Advance Version

COMPLIANCE COMMITTEE

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10 November 2011

Report of the in-depth review of the fifth national communication of Slovenia

Note by the secretariat

The report of the in-depth review of the fifth national communication of Slovenia was published on 10 November 2011. For purposes of rule 10, paragraph 2, of the rules of procedure of the Compliance Committee (annex to decision 4/CMP.2, as amended by decision 4/CMP.4), the report is considered received by the secretariat on the same date. This report, FCCC/IDR.5/SVN, contained in the annex to this note, is being forwarded to the Compliance Committee in accordance with section VI, paragraph 3, of the annex to decision 27/CMP.1.

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Report of the in-depth review of the fifth national communication of Slovenia

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 Slovenia conducted by an expert review team in accordance with the relevant provisions of the Convention and Article 8 of the Kyoto Protocol.

Contents

I. Introduction and summary

A. Introduction

1. For Slovenia the Convention entered into force on 29 February 1996 and the Kyoto Protocol on 16 February 2005. Under the Kyoto Protocol, Slovenia committed itself to reducing its greenhouse gas (GHG) emissions by 8 per cent compared with the base year[1] level during the first commitment period from 2008 to 2012.

2. This report covers the centralized in-depth review (IDR) of the fifth national communication (NC5) of Slovenia, 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 2 to 7 May 2011 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Mr. Imran Habib Ahmad (Pakistan), Mr. Luis Silva Caceres (Ecuador), Mr. James Davey (United Kingdom of Great Britain and Northern Ireland), Ms. Laura Dawidowski (Argentina), Ms. Medea Inashvili (Georgia), Ms. Natalya Parasyuk (Ukraine) and Mr. Simon Wear (New Zealand). Ms. Inashvili and Mr. Wear were the lead reviewers. The review was coordinated by Ms. Xuehong Wang and Ms. Ruta Bubniene (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 Slovenia 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 Slovenia 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 Slovenia, which provided comments that were considered and incorporated, as appropriate, in this final version of the report.

B. Summary

5. The ERT noted that Slovenia's NC5 complies in general 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 Protocol[2] is provided in the NC5. Slovenia has considered most of the recommendations provided in the report of the centralized in-depth review of the fourth national communication (NC4) of Slovenia.[3] The ERT commended Slovenia for its improved reporting.

6. The supplementary information on the minimization of adverse impacts referred to in paragraph 3 above is incomplete and not sufficiently transparent. However, the

[1] "Base year" refers to the base year under the Kyoto Protocol, which is 1986 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/SVN.

information was provided on time. During the review, Slovenia 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 steps taken to promote and/or implement any decisions of the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) in order to limit or reduce emissions of GHGs not controlled by the Montreal Protocol from aviation and marine bunker fuels. The NC5 does not include some information required by the UNFCCC reporting guidelines, including emission projections related to fuel sold to ships and aircraft engaged in international transport, information on actions taken to cooperate with developing countries with regard to adaptation, information on international activities in research and systematic observation (RSO), summary information on Global Climate Observing System (GCOS) activities and information on actions taken to support capacity-building in RSO in developing countries. The ERT recommends that Slovenia enhance the completeness of its reporting by providing this information in its next national communication.

2. Transparency

8. The ERT acknowledged that Slovenia's NC5, including supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol, is broadly transparent. The NC5 provides clear information on all aspects of the implementation of the Convention and its Kyoto Protocol. The ERT noted that 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.

9. In the course of the review, the ERT formulated a number of recommendations that could help Slovenia to further increase the transparency of its reporting with regard to national circumstances (see para. 12 below), policies and measures (PaMs) (see paras. 26, 30, 31, 40, 42, 45, 51 and 53 below), projections and total effects of PaMs (see paras. 57, 58, 63, 71 and 72 below), vulnerability, climate change impacts and adaptation (see para. 76 below), RSO (see para. 82 below), the description of the national system (see para. 18 below) and information on minimization of adverse impacts (see para. 23 below).

3. Timeliness

10. The NC5 was submitted on 6 April 2010, after the deadline of 1 January 2010 mandated by decision 10/CP.13. Slovenia informed the secretariat about its difficulties with the timeliness of its national communication submission on 16 February 2010 in accordance with paragraph 139 of decision 22/CMP.1. As the national communication was not submitted within six weeks after the due date (by 15 February 2010), the delay was brought to the attention of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP) and the Compliance Committee and made public. The ERT noted with great concern the delay in the submission of the NC5.

II. Technical assessment of the reviewed elements

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

11. In its NC5, Slovenia has provided a concise description of the national circumstances and has elaborated on the framework legislation and key policy documents on climate change. The NC5 also referred to the description of the national system provided in the national inventory report of the Party's 2009 annual submission. Further technical assessment of the institutional and legislative arrangements for the coordination and implementation of PaMs is provided in chapter II.B.1 below.

1. National circumstances

12. In its NC5, Slovenia has provided a description of its national circumstances, and information on how these national circumstances affect GHG emissions and removals in Slovenia and how changes in the national circumstances affect GHG emissions and removals over time in the country. Information was provided on the government structure, population profile, geographic profile, climate and development in relevant economic sectors. However, the ERT noted that limited information was provided on the status of and development trends in the forestry sector. Given that forestry is one of the most important sectors affecting GHG emissions and removals in the country, the ERT encourages Slovenia to provide more detailed information on this sector in its next national communication.

13. The ERT noted that, following a decline in emissions between 1986 and 1990 (by 8.4 per cent), GHG emissions in Slovenia increased moderately (by 15.2 per cent) between 1990 and 2008 compared with the increase in the gross domestic product (GDP), which grew by 73.5 per cent during the same period. The main drivers of emission trends in Slovenia include structural changes in the early 1990s, with the service sector having an increasing share in the national economy, increased economic activities coupled with an increasing demand for energy, and a fast-growing transport sector since Slovenia joined the European Union (EU) in 2004. Table 1 illustrates the national circumstances of the country by providing some indicators relevant to GHG emissions and removals.

14. Slovenia is a republic with a parliamentary democracy. The National Assembly is the highest legislative body in Slovenia. The overall responsibility for climate change policymaking lies within the Ministry of the Environment and Spatial Planning (MESP) and a number of national institutions are involved in the implementation of the climate change policy. The implementation of the Kyoto Protocol is underpinned by the Operational Programme for Limiting Greenhouse Gas Emissions until 2012 (hereinafter referred to as the Programme), adopted by the Government of Slovenia in 2006 and updated in 2009. 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 below.

15. In accordance with Article 4, paragraph 6, of the Convention and decision 11/CP.4, Slovenia, as a Party with an economy in transition, has chosen 1986 as its base year.

16. In its NC5, Slovenia has provided a summary of information on GHG emission trends for the period 1986–2007. This information is consistent with the Party's 2009 national GHG inventory submission. Summary tables, including trend tables for emissions in carbon dioxide equivalent (CO_2 eq) (given in the common reporting format), are also

provided in an annex to the NC5. During the review, the ERT assessed the Party's recently submitted 2011 annual submission and has reflected the findings in this report.

Table 1
Indicators relevant to greenhouse gas emissions and removals for Slovenia

	1986	1990	1995	2000	2005	2008	*Change[a] 1990–2000 (%)*	*Change 2000–2008 (%)*	*Change[a] 1990–2008 (%)*
Population (million)	NA	2.00	1.99	1.99	2.00	2.02	–0.50	1.66	10.00
GDP (2000 USD billion using PPP)	NA	28.08	28.08	34.76	41.65	48.71	23.79	40.14	73.47
TPES (Mtoe)	NA	5.71	6.07	6.40	7.28	7.74	12.08	20.92	35.55
GDP per capita (2000 USD thousand using PPP)	NA	14.04	14.12	17.47	20.81	24.09	21.32	37.86	67.29
TPES per capita (toe)	NA	2.86	3.05	3.22	3.64	3.83	12.59	18.94	33.92
GHG emissions without LULUCF (Tg CO_2 eq)	20.23	18.48	18.46	18.82	20.24	21.29	1.84	13.09	15.21
GHG emissions with LULUCF (Tg CO_2 eq)	12.54	11.20	11.16	11.57	11.78	12.80	3.30	10.66	14.29
CO_2 emissions per capita (Mg)	NA	7.40	7.54	7.63	8.31	7.92	3.11	3.82	7.03
CO_2 emissions per GDP unit (kg per 2000 USD using PPP)	NA	0.50	0.53	0.44	0.40	0.40	–12.00	–8.52	–20.00
GHG emissions per capita (Mg CO_2 eq)	NA	9.24	9.28	9.46	10.11	10.53	1.72	11.25	13.23
GHG emissions per GDP unit (kg CO_2 eq per 2000 USD using PPP)	NA	0.66	0.66	0.54	0.49	0.44	–10.00	–19.30	–26.67

Sources: (1) GHG emissions data: Slovenia's 2011 greenhouse gas 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, NA= not available, PPP = purchasing power parity, TPES = total primary energy supply.

[a] As the population, GDP and TPES data are not available for 1986, trends are demonstrated using 1990 data instead of 1986 data.

17. Total GHG emissions[4] excluding emissions and removals from land use, land-use change and forestry (LULUCF) decreased by 4.4 per cent between the base year and 2009, while total GHG emissions including net emissions or removals from LULUCF decreased by 13.2 per cent. This was mainly attributed to methane (CH_4) emissions, which decreased by 16.4 per cent during this period, owing to a decrease in the number of cattle, and to nitrous oxide (N_2O) emissions, which decreased by 10.9 per cent during this period. Emissions of carbon dioxide (CO_2) also decreased, but at a much lower rate of 1.7 per cent

[4] In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of CO_2 eq excluding land use, land-use change and forestry, unless otherwise specified.

during this period. A major part of the emission decrease was experienced during the 1986–1990 and 2008–2009 periods. Owing to the global economic crisis, total GHG emissions (excluding LULUCF) decreased by 9.1 per cent between 2008 and 2009, with CO_2 emissions decreasing by 10.6 per cent, followed by a decrease in CH_4 emissions by 2.2 per cent, while N_2O emissions increased slightly, by 0.8 per cent. Emissions of fluorinated gases (F-gases) remained almost stable and accounted for about 0.8 per cent of total GHG emissions in 1995 (base year) and 0.7 per cent in 2009. This trend is underpinned by the increase in emissions of hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF_6) and the decrease in emissions of perfluorocarbons (PFCs) from 1995 to 2009. Table 2 provides an overview of Slovenia's GHG emissions by sector from the base year to 2009.

Table 2
Greenhouse gas emissions by sector in Slovenia, 1986–2009

	GHG emissions (Tg CO_2 eq)						*Change (%)*		*Shares[a] by sector (%)*	
Sector	*1986*	*1995*	*2000*	*2005*	*2007*	*2008*	*1986–2009*	*2008–2009*	*1986*	*2009*
1. Energy	16.07	14.85	14.95	16.19	17.47	15.89	–1.16	–9.09	79.46	82.15
A1. Energy industries	6.73	5.63	5.50	6.33	6.39	6.09	–9.57	–4.74	33.27	31.47
A2. Manufacturing industries and construction	4.40	2.62	2.27	2.49	2.30	1.92	–56.46	–16.78	21.77	9.92
A3. Transport	2.04	3.76	3.76	4.44	6.15	5.34	161.64	–13.25	10.08	27.60
A4.–A5. Other	2.40	2.40	3.00	2.60	2.26	2.19	–7.40	–3.28	11.70	11.31
B. Fugitive emissions	0.54	0.41	0.37	0.37	0.37	0.36	–33.10	–2.33	2.65	1.85
2. Industrial processes	1.29	0.96	1.00	1.28	1.20	0.84	–34.71	–29.91	6.37	4.35
3. Solvent and other product use	0.08	0.02	0.04	0.04	0.03	0.03	–62.15	12.36	0.40	0.16
4. Agriculture	2.22	2.05	2.14	2.01	1.96	2.00	–10.00	1.61	10.97	10.32
5. LULUCF	–7.69	–7.30	–7.25	–8.46	–8.48	–8.46	10.03	–0.29	–38.00	–43.74
6. Waste	0.57	0.58	0.68	0.71	0.62	0.58	3.02	–5.60	2.80	3.02
7. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GHG total with LULUCF	**12.54**	**11.16**	**11.57**	**11.78**	**12.80**	**10.88**	**–13.24**	**–15.01**	**62.00**	**56.26**
GHG total without LULUCF	**20.23**	**18.46**	**18.82**	**20.24**	**21.29**	**19.34**	**–4.39**	**–9.14**	**100.00**	**100.00**

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

18. In accordance with decision 15/CMP.1, Slovenia 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). The Party also provided a reference to its 2009 annual submission, which contains a more detailed description of the national system. The description includes all the elements as required in decision 15/CMP.1. The ERT noted that, while Slovenia has provided comprehensive information on institutional and legislative arrangements and procedures for data collection for various sectors, related information on the forestry sector could be further elaborated, given the importance of this sector in the national GHG inventory.

19. In its NC5, Slovenia has provided a description of its 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 contributes to the conservation of biodiversity and the sustainable use of natural resources. The National Forest Programme (NFP) is a fundamental strategic document for the development of the forestry sector. It aims at sustainable management of forests and consumption of wood and is in accordance with the National Environmental Action Plan, which defines four priority areas for consideration while managing the country's forests: climate change; nature and biodiversity; quality of life; industrial pollution and waste. Forest management plans are developed for a period of 10 years.

20. The ERT took note of the recommendations made in the report of the individual review of the 2010 annual submission of Slovenia (2010 ARR) The ERT reiterates the conclusion made in the 2010 ARR that there have been no changes in Slovenia's national system since the Party's 2009 annual submission and concludes that Slovenia's national system continues to perform its required functions as set out in decision 19/CMP.1.

3. National registry

21. In its NC5, Slovenia has provided information on the national registry, including a description of 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 standards for data exchange between registry systems.

22. During the review, Slovenia 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 data manipulations; the measures put in place to protect the national registry against security compromises; the test procedures related to the performance of the national registry; and the recording of changes and discrepancies in the national registry. In response to questions raised by the ERT, Slovenia provided documents demonstrating how it records changes related to the national registry and how it maintains these records. The ERT noted that updates of databases and applications and functional testing are documented on a regular basis. However, documented updates of implemented security measures and changes to the national registry software were not provided during the review. Slovenia informed the ERT that, because of the recent changes to its national registry applications, some of the documents have not yet been updated.

23. The ERT took note of the conclusion made in the standard independent assessment report (SIAR) that no problems were found with the Party's national registry. The ERT reiterates the recommendations made in the SIAR that Slovenia submit information on discrepancies in the national registry and provide a more detailed description of actions that were taken and/or changes that were made to address such discrepancies in its next annual submission. The ERT also recommends that Slovenia report the recent changes in the national registry in its next annual submission.

24. The ERT concluded that Slovenia'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

25. As required by the UNFCCC reporting guidelines, Slovenia has provided in its NC5 comprehensive and well-organized information on its package of PaMs implemented, adopted and planned in order to fulfil its commitments under the Convention and its Kyoto Protocol. Each sector has its own textual description of the principal PaMs, supplemented by summary tables on PaMs by sector. The NC5 contains, with a few exceptions, a similar set of PaMs to those in the NC4.

26. However, the ERT noted that Slovenia did not provide information on the steps it has taken to promote and/or implement any decisions of ICAO and IMO in order to limit or reduce emissions of GHGs not controlled by the Montreal Protocol from aviation and marine bunker fuels. During the review, Slovenia explained that shipping would be covered under the EU transport road map 2050.[5] Some of the recommendations made in the previous review report were taken into consideration to improve the reporting in the NC5, including providing an explanation of how the Party's PaMs are modifying longer-term trends in GHG emissions and removals, and the estimated effect of the EU emissions trading scheme (ETS). The ERT recommends that Slovenia, in accordance with Article 2, paragraph 2, of the Kyoto Protocol, identify the steps it has taken to promote and/or implement any decisions of ICAO and IMO and report such information in its next national communication.

27. Slovenia has provided detailed information on PaMs at the national level but limited information on PaMs implemented at the regional level. The Programme, adopted by the government in 2006 and updated in 2009, is the key strategic policy document that defines PaMs across various sectors to fulfil the Party's commitments under the Kyoto Protocol. Cross-cutting PaMs include the EU ETS, an environmental tax on CO_2 emissions, taxes and charges applied in the energy sector, and awareness-raising and information campaigns.

28. The key policy instruments in place to achieve an 8 per cent GHG emission reduction in comparison with the base year level under the Kyoto Protocol are the EU ETS and the so-called 'Kyoto measures', which refers to the purchase of Kyoto units through mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol (Kyoto Protocol mechanisms). In the second phase of the EU ETS (2008–2012), 94 installations, which emit 43 per cent of Slovenia's total GHG emissions, are covered. These installations have been allocated an average of 8.2 Gg CO_2 emission allowances per year, or 40.8 million Gg CO_2 emission allowances in total during the period 2008–2012.

29. The NC5 provided estimates of the effects of PaMs by sector and by gas. The impact of the various PaMs is aggregated at the sector level. Slovenia has in place a system for the monitoring and evaluation of the performance of the PaMs. When designing its package of PaMs, Slovenia strived to avoid overlap of policy instruments targeting the same emission sources. A good example of such policy design is the exemption from the environmental tax on CO_2 for the participants in the EU ETS. Installations that have emission reduction plans in agreement with the government are also exempt from the above-mentioned environmental tax. By avoiding overlap of PaMs, Slovenia is able to accurately estimate the

[5] European Commission. 2011. *Roadmap to a Single European Transport Area*. Available at <http://ec.europa.eu/transport/strategies/doc/2011_white_paper/white_paper_com(2011)_144_en.pdf>.

effects of its PaMs by sector and by gas. According to Slovenia, the EU ETS has been the most effective policy instrument in terms of GHG emission reduction, followed by the promotion of combined heat and power, and electricity from renewable energy sources (RES). The ERT encourages Slovenia to continue to report, in its next national communication, on how it accounts for overlap or double counting of other PaMs, such as the joint effect of RES and energy-efficiency PaMs, and how the effects of PaMs are being monitored and evaluated over time.

30. In the NC5, Slovenia has not reported any PaMs that may increase GHG emissions. During the review, Slovenia informed the ERT that PaMs reported in the NC4 are still being implemented; however, some policies have been redesigned, owing to unsatisfactory performance and results. The ERT encourages Slovenia, in its next national communication, to provide a discussion of any PaMs that have underperformed since previous national communications and to report specifically on discontinued PaMs and the rationale for their discontinuation. Table 3 provides a summary of the reported information on the PaMs of Slovenia.

Table 3
Summary of information on policies and measures

Major policies and measures	*Examples/comments*
Policy framework and cross-sectoral measures	
European Union emissions trading scheme (EU ETS)	Market-based instrument to promote the reduction of CO_2 emissions in installations covered by the EU ETS (1,394 Gg; 3,242 Gg)
Awareness-raising and education	Package of awareness-raising and training activities to encourage a low-carbon economy
Policies and measures by sector	
Energy	
Environmental tax	A tax equivalent to EUR 12.50/t on CO_2 emissions from energy users (45 Gg; 45 Gg)
Improvement of efficiency in power and heat production	Regulations to reduce CO_2 emissions from electricity and heat production (322 Gg; 1,430 Gg)
Promotion of combined heat and power and renewable electricity	Favourable purchase conditions and loans for combined heat and power and renewable electricity generation (400 Gg; 1,535 Gg)
Energy-efficiency improvements in energy use by industry	Funds and favourable loan conditions to promote more efficient demand-side industrial energy use such as more efficient electric motors
Energy labelling and minimum efficiency standards	Mandated minimum energy efficiency and energy labelling of household appliances (13 Gg; 58 Gg)
Transport	
Promotion of biofuels	Incentives for biodiesel crop production through the provision of grants (181 Gg; 715 Gg)
Sustainable freight transport	More use of rail and construction of new high-speed tracks (19 Gg; 275 Gg)
Reduction of emissions from vehicles	labelling of fuel combustion, tax measures and encouraged purchase of electric or hybrid vehicles (60 Gg; 267 Gg)
Promotion of public transport	Improved integration of modes of public transport (4 Gg; 145 Gg)
Industrial processes	
Regulations on fluorinated gases (F-gases)	European Union directive on F-gases (directive 2006/842/EC)
Taxes	Environmental tax on leakage of F-gases (35 Gg; 267 Gg)

Major policies and measures	*Examples/comments*
Agriculture	
Improved efficiency in domestic animal production	Reduction of emissions per yield of milk and meat per head of cattle (13 Gg; 64 Gg)
Increase in the area of grazing for cattle	Promotion of cattle pasturing in paddocks and fewer cattle with intensive feed (8 Gg; 29 Gg)
Rational fertilization of agricultural land by nitrogen	Research on efficient use of nitrogen fertilizers (15 Gg; 30 Gg)
Forestry	
Forest management	Sustainable forest management plans which set a limit on tree felling (5,500 Gg; 2,730 Gg)
Waste	Total reduction in emissions from waste (207 Gg; 336 Gg)
Waste disposal tax	Taxes on CH_4 emissions from landfills
Regulation on waste incineration	Incineration of waste for heat in large towns
	Waste management and landfill gas management

Note: The greenhouse gas reduction estimates, given for some measures (in parentheses), are reductions in CO_2 or CO_2 eq for the years 2010 and 2020.

1. Policy framework and cross-sectoral measures

31. The Government Office of the Republic of Slovenia of Climate Change, established in June 2009, provides overall guidance on sectoral policies in the area of climate change. The Office reports directly to the Prime Minister and is responsible for the horizontal coordination of PaMs relating to climate change, as well as for representing Slovenia in international negotiations. MESP is responsible for the development, implementation and monitoring of environmental and climate policies and legislation. It also coordinates the preparation and implementation of climate change policies among a number of national institutions, including the Ministry of the Economy, the Ministry of Transport, the Ministry of Finance and the Ministry of Agriculture, Forestry and Food.

32. The Slovenian Environment Agency (ARSO) plays an important role in implementing environmental policy and is responsible for the national inventory system, while the Ministry of the Economy coordinates the implementation of PaMs focused on renewable energy and energy efficiency. Municipalities are required to adopt environmental protection programmes as well as action plans. They are also responsible for spatial planning, traffic regulations, local energy-use plans and waste management.

33. The Programme provides the legal basis for the Party's climate change policy. It defines PaMs that encompass both domestic measures and the use of the Kyoto Protocol mechanisms. Slovenia has not reported in its NC5 any plans to replace the Programme when it expires in 2012. During the review, the ERT was informed that the policies included in the Programme are intended to remain in place beyond 2012. The ERT was also informed that a new Climate Change Act, which targets mainly the sectors not covered by the EU ETS (non-ETS sector) and defines a long-term low-carbon strategy until 2050, is expected to be adopted by the National Assembly in 2011.

34. In the NC5, Slovenia has not reported any targets for GHG emission reduction beyond 2012. During the review, Slovenia informed the ERT of some key targets that must be achieved by 2020 within the framework of the 2008 EU climate and energy package, namely that 25 per cent of energy (on a consumption basis) should come from renewable sources, that emissions from the non-ETS sector should increase by no more than 4 per cent compared with the 2005 level and that emissions covered by the EU ETS should be reduced

by 21 per cent compared with the 2005 level. In addition, according to the National Energy Efficiency Action Plan 2008–2016, Slovenia aims to achieve cumulative energy savings of at least 9 per cent in relation to the starting point for final energy consumption over the period 2008–2016.

35. These medium-term targets are planned to be achieved by means of a number of PaMs. One important policy instrument is the EU ETS, which contributed to an emission reduction of 1,394 Gg CO_2 in 2010. From 2010 onwards, the allocation of emission allowances to installations covered by the EU ETS is being reduced by 1.74 per cent every year until 2020. Measures in the non-ETS sector focus on the promotion of energy efficiency in road transportation (see paras. 43–44 below).

2. Policies and measures in the energy sector

36. Between the base year and 2009, GHG emissions from the energy sector decreased by 1.2 per cent (186.1 Gg CO_2 eq), driven mainly by a reduction in energy demand in manufacturing industries and construction (by –56.5 per cent or –2,486.5 Gg CO_2 eq), which was almost entirely offset by increased emissions from transport (by 161.6 per cent or 3,297.2 Gg CO_2 eq). During this period, Slovenia's emissions from energy use in manufacturing industries decreased, because of the reduced industrial output in the late 1980s and early 1990s. Emissions increased slightly from 1995 until 2008, only to decline again between 2008 and 2009 owing to the global financial crisis. The increase in emissions from transport was driven by a dramatic shift from the use of public transport to private cars: between 1990 and 2007, the number of registered passenger cars increased by 73.3 per cent (from 289 to 501 cars per thousand people).

37. ***Energy supply***. The share of fossil-based fuel consumption in Slovenia's energy supply remained at around 70 per cent from 1990 to 2007. During this period, coal consumption decreased by 2.5 per cent (from 65.9 to 64.3 PJ), oil consumption increased by 71 per cent (from 72.5 to 123.8 PJ) and gas consumption increased by 16 per cent (from 31.9 to 36.8 PJ). Over the same period, the share of nuclear power increased by 36 per cent (from 50.4 to 68.4 PJ) and the renewable energy supply is estimated to have increased by 96 per cent (from 11.7 to 21.9 PJ). The consumption of final energy increased by an annual average of 1.5 per cent in the period 2000–2007. To meet this growing demand, more emphasis has been put on the promotion of combined heat and power generation with high efficiency and on electricity production from RES.

38. ***Renewable energy sources***. The share of energy from RES in Slovenia's gross final energy consumption was 16 per cent in 2005. Slovenia aims to increase the share of RES in energy consumption to 25 per cent by 2020 through the promotion of electricity and heat production from RES. Financial support for up to 15 years has been provided for renewable energy supply from hydro-, wind, solar, biomass and geothermal power and from landfill gas and sludge from wastewater treatment. Plants with nominal electric power of 5 MW may choose between guaranteed purchases and financial aid for running operations, while plants with nominal power higher than 5 MW are able to apply for financial assistance only for current business operations. Renewable electricity generation is supported by the provision of loans for investments with favourable interest rates, while the key PaMs for promoting the use of RES for heat production are regulations such as a mandatory 25 per cent share of RES in the energy supply of buildings, as stipulated in the Rules on Energy Performance of Buildings.

39. According to the EU directive on the promotion of the use of energy from renewable sources (2009/28/EC), at least 10 per cent of final consumption of energy has to be from RES in all forms of transport by 2020. It is not clear from the NC5 whether Slovenia will be able to achieve such a high share of energy consumption in transport from RES. The ERT encourages Slovenia to report on how it expects to meet future renewable energy

targets taking into consideration expected vehicle technologies, biofuel availability and the suitability of its vehicle fleet.

40. ***Energy efficiency***. Slovenia supports combined heat and power plants with a nominal power of 1 MW through the provision of financial assistance or guaranteed purchases of electricity. The Energy Efficiency Action Plan includes financial incentives for energy-efficient construction (EUR 22 million), energy-efficient heating and ventilation (EUR 22 million) and efficient use of electricity (EUR 10.5 million) for the period from 2009 to 2012. A Green Public Procurement Action Plan has been developed to ensure energy efficiency in the public sector, which includes the monitoring and review of energy use in public buildings. Energy-efficiency labelling and minimum standards have been introduced following relevant EU directives. Slovenia also has in place an Eco Fund to provide favourable loans for investment in energy efficiency.

41. ***Residential and commercial sectors***. In 2008, Slovenia introduced new building standards setting minimum requirements for insulation and the energy efficiency of appliances. New buildings for public use over 1,000 m^2 will require energy certification. The use of RES in the residential and commercial sectors is also encouraged, through greater utilization of solar and heat pumps. However, the NC5 does not elaborate on how residential heat pumps contribute to Slovenia meeting its renewable energy targets. The ERT encourages Slovenia to elaborate on this in its next national communication.

42. ***Transport sector***. Slovenia has in place measures to improve the efficiency of the motor vehicle fleet. These include improved public awareness achieved through vehicle fuel labelling on new motor cars, the purchase of hybrid motor vehicles encouraged by favourable loans, and higher tax rates being applied to motor vehicles with higher fuel consumptions after 1 January 2011. By 2015 the average emissions of new vehicles will be capped at 130 g CO_2/km, with an additional 10 g CO_2/km reduction to be achieved through an increased use of improved tyres and biofuels. However, it is not clear to the ERT how this target will be achieved.

43. The Government of Slovenia is promoting the greater use of biofuels in transport by removing the fuel excise tax on biofuels, providing grants for land areas planted for the production of fuel crops and passing a decree to set a minimum share of biofuel use in road transport, which will increase from 3 per cent in 2008 to 6 per cent in 2012. Public transport is being enhanced through subsidies, improved integration of public transport services and public campaigns to promote the use of public transport. Municipal governments are responsible for local public transport and are required to prepare action plans in conjunction with MESP to develop regional public transport infrastructure. In addition, the Government of Slovenia is funding several new rail tracks for high-speed rail freight. The new rail projects are expected to be completed by 2023.

44. The NC5 does not report on the steps that Slovenia has taken to promote and/or implement any decisions of ICAO and IMO in order to limit or reduce emissions of GHGs not controlled by the Montreal Protocol from aviation and marine bunker fuels, although it does report that international aviation will be covered by the EU ETS from 2012 onwards. The ERT recommends that Slovenia report this information in its next national communication.

45. ***Industrial sector***. The industrial use of electricity has been identified by Slovenia as an area of high growth (by 4.5 per cent per annum between 2000 and 2007). The Ministry of the Economy has been directed to develop means to contribute up to 10 per cent of the investment funds for energy-efficient technologies. This is mandated through the Energy Efficiency Action Plan, with EUR 15 million having been set aside for 2009 to 2012 for the implementation of such means. Other measures to promote energy efficiency include the environmental tax targeting CO_2 pollution, which is paid for the combustion of fossil fuels

and the incineration of combustible organic substances. The tax is charged at the rate of EUR 12.50/t CO_2, with possible exemptions for operators of heat and power cogeneration plants and operators that enter into agreements with MESP to reduce CO_2 emissions. The scheme also excludes participants in the EU ETS. About 167 companies have concluded emission reduction agreements that commit them to achieving an emission reduction of 2.5 per cent below reference levels by 2008.

3. Policies and measures in other sectors

46. Between 1986 and 2009, GHG emissions from industrial processes (including solvent and other product use), agriculture and waste decreased by 16.9 per cent (702.8 Gg CO_2 eq). The main drivers for this trend are the transition to a market economy in the early 1990s, the subsequent economic growth since 1995 and the recent global financial crisis. The trend in GHG emissions from industrial processes (including solvent and other product use) showed a notable decrease (–34.7 per cent or 447.3 Gg CO_2 eq), which was only marginally offset by an increase in emissions from waste (by 3.0 per cent or 17.1 Gg CO_2 eq).

47. ***Industrial processes***. Between 1986 and 2009, GHG emissions from the industrial processes sector decreased by 34.7 per cent (447.3 Gg CO_2 eq), driven mainly by the restructuring of industrial activities after the transition to a market economy, followed by economic growth since 1995 and more recently the global financial crisis.

48. As part of the EU, Slovenia is required to comply with the EU F-gas directive. In addition to implementing the EU directive on F-gases, Slovenia amended its environmental tax on air pollution of CO_2 to cover the use and leakage of F-gases. The first time an appliance is filled the tax will be levied at 5 per cent, and on subsequent refilling 100 per cent of the tax is paid. The tax will eventually be levied at the same rate of EUR 12.50/t CO_2 eq. Also, Slovenia has established management practices for the decommissioning of cars and electrical equipment from which F-gases may be released.

49. ***Agriculture***. Between 1986 and 2009, GHG emissions from the agriculture sector decreased by 10.0 per cent (221.8 Gg CO_2 eq). Much of the decrease appears to have occurred between 1986 and 1993 during the transition to a market economy, when production of cattle significantly decreased. Since 1993 emissions from agriculture have remained relatively constant at around 2,000 Gg/year. Slovenia intends to improve the efficiency of domestic animal production, so as to reduce the emission intensity of outputs of milk and meat. This is to be achieved through education programmes and improved livestock breeding. Nitrogen emissions from agricultural land are to be reduced through improved land management, better education of farmers on the role of nitrogen, and improved linking of fertilizer application to soil fertility analysis.

50. In addition, Slovenia is considering increasing the range of grazing for cattle, with the intention of reducing CH_4 emissions from manure from intensive farm management. It is not clear to the ERT whether there will be any net reduction in emissions from the increased use of grazing cattle. Increased N_2O emissions from agricultural soils caused by livestock excreta on pasture, range and paddock will be likely. There will also be greater feed requirements, owing to energy losses from cattle roaming further each day. In addition, grazing cattle may limit opportunities to actively manage feed regimes in order to reduce enteric fermentation. The ERT encourages Slovenia to fully assess the possible increases and decreases in emissions across the subsectors of agriculture as a result of the increased grazing of cattle.

51. ***LULUCF***. The LULUCF sector was a net sink of 8.5 Tg CO_2 eq in Slovenia in 2009, with net GHG removals increasing by 0.8 Tg CO_2 eq since 1986. This trend was mainly driven by forest management plans to reduce the amount of tree felling. In 2007 the

Government of Slovenia adopted the resolution on the NFP. The Slovenia Forest Service prepares forest management plans that control all forest interventions in order to maintain sustainability and environmental friendliness and to protect biodiversity. A logging quota is applied by the Forest Service. Slovenia has elected to account for forest management activities under Article 3, paragraph 4, of the Kyoto Protocol. Estimated net removals from forest management are estimated to be 6.6 Tg CO_2/year, five times more per year than the limit set for Slovenia in decision 16/CMP.1.

52. ***Waste management***. Between 1990 and 2009, GHG emissions from the waste sector increased by 3.0 per cent (17.1 Gg CO_2 eq). Slovenia adopted the Operational Programme on Elimination of Waste in 2008, with the objective of reducing waste in the period from 2009 to 2013. Measures to achieve this objective include building new reprocessing centres to collect, process and separate waste before it goes to landfill, as well as reducing the number of landfills. In areas where the population is more than 200,000 people, waste incineration will be used for waste heat generation. Emissions of CO_2 from waste incineration and from landfill gases are covered by the environmental tax on air pollution of CO_2. Public waste collection services collect separated waste products in urban areas. Waste reduction is also encouraged through a payment for service at waste management sites. The ERT encourages Slovenia to report in its next national communication on whether the aforementioned programme will be maintained and extended after 2013.

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

53. In its NC5, Slovenia 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. Further information on how Slovenia 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 Party's 2011 annual submission, is presented in chapter II.I below.

54. In its NC5, Slovenia has reported on its minimization of adverse impacts within the EU framework. Slovenia participates in providing aid to developing countries to help them to achieve economic development. During the review, Slovenia provided the ERT with additional information on its efforts to minimize the adverse impacts of its measures.

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

55. In its NC5, Slovenia has provided GHG emission projections for all sectors and gases, following the Intergovernmental Panel on Climate Change (IPCC) sector and source categories, under a 'with measures' scenario and a 'with additional measures' scenario. During the review, Slovenia provided the ERT with projections that had been updated since the submission of the NC5.

1. Projections overview, methodology and key assumptions

56. The GHG emission projections provided by Slovenia in the NC5 include a 'with measures' scenario and a 'with additional measures' scenario until 2020, presented relative to actual inventory data for 1990, 1995, 2000 and 2005, complemented with data for 1986, which is the base year for Slovenia. Projections are presented on a sectoral basis, using the same sectoral categories used in the PaMs section of the NC5, and on a gas-by-gas basis for

all the GHGs: CO_2, CH_4, N_2O, PFCs, HFCs and SF_6, with the F-gases being treated collectively. Projections are also provided in an aggregated format for each sector as well as for a national total, using global warming potential values. Emission projections related to fuel sold to ships and aircraft engaged in international transport were not reported in the NC5. Some additional information was provided to the ERT during the centralized review regarding emission projections for international aviation until 2020. The ERT recommends that Slovenia provide this information and emission projections for international shipping in its next national communication.

57. In contrast to in the NC4, projections are provided in the NC5 for the LULUCF sector. The ERT commends Slovenia for this improvement in reporting. However, the ERT noted that Slovenia did not provide projections for the following indirect GHGs in the NC5: carbon monoxide, nitrogen oxide, non-methane volatile organic compounds and sulphur dioxide. The ERT therefore encourages Slovenia to provide this information in its future national communications.

58. Slovenia provided two scenarios in its NC5. The 'with measures' scenario includes all measures implemented or adopted before 2008 as indicated in the PaMs section of the NC5. The 'with additional measures' scenario includes improving energy efficiency in industry and buildings, and the promotion of RES.

59. The methodology used for preparing the projections is well described in the NC5. Projections for the energy sector were developed using the same models as used for calculating the projections reported in the NC4, namely a reference energy ecological model called REESSLO, complemented by a model to assess the market impact of PaMs (PET-SLO), a simulation model for the electricity load curve (ELAM-SLO) and a model for the calculation of balanced electricity production in a free market (ELBIVIM). Two other models were used for making the projections for the transport sector. One is an energy model that was prepared for the assessment of the changes in fuel consumption, and the other is the COPERT model, which is also used to calculate emission estimates for Slovenia's GHG inventory. As for the NC4, emissions from the waste and agriculture sectors were projected using the same IPCC methodology as used to calculate emission estimates for the GHG inventory; for industrial processes, the emissions were calculated on the basis of projected activity data.

60. Information about all key assumptions and parameters used to develop the 'with measures' and 'with additional measures' scenarios is clearly and comprehensively presented in annex D to the NC5 for the years 2010, 2015 and 2020 in tabular format. The table includes macroeconomic (GDP and fossil fuel price), demographic and energy consumption indicators, as well as activity data for all sectors modelled and supplementary information on the forecast share of the effects of individual measures in each scenario.

61. The sensitivity of the results of the projections using different input parameters is discussed in the NC5. The sensitivity of the projections is analysed with the implementation of two scenarios of economic growth and residential construction and two strategies for the implementation of measures – referential and intensive. The sensitivity of the projections to the price of fuel in comparison with neighbouring countries was shown for the transport sector. The sensitivity is estimated on the basis of the assumption that 95 per cent of transit transport vehicles fill their fuel tanks in neighbouring countries in the event of lower prices of fuel in these countries. The results of the sensitivity analyses were well presented in tabular format in the NC5.

62. Slovenia provided estimates of the uncertainties of the projections in the NC5, which are based on the uncertainty of statistical data, emission factors, models and scenarios of future economic, technological and social development, including the uncertainty of energy prices and the growth of energy supply and demand. The

EMEP/CORINAIR in the Emission Inventory Guidebook (2002) was used for the estimation of the uncertainty of activity data and emission factors. Quantitative results were presented only for the agriculture sector. Slovenia's largest uncertainty was for the projections for the transport sector. The ERT encourages Slovenia to include in its future national communications quantitative results of the uncertainty analyses for all sectors.

2. Results of projections

63. The key results of Slovenia's GHG emission projections are provided in table 4 and the emission trends are illustrated in the figure below. Slovenia is on track to overachieve its target under the Kyoto Protocol of an 8 per cent emission reduction compared with the base year level by a combination of domestic efforts, the use of the Kyoto Protocol mechanisms and the use of accounting for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol.

64. The Kyoto Protocol target for Slovenia is, on average, emissions of 18.73 Tg CO_2 eq per annum over the first commitment period of the Kyoto Protocol (2008–2012). According to the projections presented in the NC5, under the 'with measures' scenario the Party's GHG emissions will amount to 21.06 Tg CO_2 eq in 2010 (as an average for the period 2008–2012), which means a gap to achieving its Kyoto target of 2.33 Tg CO_2 eq. According to Slovenia, this gap will be closed through the implementation of additional measures (0.02 Tg CO_2 eq), the use of carbon credits from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol (1.32 Tg CO_2 eq) and the purchase of Kyoto units. However, there is no explicit information in the NC5 on which Kyoto Protocol mechanisms will be used.

65. According to the NC5, CO_2 emissions in 2020 are projected to be 19.83 Tg CO_2 eq under the 'with measures' scenario and 19.76 Tg CO_2 eq under the 'with additional measures' scenario, which are 2.6 per cent and 2.9 per cent lower than the base year level, respectively. Under the 'with measures' scenario, the relative contribution to the total GHG emissions (in CO_2 eq) is 83 per cent for CO_2 in 2010, slightly decreasing to 82 per cent in 2020; 10 per cent for CH_4 in 2010 and 2020; 6 per cent for N_2O in 2010, increasing to 7 per cent in 2020; and less than 1 per cent for F-gases in 2010 and 2020.

66. GHG removals are projected to decrease between 2010 and 2020. Removals were estimated at 5.5 Tg CO_2 in 2010, decreasing to 2.7 Tg CO_2 in 2020. The reduction in removals is a result of the increase in the felling of trees, as foreseen in the NFP.

67. During the review, Slovenia provided the results of its most recent projections, prepared by MESP in February 2011. The updated GHG emission projections include a 'with measures' and a 'with additional measures' scenario until 2030, presented relative to actual inventory data. Projections are presented on a sectoral basis. Projected emissions under the 'with measures' scenario are 19.8 Tg CO_2 eq in 2010, which is 5.8 per cent lower than that projected in the NC5, whereas emissions are projected to be 22.3 Tg CO_2 eq in 2020, which is 5.1 per cent higher than that projected in the NC5. With additional measures, emission levels are projected to be 6.5 per cent and 5.0 per cent lower in 2010 and 2020, respectively, than those projected in the NC5. In the longer term, the updated projections show that projected emissions in 2030 will be 20.9 Tg CO_2 eq under the 'with measures' scenario and 17.5 Tg CO_2 eq under the 'with additional measures' scenario. The key results of the emission projections are shown in table 4 and the trends are illustrated in the figure below.

Table 4
Summary of greenhouse gas emission projections for Slovenia

	Greenhouse gas emissions (Tg CO_2 eq per year)	*Changes in relation to base year level (%)*	*Changes in relation to 1990 level (%)*
Inventory data 1990[a]	18.48	–9.2	NA
Inventory data 2009[a]	19.34	–5.0	4.7
Kyoto Protocol base year[b]	20.35	NA	10.2
Kyoto Protocol target[b]	18.73	–8.0	1.3
'With measures' projections for 2010[c]	21.06	3.5	14.0
'With additional measures' projections for 2010[c]	21.04	3.4	13.9
'With measures' projections for 2020[c]	19.83	–2.6	7.3
'With additional measures' projections for 2020[c]	19.76	–2.9	7.0
'With measures' projections for 2010[d]	19.83	–2.6	7.3
'With additional measures' projections for 2010[d]	19.68	–3.3	6.5
'With measures' projections for 2020[d]	22.26	9.4	20.5
'With additional measures' projections for 2020[d]	18.75	–7.9	1.5

Abbreviation: NA = not applicable.

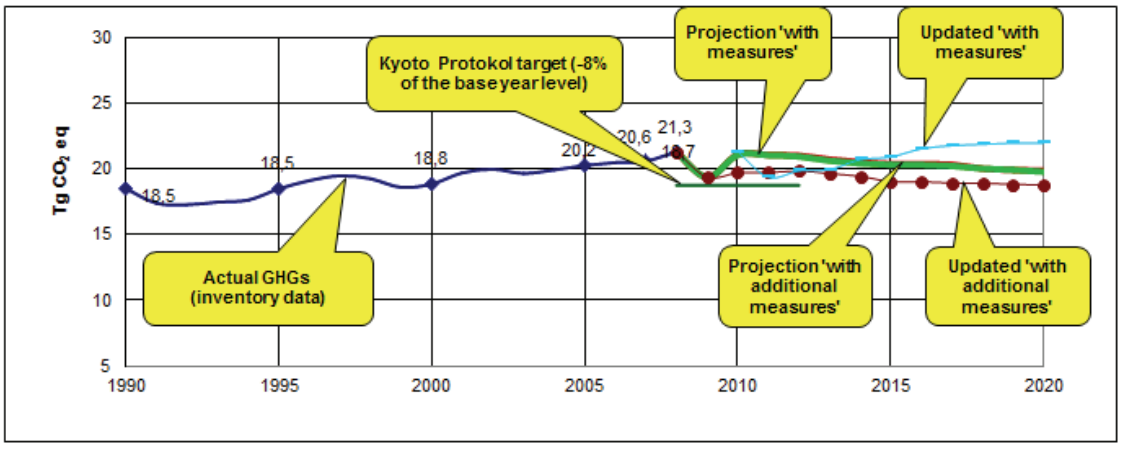
[a] *Data source*: Slovenia's 2011 greenhouse gas (GHG) inventory submission; the emissions are without land use, land-use change and forestry (LULUCF).

[b] *Data source*: Based on the initial review report contained in document FCCC/IRR/2007/SVN.

[c] *Data* source: Slovenia's fifth national communication.

[d] Updated projections provided by the Party during the in-depth review; the projections are for GHG emissions without LULUCF.

Greenhouse gas emission projections



Sources: (1) Data for the years 1986–2009: Slovenia's 2011 greenhouse gas inventory submission; the emissions are without land use, land-use change and forestry; (2) Data for the years 2009–2020: Slovenia's fifth national communication; the emissions are without land use, land-use change and forestry; updated projections provided by the Party during the in-depth review.

Abbreviation: GHGs = greenhouse gases.

3. Total effect of policies and measures

68. In its NC5, Slovenia presents the estimated and expected total effect of implemented and adopted PaMs and an estimate of the total effect of its PaMs, in accordance with the 'with measures' definition, compared with a situation without such PaMs. Information is presented in terms of GHG emissions avoided or sequestered, by gas (on a CO_2 eq basis), in 2005, 2010, 2015 and 2020.

69. However, the ERT noted that Slovenia did not provide the following reporting elements required by the UNFCCC reporting guidelines: the estimated and expected total effect of implemented and adopted PaMs, in accordance with the 'with measures' definition, compared with a situation without such PaMs, presented in terms of GHG emissions avoided or sequestered (on a CO_2 eq basis) for 1995 and 2000; and relevant information on factors and activities for each sector for the period 1990 to 2020. During the review, Slovenia explained that the reference scenario or the 'without measures' projections was made with the base year of 2007 and, therefore, the effect of PaMs could not be provided for 1995 and 2000.

70. Slovenia reported that the total estimated effect of adopted and implemented PaMs is 3.22 Tg CO_2 eq in 2010, 6.95 Tg CO_2 eq in 2015 and 9.59 Tg CO_2 eq in 2020. The most effective PaMs and drivers behind GHG emission reductions are described in chapters II.B.1 and II.B.2 above. Slovenia did not provide in the NC5 the table showing the total effect of PaMs implemented and adopted by sector, whereas such information was presented in the NC4. The ERT encourages Slovenia to present the total effect of its PaMs by sector and to make further improvements to the structure and accuracy of its reporting in its future national communications.

71. In summary, Slovenia's NC5 provides a clear and detailed description of the assumptions and methodology used for and the results of its projections. However, the ERT noted that the NC5 does not present sector-specific information on factors and activities, which would enable a clear understanding of emission trends and projections for the period 1990–2020. Information is given in an annex to the NC5 on factors and activities from 2005 onwards only. The ERT encourages Slovenia to provide sector-specific information on factors and activities in its future national communications.

4. Supplementarity relating to mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol

72. Slovenia, 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. Slovenia reports that it may need to use the Kyoto Protocol mechanisms to achieve its Kyoto target, but no further information is provided. However, the ERT noted that even if Slovenia plans to use the Kyoto Protocol mechanisms to achieve its Kyoto target, it is likely that its domestic action will constitute a significant part of the effort made to meet its Kyoto target, as it will account for more than half of the overall effort (see paras. 64 and 70 above).

D. Vulnerability assessment, climate change impacts and adaptation measures

73. In its NC5, Slovenia has provided some information on the expected impacts of climate change in the country and on adaptation options. However, the ERT noted that information is insufficient on the expected impacts of climate change in Slovenia and on action taken to implement Article 4, paragraph 1(b) and (e), of the Convention, specifically on the formulation and implementation of measures to facilitate adequate adaptation to

climate change and on cooperation with developing countries with regard to adaptation. Table 5 summarizes the information on vulnerability and adaptation to climate change presented in the NC5.

Table 5
Summary of information on vulnerability and adaptation to climate change

Vulnerable area	*Examples/comments/adaptation measures reported*
Agriculture	*Vulnerability*: The agriculture sector is very vulnerable to the current climate variability *Adaptation*: Not available
Biodiversity	*Vulnerability*: The influences of climate change on the natural environment are expected to be noticeable primarily in changes in the water cycle, and consequently in more frequent extreme weather events and the reduction of biological diversity *Adaptation*: Sustainable use and preservation of natural assets to enhance the resilience of ecosystems and the role of biodiversity in integral adaptation measures
Urban development and infrastructure	*Vulnerability*: This sector has become increasingly vulnerable to climate change *Adaptation*: Not available
Drought	*Adaptation*: Irrigation and the establishment of the Drought Management Centre for Southeastern Europe in 2006, which covers 13 countries in the region
Water resources	*Vulnerability*: Changes in the precipitation regime due to climate change *Adaptation*: Sustainable and integrated management of water resources for the prevention of floods, water power production and the provision of water for the enrichment of low flow rates

74. The projections of climate change made in 2007 indicate differentiated increases in temperature, especially in the summer, a reduction in precipitation in the hottest months and an increase in precipitation during the cold months. In its NC5, Slovenia reports that the impacts of climate change will be primarily on the natural environment, the economy and society. Changes in the water cycle will lead to more frequent extreme weather events and a decline in local biodiversity. Climate change will also result in changes in the agriculture, energy and tourism sectors. In addition, increased frequency and intensity of extreme weather events will have an impact on human health and migration. To address the negative impacts of climate change, the Drought Management Centre for Southeastern Europe was established in 2006, which covers 13 countries in the region.

75. In its NC5, Slovenia has identified a number of priority areas for climate change adaptation. These include the sustainable and integrated management of water resources and forest ecosystems, spatial planning, the sustainable use and preservation of natural assets, the preservation of biodiversity and ecosystem services, and information campaigns and awareness-raising. Compared with in the NC4, the Party provided less extensive information on vulnerability and adaptation in the NC5. Recent studies carried out after the submission of the NC4 on climate change vulnerability and adaptation have not been reported in the NC5. The ERT recommends that Slovenia provide more comprehensive information on vulnerability assessment and adaptation measures in its next national communication, and report on action taken to implement Article 4, paragraph 1(b) and (e), of the Convention.

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

76. Slovenia is not a Party included in Annex II to the Convention and is therefore not obliged to adopt measures and fulfil obligations as defined in Article 4, paragraphs 3, 4 and 5, of the Convention. However, its NC5 did include some relevant information and additional information was provided during the review. The ERT assessed this information and its findings are reflected in this report.

1. Financial resources, including "new and additional" resources and resources under Article 11 of the Kyoto Protocol

77. In its NC5, Slovenia has reported on its provision of financial assistance in the form of official development assistance (ODA), covering the period from 2006 to 2008. In accordance with the decisions of the EU Council and the European Consensus on Development,[6] Slovenia aims to increase the share of ODA to the level of 0.17 per cent of gross national income (GNI) by 2010 and 0.33 per cent by 2015. In 2008, ODA totalled EUR 46.9 million, which represents 0.13 per cent of GNI. More than half of these funds were allocated to multilateral aid, with the majority being channelled through the EU budget and in the form of contributions to international organizations and institutions. Two thirds of bilateral aid was directed towards the countries of the Western Balkans. A larger part of the bilateral aid was given in form of the co-financing of projects.

78. Slovenia has also reported on its contribution to the Global Environmental Facility (GEF). In 2007 and 2008, its contribution to the GEF increased to a little under EUR 1 million per year, while in 2009 its contribution increased to EUR 1.2 million.

2. Activities related to transfer of technology, including information under Article 10 of the Kyoto Protocol

79. In its NC5, Slovenia has provided information about its engagement in the transfer of technology and information under Article 10 of the Kyoto Protocol. The NC5 makes reference to the projects Slovenia undertakes or co-finances within the framework of international development cooperation, which include development elements and technology transfer relating to climate change mitigation.

80. In addition, Slovenia has reported on projects and initiatives co-financed within the framework of international cooperation in South-eastern Europe and through the channel of the Ministry of Higher Education, Science and Technology, the International Center for Promotion of Enterprises and the Slovene Export and Development Bank. Slovenia has also reported on activities undertaken by the private sector. Examples of its technology transfer activities in 2008 and 2009 include those undertaken with Albania, Croatia and Serbia, specifically on integrated water management in environmentally friendly vegetable production, the use of nanocrystalline silicon as a possible candidate for third-generation solar cells, and the development of cascade heat pumps for the use of geothermal and subgeothermal water sources for high-temperature central heating.

[6] Available at <http://europa.eu/legislation_summaries/development/general_development_framework/r12544_en.htm>.

F. Research and systematic observation

81. Slovenia has provided information on its actions relating to RSO and has reported on its domestic activities. However, the ERT noted that Slovenia did not provide the following reporting elements required by the UNFCCC reporting guidelines: information on international activities related to the World Climate Programme, the International Geosphere–Biosphere Programme, GCOS and the IPCC; information on action taken to support related capacity-building in developing countries; and a summary of information on GCOS activities. The ERT recommends that Slovenia include this information in its next national communication.

82. Slovenia has reported on its participation, since 2008, in the Network of European Meteorological Services (EUMETNET), the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) and the European Centre for Medium-Range Weather Forecasts (ECMWF). In addition, Slovenia has participated in the European system for alerting the public to extreme weather events (METEOALARM) since 2008.

83. Slovenia has in general provided information about its international cooperation in several specific fields of RSO. The NC5 highlights activities undertaken by the Slovenian Environment Agency, such as measuring air pollution and the systematic observation and measurement of water in rivers and lakes as well as cross-border river basins. In 2008, the Climate Variability in Slovenia project started, with a three-year duration, to explore climatic variability in the past 50 years. In addition, Slovenia has reported on a number of projects developed between 2003 and 2007 that involve RSO around a wide range of topics.

G. Education, training and public awareness

84. In the NC5, Slovenia has provided information on its actions relating to education, training and public awareness at both the domestic and international level. The NC5 reports a comprehensive list of courses and programmes offered by Slovene secondary and high schools, scientific institutes and universities, which underlines the diversity of the country's climate change related studies. Collaborative programmes with international institutions have been set up. While the NC4 reported the results of public opinion polls stating that only 47 per cent of Slovenia's total population is aware of climate change, the Eurobarometer opinion poll (2008) reported in the NC5 indicates that 89 per cent of the Slovene population considers climate change to be a very serious problem.

85. The NC5 outlined governmental support for education and training programmes related to climate change, which involves the Ministry of Education and Sport, the focal agency for the development and operation of the education and training system, local communities, expert panels appointed by the Government of Slovenia, the Slovenian National Education Institute, the Centre of the Republic of Slovenia for Vocational Education and Training, the Slovenian Institute for Adult Education and the State Examination Centre. New and more harmonized activities are expected with the commencement of the operation of the Government Office of the Republic of Slovenia of Climate Change, which will be responsible for the promotion and preparation of public-awareness, training and education programmes with regard to climate change.

86. MESP plays the most important role in raising public awareness in relation to climate change. A large and diverse range of activities to raise public awareness is highlighted in the NC5, including issuing publications and bulletins, holding professional consultation meetings and other events, and the development of web pages. Non-governmental organizations (NGOs) and consultancy firms are also credited with playing an important role in education and public information and awareness. In 2007, an

Environmental Centre was founded, which acts as the framework for the operations of environmental NGOs. The Environmental Centre has become the centre for the involvement of interested members of the public, while enabling access by the wider public to information and publications on environmental protection and climate change.

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

87. Slovenia 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 6 provides an overview of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol provided by Slovenia, as well as references to the chapters of the NC5 in which this information is provided.

88. Slovenia has not reported the following element of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol: steps taken to promote and/or implement any decisions of ICAO and IMO in order to limit or reduce emissions of GHGs not controlled by the Montreal Protocol from aviation and marine bunker fuels. The ERT recommends that Slovenia include this reporting element in its next national communication. The technical assessment of the information reported under Article 7, paragraph 2, is contained in the relevant chapters of this report.

Table 6
Overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

Supplementary information	*Reference*
National registry	Chapters 3.4 and 4.15.3, NC5
National system	Chapter 3.3, NC5
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Chapter 4.13, NC5
Policies and measures in accordance with Article 2	Chapter 4, NC5
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	Chapter 4.15, NC5
Information under Article 10	Chapters 6, 7, 8 and 9, NC5
Financial resources[a]	Chapter 7, NC5

[a] As a country with an economy in transition, Slovenia 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

89. Slovenia reported the 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 2011 annual submission. During the review, Slovenia provided 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 to be

incomplete and not sufficiently transparent with regard to the specific details of the activities being undertaken. The ERT recommends that Slovenia improve transparency and completeness by including in its next annual submission more information on how the activities being undertaken will minimize adverse social, environmental and economic impacts on developing countries.

90. On the basis of the additional information provided by Slovenia during the review, the ERT noted that PaMs to reduce GHG emissions are designed in such a way as to have no or the minimum adverse impacts on developing countries, particularly on the least developed countries. In order to avoid the negative impacts of biofuel imports on developing countries, Slovenia has introduced a sustainability standard for biofuels, in compliance with the related EU directives. More recently, the principle of minimizing adverse impacts of climate change has been adopted in defining priority areas for the provision of financial resources to the climate change related funds set up under the Copenhagen Accord.[7] In addition, Slovenia explains that, owing to the small size of its economy, most of the measures to reduce GHG emissions implemented in Slovenia are not expected to have direct effects on developing countries, or at least any effects will be minimal or negligible. The ERT encourages Slovenia to continue exploring and reporting on the adverse impacts of its response measures in its future national communications.

III. Conclusions and recommendations

91. The ERT concludes that in general the NC5 provides a good overview of the national climate policy of Slovenia. The information provided in the NC5 includes most of the mandatory information required by the UNFCCC reporting guidelines and most elements of the supplementary information under Article 7 of the Kyoto Protocol (see para. 7 above). During the review, Slovenia provided additional information on the missing elements. The ERT also concludes that the information provided in the NC5 is broadly transparent. However, the ERT noted with great concern the delay in the submission of the NC5.

92. Slovenia's emissions for 2009 were estimated to be 4.4 per cent below its base year level excluding LULUCF and 13.2 per cent below including LULUCF. The initial decline in GHG emissions took place during the period 1986–1995, driven by the transition from a centrally planned economy to a market economy. Between 1995 and 2008, GHG emissions increased, owing mainly to increased economic activity and a fast-growing transport sector. More recently, emissions decreased dramatically, owing to the global financial crisis and its impact on Slovenia.

93. In its NC5, Slovenia has presented GHG projections for the period 2008–2020. Two scenarios are included: a 'with measures' scenario and a 'with additional measures' scenario. The projected levels of GHG emissions under the 'with measures' scenario and the 'with additional measures' scenario in 2010 are 3.4 per cent and 3.5 per cent higher, respectively, than the base year level. Thus, the projections indicate that Slovenia cannot meet its Kyoto target (which is an 8 per cent emission reduction), even with additional PaMs in place. Hence, the use of credits from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol as well as the purchase of Kyoto units are essential to help Slovenia to achieve its Kyoto target.

94. Slovenia, 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. The ERT noted that, even if Slovenia plans to use the Kyoto Protocol mechanisms

[7] Decision 2/CP.15.

to meet its emission reduction commitment, the supplementarity criteria can still be met, given that more than half of its emission reduction efforts will be domestic efforts.

95. Slovenia has implemented a wide range of PaMs to reduce GHG emissions in all sectors. Its diverse PaM portfolio encompasses market instruments (EU ETS), taxes (CO_2 tax, F-gases tax and tax on CH_4 emissions from landfills), regulations and standards (such as those in the waste and residential sectors), and targets and incentives, especially for the promotion of energy efficiency and renewables. Of particular significance are its participation in the EU ETS, the promotion of combined heat and power and renewable electricity in the energy sector, and measures in the non-ETS sector, such as a greater use of biofuels in transport and increasing energy efficiency in road transportation. In the longer term, Slovenia has clear targets within the framework of the EU climate and energy package for GHG emission limitation, renewable energy deployment and energy saving by 2020.

96. The ERT commends Slovenia for its reporting on financial resources and transfer of technology.

97. Compared with the NC4, the NC5 provided less extensive and detailed information on vulnerability and adaptation. The impacts of climate change in Slovenia will be primarily on the natural environment, economy and society. A number of priority areas for climate change adaptation have been identified, including the sustainable and integrated management of water resources and forest ecosystems, spatial planning, the sustainable use and preservation of natural assets, and the preservation of biodiversity and ecosystem services, as well as information campaigns and awareness-raising.

98. A good variety of climate change related studies is offered by Slovene secondary and high schools, scientific institutes and universities. New and more harmonized activities in public awareness, training and education are expected with the commencement of the operation of the Government Office of the Republic of Slovenia of Climate Change. Slovenia participates in several regional activities in relation to RSO, including EUMETNET, EUMETSAT, ECMWF and METEOALARM. However, information on international activities relating to RSO has not been provided in the NC5.

99. The ERT concluded that Slovenia's national system continues to perform its required functions as set out in decision 19/CMP.1; and that the national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1, and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant decisions of the CMP. The ERT noted that updates of databases and applications and functional testing are documented on a regular basis. However, documented updates of implemented security measures and changes to the national registry software were not provided during the review.

100. 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 2011 annual submission is incomplete and not sufficiently transparent. Further information was provided to the ERT during the review. The ERT recommends that Slovenia improve transparency and completeness by including in its next annual submission more information on how the activities being undertaken will minimize adverse social, environmental and economic impacts on developing countries.

101. In the course of the IDR, the ERT formulated several recommendations relating to the completeness and transparency of Slovenia's reporting under the Convention and its Kyoto Protocol. The key recommendations[8] are that Slovenia:

[8] The recommendations are given in full in the relevant chapters of this report.

(a) Improve the completeness of its reporting by including in its next national communication the following:

(i) Emission projections related to fuel sold to ships and aircraft engaged in international transport;

(ii) Information on actions taken to cooperate with developing countries with regard to adaptation;

(iii) Information on international activities related to the World Climate Programme, the International Geosphere–Biosphere Programme, GCOS and the IPCC;

(iv) Information on actions taken to support capacity-building in RSO in developing countries;

(v) Information on steps taken to promote and/or implement any decisions of ICAO and IMO in order to limit or reduce emissions of GHGs not controlled by the Montreal Protocol from aviation and marine bunker fuels;

(b) Improve the transparency of its reporting by:

(i) Elaborating on the expected impacts of climate change and on action taken to implement Article 4, paragraph 1(b) and (e), of the Convention;

(ii) Providing explicit information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action;

(c) Improve the transparency and completeness of its reporting by including in its next annual submission information on how it gives priority to the actions taken to implement its commitments under Article 3, paragraph 14, of the Kyoto Protocol regarding the minimization of adverse impacts of response measures to climate change.

102. The ERT encourages Slovenia to undertake a number of improvements regarding the transparency and completeness of its reporting; the most important of these are that the Party:

(a) Communicate how the progress with PaMs to mitigate GHG emissions is monitored and evaluated over time;

(b) Provide more information on the PaMs that have been discontinued or redesigned since the previous national communication;

(c) Elaborate on the methods used to estimate the mitigation effects of individual PaMs and on how PaMs interact with one another;

(d) Present the estimated total effect of PaMs by sector;

(e) Provide emission projections for the indirect GHGs.

IV. Questions of implementation

103. 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>.

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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>.

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Standard independent assessment reports. Available at <http://unfccc.int/kyoto_protocol/registry_systems/independent_assessment_reports/items/4061.php>.

2009 greenhouse gas inventory submission of Slovenia. Available at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/4771.php>.

2011 greenhouse gas inventory submission of Slovenia. Available at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/5888.php>.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Barbara Simonic (Government Office of the Republic of Slovenia of Climate Change), including additional material on updated policies and measures, greenhouse gas projections, the national registry and recent climate policy developments in Slovenia.