the 1990s. The proportion of organic soils in 1990 was determined by the total area of peat and peat soils in the agricultural lands of Russia as of 1980. Statistical data were available for the period since 2007, while the proportions for previous years were interpolated. In response to a question raised by the ERT during the review, the Party informed the ERT that the data from 1980 is probably not representative of the 1990s, and will be reconsidered for the next submission. The ERT welcomes the Party's efforts to make improvements, and recommends that the Party improve the accuracy of area estimates for organic soils.

Grassland remaining grassland – CO_2

65. The Party explained in its NIR that errors in inventory source data for mineral soils were corrected as a result of an additional quality check. The Russian Federation used the default EF for organic soils, and improved the estimates by updating the EF among the *2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands*. The ERT commends the Russian Federation for its efforts to improve the estimates of net CSC change in mineral and organic soils.

Land converted to grassland – CO_2

66. The Party provided information on average biomass stocks and carbon contents per area for grassland categories in the NIR, table 7.61. During the conversion period, the accumulation of carbon is 0.358 Mg C/ha/year and 0.296 Mg C/ha/year for change in living biomass and dead organic matter, respectively. In response to a question raised by the ERT during the review week, the Party stated that there are errors in NIR table 7.61 concerning DOM per area, which do not influence the emission estimates, and informed the ERT that these errors will be corrected in its next annual submission. The same EFs are applied in all kinds of grasslands and when comparing these EF values in the CRF tables to those presented in the NIR, they are different. The ERT recommends that the Russian Federation improve the transparency of its reporting and check the consistency of EF values in the CRF tables and the NIR.

67. The Russian Federation uses the Rothamsted Carbon Model (RothC) for the assessment of mineral and organic soils pools. The use of the model equates to a tier 3 methodology, with the use of some country-specific input parameters. The model has been adapted and tested in different climatic zones of the country and provides a combined estimate of emissions/removals for both pools. Because mineral and organic soils cannot be separated in the RothC model, the CSC in organic soils for cropland converted to grassland were reported as "IE", that is included in mineral soils. However, in response to the question raised during the review as to whether organic soil should be reported separately the Party stated that it considers the ways in which organic soils are reported separately is limited by the availability of resources and the efforts needed. The ERT recommends that the Russian Federation continue to improve the comparability and transparency of its inventory by reporting the CSC in organic and mineral soils separately in the CRF tables.

Lands converted to settlements – CO_2

68. The Russian Federation informed the ERT that data on the average carbon stocks in soils in settlement areas is used in the inventory, and that these data are assumed to be representative of the situation across the whole country. However, the annual review report for 2012 states that the Party has already started studies to evaluate this factor at a disaggregated level concerning forest land converted to settlements, and that the results of these studies will be used in the compilation of the 2014 annual submission. The ERT acknowledges the efforts made by the Russian Federation and recommends that the Party improve the accuracy of its reported emission estimates in the CRF tables.

3. Non-key categories

Land converted to forest land – CO_2

69. The Russian Federation reports land conversions to forest land from cropland, grassland and other land. Only lands converted from cropland are considered to be managed lands. The Party explained that the conversions from grassland and other land to forest land are due to the natural expansion of forests. Therefore only AD from these subcategories were reported. However, the ERT noted inconsistencies between reported areas in CRF table 5.A and NIR table 7.3. The ERT recommends that the Party strengthen

its QA/QC procedures for further checks that the reported AD are correct and consistent between the CRF tables and the NIR.

Direct N_2O emissions from N fertilization of forest land and other – N_2O

70. The ERT noted that the Russian Federation reported estimates for the N_2O emissions from nitrogen (N) fertilizer application for the categories forest land remaining forest land and land converted to forest land under the agriculture sector. The ERT encourages the Russian Federation to develop refined estimates for N fertilizer application specific to forest land and to report them under the LULUCF sector.

F. Waste

1. Sector overview

71. In 2012, emissions from the waste sector amounted to 83,953.95 Gg CO_2 eq, or 3.7 per cent of total GHG emissions. Since 1990, emissions have increased by 37.4 per cent. The key drivers for the rise in emissions are the increases in the amount of waste disposed at solid waste disposal sites and the volume of industrial wastewater treated. Within the sector, 63.7 per cent of the emissions were from solid waste disposal on land, followed by 36.3 per cent from wastewater handling.

72. The Russian Federation has made recalculations between the 2013 and 2014 annual submissions for this sector. These recalculations are associated with the adjustment of Rosstat data on AD for industrial wastewater for 2009–2011. The impact of these recalculations on the waste sector is an increase in emissions by 301.46 Gg CO_2 eq, or 0.4 per cent, for 2011. In CRF table 8(b), the Russian Federation reported a recalculation of CH_4 emissions from industrial wastewater for the period 2009–2011 due to the correction of AD. The recalculation was adequately explained in the NIR.

73. The inventory for the waste sector is transparent and complete in terms of gases, categories, geographical coverage and years. The ERT noted that some of the recommendations made in the previous review report that could improve the inventory have been implemented. However, some other recommendations made in previous review reports that could also improve the transparency of the inventory are still pending and are reiterated in the category-specific paragraphs below (see paras. 75, 77 and 79 below).

74. Sector-specific QA/QC procedures have been performed in the waste sector, including checks of AD, calculations and time-series consistency; however, the results of quality control (QC) measures are not shown in the NIR. The ERT recommends that the Party include more specific results of the QC measures undertaken. Improvements are planned for each category in the waste sector, such as the collection of data on technical characteristics of wastewater handling systems, as well as the provision of technology information in order to improve the accuracy of emission estimates from waste incineration.

2. Key categories

Solid waste disposal on land – CH_4

75. The Party has used the IPCC tier 1 default method and default parameters with country-specific degradable organic carbon values in order to estimate CH_4 emissions from industrial solid waste disposed to solid waste disposal sites. AD was provided by the Federal Service for Ecological, Technological and Nuclear Supervision and the Federal Nature Management Supervision Service for the years 2006–2012. AD for the period 1990–2006 are not available and are therefore estimated using gross domestic product (GDP) as a driver. In response to questions raised by the ERT during the review, the Party

explained how data on normalized GDP indices are derived and used for the emission estimates. In addition, the Party informed the ERT that it undertook research on applying the tier 2 method to the estimation of CH_4 emissions from industrial solid waste disposed to solid waste disposal sites, after the verification of the data by the leading organization in this field, the Russian Federation will implement it. The ERT welcomes this effort and recommends that the Russian Federation apply the IPCC tier 2 method to estimate CH_4 emissions from industrial solid waste.

76. According to the NIR, the waste from parks and gardens is classified as industrial waste. The ERT is of the view that this should be corrected and classified as municipal waste, and recommends that the Party improve the classification of this type of waste taking into account its composition and origin.

3. Non-key categories

Wastewater handling – CH_4 and N_2O

77. In the NIR, the Party explains that for each industry included, a weighted average of correction factors takes into account incomplete treatment of wastewater. In response to a question raised by the ERT during the review, the Party provided an explanation of how the weighted average values are derived. The ERT encourages the Russian Federation to include more information on the values actually used to estimate the CH_4 emissions.

78. The ERT notes that CH_4 emissions from sludge under the subcategory industrial wastewater were included under wastewater handling. However, AD was reported as "NE". The ERT noted that the "IE" notation key is more appropriate and recommends that the Russian Federation use this notation key in its CRF tables and include the relevant background information in its NIR.

79. The Russian Federation reported that data on per capita protein consumption used in the estimation of N_2O emissions from human sewage are taken from the Food and Agriculture Organization of the United Nations (FAO) statistical database (FAOSTAT) for the period 1992–2009. Data for the period 2010–2012 were not available, and were therefore estimated using national data on household protein consumption from official statistical sources. The ERT recommends that the Russian Federation provide additional explanation on how time-series consistency was maintained for the AD used in the national inventory, or otherwise review the available data sets on protein consumption and consider ways in which their use might be amended to improve consistency across the time series.

Waste incineration – CO_2, CH_4 and N_2O

80. The ERT noted that the Russian Federation reported AD and CO_2, CH_4 and N_2O emissions as "IE" in CRF table 6.C and reported emissions from this activity under the energy sector (included in biomass used for the subcategory other (energy)). The ERT encourages the Party to report disaggregated AD on the amount of incinerated waste (without energy recovery) and emissions in CRF table 6.C in order to increase transparency.

G. Supplementary information required under Article 7, paragraph 1, of the Kyoto Protocol

1. Information on activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

Overview

81. Table 6 provides an overview of the information reported and parameters selected by the Russian Federation under Article 3, paragraphs 3 and 4, of the Kyoto Protocol.

Table 6
Supplementary information reported under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

Issue	*Expert review team assessment, if applicable*	*Findings and recommendations*
Assessment of Party's reporting in accordance with the requirements in paragraphs 5–9 of the annex to decision 15/CMP.1	Sufficient	
Activities elected under Article 3, paragraph 4, of the Kyoto Protocol	Forest management Years reported: 2008, 2009, 2010, 2011 and 2012	
Period of accounting	Annual accounting	
Party's ability to identify areas of land and areas of land-use change in accordance with paragraph 20 of the annex to decision 16/CMP.1	Sufficient	

82. Section G.I includes the ERT's assessment of the 2014 annual submission against the Article 8 review guidelines and decisions 15/CMP.1 and 16/CMP.1. In accordance with decision 6/CMP.9, Parties will begin reporting of KP-LULUCF activities in the submissions due by 15 April 2015 using revised CRF tables, as contained in the annex to decision 6/CMP.9. Owing to this change in the CRF tables for KP-LULUCF activities and the change from the first commitment period to the second commitment period, paragraphs 83–90 below contain the ERT's assessment of the Party's adherence to the current reporting guidelines and do not provide specific recommendations for reporting these activities in the 2015 annual submission.

Activities under Article 3, paragraph 3, of the Kyoto Protocol

Afforestation and reforestation – CO_2, CH_4 and N_2O

83. The ERT recognizes that the model currently used by the Party to estimate emissions and removals of CO_2 from afforestation uses default parameters and EFs, and information taken from the NIR of Canada. The ERT is of the view that the applied methodology is acceptable, but notes that there should be a specific reference to the Canadian NIR in the report. The ERT also encourages the Russian Federation to continue with its activities to further develop the model and, in particular, to incorporate country-specific data, in order to improve the accuracy of its reporting.

84. As noted in previous review reports, the Russian Federation uses a conservative approach for the assessment of biomass losses on afforested/reforested lands by assuming that all losses are a consequence of wildfires and reporting CH_4 and N_2O emissions under afforestation and reforestation (units of land not harvested). However, the Party has reported the AD for wildfires under afforestation/reforestation units of land not harvested as "IE" in CRF table 5(KP-II)5. Emissions of CO_2 are also reported as "IE" for this subcategory. The ERT is of the opinion that reporting AD for wildfires in areas subject to afforestation and reforestation under Article 3, paragraph 3, of the Kyoto Protocol in CRF table 5(KP-II)5 would improve transparency and the ERT encourages the Party to implement this improvement.

Deforestation – CO_2, CH_4 and N_2O

85. The Russian Federation has applied the 20-year IPCC default transition period to account for the carbon stock changes in the soil organic matter associated with deforestation, and has assumed that the carbon stocks in litter and soil organic matter are completely oxidized as a consequence of land-use change. Following recommendations made in previous review reports, AD on the deforested area have been improved based on updated statistics on the areas converted from forest land to settlements provided by Rosstat. However, these data are still provided at an aggregated level, because they were obtained by examining the increase in the area of settlements and not directly deforested areas. The ERT recognizes the recent efforts made by the Russian Federation to improve the emission estimates and concludes that the estimation is in accordance with the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry* (hereinafter referred to as the IPCC good practice guidance for LULUCF). However, the ERT is of the opinion that the accuracy of the emission estimates for forest land conversion could be improved further by obtaining and using more accurate and detailed input data and the ERT encourages the Party to implement this improvement.

86. There are significant recalculations for the period 2008–2011 resulting in a decrease in net emissions of 25 per cent. In response to a question raised by the ERT, the Party stated that the recalculations are related to methodological improvements and referred to the NIR (section 7.2.5.2.1.), and also provided additional information on the calculations. The average carbon stock losses on mineral soils decreased by 40.1 t C/ha from the previous annual submission. The decrease resulted from the correction of the value for carbon stock in soil undergoing complete oxidation, because soil carbon is stored in the soils of settlements under open grass areas. The Party also explained during the review week that there is still an overestimation of soil carbon losses, since the same average proportion of open and sealed areas is applied for infrastructure, where construction of infrastructure leads to a much lower proportion than in settlements in general. The Russian Federation indicated that it intends to continue to improve its estimates of CSC in soils for forest land converted to settlements in its next submission of the Convention reporting. The ERT commends the Russian Federation for the clarification on this issue and welcomes the Party's intentions for improvement. The ERT notes that the Party could increase the transparency of its reporting concerning carbon stock changes in soil, particularly explaining the changes in the methodology of recalculations in its next submission. Moreover, the ERT is of the opinion that separate estimates for the proportions of sealed and open areas concerning infrastructure and other settlements would improve the transparency of the estimates of the CSC in soils pool.

87. The Party explains in NIR chapter 10.3.3.1.3 that it uses a 20-year period for the complete oxidation of carbon in soil organic matter. Carbon losses in soil organic matter after the period 1990–2010 are calculated taking into account the residual emissions from the oxidation of soil organic carbon matter due to deforestation since 1971. However, under KP-LULUCF, only emissions from deforestation since 1 January 1990 should be reported, which is a difference compared with reporting for the LULUCF sector. Therefore the Party overestimates its soil carbon emissions for 2008, after which there is no difference. The Russian Federation confirmed during the review week that it reports annual areas for deforestation in KP-LULUCF CRF table 5(KP-1)A.2 and cumulative areas are only reported in KP-LULUCF table NIR-2, which also includes annual areas. Should this sentence be written as "The Party justified this reporting by explaining that is has transparently reported "IE" for biomass, litter and deadwood. The ERT takes note of the information provided by the Party with regards to transparency. The ERT is in the opinion, however, that there should have been cumulative areas for deforestation in KP-LULUCF CRF table 5(KP-1)A.2 in order to be consistent with common reporting practices.

88. The CO_2 EFs in mineral soils for the deforestation of managed and unmanaged areas differ from each other annually and they are also different to the values presented in NIR table 7.70 (56.2 Mg C/ha). According to the explanation provided by the Party the differences are due to the method of calculation with using 20-year period for the complete oxidation of carbon in soil organic matter. The ERT also noted that the EF for living biomass losses is relatively low. This can occur, for example, if most of the deforestation takes place due to infrastructure construction in more northern regions of the country which contain less biomass. The Party clarified during the review that these figures are based on fresh and detailed information from managed and unmanaged forests. The ERT is of the view that it would improve transparency in the reporting of EFs if the reasons for different EFs in mineral soils of managed and unmanaged lands were explained in the NIR, and the ERT encourages the Party to implement this improvement.

Activities under Article 3, paragraph 4, of the Kyoto Protocol

Forest management – CO_2, CH_4 and N_2O

89. The ERT noted a significant increase in the area of forest management between 2008 and 2009. The Party explained in the NIR (section 10.3.5.2) that the forest management area from 1990 to 2012 has increased by 52.6 million ha owing to the allocation of previously unmanaged forests under forest management. Furthermore, the Party reported that the most significant growth in area occurred in 2009 when reserve forests where transferred under forest management. The reported areas of managed and unmanaged forest areas are consistent with the CRF tables 5.A concerning years 2008 and 2009. In the previous review, the Party responded that the areas newly allocated into forest management include some very productive middle-aged forests (previously categorized as lands used for agricultural purposes), which resulted in the increase of the IEF for carbon gain. During the current review, the Party clarified further that the lands used for agricultural purposes and reserve forests were previously unmanaged forest areas, which is the only case when the area of forest management can increase during the Kyoto Protocol reporting period. The ERT commends the Party for the information it provided during the review.

90. During the review, in response to a request made by the ERT for information on the methodologies and statistics used to convert the nationally defined "stand density" (see the NIR 10.3.1) estimated in to the "crown cover" required by the forest definition under the Kyoto Protocol, the Russian Federation provided details of the methods and parameters used. The Party also explains in the NIR that bushes are excluded from the reporting under Kyoto Protocol. The ERT is of the view that the Party could consider including information on the method used to calculate the correlation between stand density and crown cover in the next submission of Convention reporting, referring also to the recommendation in the review report published in 2008 and 2012.

2. Information on Kyoto Protocol units

Standard electronic format and reports from the national registry

91. The Russian Federation has reported information on its accounting of Kyoto Protocol units in the required SEF tables, as required by decisions 15/CMP.1 and 14/CMP.1. The ERT took note of the findings included in the standard independent assessment report (SIAR) on the SEF tables and the SEF comparison report.[5] The SIAR was forwarded to the

[5] The SEF comparison report is prepared by the international transaction log (ITL) administrator and provides information on the outcome of the comparison of data contained in the Party's SEF tables with corresponding records contained in the ITL.

ERT prior to the review, pursuant to decision 16/CP.10. The ERT reiterated the main findings contained in the SIAR.

92. Information on the accounting of Kyoto Protocol units has been prepared and reported in accordance with decision 15/CMP.1, annex, chapter I.E, and reported in accordance with decision 14/CMP.1 using the SEF tables. This information is consistent with that contained in the national registry and with the records of the international transaction log (ITL) and the clean development mechanism registry and meets the requirements referred to in decision 22/CMP.1, annex, paragraph 88(a–j). The transactions of Kyoto Protocol units initiated by the national registry are in accordance with the requirements of the annex to decision 5/CMP.1 and the annex to decision 13/CMP.1. No discrepancy has been identified by the ITL and no non-replacement has occurred. The national registry has adequate procedures in place to minimize discrepancies.

Accounting of activities under Article 3, paragraph 3, of the Kyoto Protocol

93. The Russian Federation has reported information on its accounting of KP-LULUCF in the accounting table, as included in the annex to decision 6/CMP.3. Information on the accounting of KP-LULUCF has been prepared and reported in accordance with decisions 16/CMP.1 and 6/CMP.3.

94. Table 7 shows the accounting quantities for KP-LULUCF as reported by the Party and the final values after the review.

Table 7
Accounting quantities for activities under Article 3, paragraph 3, and, if any, activities under Article 3, paragraph 4, of the Kyoto Protocol, in t CO_2 eq

	2014 annual submission[a]			*2010, 2011, 2012 and 2013 annual submissions*[b]	*Net accounting quantity*[c]
	As reported	*Revised estimates*	*Final*	*Final*	
Afforestation and reforestation					
Non-harvested land	–25 462 443		–25 462 443	–20 458 173	–5 004 270
Harvested land	0		0		
Deforestation	78 989 902		78 989 902	86 876 835	–7 886 933
Forest management	–658 527 459		–658 527 459	–671 418 662	12 891 203
Article 3.3 offset[d]	–53 527 459		–53 527 459	–66 418 662	12 891 203
Forest management cap[e]	–605 000 000		–605 000 000	–605 000 000	0
Cropland management	NA		NA	NA	NA
Grazing land management	NA		NA	NA	NA
Revegetation	NA		NA	NA	NA

Abbreviations: CRF = common reporting format, KP-LULUCF = land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, NA = not applicable.

[a] The values included under the 2014 annual submission are the cumulative accounting values for 2008, 2009, 2010, 2011 and 2012, as reported in the accounting table of the KP-LULUCF CRF tables for the inventory year 2012.

[b] The values included under the 2010, 2011, 2012 and 2013 submissions are the final accounting values as a result of the 2013 review and are included in table 6 of the 2013 annual review report (FCCC/ARR/2013/RUS, pages 26 and 27) in the column "2013 annual submission", "Final".

[c] The "net accounting quantity" is the quantity of Kyoto Protocol units that the Party shall issue or cancel under each activity under Article 3, paragraph 3, and paragraph 4, if relevant, based on the final accounting quantity in the 2014 annual submission and where the quantities issued or cancelled based on the 2013 annual review report have been subtracted ("net accounting quantity" = final 2014 – final 2013 annual review report).

[d] "Article 3.3 offset": for the first commitment period, a Party included in Annex I to the Convention that incurs a net source of emissions under the provisions of Article 3, paragraph 3, of the Kyoto Protocol may account for anthropogenic greenhouse gas emissions by sources and removals by sinks in areas under forest management under Article 3, paragraph 4, up to a level that is equal to the net source of emissions under the provisions of Article 3, paragraph 3, but not greater than 9.0 megatonnes of carbon times five, if the total anthropogenic greenhouse gas emissions by sources and removals by sinks in the managed forest since 1990 is equal to, or larger than, the net source of emissions incurred under Article 3, paragraph 3.

[e] In accordance with decision 16/CMP.1, annex, paragraph 11, for the first commitment period only, additions to and subtractions from the assigned amount of a Party resulting from forest management under Article 3, paragraph 4, of the Kyoto Protocol after the application of decision 16/CMP.1, annex, paragraph 10, and resulting from forest management project activities undertaken under Article 6, shall not exceed the value inscribed in the appendix of the annex to decision 16/CMP.1, times five.

95. Based on the information provided in table 7 for the activity afforestation and reforestation, the Russian Federation shall: for non-harvested land, issue 5,004,270 removal units (RMUs) in its national registry; and for harvested land, neither issue nor cancel any units in its national registry.

96. Based on the information provided in table 7 for the activity deforestation, the Russian Federation shall issue 7,886,933 RMUs in its national registry.

97. Based on the information provided in table 7 for the activity forest management, the Russian Federation shall cancel 12,891,203 assigned amount units, emission reduction units, certified emission reduction units and/or RMUs in its national registry.

Calculation of the commitment period reserve

98. The Russian Federation has reported its commitment period reserve in its 2014 annual submission. The Russian Federation reported its commitment period reserve to be 11,475,249,420 t CO_2 eq based on the national emissions in its most recently reviewed inventory (2,295,049,884 t CO_2 eq) in its NIR. The ERT notes that based on the submission of revised emission estimates by the Russian Federation during the review of the 2014 annual submission, the commitment period reserve changed, and the new commitment period reserve is reported as 11,485,758,990 t CO_2 eq based on the national emissions in its most recently reviewed inventory (2,297,151,798 t CO_2 eq). The ERT agrees with this figure.

3. Changes to the national system

99. The Russian Federation reported that there are no changes in its national system since the previous annual submission. The ERT concluded that the Party's national system continues to be in accordance with the requirements of national systems outlined in decision 19/CMP.1.

4. Changes to the national registry

100. The Russian Federation reported that there are no changes in its national registry since the previous annual submission. The ERT concluded that the Party's national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1, and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP) decisions.

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

101. Consistent with paragraph 23 of the annex to decision 15/CMP.1, the Russian Federation provided information relating to how it is striving, under Article 3, paragraph 14, of the Kyoto Protocol, to implement its commitments in such a way as to minimize adverse

social, environmental and economic impacts on developing country Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention.

102. The Russian Federation reported that there are no changes in its reporting of the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol since the previous annual submission. The ERT concluded that the information provided continues to be complete and transparent.

III. Conclusions and recommendations

A. Conclusions

103. Table 8 summarizes the ERT's conclusions on the 2014 annual submission of the Russian Federation, in accordance with the Article 8 review guidelines.

Table 8
Expert review team's conclusions on the 2014 annual submission of the Russian Federation

Issue	*Expert review team assessment*	*Paragraph cross references for identified problems*
The ERT concludes that the inventory submission of the Russian Federation is complete with regard to categories, gases, years and geographical boundaries and contains both an NIR and CRF tables for 1990–2012		
Annex A sources[a]	Complete	Table 3
LULUCF[a]	Complete	Table 3
KP-LULUCF	Complete	Table 3
The ERT concludes that the inventory submission of the Russian Federation has been prepared and reported in accordance with the UNFCCC reporting guidelines	Generally	7, table 5
The Party's inventory is in accordance with the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF	Generally	30, 55
The submission of information required under Article 7, paragraph 1, of the Kyoto Protocol has been prepared and reported in accordance with decision 15/CMP.1	Yes	7
Party has reported information on its accounting of Kyoto Protocol units in accordance with decision 15/CMP.1, annex, chapter I.E, and used the required reporting format tables as specified by decision 14/CMP.1	Yes	93
The national system continues to perform its required functions as set out in the annex to decision 19/CMP.1	Yes	99
The national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and continues to adhere to the technical standards for data exchange between registry systems in accordance with	Yes	100

Issue	*Expert review team assessment*	*Paragraph cross references for identified problems*
relevant CMP decisions		
Did the Party provide information in the NIR on changes in its reporting of the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol?	Yes	101–102

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol, CMP = Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, CRF = common reporting format, ERT = expert review team, IPCC = Intergovernmental Panel on Climate Change, IPCC good practice guidance = IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, IPCC good practice guidance for LULUCF = IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*, 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, Revised 1996 IPCC Guidelines = *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, UNFCCC 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 inventories".

[a] The assessment of completeness by the ERT considers only the completeness of reporting of mandatory categories (i.e. categories for which methods and default emission factors are provided in the Revised 1996 IPCC Guidelines, the IPCC good practice guidance or the IPCC good practice guidance for LULUCF).

B. Recommendations

104. The ERT identified the issues for improvement listed in table 9. All recommendations are for the next annual submission, unless otherwise specified. The ERT notes that this review report of the 2014 annual submission will be published after 15 April 2015. Where recommendations cannot be fully implemented in time for the 2015 annual submission, the ERT recommends that the Party provide an update on progress of implementation in the NIR.

Table 9
Recommendations identified by the expert review team

Sector	*Category/cross-cutting issue*	*Recommendation*	*Reiteration of previous recommendation?*	*Paragraph cross references*
Cross-cutting	General	Submit its inventories by 15 April of each year, as required by decision 24/CP.19, taking into account the provisions for the decision 24/CP.19	No	7
		Provide more detailed explanations on recalculations in the agricultural sector	No	Table 3
		Provide more detailed explanations on inter-annual fluctuations	No	Table 3
		Include in the NIR more detailed information on AD, EFs and background information for methodologies used	Yes	Table 3
Energy	General	Review the use of notation keys for all categories in the energy sector and ensure the appropriate selection of notation keys for the complete time series	Yes	19

Sector	*Category/cross-cutting issue*	*Recommendation*	*Reiteration of previous recommendation?*	*Paragraph cross references*
	Reference and sectoral approaches	Investigate further the underlying reasons for the discrepancies between the reference and sectoral approaches in CO_2 emissions for the whole time series for all fuels	Yes	21
		Investigate the reason of the differences between the reference and sectoral approaches in apparent consumption and report accordingly in the next NIR	No	22
	International bunker fuels	Include in the NIR information on average annual flying times and the calculated annual average flow rate for the entire time series	No	23
	Feedstocks and non-energy use of fuels	Enrich the NIR with more information about the methodology and assumptions related to the calculations of the NEAT model for the estimation of country-specific fractions of carbon stored in products for non-energy use; and provide specific examples of detailed calculations as an appendix to the NIR	No	24
	Stationary combustion: all fuels – CO_2, CH_4 and N_2O	Continue to explore ways to reallocate the emissions from autoproducers for the period 2005–2012 to the appropriate sub-categories under manufacturing industries and construction	No	25
		Make efforts to gather further information on the use of coal and natural gas in order to allow for the development of country-specific CO_2 EFs for all stationary combustion categories using coal, and use these data to estimate CO_2 emissions for all stationary combustion categories	Yes	26
	Stationary combustion: liquid fuels – CO_2	Strengthen the QA/QC procedures related to identifying source categories which emit CO_2 emissions from non-energy use of liquid fuels (lubricants, gas/diesel oil and LPG) and include information on the estimation method provided in the response to the list of potential problems in the NIR	No	28
	Stationary combustion: solid fuels – CO_2	Provide information on the definition of fuel types	No	29
	Other transportation: liquid fuels – CO_2	Estimate CO_2 emissions from pipeline transport – liquid fuel reported under other transportation in 1990 and 1991, using extrapolation techniques if necessary	No	32
Industrial processes and	Iron and steel production – CO_2	Include the information on significant changes in IEFs (e.g. the IEF CO_2 for pig iron) in the NIR	No	35

Sector	*Category/cross-cutting issue*	*Recommendation*	*Reiteration of previous recommendation?*	*Paragraph cross references*
solvent and other product use		Change the notation key for CO_2 emissions from coke production from "NE" to "IE" and improve QA/QC procedures	No	36
		Use appropriate units to increase the transparency and comparability of the reporting	No	37
	Production of halocarbons and SF_6 – HFCs, PFCs and SF_6	Improve QA/QC procedures on description in the NIR	No	40
	Other (mineral products) – CO_2	Provide the necessary explanation regarding CO_2 emissions from glass production, particularly for IEF inter-annual changes, in the NIR	No	42
	Other (chemical industry) – CH_4	Enhance the QA/QC procedures for checking the completeness of the inventory	No	43
	Aluminium production – PFCs	Use the appropriate notation keys for each species of PFC in the CRF tables	No	44
Agriculture	General	Improve the transparency of its reporting by providing additional information that supports the use of country-specific EFs, as well as that describes the reasons for the fluctuations in the trend of IEFs	No	48
		Improve the consistency of its reporting between the CRF tables and the NIR and establish better QA/QC activities in the agriculture sector	No	49
	Enteric fermentation – CH_4	Improve the transparency of its reporting and include in the NIR data-supported calculations for the CH_4 EF from enteric fermentation for swine and describe the reasons for its change over the reporting period	No	52
	Agricultural soils – N_2O	Improve the transparency of its reporting and include a clearer description of the derivation of the N_2O EF from the cultivation of histosols by providing all relevant supporting information, including the period of measurement, a description of the process by which this EF is derived and description of the source	No	54
	Rice cultivation – CH_4	Investigate further this issue by collecting data on the type of organic amendments applied, as well as transparently explain the practice of fertilizer application during rice cultivation	No	55
LULUCF	General	Provide further revisions to the NIR text structure in chapter 7.2 concerning the methodologies used	No	59

Sector	*Category/cross-cutting issue*	*Recommendation*	*Reiteration of previous recommendation?*	*Paragraph cross references*
		for estimating CSC so as to be organized by individual carbon pools within individual land-use categories		
		Continue its efforts in improving the accuracy of its land representation matrix by detecting actual land-use changes instead of net changes	No	60
		Continue to strengthen its QA/QC procedures in the LULUCF sector, paying particular attention to checking that any unexpected trends in AD relating to managed and unmanaged lands and emissions across the time series are explained in the NIR, and that references in the NIR are correct and consistent with the CRF tables	No	61
	Cropland remaining cropland – CO_2	Continue the efforts in developing and verifying country-specific EFs for the estimation of the carbon stock accumulation and losses in the above-ground biomass pool	No	63
		Improve the accuracy of area estimates for organic soils	No	64
	Land converted to grassland – CO_2	Improve the transparency of the reporting and check the consistency of EF values in the CRF tables and the NIR	No	66
		Continue to improve the comparability and transparency of the inventory by reporting the CSC in organic and mineral soils separately in the CRF tables	No	67
	Lands converted to settlements – CO_2	Improve the accuracy of the reported emission estimates in the CRF tables	No	68
	Land converted to forest land – CO_2	Strengthen the QA/QC procedures for further checks that the reported AD are correct and consistent between the CRF tables and the NIR	No	69
Waste	General	Include more specific results of the QC measures undertaken	No	74
	Solid waste disposal on land – CH_4	Apply the IPCC tier 2 method to estimate CH_4 emissions from industrial solid waste	No	75
		Improve the classification of this type of waste taking into account its composition and origin	No	76
	Wastewater handling – CH_4, and N_2O	Use the notation key “IE” instead of “NE” for AD of CH_4 emissions from sludge under the industrial wastewater in the CRF tables and include the relevant background information in the NIR	No	78

Sector	*Category/cross-cutting issue*	*Recommendation*	*Reiteration of previous recommendation?*	*Paragraph cross references*
		Provide additional explanation on how time-series consistency was maintained for the AD used in the national inventory, or otherwise review the available data sets on protein consumption and consider ways in which their use might be amended to improve consistency across the time series	No	79

Abbreviations: AD = activity data, CRF = common reporting format, CSC = carbon stock change, EF = emission factor, IE = included elsewhere, IEA = International Energy Agency, IEF = implied emission factor, LPG = liquefied petroleum gas, LULUCF = land use, land-use change and forestry, NE = not estimated, NEAT = non-energy accounting tables, NIR = national inventory report, QA/QC = quality assurance/quality control.

IV. Questions of implementation

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

Annex I

Information to be included in the compilation and accounting database

Table 10
Information to be included in the compilation and accounting database in t CO_2 eq for 2012, including the commitment period reserve

	As reported	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Commitment period reserve	11 475 249 420	11 485 758 990		11 485 758 990
Annex A emissions for 2012				
CO_2	1 656 774 188	1 658 872 051		1 658 872 051
CH_4	502 547 005	502 555 565		502 555 565
N_2O	115 949 497			115 949 497
HFCs	11 337 580			11 337 580
PFCs	2 468 291			2 468 291
SF_6	5 968 814			5 968 814
Total Annex A sources[c]	**2 295 045 375**	**2 297 151 798**		**2 297 151 798**
Activities under Article 3, paragraph 3, for 2012				
3.3 Afforestation and reforestation on non-harvested land for 2012	–5 011 478			–5 011 478
3.3 Afforestation and reforestation on harvested land for 2012	NA			NA
3.3 Deforestation for 2012	14 221 914			14 221 914
Activities under Article 3, paragraph 4, for 2012[d]				
3.4 Forest management for 2012	–524 413 366			–524 413 366
3.4 Cropland management for 2012				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2012				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2012				
3.4 Revegetation for the base year				

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

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

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

[c] The values for "Total Annex A sources" in the columns "As reported", "Revised estimates" and "Final" may not equal the sum of the values for the gases in those columns owing to rounding.

[d] Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Table 11
Information to be included in the compilation and accounting database in t CO_2 eq for 2011

	As reported	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Annex A emissions for 2011				
CO_2	1 648 128 622	1 650 267 312		1 650 267 312
CH_4	506 759 613	506 770 655		506 770 655
N_2O	116 945 279			116 945 279
HFCs	9 405 737			9 405 737
PFCs	2 544 152			2 544 152
SF_6	509 417			509 417
Total Annex A sources[c]	**2 284 292 820**	**2 286 442 552**		**2 286 442 552**
Activities under Article 3, paragraph 3, for 2011				
3.3 Afforestation and reforestation on non-harvested land for 2011	–5 000 152			–5 000 152
3.3 Afforestation and reforestation on harvested land for 2011	NA			NA
3.3 Deforestation for 2011	15 175 642			15 175 642
Activities under Article 3, paragraph 4, for 2011[d]				
3.4 Forest management for 2011	–518 277 649			–518 277 649
3.4 Cropland management for 2011				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2011				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2011				
3.4 Revegetation for the base year				

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

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

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

[c] The values for "Total Annex A sources" in the columns "As reported", "Revised estimates" and "Final" may not equal the sum of the values for the gases in those columns owing to rounding.

[d] Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Table 12
Information to be included in the compilation and accounting database in t CO_2 eq for 2010

	As reported	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Annex A emissions for 2010				
CO_2	1 602 425 645	1 604 573 817		1 604 573 817
CH_4	491 210 349	491 221 259		491 221 259
N_2O	113 400 913			113 400 913
HFCs	10 960 011			10 960 011
PFCs	2 677 573			2 677 573
SF_6	667 517			667 517
Total Annex A sources[c]	**2 221 342 006**	**2 223 501 089**		**2 223 501 089**
Activities under Article 3, paragraph 3, for 2010				
3.3 Afforestation and reforestation on non-harvested land for 2010	–5 082 330			–5 082 330
3.3 Afforestation and reforestation on harvested land for 2010	NA			NA
3.3 Deforestation for 2010	15 815 378			15 815 378
Activities under Article 3, paragraph 4, for 2010[d]				
3.4 Forest management for 2010	–538 730 043			–538 730 043
3.4 Cropland management for 2010				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2010				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2010				
3.4 Revegetation for the base year				

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

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

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

[c] The values for "Total Annex A sources" in the columns "As reported", "Revised estimates" and "Final" may not equal the sum of the values for the gases in those columns owing to rounding.

[d] Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Table 13
Information to be included in the compilation and accounting database in t CO_2 eq for 2009

	As reported	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Annex A emissions for 2009				
CO_2	1 535 213 840	1 537 147 606		1 537 147 606
CH_4	464 711 118	464 724 260		464 724 260
N_2O	116 882 681			116 882 681
HFCs	10 198 503			10 198 503
PFCs	2 524 584			2 524 584
SF_6	790 630			790 630
Total Annex A sources[c]	**2 130 321 356**	**2 132 268 264**		**2 132 268 264**
Activities under Article 3, paragraph 3, for 2009				
3.3 Afforestation and reforestation on non-harvested land for 2009	–5 166 688			–5 166 688
3.3 Afforestation and reforestation on harvested land for 2009	NA			NA
3.3 Deforestation for 2009	16 383 551			16 383 551
Activities under Article 3, paragraph 4, for 2009[d]				
3.4 Forest management for 2009	–527 122 140			–527 122 140
3.4 Cropland management for 2009				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2009				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2009				
3.4 Revegetation for the base year				

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

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

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

[c] The values for "Total Annex A sources" in the columns "As reported", "Revised estimates" and "Final" may not equal the sum of the values for the gases in those columns owing to rounding.

[d] Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Table 14
Information to be included in the compilation and accounting database in t CO_2 eq for 2008

	As reported	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Annex A emissions for 2008				
CO_2	1 617 602 737	1 619 918 484		1 619 918 484
CH_4	492 913 053	492 925 687		492 925 687
N_2O	116 321 764			116 321 764
HFCs	14 462 328			14 462 328
PFCs	3 720 571			3 720 571
SF_6	830 882			830 882
Total Annex A sources[c]	**2 245 851 335**	**2 248 179 716**		**2 248 179 716**
Activities under Article 3 paragraph 3 for 2008				
3.3 Afforestation and reforestation on non-harvested land for 2008	–5 201 795			–5 201 795
3.3 Afforestation and reforestation on harvested land for 2008	NA			NA
3.3 Deforestation for 2008	17 393 417			17 393 417
Activities under Article 3 paragraph 4 for 2008[d]				
3.4 Forest management for 2008	–465 667 680			–465 667 680
3.4 Cropland management for 2008				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2008				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2008				
3.4 Revegetation for the base year				

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

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

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

[c] The values for "Total Annex A sources" in the columns "As reported", "Revised estimates" and "Final" may not equal the sum of the values for the gases in those columns owing to rounding.

[d] Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Annex II

Documents and information used during the review

A. Reference documents

Intergovernmental Panel on Climate Change. *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. *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*. Available at <http://www.ipcc-nggip.iges.or.jp/public/gl/invs1.htm>.

Intergovernmental Panel on Climate Change. *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*. Available at <http://www.ipcc-nggip.iges.or.jp/public/gp/english/>.

Intergovernmental Panel on Climate Change. *Good Practice Guidance for Land Use Land-Use Change and Forestry*. Available at <http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.htm>.

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention Part I: UNFCCC reporting guidelines on annual inventories". FCCC/SBSTA/2006/9. Available at <http://unfccc.int/resource/docs/2006/sbsta/eng/09.pdf>.

"Guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention". FCCC/CP/2002/8. Available at <http://unfccc.int/resource/docs/cop8/08.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 the preparation of the information required under Article 7 of the Kyoto Protocol". Decision 15/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf#page=54>.

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

Status report for the Russian Federation 2014. Available at <http://unfccc.int/resource/docs/2014/asr/rus.pdf>.

Synthesis and assessment report on the greenhouse gas inventories submitted in 2014. Available at <http://unfccc.int/resource/webdocs/sai/2014.pdf>.

FCCC/ARR/2013/RUS. Report of the individual review of the annual submission of the Russian Federation submitted in 2013. Available at <http://unfccc.int/resource/docs/2014/arr/rus.pdf>.

Standard independent assessment report template, parts 1 and 2. Available at <http://unfccc.int/kyoto_protocol/registry_systems/independent_assessment_reports/items/4061.php>.

B. Additional information provided by the Party

Responses to questions during the review were received from Mr. Alexander Nakhutin (Institute of Global Climate and Ecology), including additional material on the methodology and assumptions used. The following documents[1] were also provided by the Russian Federation:

Pavlik, 2012 *Estimation of the GHG emissions from agricultural soils using different agrotechnologies* Available at <http://www.docme.ru/doc/217964/ocenka-e-missii-parnikovyh-gazov-iz-sel._skohozyajstvennyh-p>.

[1] Reproduced as received from the Party.

Annex III

Acronyms and abbreviations

AD	activity data
CH_4	methane
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
CRF	common reporting format
CSC	carbon stock changes
DOM	dead organic matter
EF	emission factor
ERT	expert review team
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	FAO statistical database
GDP	gross domestic product
GHG	greenhouse gas; unless indicated otherwise GHG emissions are the sum of CO_2, CH_4, N_2O, HFCs, PFCs and SF_6 without GHG emissions and removals from LULUCF
ha	hectare
HFCs	hydrofluorocarbons
IE	included elsewhere
IEA	International Energy Agency
IEF	implied emission factor
IPCC	Intergovernmental Panel on Climate Change
ITL	international transaction log
JI	joint implementation
kg	kilogram (1 kg = 1 000 grams)
KP-LULUCF	land use land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol
LPG	liquefied petroleum gas
LULUCF	land use land-use change and forestry
Mg	megagram (1 Mg = 1 tonne)
Mt	million tonnes
N	nitrogen
N_2O	nitrous oxide
NA	not applicable
NE	not estimated
NIR	national inventory report
NO	not occurring
PFCs	perfluorocarbons
PJ	petajoule (1 PJ = 10^{15} joule)
QA/QC	quality assurance/quality control
QC	quality control
RMU	removal unit
SEF	standard electronic format
SF_6	sulphur hexafluoride
SFo	scaling factor
SIAR	standard independent assessment report
UNFCCC	United Nations Framework Convention on Climate Change