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Report of the in-depth review of the fifth national communication of the Russian Federation

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

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I. Introduction and summary

A. Introduction

1. For the Russian Federation the Convention entered into force on 4 November 1994 and the Kyoto Protocol on 16 February 2005. Under the Kyoto Protocol, the Russian Federation committed itself to keeping its greenhouse gas (GHG) emissions at the base year¹ (1990) level during the first commitment period from 2008 to 2012.

2. This report covers the in-country in-depth review (IDR) of the fifth national communication (NC5) of 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). The review took place from 16 to 21 April 2012 in Moscow, Russian Federation, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Mr. Ralph Harthan (Germany), Ms. Violeta Hristova (Bulgaria), Ms. Batimaa Punsalmaa (Mongolia), Mr. Ilhom Rajabov (Tajikistan) and Mr. Janis Rekis (Latvia). Ms. Batimaa and Ms. Hristova were the lead reviewers. The review was coordinated by Ms. Katia Simeonova and Ms. Inkar Kadyrzhanova (UNFCCC secretariat).

3. During the IDR, the expert review team (ERT) examined each section of the NC5. The ERT also evaluated the supplementary information provided by the Russian Federation as a part of the NC5 in accordance with Article 7, paragraph 2, of the Kyoto Protocol. In addition, the ERT reviewed the information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol, which was provided by the Russian Federation in its 2010 annual submission and elaborated further in its 2011 annual submission under Article 7, paragraph 1, of the Kyoto Protocol.

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

B. Summary

5. The ERT noted that the Russian Federation's NC5 complies to some extent with the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications" (hereinafter referred to as the UNFCCC reporting guidelines). As required by decision 15/CMP.1, supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol² is provided in the NC5. The Russian Federation considered a few recommendations provided in the report on the centralized review of the fourth national communication (NC4) of the Russian Federation.³ The ERT reiterates some recommendations of the previous ERT, in particular in relation to reporting on the policies and measures (PaMs) and the projections.

¹ "Base year" refers to the based year under the Kyoto Protocol, which is 1990 for carbon dioxide, methane and nitrous oxide and 1995 for perfluorocarbons, hydrofluorocarbons and sulphur hexafluoride. The base year emissions include emissions from sectors/source categories listed in Annex A to the Kyoto Protocol.

² Decision 15/CMP.1, annex, chapter II.

³ FCCC/IDR.4/RUS.

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

1. Completeness

7. The NC5 covers all sections required by the UNFCCC reporting guidelines, and most of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol, except for information on some reporting elements related to a description of the national system in accordance with Article 5, paragraph 1, of the Kyoto Protocol (see para. 22 below); steps taken to promote and/or implement any decisions by the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) (see para. 69 below); minimization of adverse effects under Article 2, paragraph 3, of the Kyoto Protocol (see para. 82 below); supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17, of the Kyoto Protocol (see para. 105 below); and steps taken to promote, facilitate and finance the transfer of technology to developing countries and to build their capacity, taking into account Article 4, paragraphs 3, 5 and 7, of the Convention in order to facilitate the implementation of Article 10 of the Kyoto Protocol (see para. 116 below).

8. The NC5 does not include some information required by the UNFCCC reporting guidelines on a description of principal PaMs in each sector, to the extent appropriate, supplemented by a summary table on PaMs, PaMs subdivided by gas and PaMs for the non-energy sectors, except for the industrial processes sector (see para. 32 below), the projections related to fuel sold to ships and aircraft engaged in international transport reported separately from the national totals (see para. 88 below) and the total effect of PaMs (see para. 102 below). The missing information listed in paragraphs 7 and 8 was provided during the review. The ERT recommends that the Russian Federation enhance the completeness of its reporting by providing this information in its next national communication.

2. Transparency

9. The ERT acknowledged that the Russian Federation's NC5, including the information on the implementation of the Convention and the supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol, is broadly transparent. The NC5 is structured following the outline contained in the annex to the UNFCCC reporting guidelines, and supplementary information submitted under Article 7, paragraph 2, of the Kyoto Protocol is easily identifiable.

10. In the course of the review, the ERT formulated a number of recommendations that could help the Russian Federation to further increase the transparency of its reporting with regard to national circumstances (see para. 14 below); PaMs (see para. 32 below); and projections (see para. 87 below).

3. Timeliness

11. The NC5 was submitted on 12 February 2010 and resubmitted on 16 March 2010 after the deadline of 1 January 2010 mandated by decision 10/CP.13. The Russian Federation informed the secretariat about its difficulties with the timeliness of its national communication submission on 13 December 2009 in accordance with paragraph 139 of decision 22/CMP.1. The ERT noted the delay in the submission of the NC5. The ERT recommends that the Russian Federation improve the timeliness of its reporting and submit its next national communication by the deadline.

II. Technical assessment of the reviewed elements

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

12. In its NC5, the Russian Federation has provided a description of the national circumstances and elaborated on the framework legislation and key policy documents on climate change. Further technical assessment of the institutional and legislative arrangements for coordination and implementation of PaMs is provided in chapter II.B.1 of this report.

1. National circumstances

13. In its NC5, the Russian Federation has provided a description of its national circumstances and information on how these national circumstances affect GHG emissions and removals in the Russian Federation. Information was provided on the government structure, population, geography, climate, economy and relevant economic sectors. The ERT noted that the main drivers of emission trends in the Russian Federation include the decline of economic activity between 1990 and 1998, restructuring of the economy, structural changes in the primary energy supply mix that altogether resulted in a decrease in overall energy demand and related oil and natural gas operations and fuel combustion.

14. However, the reported information was not sufficiently transparent on national circumstances, how national circumstances affect GHG emissions and removals and how national circumstances and changes in the national circumstances affect GHG emissions and removals over time. For example, some important changes in national circumstances, affecting the emissions and removals, in the transport sector (i.e. changes in the numbers of passengers using different transport modes, increased number of cars), the residential sector (i.e. increased number of private houses) and the waste and agriculture sectors (i.e. change in the management practices) have not been described in the NC5. In relation to this chapter of the NC5, the ERT recommends that the Russian Federation report more detailed information, in order to improve the transparency of its reporting, on national circumstances and changes in national circumstances and how they affect GHG emissions and removals over time, including disaggregated indicators to explain the relationship between the national circumstances and emissions or removals. Table 1 illustrates the national circumstances of the country by providing some indicators relevant to GHG emissions and removals.

15. The Russian Federation is a democratic federative republic. It consists of 83 member regions called subjects of the Federation. The subjects of the Russian Federation include 21 republics, nine krais, 46 oblasts, two federal cities, one autonomous oblast and four autonomous districts. Executive, legislative and judicial power is distributed among the President and the Government, the Parliament and the Supreme Court, accordingly.

16. Overall responsibility for climate change policymaking lies with the Ministry of Natural Resources and Environment of the Russian Federation and the Ministry of Economic Development of the Russian Federation. A number of national institutions are involved in the implementation of climate change policy. Implementation of the Kyoto Protocol is underpinned by the Comprehensive Action Plan (CAP) on the Implementation in the Russian Federation of the Kyoto Protocol to the UNFCCC (2005) and the decree on Measures to Implement Article 6 of the Kyoto Protocol to the UNFCCC (2009).⁴ In

⁴ Decree of the Government of the Russian Federation on 28 October 2009, No. 843.

addition, the Russian Federation has adopted long-term government policies and legislation, such as the Climate Doctrine of the Russian Federation (CDRF) (2009),⁵ the decree on Certain Measures to Increase Energy and Ecological Efficiency of the Russian Economy (2008),⁶ the federal law on Energy Saving and Energy Efficiency of the Russian Federation (2009),⁷ the decree on the Main Directions of State Policy in Improving Energy Efficiency of the Electric Power Industry Based on Renewable Energy Sources until 2020 (2009)⁸ and others (see table 3 below). A significant part of the PaMs is delegated to the regional and local levels. Further legislative arrangements and administrative procedures, including those for the national system and the national registry, are presented in chapters II.A.2, II.A.3 and II.B of this report.

Table 1
Indicators relevant to greenhouse gas emissions and removals for the Russian Federation

| | 1990 | 1995 | 2000 | 2005 | 2009 | Change 1990–2000 (%) | Change 2000–2009 (%) | Change 1990–2009 (%) |
|--|----------|----------|----------|----------|----------|----------------------------|----------------------------|----------------------------|
| Population (million) | 147.67 | 148.46 | 146.89 | 143.47 | 141.90 | –0.5 | –3.4 | –3.9 |
| GDP (2000 USD billion using PPP) | 1 484.96 | 922.44 | 998.61 | 1 344.67 | 1 530.15 | –32.8 | 53.2 | 3.0 |
| TPES (Mtoe) | 878.61 | 636.89 | 619.88 | 651.37 | 647.08 | –29.4 | 4.4 | –26.4 |
| GDP per capita (2000 USD thousand using PPP) | 10.06 | 6.21 | 6.80 | 9.37 | 10.78 | –32.4 | 58.6 | 7.2 |
| TPES per capita (toe) | 5.95 | 4.29 | 4.22 | 4.54 | 4.56 | –29.1 | 8.1 | –23.4 |
| GHG emissions without LULUCF (Tg CO ₂ eq) | 3 348.69 | 2 193.06 | 2 039.90 | 2 120.27 | 2 111.55 | –39.1 | 3.5 | –36.9 |
| GHG emissions with LULUCF (Tg CO ₂ eq) | 3 428.75 | 1 965.91 | 1 575.15 | 1 577.31 | 1 459.84 | –54.1 | –7.3 | –57.4 |
| CO ₂ emissions per capita (Mg CO ₂ eq) | 16.92 | 10.59 | 10.02 | 10.63 | 10.76 | –40.8 | 7.4 | –36.4 |
| CO ₂ emissions per GDP unit (kg per 2000 USD using PPP) | 1.68 | 1.70 | 1.47 | 1.13 | 1.00 | –12.4 | –32.3 | –40.7 |
| GHG emissions per capita (Mg CO ₂ eq) | 22.68 | 14.77 | 13.89 | 14.78 | 14.88 | –38.8 | 7.1 | –34.4 |
| GHG emissions per GDP unit (kg CO ₂ eq per 2000 USD using PPP) | 2.26 | 2.38 | 2.04 | 1.58 | 1.38 | –9.4 | –32.4 | –38.8 |

Sources: (1) GHG emissions data: the Russian Federation's 2011 GHG inventory submission; (2) Population, GDP and TPES data: International Energy Agency.

Note: The ratios per *capita* and per GDP unit are calculated relative to GHG emissions without LULUCF; the ratios are calculated using the exact (not rounded) values and may therefore differ from a ratio calculated with the rounded numbers provided in the table.

Abbreviations: GDP = gross domestic product, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry, PPP = purchasing power parity, TPES = total primary energy supply.

17. In the NC5, the Russian Federation has provided a summary of information on GHG emission trends for 1990–2007, including summary tables and trend tables for emissions expressed in carbon dioxide equivalent (CO₂ eq), that are provided in an annex to the NC5.

⁵ Approved by Presidential Decree on 17 December 2009, No. 864.

⁶ Decree of the President of the Russian Federation on 4 June 2008, No. 889.

⁷ Federal law on 23 November 2009, No. 261-FZ.

⁸ Decree of the Government of the Russian Federation on 8 January 2009, No. 1.

This information is broadly consistent with the 2009 national GHG inventory submission. During the review, the ERT assessed emissions and their trends from the recently submitted 2012 annual submission and reflected the findings in this report.

18. Total GHG emissions,⁹ excluding emissions and removals from land use, land-use change and forestry (LULUCF), decreased by 34.2 per cent between 1990 and 2010, whereas total GHG emissions, including net emissions or removals from LULUCF, decreased even more, by 54.8 per cent. This was mainly attributed to CO₂ emissions, which decreased by 36.2 per cent during 1990–2010. Methane (CH₄) emissions decreased by 17.2 per cent, while emissions of nitrous oxide (N₂O) decreased the most, by 48.3 per cent, but starting from relatively low levels in 1990. Emissions of fluorinated gases (F-gases) accounted for about 1.2 per cent of total GHG emissions in 1990 and 0.6 per cent in 2010. Trends of total GHG emissions were mostly underpinned by GHG emission trends in the energy sector.

19. During 1990–2000, total GHG emissions dropped significantly (by 39.1 per cent). This drop was mostly underpinned by the decrease in emissions from the energy, industry and agriculture sectors, driven by the decline in economic activity between 1990 and 1998, restructuring of the economy (increase of the share of service sectors) and structural changes in the primary energy supply mix that altogether resulted in a decrease in the overall energy demand and related oil and natural gas operations and fuel combustion. During 2000–2010, total GHG emissions remained broadly stable with an increase of only 3.5 per cent. Analysis of drivers for GHG emissions trends in each sector is provided in chapter II.B of this report. Table 2 provides an overview of GHG emissions by sector from 1990 to 2010.

20. In 2010, emissions from the energy sector amounted to 1,819.02 Tg CO₂ eq, or 82.3 per cent of total GHG emissions. Since 1990, emissions from the energy sector have decreased by 33.0 per cent. The key drivers for the fall in emissions from the energy sector are the decline in economic activity between 1990 and 1998, resulting in a reduction in the overall fuel demand and a reduction of related oil and natural gas operations and fuel combustion, and significant structural changes in the overall primary energy supply mix (increase in the share of natural gas and decrease in the shares of oil and coal), altogether resulting in a decrease in energy demand and less emission-intensive (in specific terms) fuel combustion. After 1998, the economy started to grow, as reflected in the increase in economic output that was underpinned by growing domestic production and consumption, and exports. For example, during 2004–2007 the volume of industrial production increased by 18.8 per cent and gross domestic product (GDP) increased by 23.9 per cent.

⁹ In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions expressed in terms of carbon dioxide equivalent, excluding land use, land-use change and forestry, unless otherwise specified.

Table 2
Greenhouse gas emissions by sector in the Russian Federation, 1990–2010

| Sector | GHG emissions (Tg CO ₂ eq) | | | | | Change (%) | | | Shares ^a by sector (%) | |
|---|---------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|------------|-----------------------------------|--------------|
| | 1990 | 1995 | 2000 | 2005 | 2009 | 2010 | 1990–2010 | 2009–2010 | 1990 | 2010 |
| | 1. Energy | 2 714.75 | 1 778.02 | 1 668.06 | 1 739.33 | 1 737.28 | 1 819.02 | –33.0 | 4.7 | 81.1 |
| A1. Energy industries | 1 176.04 | 912.58 | 863.46 | 874.17 | 867.24 | 891.74 | –24.2 | 2.8 | 35.1 | 41.1 |
| A2. Manufacturing industries and construction | 217.53 | 106.36 | 116.06 | 120.61 | 132.39 | 138.74 | –36.2 | 4.8 | 6.5 | 6.3 |
| A3. Transport | 342.37 | 186.11 | 153.03 | 191.84 | 199.53 | 223.27 | –34.8 | 11.9 | 10.2 | 9.4 |
| A4.–A5. Other | 546.36 | 233.84 | 194.77 | 164.78 | 170.71 | 162.88 | –70.2 | –4.6 | 16.3 | 8.1 |
| B. Fugitive emissions | 432.45 | 339.13 | 340.75 | 387.94 | 367.41 | 402.40 | –6.9 | 9.5 | 12.9 | 17.4 |
| 2. Industrial processes | 257.43 | 154.31 | 166.68 | 178.54 | 158.02 | 172.81 | –32.9 | 9.4 | 7.7 | 7.5 |
| 3. Solvent and other product use | 0.56 | 0.51 | 0.52 | 0.53 | 0.56 | 0.56 | 0.6 | 1.3 | 0.0 | 0.0 |
| 4. Agriculture | 317.29 | 210.17 | 149.07 | 136.81 | 142.38 | 136.80 | –56.9 | –3.9 | 9.5 | 6.7 |
| 5. LULUCF | 80.06 | –227.16 | –464.75 | –542.96 | –651.71 | –652.60 | –915.1 | 0.1 | 2.4 | –30.9 |
| 6. Waste | 58.65 | 50.05 | 55.56 | 65.05 | 73.31 | 72.69 | 23.9 | –0.9 | 1.8 | 3.5 |
| 7. Other | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| GHG total with LULUCF | 3 428.75 | 1 965.91 | 1 575.15 | 1 577.31 | 1 459.84 | 1 549.28 | –54.8 | 6.1 | NA | NA |
| GHG total without LULUCF | 3 348.69 | 2 193.06 | 2 039.90 | 2 120.27 | 2 111.55 | 2 201.89 | –34.2 | 4.3 | 100.0 | 100.0 |

Note: The changes in *emissions* and the shares by sector are calculated using the exact (not rounded) values and may therefore differ from values calculated with the rounded numbers provided in the table.

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

^a The shares of sectors are calculated relative to GHG emissions without LULUCF; for the LULUCF sector, the negative values indicate the share of GHG emissions that was offset by GHG removals through LULUCF.

2. National system

21. In accordance with decision 15/CMP.1, the Russian Federation has provided in its NC5 a description of how its national system is performing the general and specific functions defined in the guidelines for national systems under Article 5, paragraph 1 (decision 19/CMP.1). In its NC5, the Russian Federation reported on the changes in the institutional arrangements in the national system, whereby the responsibilities and tasks of the ministries taking part in the national system have been redistributed, owing to an overall reorganization of the governmental structure in the Russian Federation. The Party did not provide a reference to the 2009 annual submission, which contains a more detailed description of the national system.

22. The description provided in the NC5 includes most of the reporting elements as required in decision 15/CMP.1, except for the name and contact information of the national entity, a description of the process and the results of key source identification, a description of the process for recalculation of previously submitted inventory data and a description of the procedures for the official consideration and approval of the inventory. All this

information and supporting documents, such as letters confirming official consideration and approval of the inventory,¹⁰ were provided during the review.

23. During the review, the Russian Federation provided additional information on the national system, elaborating on the capacity of the national system, institutional and legislative arrangements and administrative procedures for GHG inventory planning, preparation and management, and quality control/quality assurance activities. The ERT recommends that the Russian Federation improve the completeness of its reporting and provide information on all reporting elements related to reporting on the national system in accordance with the UNFCCC reporting guidelines.

24. The Institute of Global Climate and Ecology of Roshydromet has the overall responsibility for the preparation and management of the GHG inventory. It collects the necessary data, performs the calculations and compiles the national inventory report (NIR) and the common reporting format tables. The national system encompasses also the Russian Federal Service for State Statistics, other agencies providing data for the inventory and the relevant ministries, which support the inventory process by taking part in the annual review of the NIR prior to its official submission to the secretariat. Large industrial companies, such as Gazprom and RUSAL, have concluded agreements with Roshydromet and provide data in relation to their activities and associated emissions, and support in reviewing the quality of the inventory.

25. The Russian Federation provided a description of national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, and elected activities under Article 3, paragraph 4, of the Kyoto Protocol, also contribute to the conservation of biodiversity and the sustainable use of natural resources (see para. 78 below).

26. The ERT took note of the recommendations of the reports of the individual review of the annual submission of the Russian Federation submitted in 2009 and 2010 (2009 ARR and 2010 ARR). The ERT concluded that the national system continued to perform its required functions as set out in decision 19/CMP.1.

3. National registry

27. In its NC5, the Russian Federation has provided information on the national registry, including a description on how its national registry performs the functions defined in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and how it complies with the requirements of the technical standard for data exchange between registry systems.

28. During the review, the Russian Federation provided additional information on the measures put in place to safeguard, maintain and recover registry data, the security measures employed in the registry to prevent unauthorized manipulations, the measures put in place to protect the registry against security compromises, the test procedures related to performance of the current version of the national registry, the recording of the changes and the registry attestation during 2009–2012. In response to questions raised by the ERT during the review, the Russian Federation provided documents demonstrating how it records the changes related to the national registry and how it maintains those records. The ERT noted that the updates of databases and applications, and implemented security measures, are documented on a regular basis by nominated responsible staff. It also noted the high capacity and professionalism of the staff in charge of the registry operations.

¹⁰ During the review, the Russian Federation provided the exchange of letters between Roshydromet and participating ministries on acceptance/comments to the National Inventory Report, the letter from Roshydromet to the Ministry of Natural Resources and Environment, the letter from the Ministry of Natural Resources and Environment to the Government of the Russian Federation and agreements made between Gazprom, RUSAL and Roshydromet on data provision.

29. The ERT took note of the conclusion of the standard independent assessment report.¹¹ The ERT concluded that the Russian Federation's national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and continues to adhere to the technical standards for data exchange between registry systems in accordance with decisions 16/CP.10 and 12/CMP.1.

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

30. As required by the UNFCCC reporting guidelines, the Russian Federation has provided in its NC5 information on its package of PaMs implemented, adopted and planned in order to fulfil its commitments under the Convention and its Kyoto Protocol. The reported information on the textual description of the principal PaMs is limited and not sufficiently transparent, as the NC5 contains a textual description of PaMs in the energy and transport sectors only (including the natural gas subsector¹²) and some limited information on PaMs in the industrial processes sector.¹³ The quantitative estimates were provided for the mitigation effects of some PaMs in the energy, transport and aluminium industry sectors. The reported estimated impacts of PaMs sometimes comprise aggregate effects for several PaMs, sometimes disaggregated at a more detailed level by PaM. Years for which information on mitigation impact is reported differ between the PaMs. Progress in implementation and emission reductions achieved are described for some PaMs only.

31. The ERT noted that information reported in the NC5 on PaMs was not sufficiently transparent, in relation to the specific priorities, activities and measures included in the key PaMs and to how the PaMs interact with each other. The overall framework for continuous monitoring as well as the institutional arrangements for monitoring are not clear from the NC5. Milestones, as well as funding and the institutional settings regarding the coordination of programmes, are not reported.

32. The NC5 did not provide a description of the principal PaMs in each sector, to the extent appropriate, subdivided by gas, supplemented by a summary table on PaMs, including information on a name, objectives, GHGs affected, type of instrument, status of implementation, implementing agencies, etc., as required by the UNFCCC reporting guidelines. Also, the NC5 did not include quantitative estimates of the mitigation impacts of PaMs in a systematic and transparent manner (i.e. in a tabular format) for all sectors for a particular year, not cumulative, in CO₂ eq. Information on the methodologies used for the estimation of the effects of PaMs and underlying data has not been reported in the NC5. The Russian Federation has not reported on how it believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals, consistent with the objective of the Convention. The ERT recommends that the Russian Federation report such information in its next national communication.

33. During the review, the Russian Federation provided further information on the description of the PaMs in the energy, transport, industrial processes, forestry and waste sectors, including name, objectives, status of implementation, implementing agency and estimated mitigation effects. Also, it provided a summary table on PaMs as required by the UNFCCC reporting guidelines. The ERT reiterates the recommendation made in the previous review report that the Russian Federation improve the completeness and

¹¹ IAR/2011/RUS/1/1 and IAR/2011/RUS/2/1, available at <http://unfccc.int/kyoto_protocol/registry_systems/independent_assessment_reports/items/4061.php>.

¹² In its NC5, the Russian Federation has reported on the programmes implemented by the state-owned company Gazprom.

¹³ In its NC5, the Russian Federation has reported on the programmes implemented by RUSAL.

transparency of its reporting by providing, in its next national communication, the textual description of PaMs for each sector, to the extent appropriate, supplemented by a summary table on PaMs, in line with the reporting requirements.

34. The ERT noted with concern that reporting on PaMs in the NC5 is less complete than the reporting in the NC4, where more detailed information was provided on PaMs for the non-energy sectors. Also, the recommendations made in the previous review report were not taken into consideration, for example to improve the completeness of reporting on PaMs in the non-energy sectors in the NC5 and, in particular, to include the section on the PaMs in the waste sector.

35. The Russian Federation has reported on the legislative arrangements put in place to support the implementation of the commitments under the Convention and its Kyoto Protocol, such as those related to mitigation and adaptation measures, the preparation of a GHG inventory, the creation of a national registry and the regulatory framework for approving joint implementation (JI) projects.

36. The implementation of the Kyoto Protocol and the target of the Russian Federation of keeping its GHG emissions at the base year (1990) level during the first commitment period from 2008 to 2012 is underpinned by the CAP on the Implementation in the Russian Federation of the Kyoto Protocol to the UNFCCC (2005), which addresses the arrangements referred to in paragraph 35 above. In addition, several decrees adopted in 2007, 2009, 2010 and 2011 aim at creating the regulatory framework for the implementation of the Kyoto Protocol mechanisms under Articles 6 and 17 of the Kyoto Protocol (see para. 106 below).

37. The Russian Federation announced its economy-wide emission reduction target by 2020 under the Copenhagen Accord. The target is to reduce total GHG emissions by 2020 within a range of 15 per cent and 25 per cent relative to the 1990 level of emissions. The range of the target of the Russian Federation depends on the following conditions: (a) appropriate accounting of the potential of the Russian Federation's forestry sector in the context of its contribution to meeting the obligations of anthropogenic emission reductions; and (b) the undertaking by all major emitters of legally binding obligations to reduce anthropogenic GHG emissions. Table 3 provides a summary of information on the PaMs of the Russian Federation related to climate change.

Table 3
Summary of information on policies and measures

| <i>Major policies and measures</i> | <i>Examples/comments</i> |
|--|---|
| <i>Policy framework and cross-sectoral measures</i> | |
| Comprehensive action plan (CAP) on the implementation in the Russian Federation of the Kyoto Protocol to the UNFCCC (2005) | The CAP includes quantitative provisions with regard to energy policy goals, such as the decrease of emissions from associated petroleum gas, the increased use of renewable energy sources (RES) and the reduction of losses in pipelines. It also includes other provisions related to the preparation of greenhouse gas (GHG) inventory submissions and the national communications and provisions with regard to Articles 6 and 17 of the Kyoto Protocol. |
| Climate Doctrine of the Russian Federation (CDRF) (2009) | The CDRF is an overarching policy document based on the principles enshrined in the Convention. It envisages the development of a legal framework, the development of economic tools and scientific, capacity-building and information support as well as international cooperation aimed at promotion of climate change related programmes. |
| CAP for implementation of the CDRF by 2020 (2011) | The CAP translates the CDRF into practical implementation related to both adaptation and mitigation actions as well as climate change research. Also, the CAP defines the roles and responsibilities of the ministries and agencies involved in its implementation. |

| <i>Major policies and measures</i> | <i>Examples/comments</i> |
|--|---|
| <i>Policies and measures by sector</i> | |
| Energy | The Russian Energy Strategy 2030 (2009) has four strategic objectives: energy security, ecological security, energy efficiency and economic efficiency of the power industry. It focusses almost entirely on the energy supply sector and provides among other things for the construction of new oil, gas, coal, nuclear and renewable power plants and the large-scale use of energy-efficient technologies. The Energy Strategy also makes reference to the associated reduction of GHG emissions. |
| Energy efficiency | <p>The decree on Certain Measures to Increase Energy and Ecological Efficiency of the Russian Economy (No. 889 of 4 June 2008) sets as a goal the reduction of energy consumption per gross domestic product by 40 per cent between 2007 and 2020 and includes measures for achieving this goal.</p> <p>The federal law on Energy Saving and Energy Efficiency of the Russian Federation (No. 261-FZ of 23 November 2009) stipulates measures related to energy saving and energy efficiency and includes provisions related to the replacement of incandescent light bulbs, product labelling or energy-efficiency measures for new buildings.</p> <p>The State programme on Energy Saving and Energy Efficiency by 2020 (2010) includes provisions for different measures related to energy saving and energy efficiency as well as corresponding public support. Emission reduction impact was estimated as 408.6 Mt CO₂ eq in 2020.</p> <p>The State programme on Energy Efficiency and Energy Sector Development by 2020 (2012, under preparation) contains several subprogrammes, among which subprogramme 1 relates to energy savings and energy efficiency improvements and subprogramme 6 to renewable energy development. Emission reduction impact by 2020 was estimated in the following sectors: electricity production – 577 kt CO₂ eq; electricity transportation network – 93 kt CO₂ eq; energy industry – 511 kt CO₂ eq; transport – 136 kt CO₂ eq; heating systems in the residential sector – 156 kt CO₂ eq; energy and water transmission networks in the residential sector – 234 kt CO₂ eq; energy use in the residential sector – 260 kt CO₂ eq.</p> |
| Renewable energy | The decree on the Main Directions of State Policy in Improving Energy Efficiency of the Electric Power Industry Based on Renewable Energy Sources until 2020 (No. 1-R of 8 January 2009) stipulates the increased use of electricity from RES and envisages increasing the share of RES, without hydropower plants with the capacity above 25 MW, in the production and consumption of electricity to 1.5 per cent in 2010, 2.5 per cent in 2015 and 4.5 per cent in 2020. |
| Other | Gazprom's integrated research programmes comprise a list of measures, including an increased use of associated petroleum gas, an energy conservation programme, a programme to cut GHG emissions through the development of a gas filling network and a machine fleet operating on natural gas. Major GHG emission reductions are expected to come from measures implemented at gas transportation sites. Generally, the measures address fugitive emissions along the gas process chain. |
| Transport | <p>The programme on Modernization of the Russian Transport System for 2002–2012 (2001) includes different subprogrammes on rail and road transport as well as on aviation and navigation. It includes several measures to increase energy efficiency of the transport system. Efficiency estimates included in the fifth national communication (NC5) are not translated into emission reductions.</p> <p>The Transport Strategy of the Russian Federation until 2030 (2008) includes several objectives, such as the use of environmentally-friendly fuels, the reduction of energy consumption, the training of personnel in the transport industry and the optimization of transport routes. A reduction of energy consumption in transport by 30 per cent is estimated in the NC5. However, this estimate is not further substantiated.</p> |
| Industrial processes | RUSAL envisages a 50 per cent reduction of perfluorocarbon emissions by 2015 below 1990 level, by a decrease in the number of anode effects. Furthermore, an increased use of secondary aluminium is envisaged. Significant reductions have already been achieved in a company using innovative electrolyzers. Furthermore, it plans to prepare a GHG inventory of all the company's facilities. |
| Agriculture | The State programme on Development of Agriculture and Agricultural Production Markets for 2008–2012 (2007) aims to promote sustainable development of rural areas and improve the competitiveness of agricultural production through technological modernization and the rational use of land and other resources. This programme is complemented by State subsidies to stimulate the efficient production of meat and milk. |

| <i>Major policies and measures</i> | <i>Examples/comments</i> |
|------------------------------------|---|
| <i>Forestry</i> | <p>The State programme on Development of Agriculture and Agricultural Production Markets for 2013–2020 (2012, under preparation) includes climate change mitigation measures related to land melioration and improvement in land production and technological modernization in the sector.</p> <p>The Forest Policy (2012) is aimed at the conservation and expansion of forest resources, the promotion of development of the forestry sector and ensuring sustainable access to forest resources. The policy has five priority areas: conservation and expansion of forests; development of a forest management system; preparation of an effective forest policy; creation of favourable conditions for local populations; and ensuring a leadership role by the Russian Federation in the global forestry resources market.</p> |
| <i>Waste</i> | <p>Policies in the waste sector include the introduction of technical specifications for landfills, the promotion of landfill gas collection and its use for energy purposes, and waste minimization. An action plan to ban certain waste fractions from landfilling has been prepared.</p> |

1. Policy framework and cross-sectoral measures

38. The key framework policy on climate change is the CDRF (2009) adopted by the President of the Russian Federation. It is the overarching climate change policy document that sets objectives in three priority areas related to scientific and research work in the area of climate change, adaptation and mitigation, and participation in international initiatives. The doctrine sets the foundation of the current climate policy of the Russian Federation and contributes to raising awareness on climate change at the highest political level and outlines implementation activities in all key sectors. It represents a framework cross-cutting strategy that is intended to be supported by a number of sectoral policies and programmes.

39. In 2011, the CAP for Implementation of the CDRF by 2020 was adopted, which translated the CDRF into practical implementation steps in relation to its priority areas. Also, the CAP defines the roles and responsibilities of the ministries and agencies involved in its implementation, contains provisions for cooperation among them and includes relevant arrangements for monitoring of its implementation.

40. During the review, responding to the ERT request, the Russian Federation provided further information on the specific measures to be taken under the CAP, linkages between different policies and programmes, information on implementing agencies, allocated budget and estimated effects as well as information on the progress achieved so far. Implemented measures so far are limited to the assessment of risks and damages related to climate change as well as the research work.

41. The ERT noted that, according to the NC5, policies to promote energy efficiency and renewable energy sources (RES) are the key ones in the overall climate policy framework because of their large mitigation potential and their potential to deliver multiple co-benefits to economy and society, such as a reduction in air pollution or a decrease in the energy consumption and related energy bills of households, public buildings and industry. The legislative framework for such policies was put in place in recent years and initial steps towards their implementation have been made.

42. The NC5 provides information on PaMs at the national level. Little information was provided on policies implemented at the regional and local levels. During the review, the Party explained that the distribution of competencies across different administrative levels (national, regional and local) poses challenges with regard to the monitoring and assessment of the effects of PaMs.

2. Policies and measures in the energy sector

43. Between 1990 and 2010, GHG emissions from the energy sector decreased by 33.0 per cent. Within the energy sector, emissions from almost all sub-sectors show significant decreases between 1990 and 2010, with the category “other sectors” (including residential and commercial sectors) showing the highest decrease (by 70.2 per cent) and the “fugitive emissions” category showing the lowest decrease (by 6.9 per cent).

44. The emission decrease mainly occurred between 1990 and 1998; since 1998, emissions have increased. However, since 1998 emissions grew at a lower rate than the rate of economic growth, owing to the structural changes of the Russian economy, moving towards increasing the share of services relative to energy-intensive industries. Within the sector, emissions have been reduced significantly between 1990 and 1998, by 39.4 per cent, and since 1998 the sectoral emissions have increased by 8.8 per cent. The emission reduction of the 1990s was driven by the reductions in manufacturing industries and construction, transport and the energy industry, with the emission reductions being 59.1 per cent, 43.4 per cent and 26.7 per cent, respectively. In 2010, within the energy sector, 41.1 per cent of the emissions were from energy industries (electricity and heat production), followed by 17.4 per cent from oil and natural gas, 9.4 per cent from transport and 8.1 per cent from the category “other”.

45. **Energy supply.** The Russian Federation is one of the leading countries in the world in terms of energy production and the pathway of its energy sector development has an impact not only on Russia’s own economic development but also on global energy security and environmental sustainability. More specifically, the Russian Federation is the world’s largest oil and gas producer and is one of the largest coal producers. As one of the largest energy exporters, the Russian Federation continues to supply primarily the European energy markets, but it is diversifying its energy export flows and is increasingly shifting to also supplying the Asian markets. The leading role of the Russian Federation in the global energy markets explains the expectations that the energy sector will continue to dominate in the Russian economy, despite the attempts to diversify the economy and develop further the service sectors. The growth of the energy sector was particularly pronounced in the 2000s, and the expectations are that the growth rate by 2030 will be more modest than that of the 2000s.

46. Primary energy production in 2009 amounted to 1,182 million tones of oil equivalent, including 41.8 per cent from oil, 39.1 per cent from natural gas, 13.0 per cent from coal and peat, and 5.4 per cent from other sources, including nuclear power and hydropower.

47. The Russian Energy Strategy 2030 (2009) is the overarching strategic policy for energy sector development. According to the target indicators contained in the strategy, the Russian Federation plans to change its energy supply mix, between 2005 and 2030, with a view to decreasing the share of natural gas from 52 per cent to 45–47 per cent, increasing the share of coal from 18 per cent to 19 per cent, increasing the share of oil and oil condensate from 19 per cent to 22 per cent and increasing the share of other sources from 11 per cent to 12–14 per cent. The Energy Strategy 2030 will also result in changes in the energy intensity of the GDP, which is envisaged to improve by 44 per cent between 2005 and 2030 (see para. 57 below). The strategy will be implemented in three phases. The first phase aims to eliminate the impact of the economic crisis of the late 2010s, the second phase is focused on improving energy efficiency and the third phase is aimed at a transition to the use of alternative sources of energy. The previous Energy Strategy 2020 (2003) prioritized energy market liberalization, improvements in energy sector competitiveness in domestic and export markets and attraction of capital investment to the sector.

48. The Russian Federation adopted the General Scheme of Gas Sector Development by 2030 (2011), the State programme on Energy Saving and Energy Efficiency by 2020 (2010) and several programmes addressing technological modernization of various gas production and distribution enterprises by 2010 and emission reduction activities by 2012. Many of the Russian Federation's gas fields are in decline and depend on large-scale investment and subsidies from the government, which has introduced market-based gas and electricity pricing for the industrial sector. Such subsidies help to reduce the inefficiency still persisting in the sector, prevent potential revenue losses and increase investors' confidence in new capital investment in the sector.

49. During the review, the ERT learned that according to the General Scheme of Allocation of Electric Energy Facilities by 2020 (2008), 44.6 GW of new nuclear capacity will be introduced by 2030, including the finalization of five new nuclear power plants and the identification of 12 new locations for new nuclear power plants. This is expected to increase the share of nuclear energy generation from 16 per cent of the total electricity generation in 2005 to 20 per cent in 2030. In addition, during the review the ERT learned that the Russian Federation has plans to increase its hydropower production from large hydropower plants, which accounted for 17.6 per cent of total electricity generation in 2010.

50. The Russian Federation has successfully expanded the use of combined heat and power (CHP) plants to about 30 per cent of total power generation (installed capacity of 63,100 MW), as measured in 2006. The Russian Federation has a long tradition of heat supply to energy end-use sectors through district heating networks linked to CHP plants. This energy supply model has been extended throughout the country and made the Russian Federation a major user of CHP. Given projected high energy demand growth, CHP has a clear opportunity to expand even more widely.

51. The Party aims at creating a more energy-efficient economy and at reducing the energy intensity of the GDP, as currently the Russian Federation has one of the most energy-intensive economies worldwide. Although energy intensity has been declining since the late 1990s, it was still around 72 per cent above the global average in 2008, according to international sources. However, while the climatic conditions, the size of the country and its economic conditions contribute to the energy intensity, the Russian Federation has enormous potential for energy saving. According to information provided during the review, the Russian Federation can save up to 45 per cent of its total primary energy consumption in 2005, mainly in the end-use sectors, such as the residential, electricity generation and manufacturing sectors.

52. In its NC5, the Russian Federation reported on several programmes for the reduction of energy consumption and fugitive emissions envisaged by Gazprom, which controls 84 per cent of the national natural gas production and 17 per cent of the world's natural gas production. Gazprom's measures include an increased use of petroleum gas for energy production, an energy conservation programme and a programme to cut GHG emissions through the development of a gas filling network and of a machine fleet operating on natural gas. Major emission reductions are expected to come from measures implemented in the gas transmission networks, which generally target fugitive emissions along the gas process chain. In its NC5, the Russian Federation reported on the impact of Gazprom's measures on energy efficiency in gas transportation networks for 2005–2008, which accounted for 48.2 Mt CO₂ eq for the period.

53. **Renewable energy sources.** The Russian Federation is one of the leading countries in the world in terms of RES potential, but this potential remains largely untapped, in particular the high potential for hydropower electricity generation and biomass use for energy. To increase the use of renewables, the Russian Federation adopted the decree on the Main Directions of the State Policy in Improving Energy Efficiency of the Electric

Power Industry Based on Renewable Energy Sources until 2020 (2009),¹⁴ which contains provisions for the increased use of electricity from RES and envisages an increase in the share of RES, not including large hydropower plants with capacities above 25 MW, in the production and consumption of electricity, from 1.5 per cent in 2010 to 2.5 per cent in 2015 and 4.5 per cent in 2020 (see table 3 above).

54. During the review, it was further explained to the ERT that within the new State programme on Energy Efficiency and Energy Sector Development by 2020 (2012, under preparation) a draft subprogramme on RES has been submitted to the government, but funding has not yet been secured (see para. 61 below). Once the programme is approved, it is envisaged that the government will subsidize the promotion of RES through the regional governments and national banks. Also, tax incentives, such as exemption from property tax, and tariff regulation are envisaged to promote further RES development. Specific tariffs are planned to be offered for small RES operators and local energy networks to set the incentives for a higher RES use.

55. The ERT noted that, in general, in promoting electricity generation from RES, priority is given to hydropower, whereas other sources with significant renewable potentials, such as wind power, photovoltaics or biomass, largely remain untapped by the current policy framework.

56. **Energy efficiency.** The Russian Federation has significant opportunities to improve energy efficiency and reduce related emissions. The promotion of energy efficiency, which was long overlooked owing to a lack of economic incentives to save abundant and cheap energy resources, was set as a top priority for energy sector development.

57. The legal framework setting the provisions to promote energy efficiency was introduced in the 2000s. The progress in implementation, however, was modest, owing to the low prices for energy, which provided few incentives for implementing energy saving projects. The decree on Certain Measures to Increase Energy and Ecological Efficiency of the Russian Economy (2008) sets a target to reduce the energy intensity of the GDP by 40 per cent between 2007 and 2020 by implementing measures in six areas, such as the installation of meters and associated expected energy savings, the replacement of incandescent light bulbs with energy-efficient lighting, the upgrading of power distribution networks in local municipal districts and small towns, the installation of energy-efficient appliances in public institutions such as schools, polyclinics and hospitals, the replacement of inefficient heat supply technologies with more efficient technologies and the promotion of innovative technologies, such as smart grids or the use of biomass.

58. The decree on Certain Measures to Increase Energy and Ecological Efficiency of the Russian Economy (2008)¹⁵ and the federal law on Energy Saving and Energy Efficiency of the Russian Federation (2009)¹⁶ outline the government's activities in promoting energy efficiency. In 2010, the State programme on Energy Saving and Energy Efficiency by 2020 was adopted. The programme facilitates the implementation of the Federal law by providing support for specific energy saving measures.

59. However, the ERT noted that the operational basis to support this legislation is still under development and a lot needs to be done to enhance the enabling environment in the area of legal, organizational and human capacity. According to the assessment, the full use of the energy-efficiency potential would cost about USD 320 billion to the economy and result in annual savings of about USD 80 billion, with a payback period of four years. The

¹⁴ Order of the Government of the Russian Federation No. 1-r of 8 January 2009, on renewable energy.

¹⁵ Decree No. 889 of 4 June 2008 on certain measures to increase the energy and ecological efficiency of the Russian economy.

¹⁶ Federal Law 261-FZ of 23 November 2009 on energy saving and energy efficiency and on the introduction of amendments to individual legislative acts of the Russian Federation.

potential additional benefits and cost savings for the investors and energy end users are much higher than this amount. The key barriers to energy-efficiency improvements in the Russian Federation are the declarative nature of the current federal and regional legislation, lack of information and access to long-term financing, price controls and relatively low energy prices that do not make investments in energy-efficiency measures economically viable.

60. According to the information provided during the review, the government estimates that the energy intensity of GDP will decrease by 26.5 per cent by 2020 without any direct government involvement as a result of the structural changes, including the development of non-energy sectors, the deployment of new technologies and reduction in energy consumption due to the increased tariffs. This is consistent with the Russian Federation's energy intensity improvement in the past given that it has decreased by 3.4 per cent per year on average since 1990 driven chiefly by a shift towards less energy-intensive industries. The remaining 13.5 per cent towards the 40 per cent target (see para. 57 above) are expected to be achieved through the PaMs aimed at energy efficiency in all sectors of the economy.

61. During the review, the ERT was provided with further information on the implementation of the energy efficiency policy in the Russian Federation, in particular on the State programme on Energy Efficiency and Energy Sector Development by 2020 under development in 2012. The programme is designed to ensure a 13.5 per cent reduction in the energy intensity (measured by GHG emissions per GDP), which is additional to the 26.5 per cent reduction expected from other measures (see para. 57 above). The programme comprises specific measures by sector and information on the estimation of effects, the funding and provisions for the monitoring of effects. Different ministries are responsible for the implementation of the programme. The programme will have a number of subprogrammes, including on energy efficiency and the development of the renewables sector. The estimated mitigation effect of the programme is 620 Tg CO₂ eq cumulative for 2011–2015 and 2,200 Tg CO₂ eq cumulative for 2011–2020.

62. A number of studies demonstrate that the largest energy saving and emission reduction opportunities lie in the end-use energy subsectors and that energy-efficiency measures could bring about economic and social benefits, reduced energy consumption and emission reduction benefits over the short to medium term. About a half of energy-efficiency measures are highly financially attractive, even with the current relatively low energy price level.

63. **Residential and commercial sectors.** Energy use in buildings is responsible for about one third of energy use in the country. In terms of energy use for heating, according to information provided during the review, the energy saving potential in residential buildings is estimated at about 49 per cent of total primary energy consumption in 2005, which could be achieved through highly economically viable measures. Two thirds of the potential energy savings can be achieved through the reduction of energy use for heating and hot water supply.

64. In terms of both electricity and heat consumption, in the NC5 the Russian Federation reported on the activities in the residential buildings sector planned for implementation under the decree on Certain Measures to Increase Energy and Ecological Efficiency of the Russian Economy (2008). The energy-efficiency measures envisaged relate to the installation of metering appliances, energy-efficient appliances and efficient lighting in the buildings sector. However, currently there is only limited information on the results of these measures in terms of achieved energy saving and emission reductions.

65. The most significant barriers to energy efficiency in the residential buildings sector relate to the lack of building standards, building ownership rights, poor awareness of the

options and opportunities, and difficulties in the implementation of energy efficiency in common use residential areas. Another barrier to successful policy implementation relates to the limited institutional capacity to estimate, implement, monitor and measure the potential and real energy savings from the economic and financial points of view. To address these barriers, the government puts effort in development of the supporting legislation, liberalization of the energy market, support to investments and training and retraining programmes for energy sector specialists. It also encourages public awareness campaigns and the widespread use of metering in order to influence consumer behaviour.

66. Energy-efficiency improvements are also much needed in the public buildings sector, where the energy saving potential is 42 per cent of the total primary energy consumption in 2005. The existing legislation does not yet address the existing barriers to energy efficiency in relation to broader issues of public procurement regulations and budgeting rules, which do not allow reallocation of financial savings and the signing of long-term energy performance contracts based on lifelong energy costs.

67. **Transport sector.** The transport sector accounted for 10.1 per cent of total GHG emissions in 2010 and this share is still rather modest compared to many developed countries. Emissions from this sector have decreased by 34.8 per cent since 1990. In the NC5, the Russian Federation estimates a reduction of energy consumption in transport by 30 per cent, but there was no information provided on the time frame and methods used to obtain these estimates. Within the sector, road transport is the fastest growing subsector in terms of energy consumption driven by the growing number of private cars at the expense of public transport. Emissions from road transport will continue to grow in the future as the private car ownership is still far below the levels in most developed countries in spite of the expected continuous decrease of emissions from public transport.

68. The Transport Strategy of the Russian Federation until 2030 (2008) is the overarching policy document for the transport sector. It includes several objectives, such as promoting the use of environmentally-friendly fuels, reduction of energy consumption in transport to the level of advanced countries, training of personnel in the transport industry and the optimization of transport infrastructure. The earlier Programme on Modernization of the Russian Transport System for 2002–2012 (2001) included different subprogrammes on rail and road transport as well as on aviation and shipping. It also included several measures that aimed at increasing the energy efficiency of the transport system, which had the potential to reduce energy consumption by 41 per cent of the total primary energy consumption in 2005. It remained unclear to the ERT how much of this potential was utilized. Within the sector, road transport followed by gas transport has the largest potential for energy-efficiency improvements.

69. In the NC5, there is no information provided on how the Russian Federation is working on the mitigation of emissions from international shipping and aviation (bunker fuels) by working to implement the decisions of ICAO and IMO. During the review, further information was provided on the steps taken to promote and implement decisions by ICAO and IMO. With regard to civil aviation, an action plan is currently under preparation for implementing 2010 ICAO resolution A19–37. The plan is to be adopted in 2013 and measures under consideration within the plan include improvement of the energy efficiency of aircraft by 2 per cent annually, renewal of the aircraft fleet and infrastructural and organizational measures (e.g. optimization of flight routes). The plan envisages to keep aviation emissions at the level of 1998. On cooperation with IMO, the Russian Federation is involved in the implementation of measures targeting the efficiency of engines and operational measures to increase the fuel efficiency of vessels.

70. **Industrial sector.** In its NC5, the Russian Federation has not reported information on PaMs in the industrial sector. During the review, the Party explained that, at the moment, there are no specific PaMs planned in the industrial sector.

3. Policies and measures in other sectors

71. Between 1990 and 2010, GHG emissions from industrial processes (including solvent and other product use) and agriculture decreased, by 32.8 per cent and 56.9 per cent, respectively, mainly driven by the reduction in industrial production and a significant decrease in the cattle and poultry populations and agricultural lands area. Emissions from waste increased by 23.9 per cent over the same period, owing to the increase in living standards and following the increase in household waste generation and the increase in industrial waste from food, pulp and paper and other industries.

72. **Industrial processes.** Between 1990 and 2010, GHG emissions from the industrial processes sector decreased by 32.9 per cent, mainly driven by the decline in the economic activity after 1990 and the restructuring of the economy, in particular the significant reductions were in the iron and steel sector as well as in the chemical industry.

73. The Russian Federation has reported in its NC5 very limited information on PaMs implemented in the industrial processes sector, except for PaMs implemented by RUSAL, which is the world's largest aluminium producer, responsible for 50 per cent of aluminium production in the Russian Federation. RUSAL has pledged a voluntary goal to reduce GHG emissions from aluminium production by 50 per cent by 2015 in comparison with 1990, which had almost been achieved in 2011. Measures include a replacement of Söderberg technology by pre-baked technology, as well as the improvement of Söderberg technology when replacement is too expensive. The impact of some of the measures, such as the implementation of the modernization programme with automated alumina feeding, lead to about a 40 per cent perfluorocarbons (PFC) emission reduction. Several JI projects have been initiated to reduce PFC emissions. Proceeds from JI projects are used for environmental improvements in the aluminium plants. Also, RUSAL envisages an increased use of secondary aluminium and intends to strengthen GHG monitoring at its production plants and plans to compile GHG inventories for all the company's facilities.

74. **Agriculture.** Between 1990 and 2010, GHG emissions from the agriculture sector decreased by 56.9 per cent, mainly driven by a reduction in the agricultural output, including a reduction in the animal and poultry population (by 60.3 per cent over the reporting period), a reduction of agricultural lands under cultivation and reduced use of fertilizers. As a result, the share of the sector in total GHG emissions decreased from 9.5 per cent in 1990 to 6.7 per cent in 2010. Within the sector, most of the emissions (53.8 per cent in 2010) come from agricultural soils.

75. In its NC5, the Russian Federation has not reported on PaMs in the agriculture sector. However, during the review, the Russian Federation provided some information on the existing short- and long-term programmes in agriculture, which include, inter alia, policy elements relating to climate change mitigation. The State programme on Development of Agriculture and Agricultural Production Markets for 2008–2012 (2008) aims at promoting the sustainable development of rural areas and improving the competitiveness of Russian agricultural production through technological modernization and the rational use of land and other resources. This programme is complemented by the subsidies encouraging the efficient production of meat and milk.

76. During the review, the Russian Federation further informed the ERT that a new State programme on Development of Agriculture and Agricultural Production Markets for 2013–2020 is under preparation. In this new programme, elements relating to climate change mitigation are limited to land amelioration and improvement in land productivity as well as technical modernization. In the CAP for Implementation of the CDRF by 2020 (2011), it is planned to develop adaptation programmes for agriculture.

77. **LULUCF.** The LULUCF sector was a net sink of 652.60 Tg CO₂ in the Russian Federation in 2010; net GHG removals have increased by 732.67 Tg CO₂ since 1990. The

Party ranks the first in the world in terms of its forest resources, with a forested area of 1,183 million ha. Forest management constitutes the most important part in the LULUCF sector, with only limited land-use changes in other areas. Forest fires pose a significant challenge with regard to climate change. Severe fires were observed in 2009 and 2010. Forest policies impacting climate mitigation and adaptation relate to the prevention and fighting of forest fires, reforestation and pest control. Also, the forest policy envisages decreasing the harvesting rate of forests.

78. During the review, the ERT was informed that the Russian Federation adopted in 2012 a new Forest Policy that is aimed at conserving and expanding forest resources, promoting the development of the forestry sector and ensuring sustainable access to forest resources. The policy is based on the principles of conservation of forests as an important natural habitat for biodiversity and climate stabilizing systems and the rational sustainable continuous use of forest resources. The policy has five priority areas: conservation of forests; development of a forest management system; preparation of an effective forest policy; creation of favourable conditions for the local population; and ensuring a leadership role by the Russian Federation in the global forest resources market.

79. **Waste management.** Between 1990 and 2010, GHG emissions from the waste sector increased by 23.9 per cent. There has been a steady increase of CH₄ emissions from landfills since 1990, owing to an increase of solid waste production by households (and partly by industry). However, the level of CH₄ emissions from wastewater is not stable, owing to the instability of industrial production and the corresponding production of industrial wastewater.

80. In the NC5, no information is provided on the PaMs targeting emissions from the waste sector. During the review, the Party provided additional information on PaMs that suggests that the Russian Federation is increasingly moving towards greater harmonization of its policies on waste management with those of the European Union countries. In particular, a hierarchy in policy objectives is established, ranging from waste prevention, minimization and recycling, to composting and incineration, and landfilling. So far, no overarching policy or strategy on waste management has been adopted in the Russian Federation.

81. Technical specifications for landfills were prepared at the federal level, while actual implementation of these specifications is within the competences of the regions. A federal programme is under preparation, which envisages, inter alia, promoting landfill gas collection and use for energy purposes. Also, the emphasis is given to waste minimization by introducing economic incentives or employing the polluter-pays principle. For 2017, a ban on certain waste fractions (e.g. plastics, bottles, tyres, paper or organic waste) from landfilling is envisaged and a corresponding action plan has been prepared. To date, landfill gas collection is only performed at one landfill, although it is economically feasible to extend this practice to further large landfills. A database is expected to improve the information available on landfills.

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

82. In its NC5, Russian Federation has not reported information on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts, on other Parties, especially developing country Parties. During the review, the Russian Federation provided some relevant missing information. The information was provided to address the reporting under Article 2, paragraph 3, and Article 3, paragraph 14, of the Kyoto Protocol (see para. 140

below). The ERT therefore recommends that the Russian Federation report the missing information in its next national communication.

83. The information provided underlines the efforts on the gradual reduction or elimination of market distortions, the provision of fiscal incentives and the removal of subsidies that contradict the objectives of the Convention in all sectors of GHG emissions. Among such measures, the Russian Federation has reported on the use of market-based instruments and enhancement of natural gas exports to developing countries to replace local fuels with a high carbon content (e.g. coal). Further information on how the Russian Federation strives to implement its commitments under Article 3, paragraph 1, in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties, as reported in the 2010 and 2011 annual submissions, is presented in chapter II.I of this report.

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

84. In its NC5, the Russian Federation has provided information on its projections for all GHG emissions for three scenarios, namely the “moderate” and “innovation” scenarios, which belong to the group of the “with measures” scenarios as defined by the UNFCCC reporting guidelines, and the “with additional measures” scenario, which does not correspond strictly to the scenario definition by the UNFCCC reporting guidelines for the same scenario. However, the information reported on projections is limited to description of scenario results only (see para. 87 below). During the review, the Russian Federation presented the updated projections, which take into account the impact of the economic crisis in 2008–2009.

85. The NC5 and the updated projections covered in this report were prepared by the Centre for Energy Efficiency (CENef). During the review, the ERT was informed that the Ministry of Economic Development assumed responsibility for the preparation of emission projections as of 2012 in accordance with the CAP of the CDRF with a possible use of a new model, RU TIMES, that has been developed for the preparation of the long-term emission projections in the Russian Federation.

1. Projections overview, methodology and key assumptions

86. The GHG emission projections reported by the Russian Federation in the NC5 include projections for 2010, 2015, 2020 and 2030 relative to actual inventory data for only two years, namely 2005 and 2007. Projections are presented on a gas-by-gas basis for the energy sector and for all sectors taken together for CO₂, CH₄ and N₂O. Projections of PFCs, hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF₆) are presented in aggregate. Projections are also provided in an aggregated format for a national total, using global warming potential values.

87. The ERT noted that the qualitative information on projections by sector was limited to the energy sector only and, sector categories used in the projections section of the Party’s NC5 are not fully consistent with those used in the PaMs section (energy, transport, and industry) as required by the UNFCCC reporting guidelines. During the review, the Russian Federation provided most of the missing information. The ERT encourages the Russian Federation to follow, in its next national communication, a consistent structure in relation to the sector categories used in both the PaMs and the projections section of its next national communication.

88. The ERT further noted that the Russian Federation did not report in the NC5 the following elements required by the UNFCCC reporting guidelines: emission projections

related to fuel sold to ships and aircraft engaged in international transport reported separately from the national totals. The projections of emissions from international aviation were presented together with the projections of emissions from domestic flights. Information on projections of emissions from ships engaged in international transport was not available. The ERT reiterates the recommendation made in the previous review report that the Russian Federation exclude the emission projections related to fuel sold to ships and aircraft engaged in international transport from the totals, and report, to the extent possible, separate projections of emissions related to fuel sold to ships and aircraft engaged in international transport in its next national communication.

89. On scenario definition, both the “moderate” and the “innovation” scenarios belong to the group of the “with measures” scenarios as defined by the UNFCCC reporting guidelines, but the “innovation” scenario assumes a higher rate of implementation of currently implemented policies to promote energy efficiency and innovation, by providing the necessary price incentives and further structural changes in economy, compared to the more conservative assumptions embedded in the “moderate” scenario. Both the “moderate” and the “innovation” scenarios included the effects of some of the implemented and adopted PaMs that were presented in the section of the NC5 on PaMs, but not all of them. The “with additional measures” scenario includes the effect of market and non-market policies, including policies that may attach price to carbon that could be implemented in the future. There were no such policies planned in the Russian Federation at the time of the preparation of projections and in this sense the “with additional measures” scenario does not correspond to the scenario definition by the UNFCCC reporting guidelines. In addition, the “without measures” scenario was not provided. The ERT recommends that the Russian Federation follow, in its next national communication, the UNFCCC reporting guidelines and report at least the “with measures” projection, encompassing currently implemented and adopted PaMs in its next national communication.

90. The ERT noted that the information on the methodology used for projections reported in the NC5 was limited to the LULUCF sector only. No discussion was provided on the differences with the NC4 as required by the UNFCCC reporting guidelines. The relevant information on factors and activities for each sector for the years 1990 to 2020 was also not presented. The ERT encourages the Russian Federation to report, in its next national communication, the main differences in the methodology used for projections reported in the current and earlier national communications.

91. For preparing the projections for LULUCF, the Carbon Budget Model for the Canadian Forest Service (CBM-CFS3), which belongs to a class of the “forest transition” models, was used to calculate the forest carbon stock and stock changes in the past and for the future. The CBM-CFS3 is a modeling framework to simulate the dynamics of all forest carbon stocks required under the Kyoto Protocol (above ground biomass, below ground biomass, litter, dead wood and soil organic carbon). During the review, the ERT was informed that an energy balance model (ENERGYBAL-GEM-250) was used for preparing the energy sector projections included in the NC5. This is a simulation model based on the energy balance concept, which simulates the energy system, energy production, transformation and energy end-use. This model is used by CENef to prepare projections for the energy sector that account for around 80 per cent of the total emissions for both, the NC5 projections and the updated projections.

92. The Russian Federation prepared the projections of the total emissions using the same energy sector growth rate to define projections of total emissions for the three scenarios. The ERT noted that assuming identical growth rates of emissions for both the energy and non-energy sectors is not fully supported by historical emission trends. The ERT encourages the Russian Federation in its next national communication to increase the transparency of its reporting by including sufficient information on the models and

methodology used for projections and to report the differences between the projections provided in the NC5 and those in previous national communications.

93. The NC5 contains information on the assumptions used for projections, such as GDP and population growth, tax levels and international fuel prices although to a limited extent and it does not contain information on the sensitivity analysis of projections to key assumptions since such analysis was not conducted. The NC5 provides historical and projected levels of several energy indicators at the macroeconomic level, such as GDP, energy intensity, energy prices, and natural gas prices, such as the GDP growth of 6.4 per cent in 2011–2015 and 6.3 per cent in 2016–2020, and the natural gas prices growth of 356 per cent in 2011–2015 and 121 per cent in 2016–2020. The ERT encourages the Russian Federation to improve in its next national communication the transparency of its reporting on projections by including more detailed information on the models used, on key assumptions and parameter values and by presenting a sensitivity analysis of its modelling results.

2. Results of projections

94. Total GHG emissions excluding LULUCF are projected to be around 2,000 Tg CO₂ eq. in 2010 or 39.8 per cent below the base year level under all three scenarios, the “moderate”, “innovation” and “with additional measures”. This suggests that the Russian Federation is expected to exceed by far, by domestic efforts alone, its target under the Kyoto Protocol, which is to keep the level of emissions during the first commitment period (2008–2012) at the level of the base year. Key results of the Party’s GHG emission projections are provided in table 4 and the emission trends illustrated in the figure below.

Table 4
Summary of greenhouse gas emission projections for the Russian Federation

| | <i>Greenhouse gas emissions (Tg CO₂ eq per year)</i> | <i>Changes in relation to base year level (%)</i> | <i>Changes in relation to 1990 level (%)</i> |
|---|---|---|--|
| Inventory data 1990 ^a | 3 348.69 | 0.8 | NA |
| Inventory data 2010 ^a | 2 201.89 | –33.7 | –34.2 |
| Kyoto Protocol base year ^b | 3 323.42 | NA | –0.8 |
| Kyoto Protocol target ^b | 3 323.42 | 0 | –0.8 |
| <i>NC5 projections:</i> | | | |
| “Moderate” projections for 2010 | 2 000.00 | –39.8 | –40.6 |
| “Innovation” projections for 2010 | 2 000.00 | –39.8 | –40.6 |
| “With additional measures” projections for 2010 | 2 000.00 | –39.8 | –40.6 |
| “Moderate” projection for 2020 | 2 750.00 | –17.3 | –21.8 |
| “Innovation” projection for 2020 | 2 450.00 | –26.3 | –36.7 |
| “With additional measures” projections for 2020 | 2 400.00 | –27.8 | –39.5 |
| <i>Updated projections:</i> | | | |
| “Moderate” projection for 2020 | 2 300.00 | –30.8 | –31.3 |
| “Innovation” projection for 2020 | 1 900.00 | –42.8 | –40.3 |

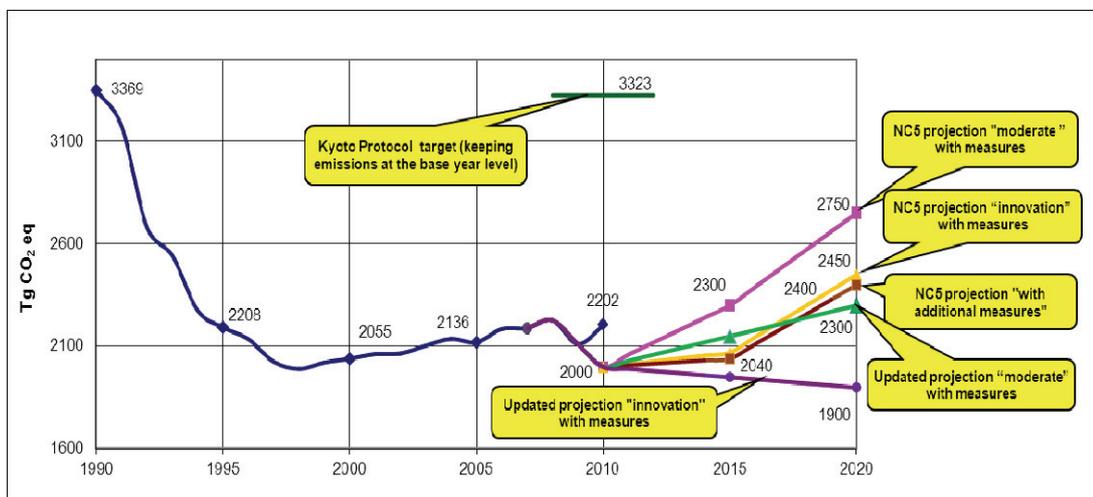
^a *Data source:* The Russian Federation’s 2012 greenhouse gas inventory submission; the emissions are without land use, land-use change and forestry.

^b *Data source:* Based on the initial review report contained in document FCCC/IRR/2007/RUS.

Abbreviation: NA = not applicable.

95. In addition, the Russian Federation has elected forest management under Article 3, paragraph 4, and, overall, activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol are expected to result in a net removal average of 280 Tg CO₂ eq annually, which could be issued as removal units and could further contribute to the overachievement of the Kyoto Protocol target.

Greenhouse gas emission projections



Sources: (1) Data for 1990–2010: the Russian Federation’s 2012 greenhouse gas inventory submission; the emissions are without land use, land-use change and forestry; (2) Data for 2009–2020: the Russian Federation’s NC5; the emissions are without land use, land-use change and forestry.

Abbreviation: NC5 = fifth national communication.

96. In the mid-term, by 2020, according to the NC5 projections, total GHG emissions are expected to continue to grow. From 2010 to 2020, GHG emissions are expected to be, in the scenario with the highest growth, i.e. “moderate” scenario, by 17.3 per cent below the base year level of emissions. For the “moderate” scenario, total emissions without LULUCF are expected to amount to 2,000 Tg CO₂ eq in 2010 and 2,750 Tg CO₂ eq in 2020, which represents a 17.3 per cent decrease in relation to the base year level. For the “innovation” scenario, total emissions without LULUCF are expected to amount to 2,000 Tg CO₂ eq in 2010 and 2,450 Tg CO₂ eq in 2020, which represents a 26.3 per cent decrease in relation to the base year level. For the “with additional measures” scenario, total emissions without LULUCF are expected to amount to 2,000 Tg CO₂ eq in 2010 and 2 400 Tg CO₂ eq in 2020, which represents a 27.8 per cent decrease in relation to the base year level.

97. The results of projections set the context for consideration of the conditional national emission reduction target to reach 15–25 per cent emission reduction relative to 1990 level of emissions by 2020 (see para. 37 above). The comparison of the target with the projections from the NC5 suggests that the Russian Federation is expected to meet by far this target with the existing measures in place and under the assumption of relatively high GDP growth between 2010 and 2020.

98. In terms of projections for individual gases, emissions are expected to grow between 2010 and 2020 for all gases and for all scenarios. In particular, for the “moderate” scenario the expected emissions growth is 40.6 per cent for CO₂ emissions, 27.3 per cent for CH₄ emissions, 30.0 per cent for N₂O emissions and 66.7 per cent for F-gases for this period.

99. On the assessment of the overall emission projections, the ERT acknowledged that the reported results do not show continuation with the trend in the past 10 years (e.g.

between 2000 and 2010). Even though the GDP growth rate for 2011–2020 was assumed at around 6.3 per cent annually, which is much lower than the observed GDP growth for the period 2000–2010, around 8 per cent annually, emissions are expected to grow much faster by 2020 than the growth observed in 2000–2010 for all scenarios that assume a different degree of energy efficiency improvement. This suggests that the emissions in 2020 presented in the NC5 could be overestimated.

100. This is confirmed by the most recent projections presented by CENef to the ERT during the review. In these projections, the GDP growth rate between 2010 and 2020 is revised downwards to around 4 per cent. Assumptions on the energy-efficiency improvements and maintaining the energy supply mix broadly constant remained the same as in the assumptions taken in the NC5 projections. Results from these updated projections for the scenario “InnovativeMinEcon-crisis2 (estimated as of May 2009)”, which corresponds to the “moderate” scenario from the NC5, show that the total emissions without LULUCF are expected to amount to less than 2,300 Tg CO₂ eq in 2020, which represents a 30.8 per cent decrease in relation to base year level. Results from these updated projections for the scenario “InertialMinEcon-crisis2 (estimated as of May 2009)”, which corresponds to the “innovation” scenario from the NC5, show that the total emissions without LULUCF are expected to amount to less than 1,900 Tg CO₂ eq in 2020, which represents a 42.8 per cent decrease in relation to the base year level.

101. The updated scenarios confirm the assessment made based on the NC5 projections that the Russian Federation is expected to meet by far the Kyoto Protocol target and the national conditional target by 2020 with the existing measures in place under a revised assumption of a lower GDP growth between 2010 and 2020 compared to the relevant NC5 assumption.

3. Total effect of policies and measures

102. The ERT noted that the Russian Federation did not provide an estimate of the total effect of PaMs in accordance with the “with measures” scenario definition, compared with a situation without such PaMs, presented in terms of GHG emissions avoided or sequestered, by gas (on a CO₂ eq basis), for 2010, 2015 and 2020. Relevant information was provided to the ERT during the review, as highlighted in paragraph 94 above. The ERT, therefore, strongly recommends that the Russian Federation provide complete information on the estimates of the total effect of PaMs in its next national communication.

103. During the review, the Russian Federation presented the State programme on Energy Saving and Energy Efficiency by 2020 (2010). According to this programme, the total estimated effect of adopted and implemented PaMs to promote energy efficiency is expected to gradually increase from 65.3 Tg CO₂ eq in 2011 to 408.6 Tg CO₂ eq in 2020. According to the information reported on the programme, the PaMs implemented in the energy sector are expected to deliver the largest emission reductions, followed by the effect of PaMs implemented in the transport sector. Table 5 provides an overview of the total effect of PaMs provided by the Russian Federation during the review, including for the energy and transport sectors from the programme, and for LULUCF from the NC5.

104. These estimates confirm that the Russian Federation has a huge potential for energy and emission saving that when fully utilized can bring many other benefits, such as improvement in air quality and savings for the energy bills of households. Given that the energy sector accounts for the bulk of the total emissions, around 82.3 per cent in 2010, and also given that the bulk of the potential for emission saving is in the energy sector, the estimates provided for the programme are likely to be very close to the estimates of the total effect of PaMs.

Table 5
Projected effects of planned, implemented and adopted policies and measures in 2010 and 2020

| Sector | <i>Effect of implemented and adopted measures (Tg CO₂ eq)</i> | <i>Relative value (% of 1990 emissions)</i> | <i>Effect of planned measures (Tg CO₂ eq)</i> | <i>Relative value (% of 1990 emissions)</i> | <i>Effect of implemented and adopted measures (Tg CO₂ eq)</i> | <i>Relative value (% of 1990 emissions)</i> | <i>Effect of planned measures (Tg CO₂ eq)</i> | <i>Relative value (% of 1990 emissions)</i> |
|---|--|---|--|---|--|---|--|---|
| | 2010 ^c | | | | 2020 | | | |
| Energy (without CO ₂ from transport) | 64.2 | 2.7 | NA | NA | 397.08 | 16.6 | NA | NA |
| Transport – CO ₂ | 1.07 | 0.3 | NA | NA | 11.52 | 3.4 | NA | NA |
| Industrial processes | 0.03 | 0.1 | NA | NA | 0.04 | 0.1 | NA | NA |
| Agriculture | NA | NA | NA | NA | NA | NA | NA | NA |
| Land-use change and forestry | -61.9 | 77.1 | NA | NA | -100.6 | 125.3 | NA | NA |
| Waste management | NA | NA | NA | NA | NA | NA | NA | NA |
| Total (without LULUCF) | 65.3 | 1.9 | NA | NA | 408.6 | 11.8 | NA | NA |

Source: Land-use change and forestry – the Russian Federation’s fifth national communication; energy and transport – the State programme on energy saving and energy efficiency by 2020.

Note: The total effect of implemented and adopted policies and measures is defined as a sum from the effects of energy-efficiency measures implemented in different sectors of economy in accordance with the State programme on energy saving and energy efficiency by 2020.

Abbreviation: NA = not available.

^a Energy and transport – 2011.

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

105. The Russian Federation, in its NC5, did not provide explicit information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action. Given that total GHG emissions of the Russian Federation are well below its target for the first commitment period of the Kyoto Protocol, the Russian Federation does not plan to use the units from the Kyoto Protocol mechanisms to meet this target.

106. The CAP on the Implementation in the Russian Federation of the Kyoto Protocol to the UNFCCC (2005) envisages cooperation with other Parties, international financial institutions and potential investors on the implementation of Articles 6 and 17 of the Kyoto Protocol. During the review, the ERT was informed that the Ministry of Economic Development of the Russian Federation adopted in 2009 the regulatory framework for the implementation of the mechanisms. The JI projects totalling 30 Mt CO₂ eq were approved by June 2009. As the procedure for preparation and approval appeared very complicated, the lessons learned from the first two rounds of JI projects were reflected in simplified and streamlined procedures that were adopted in 2010.

107. The overall target allocation for JI projects was set at 300 Mt CO₂ eq. As of April 2012 the remaining unallocated amount was estimated to be above 100 Mt CO₂ eq, which is considered by Russian experts to be far below the potential for JI in the Russian Federation. Although there are no mandatory requirements on the way to spend the revenue from JI projects, participants in such projects must submit an investment declaration on plans to invest such revenue in environmental and energy efficiency projects.

108. During the review, the ERT was informed about the growing interest of Russian industry in continuing with participation in the second commitment period of the Kyoto Protocol with commitments inscribed in Annex B with a view to continue participation in JI projects, as they were seen as an incentive for upgrading, modernization and efficiency improvements in a number of industries, such as the aluminium, iron and steel, pulp and paper, electric power, renewable energy, including bioenergy and biofuels, and waste management industries. There is also a growing interest in climate-related market mechanisms (cap and trade), as suggested by the setting up of a joint working group between the business association Business Russia and the Ministry of Economic Development of the Russian Federation.

D. Vulnerability assessment, climate change impacts and adaptation measures

109. In its NC5, the Russian Federation has provided the required information on the expected impacts of climate change in the country and on adaptation measures. The ERT noted that, in its NC5, the Russian Federation has provided more detailed information on assessment of vulnerability and risk for sectors of the economy and less detailed information on the action taken to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation.

110. The CDRF set adaptation as one of the priority areas and identified the strategic approaches to adaptation work in the country. During the review, the Party provided additional information regarding the measures for adaptation included in the CAP, such as modification of programmes of social and economic development in the Russian Federation, taking into account climatic risks, mitigation of the anthropogenic impact to the climate, adaptation to climate change in some specific geographic areas, development and implementation of urgent and long-term adaptation measures, further impact assessments in various geographic regions and sectors of economy, minimization of impact on population and public health, and impact on forest and wetland areas.

111. During the review, the Russian Federation informed the ERT about a number of research and scientific publications addressing the issues related to the impact assessment and proposed adaptation measures, including an assessment of the micro-economic consequences of climate change in the Russian Federation until 2030 and future perspectives, an assessment of climate change and international security and an assessment on climate change and its consequences in the Russian Federation. Table 6 summarizes the information on vulnerability and adaptation to climate change presented in the NC5.

Table 6
Summary of information on vulnerability and adaptation to climate change

| <i>Vulnerable area</i> | <i>Examples/comments/adaptation measures reported</i> |
|-------------------------------|---|
| Agriculture and food security | <p><i>Vulnerability:</i> Pests with a life cycle strongly dependent on the climate (e.g. locusts and Colorado beetles) become more active in the European part of the country and in Siberia. Warming in arid areas of the Russian territory may increase the negative impacts of pests on crop yields. With the present agricultural technologies and geographical distribution of crops, the productivity of cereals in Siberia may decrease by 20–25 per cent. In the European part of the Russian Federation, with current trends, the productivity of grain will reduce by 9 per cent by 2020 and by 17 per cent by 2050.</p> <p><i>Adaptation:</i> Adaptation of crop production to warming is to be introduced in areas with sufficient moistening. Other measures include expansion of the use of more late-ripening and more productive varieties of cereal crops, maize and sunflower and of late-ripening varieties of potatoes, etc., a wider use of fertilizers and chemicals that are more efficient in a warm and damp climate, and the cultivation of beet and more heat-resistant types of green crops, soybean and alfalfa. Another adaptation measure is the development of an agro-</p> |

| <i>Vulnerable area</i> | <i>Examples/comments/adaptation measures reported</i> |
|------------------------|--|
| | insurance programme. |
| Forests | <p><i>Vulnerability:</i> Climate warming will positively affect forest productivity; however, owing to climate warming, the frequency of heatwaves and elevated maximum temperatures and the risk of forest fires will increase.</p> <p><i>Adaptation:</i> Implementation of a comprehensive programme on forest protection, remote operational monitoring of forests, the introduction of more efficient means for the control of forest fires and the strengthening of operative services raise opportunities for effective adaptation to forest fires.</p> |
| Human health | <p><i>Vulnerability:</i> Occurance of viral diseases will have negative impact on some groups of the population. The impacts of heatwaves and long periods of extremely hot weather have been observed in several cities. The combination of heatwaves and increased air pollution may intensify negative effects under adverse meteorological conditions. Deterioration of water quality may also occur in some regions.</p> <p><i>Adaptation:</i> Installation of air-conditioning systems in the residential and industrial facilities and an increase in their availability on the market, monitoring of adverse weather conditions and preventive protection measures with regard to vulnerable groups, the development of health and recreation facilities, dissemination of information on forecasting and weather conditions, and continuous monitoring of contagious and parasitic pests, their habitats and affected populations will facilitate efficient adaptation.</p> |
| Water resources | <p><i>Vulnerability:</i> In some parts of the Russian Federation in 2010–2039 water resources will increase by 8–10 per cent, which will have a positive impact; however, in the big cities, owing to climate warming, water resources will reduce by 15–20 per cent and the need for water resources will increase by up to 25 per cent, including in the water-dependent agriculture sector of the Central federal region and the South federal region and in the Ob and Irtysh river basins of the Siberian federal region.</p> <p><i>Adaptation:</i> In the regions with expected reductions in water resources, the adaptation measures are aimed at a search for and implementation of alternative and additional resources of water, in particular for agriculture, irrigation and energy production, as well as optimization of regional water use and the construction of additional water reservoirs, such as in the river basins of the Ob and the Irtysh.</p> |

112. According to the NC5, water resources, human health, forestry and agriculture could be the sectors most affected in the Russian Federation by the negative impacts of climate change. As reported by the Russian Federation in its NC5, the impacts of climate change can be positive or negative, owing to the geographical locations of particular regions, the territorial spread and the size of the country.

113. The NC5 also provided information on an assessment of vulnerability to climate change of the agriculture sector, which was observed in the European part of the country and in Western Siberia and was caused by an increase of some insects (e.g. locusts and Colorado beetles) that damage agricultural plants.

114. In the NC5, the Russian Federation reported on an assessment of the impacts of climate change on human health, including the distribution of some diseases caused by climate change, and the studies on the impact of heatwaves and long periods of extremely hot weather, conducted in several Russian cities, including Moscow and Tver, which detected some negative consequences for morbidity and mortality in some groups of the population. According to some studies presented during the review, the frequency and severity of heatwaves has increased over the past decade, and with an increasing frequency of heatwaves and elevated maximum temperatures, the risks for vulnerable groups of the population will grow in the XXI century. The combination of heatwaves and enhanced air pollution may increase negative effects under adverse meteorological conditions.

115. Deterioration of water quality may also occur in some regions, including the Kalmyk Republic, Dagestan and the Karachay-Cherkessia Republic. Climate change in the Arctic region may affect the health and way of life of indigenous people, particularly owing to shifts in the ranges of some species on which some indigenous people were traditionally dependent. During the review, the Party provided information on an assessment of the vulnerability of some sectors of the economy. In the past decades, the impact of climate

change on the economy of the country affected economic security and productivity, as, according to the impact assessment, in particular related to hot weather and extreme hydrometeorological events, human health and productivity will be affected. According to the assessment, the damage to productivity from the extremely hot summer in 2010 was around 250–280 billion roubles, or 0.6 per cent of GDP. The ERT noted that adaptation options are identified and developed in the country, but they were not reported in the NC5. Therefore, the ERT encourages the Russian Federation to provide in its next national communication more detailed information on implementation of the adaptation measures.

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

Information under Article 10 of the Kyoto Protocol

116. In its NC5, the Russian Federation has not provided information on the steps it has taken to promote, facilitate and finance the transfer of technology to developing countries and to build their capacity. During the review, considering the requirements of Article 4 of the Convention and Article 10 of the Kyoto Protocol, the Russian Federation provided information on its support provided to strengthen capacity-building of developing countries in the area of climatology and meteorology through higher educational institutions and postgraduate schools within the framework of the existing international treaties. Education is provided for students, postgraduates and specialists from developing countries, including countries in Africa. The ERT learned that the Russian Federation involved developing countries in regional and global research projects on climate change, including an expedition to the Antarctic.

117. During the review, the Russian Federation provided information on the financial resources allocated for the transfer of technology, which amounted to 123 million roubles during 2010–2011. The ERT recommends that the Russian Federation report, in its next national communication, on its activities, actions and programme undertaken in fulfilment of its commitments under Article 10.

F. Research and systematic observation

118. In its NC5, the Russian Federation has provided information on its actions relating to research and systematic observation, and addressed both domestic and international activities, including its participation in the World Climate Research Programme (WCRP), the Global Climate Observing System (GCOS) and the Intergovernmental Panel on Climate Change (IPCC). Several institutions have been involved in activities relating to research and systematic observation, notably Roshydromet and its institutions and the research institutes of the Russian Academy of Sciences.

119. The NC5 provides a summary of information on GCOS activities and includes a separate report that outlines these activities in great detail, following the UNFCCC reporting guidelines requirements. The ERT acknowledged with appreciation that the Russian Federation is among the leading countries in the world in the area of climate research and systematic observation. The Russian Federation attaches high importance to research and observation, and financial support provided is relatively high.

120. However, limited information is provided in the NC5 on the actions taken to support capacity-building in developing countries and to support those countries to establish and maintain observing systems and related data and monitoring systems. The ERT noted that the Russian Federation has a strong capacity for provision of education and training on research and systematic observation and that it cooperates with other countries, including

developing countries, in the area of research and systematic observation. During the review, the Russian Federation provided information on the actions taken to support related capacity-building activities in developing countries in Africa, Asia and former Soviet Union and programmes targeted at providing support for developing countries to maintain observing systems and related data and monitoring systems. The ERT encourages the Russian Federation to include information on such actions and programmes in its next national communication.

121. The Russian Federation, through Roshydromet, is implementing a number of federal programmes on the climate and climate change research that support research in fundamental and applied science, including the following:

(a) Scientific research and development in the area of hydrometeorology and environmental monitoring in 2011–2013 and its subprogrammes on monitoring systems and data collection, archiving, dissemination and management, on the development of an environmental data monitoring system and modern climate and climate change;

(b) Setting up and developing a geophysical environmental monitoring system for the Russian Federation in 2008–2015;

(c) World ocean research, in particular on the Antarctic, and the establishment of a common information system.

122. The Russian Federation is also implementing a federal programme on research and innovation in the priority directions of the development of the scientific and technological complex of the Russian Federation for 2007–2012 under the auspices of the Ministry of Education and Science of the Russian Federation. Within this programme, the work is organized on a project basis, focusing on the development of methods for monitoring the atmosphere, lithosphere and water bodies, in-depth research on the environment of certain regions, the development of climate models and the identification of adaptation measures. Within the programme, in the subprogrammes on energy and energy saving, and on rational environment use, 121 projects were implemented in 2008 to promote improvements in energy and resource use, diversification of energy sources and the implementation of low-carbon technologies. Another programme, on the development of the scientific base for sustainable development of the energy sector in the Northern region of the Russian Federation under the conditions of climate change, is under development.

123. In addition, within the CAP for Implementation of the CDRF by 2020 (2011), work will continue until 2020 in three key areas: research on the climatic system of the Earth; climate forecasting for the short- and long-term and at the regional to the global levels; and climate change impacts, risks, vulnerabilities and advantages. During 2011–2013, research activities will be focused on the preparation of the second national assessment report on climate change and its impact on the territory of the Russian Federation. The first assessment report was published in 2008.

124. According to the NC5, the Russian Academy of Sciences is conducting a scientific research programme until 2025 in the area of the environment and climate change, including the physical and chemical aspects of terrestrial and atmospheric processes, climate simulation, the paleoclimate and atmospheric composition and change therein. It is also conducting research in the area of the sustainable use of natural resources and RES. A number of sectoral ministries and specialized public organizations conduct thematic research projects in the area of climate change, for example the Ministry of Natural Resources and Environment of the Russian Federation, the Federal Forestry Agency, the Ministry of Agriculture of the Russian Federation and the Ministry of the Russian Federation for Affairs for Civil Defence, Emergencies and Elimination of Consequences of Natural Disasters.

125. According to the NC5, Roshydromet and its institutes conduct systematic terrestrial, oceanographic and stratospheric observations related to climate change, including observations of the climate system through 1,633 stations of the surface meteorological network. Most of these stations have collected data since 1951. The focus of terrestrial observations is on permafrost, glaciers, the carbon flux and monitoring of land use and land-use change. The Russian Federation has also an extensive observation network of 37 stations at sea, with a focus on temperature, sea ice, the sea level and observations in the Arctic and the Antarctic.

126. Two Russian satellites (Meteor, launched in 2009, and Electro, launched in 2011) and a number of international satellites collect data that are acquired and stored by the Planeta Institute of Roshydromet, which hosts one of the two world meteorological data centres, for subsequent use for climate and environmental monitoring and studying the impact of climate change on nature and ecosystems. The ERT was informed during the review that the institute is now working to create high-quality specialized data sets to enhance data utility, in particular for climate change studies.

127. The Russian Federation is also actively participating in international projects and programmes for climate research and observation supported by the World Meteorological Organization (WMO), the United Nations Environment Programme, the Intergovernmental Oceanographic Commission, the United Nations Educational, Scientific and Cultural Organization, the International Council for Science and other organizations (WCRP, GCOS, the World Climate Programme, the Global Ocean Observing System, the Global Sea Level Observing System and the Global Earth Observing System of Systems).

128. The Russian Federation is also participating in a range of other programmes and in the activities related to the Convention and the IPCC, including the preparation of the Fifth Assessment Report of IPCC. During the review, the Russian Federation provided the ERT with additional information on programmes that it implemented for the purpose of research and systematic observation, such as the first and second assessment reports on climate change and its consequences in the Russian Federation and the report on features of climate on the territory of the Russian Federation.

G. Education, training and public awareness

129. In its NC5, the Russian Federation has provided information on its actions relating to education, training and public awareness at both the domestic and international levels. Although compared with the NC4, the Party provided more detailed information, the coverage of this reporting element was not always sufficiently transparent with respect to the UNFCCC reporting guidelines.

130. Activities in the education area are coordinated by the Ministry of Education and Science of the Russian Federation through the Education and Methodology Association and in collaboration of the Russian State Hydrometeorological University (RSHU). The Education and Methodology Association is developing methodological guidelines and recommendations for the inclusion of environmental disciplines in the curricula of secondary and higher education establishments.

131. In its NC5, the Russian Federation also provided detailed information on activities at the university level, including the training of specialists on climatology and meteorology in 11 universities, including the RSHU. The President of the RSHU was designated as a focal point for Article 6 of the Convention. As reported in the NC5, climate change and environmental subjects have been introduced into the curricula of primary, secondary and higher education institutions. There are number of specialized booklets and encyclopaedias published on weather and climate for preschool and primary school children. During the

review, the ERT learned that as the regional centre of the WMO, the RSHU organizes international conferences on climate change and environment and conducts annual national competitions on Geography that include climate change issues for secondary school pupils. Capacity-building, exchange of knowledge, sharing of experience and transfer of technologies are carried out through various conferences, seminars and exhibitions, having both a scientific and practical character, with the involvement of international participants, including from developing countries.

132. The CDRF and the Ecology Doctrine include the priorities relating to the training and retraining of professionals in the areas of climate and the environment. During the review, the ERT learned about the increasing number of graduate students in academic institutions and leading scientific institutions, internships of the most promising young scientists, professionals working in the world's major research centres, training provided for diplomatic staff and a group of professional advisers for international negotiations and drafting international agreements on climate. The government provides grants for 200 students to study at the RSHU. These grants are also open to foreign students; at present, there are about 50 students from developing countries at the RSHU. During the review, the ERT was informed by the Party that the government provides additional funding, in the form of grants, to support young scientists, leading higher education institutions and scientific-educational centres.

133. The Russian Federation in its NC5 provided detailed information on publications related to climate change, including scientific papers, popular scientific publications, business print media and public media; most of the publications and scientific papers are available on the websites of Roshydromet, the Institute of Global Climate and Ecology and other Russian research institutes. Roshydromet annually prepares a special report on the climate of the Russian Federation, which is published on its website. The research institutes regularly publish a specialized bulletin entitled *Climate Change in Russia*, which contains information about changes in temperature and precipitation and extreme weather events. The ERT also learned that there is a growing number of national and international conferences, meetings, training workshops, publications, media events and Internet sites dedicated to awareness-raising on climate change issues, as well as independent public reviews and public hearings on energy, industry and forestry policies.

134. In its NC5, the Russian Federation has reported that non-governmental organizations, such as the International Socio-ecological Alliance (ISEA), the Ecological Alliance-Bellona, the CENef and the Baikal Ecological Wave, prepare and implement a range of climate change awareness-raising and educational activities. ISEA publishes a weekly bulletin entitled *ISEA News*, which is aimed at drawing the attention of the public and policymakers to human impacts on the biosphere, climate and environment. The Regional Environmental Centre, the CENef and the World Wide Fund for Nature (WWF) developed a specialized website named Global Climate Change, on which they post the latest national and foreign research findings on climate change, activities taken by international organizations to mitigate climate change and analyses of environment and climate issues. WWF Russia implements a programme entitled Climate and Energy and conducts a public awareness-raising campaign on advanced technology for energy use and transfer. The Russian Geographical Society, through its 14 regional representative offices, supports scientific work, information dissemination and public awareness-raising of the general public and various social groups.

135. During the review, the ERT learned about a number of activities relating to public awareness-raising, namely social forums on climate change and discussions in the Public Chamber and the State Duma between the government and businesses and between businesses, and including a number of discussion platforms, including the Russian Union of Entrepreneurs, Union Delovaya Rossiya and others.

136. A number of regional and State policy documents, for example the CDRF, the Ecology Doctrine and strategic documents on the Arctic region and on hydrometeorology, contain specific objectives and measures relating to targeted public awareness-raising, access to information, public involvement and work with interested social groups on climate-related priorities.

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

137. The Russian Federation has provided most of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol in its NC5. The supplementary information is placed in different sections of the NC5. Table 7 provides an overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol as well as references to the NC5 chapters in which this information is provided.

138. The Russian Federation has not reported the following elements of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol: some information related to a description of the national system in accordance with Article 5, paragraph 1, of the Kyoto Protocol; steps taken to promote and/or implement any decisions by ICAO and IMO; minimization of adverse effects under Article 2, paragraph 3, of the Kyoto Protocol; supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol; and steps taken to promote, facilitate and finance the transfer of technology to developing countries and to build their capacity, taking into account Article 4, paragraphs 3,5 and 7, of the Convention in order to facilitate the implementation of Article 10 of the Kyoto Protocol. However, during the review the Party provided the ERT with this missing information. The ERT recommends that the Russian Federation include these reporting elements in its next national communication. The technical assessment of the information reported under Article 7, paragraph 2, is contained in the relevant sections of this report.

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

| <i>Supplementary information</i> | <i>Reference</i> |
|--|--|
| National registry | Page 68, chapter III |
| National system | Page 64, chapter III |
| Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 | Not provided in the NC5, but provided during the review |
| Policies and measures in accordance with Article 2 | Page 71, chapter VI |
| Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures | Page 71, chapter VI |
| Information under Article 10 | Limited information was provided in the NC5, page 101, chapter VII |
| Financial resources* | – |

* The Russian Federation is an economy in transition, and as such it does not have to report on the implementation of Article 11 of the Kyoto Protocol, including on the provision of new and additional resources.

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

139. The Russian Federation reported some information requested in section H. Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the annex to decision 15/CMP.1 as a part of its 2010 and 2011 annual submissions. During the review, the Russian Federation provided the ERT with the additional information on how it strives to implement its commitments under Article 3, paragraph 1, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention. The ERT considers the reported information in the NIR to be transparent and complete.

140. The NIR 2010 and 2011 and the additional information provided during the review include information on the efforts made on the gradual reduction or elimination of market distortions by shifting to a market-based economy, natural gas exports to developing countries to replace local high-carbon content coal and assistance to counties that have been affected by natural disasters. The ERT commends the Russian Federation for the additional information provided during the review and encourages it to continue exploring and reporting on the adverse impacts of the response measures.

III. Conclusions and recommendations

141. The ERT concludes that the NC5 provides, to a certain extent, a good overview of the national climate policy of the Russian Federation. The information provided in the NC5 includes most mandatory information required by the UNFCCC reporting guidelines, with the exception of a description of the principal PaMs in each sector, to the extent appropriate, supplemented by a summary table on PaMs, PaMs subdivided by gas and PaMs for the non-energy sectors, the projections related to fuel sold to ships and aircraft engaged in international transport reported separately from the national totals and the total effect of PaMs.

142. The information provided in the NC5 includes most elements of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol, with the exception of the following: information on some reporting elements related to the description of the national system in accordance with Article 5, paragraph 1, of the Kyoto Protocol; steps taken to promote and/or implement any decisions by ICAO and IMO; minimization of adverse effects under Article 2, paragraph 3, of the Kyoto Protocol; supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol; and steps taken to promote, facilitate and finance the transfer of technology to developing countries and to build their capacity, taking into account Article 4, paragraphs 3, 5 and 7, of the Convention in order to facilitate the implementation of Article 10 of the Kyoto Protocol. During the review, the Russian Federation provided additional information on the missing reporting elements.

143. The Russian Federation's total emissions for 2010, excluding LULUCF, were estimated to be 34.2 per cent and, including LULUCF, 54.8 per cent below their level in 1990. The emissions trend was driven by the decline of economic activity between 1990 and 1998, restructuring of the economy, structural changes in the primary energy supply mix that resulted in a decrease in overall energy demand and related oil and natural gas operations and fuel combustion.

144. In its NC5, the Russian Federation reported GHG projections for the period 2010–2030. Three scenarios are included: two “with measures” scenarios (“moderate” and

“innovation”) and a “with additional measures” scenario. The projected emissions in 2010, under all three reported scenarios, are 39.8 per cent below the base year. Thus, the projections indicate that the Russian Federation is in a position to meet by far its Kyoto Protocol target (which is to keep the level of emissions at the base year level). Under none of the emission scenarios were GHG emissions expected to exceed the conditional national target of a 15–25 per cent emission reduction relative to the 1990 level by 2020, including under the “moderate” scenario, which anticipates the highest growth of emissions.

145. The NC5 does not contain explicit information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action, although it was clear that the Russian Federation is not planning to make use of the Kyoto Protocol mechanisms to meet its Kyoto Protocol target for the first commitment period. However, the Russian Federation reported that it developed a relevant regulatory framework for JI project implementation, such as the CAP on the Implementation in the Russian Federation of the Kyoto Protocol to the UNFCCC (2005) and supporting regulations adopted in 2009 and 2010.

146. The CDRF (2009) and the CAP for Implementation of the CDRF by 2020 (2011) outline the framework for the contemporary climate policy in the Russian Federation and set the long-term policy objectives related to scientific research work on climate change in three priority areas, namely adaptation, mitigation and international initiatives. The CDRF helped to bring climate change high in the overall policy agenda of the Russian Federation. However, climate change considerations are yet to be given sufficiency attention in the context of energy policy.

147. The Russian Federation adopted several policies on energy-efficiency improvements and the promotion of renewable energy that have a significant mitigation potential, given the scale of energy production and consumption and the high energy intensity of the economy. To that end, the Russian Federation adopted the decree on Certain Measures to Increase Energy and Ecological Efficiency of the Russian Economy (2008), which has a target to reduce the energy intensity of the GDP by 40 per cent between 2007 and 2020. It also adopted the Energy Strategy 2030 (2009), which outlines the overarching strategic policy for energy sector development, with a view to reducing the share of gas in the total primary energy consumption and to reducing the energy intensity of the GDP by 44 per cent between 2005 and 2030. It further adopted the decree on the Main Directions of State Policy in Improving Energy Efficiency of the Electric Power Industry Based on Renewable Energy Sources until 2020 (2009), with a target of increasing the share of RES in the production and consumption of electricity, excluding electricity from large hydropower plants, from 1.5 per cent in 2010 to 4.5 per cent in 2020. Although key elements of the policy framework on climate change were put in place in recent years, its implementation follows a slow pace that is in part due to the slow move towards market-based pricing of gas and electricity, remaining subsidies and the lack of sufficient institutional capacity.

148. According to the studies on climate change vulnerability, the Russian Federation identified water resources, human health, forestry and agriculture as the most vulnerable sectors. Adaptation to climate change was identified as a priority of the CDRF and a number of measures were included in the CAP, namely measures related to the elaboration of approaches to risk assessments and further impact assessments in various geographic regions and sectors of the economy, minimization of the impact on the population, public health and forest and wetland areas, and measures related to natural disaster management. The Russian Federation is one of the leading countries in the area of climate research and systematic observation at the international level. Roshydromet and its institutes conduct systematic terrestrial, oceanographic and stratospheric observations related to climate change, including observations of the climate system through the meteorological network of 1,633 stations on land and 37 stations at sea. A large number of programmes and

capacities were developed to deal with the complex scientific and research issues in the area of the environment and climate change, including the physical and chemical aspects of terrestrial and atmospheric processes, climate simulation, and paleoclimate and atmospheric composition and change.

149. The CDRF and the Ecology Doctrine include the priorities relating to capacity-building, training and retraining of professionals in the areas of climate and the environment. The Russian Federation has a comprehensive approach to education, training and awareness-raising, delivered through the universities and schools and reinforced by specialized publications, social forums, international conferences and web resources. The Party has the capacity to meet the national need for education and training in climate change and to work internationally to build capacity in developing countries.

150. The ERT concluded that the Russian Federation's national system continues to perform its required functions as set out in decision 19/CMP.1. The ERT concluded that the Russian Federation'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 CMP decisions. The ERT noted that updates of database and applications, implemented security measures and changes to the national registry software are documented on a regular basis by nominated responsible persons.

151. Supplementary information under Article 7, paragraph 1, of the Kyoto Protocol on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol provided by the Party in its 2010 and 2011 annual submissions is complete and transparent.

152. In the course of the IDR, the ERT formulated several recommendations relating to the completeness and transparency of the Russian Federation's reporting under the Convention and its Kyoto Protocol. The key recommendations¹⁷ are that the Russian Federation:

- (a) Improve the completeness of reporting by including in the next national communication the following information:
 - (i) All elements of a description of the national system in accordance with Article 5, paragraph 1, of the Kyoto Protocol;
 - (ii) The description of PaMs by sector and by gas, for all sectors;
 - (iii) The "with measures" projection scenario, encompassing currently implemented and adopted PaMs;
 - (iv) The total effect of PaMs;
 - (v) The minimization of adverse effects under Article 2, paragraph 3, of the Kyoto Protocol;
 - (vi) The elaboration on the supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17, of the Kyoto Protocol;
 - (vii) Description of action taken with regard to adaptation to climate change;
 - (viii) Exclude the emission projections related to fuel sold to ships and aircraft engaged in international transport from the totals, and report, to the extent possible, separate projections of emissions related to fuel sold to ships and aircraft engaged in international transport;

¹⁷ The recommendations are given in full in the relevant sections of this report.

(b) Improve the transparency of reporting by including in the next national communication the following information: detailed description of the projections, for the “with measures” scenario, encompassing currently implemented and adopted PaMs.

153. The ERT encourages the Russian Federation to undertake a number of improvements regarding transparency and completeness of reporting of its next national communication; the most important of these are that the Party:

(a) Provide more detailed information on the national circumstances, changes in the national circumstances and how they affect emissions or removals over time, including disaggregated indicators to explain the relationship between the national circumstances and emissions or removals;

(b) Provide more detailed information on the projections methodology and the assumptions used and the results achieved;

(c) Provide more information on actions taken to support related capacity-building activities in developing countries.

IV. Questions of implementation

154. During the review, the ERT assessed the NC5, including supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol, and reviewed information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol with regard to timeliness, completeness and transparency. No question of implementation was raised by the ERT during the review.

Annex

Documents and information used during the review

A. Reference documents

“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications”. FCCC/CP/1999/7. Available at <<http://unfccc.int/resource/docs/cop5/07.pdf>>.

“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories”. FCCC/CP/1999/7. Available at <<http://unfccc.int/resource/docs/cop5/07.pdf>>.

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

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

FCCC/SBI/2011/INF.1. Compilation and synthesis of fifth national communications. Executive summary. Note by the secretariat. Available at <<http://unfccc.int/resource/docs/2011/sbi/eng/inf01.pdf>>.

FCCC/SBI/2011/INF.1/Add.1. Compilation and synthesis of fifth national communications. Note by the secretariat. Addendum. Policies, measures, and past and projected future greenhouse gas emission trends of Parties included in Annex I to the Convention. Available at <<http://unfccc.int/resource/docs/2011/sbi/eng/inf01a01.pdf>>.

FCCC/SBI/2011/INF.1/Add.2. Compilation and synthesis of fifth national communications. Note by the secretariat. Addendum. Financial resources, technology transfer, vulnerability, adaptation and other issues relating to the implementation of the Convention by Parties included in Annex I to the Convention. Available at <<http://unfccc.int/resource/docs/2011/sbi/eng/inf01a02.pdf>>.

FCCC/SBI/2011/INF.2. Compilation and synthesis of supplementary information incorporated in fifth national communications submitted in accordance with Article 7, paragraph 2, of the Kyoto Protocol. Note by the secretariat. Available at <<http://unfccc.int/resource/docs/2011/sbi/eng/inf02.pdf>>.

FCCC/ARR/2010/RUS. Report of the individual review of the greenhouse gas inventory of the Russian Federation submitted in 2010. Available at <http://unfccc.int/documentation/documents/advanced_search/items/6911.php?priref=600006237>.

FCCC/IRR/2007/RUS. Report of the review of the initial report of the Russian Federation. Available at <http://unfccc.int/documentation/documents/advanced_search/items/6911.php?priref=600004618>.

FCCC/IDR.4/RUS. Report on the in-depth review of the fourth national communication of the Russian Federation. Available at <http://unfccc.int/documentation/documents/advanced_search/items/6911.php?priref=600005423>.

Fourth national communication of the Russian Federation. Available at
<http://unfccc.int/national_reports/annex_i_natcom/submitted_natcom/items/3625.php>.

2009 GHG inventory submission of the Russian Federation. Available at
<http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/4771.php>.

2010 GHG inventory submission of the Russian Federation. Available at
<http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/5270.php>.

2011 GHG inventory submission of the Russian Federation. Available at
<http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/5888.php>.

2012 GHG inventory submission of the Russian Federation. Available at
<http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/6598.php>.

IAR/2011/RUS/1/1 and IAR/2011/RUS/2/1 Standard independent assessment report, 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. Alexandr Nakhutin (Institute of Global Climate and Ecology) and Ms. Veronika Kusnetsova (Roshydromet) and included additional material on updated policies and measures, greenhouse gas projections, the national registry and recent climate policy developments in the Russian Federation. The following documents¹ were also provided by the Russian Federation:

Bashmakov, I., 2008. *Low carbon Russia: 2050*.

General Summary. Assessment report on climate change and its consequences in the Russian Federation, 2008. The Russian Federal Service for Hydrometeorology and environmental monitoring.

¹ Reproduced as received from the Party.