



**Framework Convention on  
Climate Change**

Distr.: General  
24 August 2011

English only

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**Report of the in-depth review of the fifth national  
communication of Estonia**

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 Estonia 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 Estonia, the Convention entered into force on 25 October 1994 and the Kyoto Protocol on 16 February 2005. Under the Kyoto Protocol, Estonia committed itself to reducing its greenhouse gas (GHG) emissions by 8 per cent compared with the base year level<sup>1</sup> 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 Estonia, 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 9 to 14 May 2011 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Mr. Jorge Alvarez Lam (Peru), Mr. Kennedy Amankwa (Ghana), Mr. Eric De Brabanter (Luxembourg), Ms. Violeta Hristova Hristova (Bulgaria), Ms. Tuğba İçmeli (Turkey), Mr. Seungdo Kim (Republic of Korea), Ms. Sara Moarif (France) and Mr. Nguyen Mong Cuong (Viet Nam). Mr. Alvarez Lam and Mr. De Brabanter were the lead reviewers. The review was coordinated by Ms. Inkar Kadyrzhanova and Ms. Barbara Muik (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 Estonia 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 Estonia in its 2010 annual submission and elaborated on 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 Estonia, which informed the ERT that it had no comments for incorporation into the final version of the report.

### B. Summary

5. The ERT noted that Estonia'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, most of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol<sup>2</sup> is provided in the NC5. Estonia considered some recommendations provided in the report on the IDR of the fourth national communication (NC4) of Estonia.<sup>3</sup> The ERT commended Estonia for its improved reporting.

6. The supplementary information on the minimization of adverse impacts referred to in paragraph 3 above was complete and transparent and was provided on time.

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<sup>1</sup> "Base year" refers to the base 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.

<sup>2</sup> Decision 15/CMP.1, annex, chapter II.

<sup>3</sup> FCCC/IDR.4/EST.

## 1. Completeness

7. The NC5 covers all sections required by the UNFCCC reporting guidelines, and most of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol, except for some information on the national registry; and identification of steps taken to promote and/or implement any decisions by the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) in order to limit GHG emissions not included in the Montreal Protocol from aviation and marine bunker fuels (see paras. 23 and 26 below). The NC5 does not include some information required by the UNFCCC reporting guidelines on the policies and measures (PaMs) (see para. 26 below); and on projections and the total effect of PaMs (see paras. 64, 76 and 78 below). The Party provided this missing information during the review. The ERT recommends that Estonia enhance the completeness of its reporting by including this information in its next national communication.

## 2. Transparency

8. The ERT acknowledged that Estonia's NC5, including the supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol, is generally comprehensive and transparent. The NC5 is structured following the outline contained in the annex to the UNFCCC reporting guidelines and the supplementary information submitted under Article 7, paragraph 2, of the Kyoto Protocol is easily identifiable. The NC5 provides information on all aspects of implementation of the Convention and its Kyoto Protocol. In the course of the review, the ERT formulated a number of recommendations that could help Estonia to further increase the transparency of its reporting with regard to: projections and the total effect of PaMs (see para. 64 below); and vulnerability assessment and adaptation (see para. 80 below).

## 3. Timeliness

9. The NC5 was submitted on 12 February 2010, after the deadline of 1 January 2010 mandated by decision 10/CP.13. Estonia did not inform the secretariat about its difficulties with the timeliness of its national communication submission in accordance with decision 22/CMP.1, paragraph 139. The ERT recommends that Estonia submit its next national communication on time.

## II. Technical assessment of the reviewed elements

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

10. In its NC5, Estonia has provided a comprehensive description of its national circumstances, and elaborated on its framework legislation and key policy documents on climate change. The NC5 also referred to the description of the national system provided in the report mandated by decision 13/CMP.1, submitted in 2006,<sup>4</sup> and in the national inventory report (NIR) of the 2009 annual submission. Further technical assessment of the institutional and legislative arrangements for coordination and implementation of PaMs are provided in chapter II.B.I of this report.

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<sup>4</sup> Report of the review of the initial report of Estonia. Available at [http://unfccc.int/national\\_reports/initial\\_reports\\_under\\_the\\_kyoto\\_protocol/items/3765.php](http://unfccc.int/national_reports/initial_reports_under_the_kyoto_protocol/items/3765.php).

## 1. National circumstances

11. In its NC5, Estonia has provided a description of its national circumstances and information on how these national circumstances affect GHG emissions and removals in Estonia and how changes in national circumstances affect GHG emissions and removals over time. 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 Estonia include the transition from a centrally planned economy to a market driven economy, which started in the early 1990s, massive restructuring of its economy, reduction of oil shale use, energy efficiency enhancement in the power generation and transport sectors, and the increase in Estonia's forest cover.

12. As an economy in transition from a centrally planned to a market driven one, Estonia experienced a sharp reduction in gross domestic product (GDP) and significant slowdown of economic activities at the beginning of 1990s. During the period 1995–2008, the negative economic trend reversed and the macroeconomic indicators, such as GDP and GDP per capita, demonstrated significant growth. The Estonian economy provides an example of transition towards the low carbon economy that is characterized by high economic growth (GDP increase by 65.8 per cent) and significant reduction of carbon intensity (decrease of GHG emissions per unit of GDP by 70.5 per cent) over the period 1990–2008. Table 1 illustrates the national circumstances of the country by providing some indicators relevant to GHG emissions and removals.

13. Estonia is a parliamentary republic. The Cabinet of Ministers comprises 15 ministers, including the Prime Minister. The Ministry of the Environment and the Ministry of Economic Affairs and Communications are the main ministries responsible for climate and energy issues. The territorial and administrative structure of Estonia consists of 227 local governments, including 194 rural municipalities and 33 city municipalities. The functions of all the municipalities are the same by law and they are primarily responsible for education, public works, housing, local road maintenance and other areas. A significant part of the PaMs are deferred to the local level (see para. 32 below). 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 chapter II.B of this report.

14. Estonia has provided in its NC5 a summary of information on GHG emission trends for the period 1990–2007. This information is consistent with the 2009 national GHG inventory submission. Summary tables, including trend tables for emissions in carbon dioxide equivalent (CO<sub>2</sub> eq) (given in the common reporting format), are also provided in an annex to the NC5. During the review, the ERT assessed the recently submitted 2011 annual submission and reflected the findings in this report.

15. Total GHG emissions<sup>5</sup>, excluding emissions and removals from land use, land-use change and forestry (LULUCF), decreased by 59.0 per cent between 1990 and 2009, whereas total GHG emissions, including net emissions or removals from LULUCF, decreased by 68.0 per cent. This was mainly attributed to CO<sub>2</sub> emissions, which decreased by 72.0 per cent over this period. Emissions of methane (CH<sub>4</sub>) decreased by 50.3 per cent, while emissions of nitrous oxide (N<sub>2</sub>O) decreased by 47.9 per cent. Emissions of fluorinated gases (F-gases) were reported as not estimated in 1990, whereas in 2009 they accounted for about 1.5 per cent of total GHG emissions. During the period 1990–1994, total GHG emissions decreased significantly, dropping by 35.2 per cent; whereas, during the period 1995–2009, total GHG emissions continued to decrease but at a much slower rate, dropping by 9.1 per cent. Trends of total GHG emissions during the period 1990–2009

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<sup>5</sup> In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions expressed in terms of CO<sub>2</sub> eq excluding LULUCF, unless otherwise specified.

were mostly underpinned by the trend of CO<sub>2</sub> emissions from the energy and industrial processes sectors. In addition, the emissions from the agriculture sector dropped significantly (56.9 per cent), due to reduction in livestock population, decreasing use of fertilizers and reduction in manure applied to agricultural lands.

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

	1990	1995	2000	2005	2008	Change 1990– 2000 (%)	Change 2000– 2008 (%)	Change 1990– 2008 (%)
Population (million)	1.59	1.45	1.37	1.35	1.34	–13.6	–2.3	–15.6
GDP (USD 2 000 billion using PPP)	13.59	9.79	13.53	19.82	22.53	–0.4	66.5	65.8
TPES (Mtoe)	9.58	5.04	4.72	5.16	5.40	–50.7	14.5	–43.6
GDP per capita (USD 2 000 thousand PPP)	8.56	6.76	9.86	14.70	16.80	15.3	70.3	96.3
TPES per capita (toe)	6.03	3.48	3.44	3.83	4.03	–43.0	17.2	–33.2
GHG emissions without LULUCF (Tg CO <sub>2</sub> eq)	41.05	20.25	17.81	19.16	20.07	–56.6	12.7	–51.1
GHG emissions with LULUCF (Tg CO <sub>2</sub> eq)	30.64	10.79	21.82	10.50	19.75	–28.8	–9.5	–35.6
CO <sub>2</sub> emissions per capita (Mg)	22.84	12.22	11.07	12.21	12.85	–51.5	16.0	–43.8
CO <sub>2</sub> emissions per GDP unit (kg per USD 2 000 using PPP)	2.67	1.81	1.12	0.83	0.76	–58.0	–31.9	–71.4
GHG emissions per capita (Mg CO <sub>2</sub> eq)	25.85	13.98	12.98	14.22	14.97	–49.8	15.3	–42.1
GHG emissions per GDP unit (kg CO <sub>2</sub> eq per USD 2 000 using PPP)	3.02	2.07	1.32	0.97	0.89	–56.4	–32.3	–70.5

Sources: (1) GHG emissions data: Estonia'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.

16. Trends for total GHG emissions were mostly underpinned by emission trends in the energy sector, driven by transition from a centrally planned to a market driven economy and reduction in electricity and heat production. Emissions from the energy sector have decreased by 62.4 per cent between 1990 and 2009, contributing 69.7 per cent to total GHG emissions in 1990 and 63.9 per cent in 2009. Analysis of drivers of GHG emission 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 2009.

Table 2  
**Greenhouse gas emissions by sector in Estonia, 1990–2009**

Sector	GHG emissions (Tg CO <sub>2</sub> equivalent)						Change (%)		Shares <sup>a</sup> by sector (%)	
	1990	1995	2000	2005	2008	2009	1990–	2008	1990	2009
							2009	2009		
1. Energy	36.16	17.49	15.05	16.39	16.90	14.40	-60.2	-14.8	88.1	85.5
A1. Energy industries	28.60	14.18	11.93	12.43	12.44	10.76	-62.4	-13.5	69.7	63.9
A2. Manufacturing industries and construction	2.26	0.79	0.57	0.72	1.06	0.61	-73.1	-42.6	5.5	3.6
A3. Transport	2.49	1.58	1.68	2.15	2.33	2.16	-13.4	-7.6	6.1	12.8
A4.–A.5. Other	2.02	0.57	0.44	0.58	0.56	0.54	-73.2	-4.0	4.9	3.2
B. Fugitive emissions	0.79	0.37	0.43	0.51	0.50	0.34	-57.6	-32.4	1.9	2.0
2. Industrial processes	1.05	0.68	0.71	0.81	1.05	0.45	-56.7	-56.9	2.6	2.7
3. Solvent and other product uses	0.02	0.03	0.03	0.03	0.02	0.02	-16.7	-22.1	0.1	0.1
4. Agriculture	3.03	1.42	1.24	1.22	1.39	1.30	-56.9	-6.0	7.4	7.7
5. LULUCF	-10.42	-9.46	4.01	-8.67	-0.33	-7.03	-32.5	2,055.8	-25.4	-41.8
6. Waste	0.79	0.63	0.79	0.73	0.71	0.66	-16.5	-7.1	1.9	3.9
7. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
<b>GHG total with LULUCF</b>	<b>30.64</b>	<b>10.79</b>	<b>21.82</b>	<b>10.50</b>	<b>19.75</b>	<b>9.80</b>	<b>-68.0</b>	<b>-50.4</b>	<b>NA</b>	<b>58.2</b>
<b>GHG total without LULUCF</b>	<b>41.05</b>	<b>20.25</b>	<b>17.81</b>	<b>19.16</b>	<b>20.07</b>	<b>16.84</b>	<b>-59.0</b>	<b>-16.1</b>	<b>100.0</b>	<b>100.0</b>

*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.

<sup>a</sup> 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

17. In accordance with decision 15/CMP.1, Estonia has reported 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 description includes all the elements as required in decision 15/CMP.1.

18. In accordance with Article 117 of the Ambient Air Protection Act, the activities aimed at climate change mitigation under the Kyoto Protocol are coordinated by the Ministry of the Environment. The Estonian Environment Information Centre (EEIC) works under the jurisdiction of the Ministry of the Environment. The responsibilities of the Ministry of the Environment and the EEIC with regard to the GHG inventory planning, preparation and management are regulated by the Directive of the Minister of the Environment. The Ministry of the Environment is responsible for coordinating the overall inventory preparation process; approving the inventory before its official submission to the UNFCCC secretariat; concluding formal agreements with inventory compilers annually by

1 July; ensuring that the information available in national institutions is taken into consideration and used in the inventory, as appropriate; and coordinating the inventory reviews.

19. The inventory is prepared in a collaboration between the Ministry of the Environment, EEIC, Tallinn University of Technology and the Estonian Environmental Research Centre. During the review, Estonia provided additional information on the national system, elaborating on the capacity of the national system, institutional and legislative arrangements and administrative procedures for the GHG inventory planning, preparation and management, and on quality control/quality assurance of the GHG inventory. Estonia provided a description of national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, of the Kyoto Protocol 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.

20. The ERT took note of the recommendations of the 2010 annual review report (ARR) related to further improvements and strengthening of the national system, in particular with regard to the inventory of the LULUCF sector and the activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol. During the review, the ERT was informed by Estonia that it has addressed some of the recommendations of the 2010 ARR by making the changes in the institutional arrangements as indicated in paragraph 21 below.

21. In the 2011 annual submission, Estonia has reported two changes in the national system. Firstly, the establishment of a new institution called the Climate and Radiation Department that replaced the Climate and Ozone Bureau at the EEIC, and secondly, the nomination of the Department of the National Forest Inventory at the EEIC responsible for the inventory of the LULUCF sector and for reporting on activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol instead of Tallinn University of Technology. The ERT took note of the reported changes in the national system and considers that such changes could affect the functionality of the national system. The ERT therefore encourages Estonia to strengthen and enhance the functionality of the national system by strengthening the Climate and Radiation Department and the Department of the National Forest Inventory. The ERT also noted that the changes in the national system will be reviewed during the forthcoming review of the 2011 annual submission. The ERT concluded that the national system continued to perform its required functions as set out in decision 19/CMP.1.

### **3. National registry**

22. In its NC5, Estonia 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. Estonia also provided a reference to the 2011 annual submission, which contains a complete table with information on changes in the national registry.

23. During the review, Estonia provided additional information on the measures put in place to safeguard, maintain and recover registry data, the security measures employed in the national registry to prevent unauthorized manipulations and security compromises. Also, Estonia informed the ERT that neither the test procedures related to the performance of the current version of the national registry nor the testing of the backup plan for the data base have taken place. The ERT recommends that Estonia undertake the testing of the performance procedure and backup plan and report its findings in the next national communication and annual submission.

24. The ERT took note of the conclusion of the standard independent assessment report that records of any discrepancies and any records of non-replacement were found to be consistent with the information provided to the secretariat by the international transaction log. The ERT concluded that Estonia'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, Estonia 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. Each reported sector has its own textual description of the principal PaMs supplemented by summary tables on PaMs. Estonia has also provided information on how it believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals, consistent with the objective of the Convention.

26. However, the ERT noted that Estonia did not provide the following required reporting elements: information on PaMs subdivided by GHG; the PaMs in the industrial processes sector; and the steps taken to promote and/or implement any decisions by ICAO and IMO in order to limit or reduce emissions not controlled by the Montreal Protocol from aviation and marine bunker fuels. During the review, Estonia provided the missing information. The ERT recommends that Estonia include the missing information in its next national communication to improve the completeness of its reporting.

27. The ERT noted that Estonia reported the quantitative estimates of mitigation impacts of individual PaMs by sector cumulatively for the period 2003–2012 but not for a particular year. During the review, the ERT received the latest estimates of the mitigation effects of PaMs that were presented in the biennial report. The ERT encourages Estonia to report the mitigation impacts of PaMs for a particular year, but not for a period of time, in its next national communication. The ERT noted that Estonia did not take into consideration some suggestions from the previous review report related to the provision of supporting information on the European Union emission trading system (EU ETS) and the PaMs in the forestry sector.

28. In its NC5, Estonia has not provided a description of existing arrangements to monitor and evaluate the progress in the implementation of the PaMs aimed to mitigate GHG emissions. In response to a question raised by the ERT during the review, Estonia informed the ERT that its PaMs are reviewed and evaluated every two years by the European Commission (EC) according to the requirements of the EU monitoring mechanism. Estonia further informed the ERT that in March 2011 it submitted to the EC its biennial report on the monitoring of PaMs and the projection of emissions.<sup>6</sup> The ERT encourages Estonia to report in more detail on the system for the monitoring and evaluation of climate change related PaMs in its next national communication.

29. In its NC5, Estonia has reported comprehensive information on PaMs at the national level. The Estonian National Strategy on Sustainable Development – Sustainable Estonia 21 is the comprehensive national strategy that outlines the pathway to 2030 aimed at developing a balanced approach to the integration of economic development factors with the principles of sustainable development that are shared by the Estonian state and society.

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<sup>6</sup> European Union (EU) decision 280/2004/EC concerning a mechanism for monitoring Community's greenhouse gas (GHG) emissions and for implementing the Kyoto Protocol.

The key climate and energy policy is the National Development Plan of the Energy Sector until 2020 (see para. 38 below). The National Programme of Greenhouse Gas Emission Reduction for 2003–2012 is the key programme that outlines the actions necessary to reach the Kyoto Protocol target and to further reduce the emissions by 21 per cent by 2010 as compared with the 1999 level of emissions.

30. According to the NC5, the most effective PaMs are the promotion of renewable energy sources (RES), feed-in tariffs for RES and investment support, and cogeneration. In its NC5, Estonia has reported that most of its PaMs have been implemented already and reported in the NC4. There were no major changes since then, except that expired PaMs and related documents have been replaced by newer versions. Estonia has not reported the information on the costs of its PaMs and how its PaMs interact with other PaMs at the national level. The ERT encourages Estonia to include this information in its next national communication. Table 3 provides a summary of the reported information on the PaMs of Estonia.

**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>	
National Programme of Greenhouse Gas Emission Reduction for 2003–2012 (2002)	Objective is to reach the Kyoto Protocol target and to further reduce the emissions by 21 per cent by 2010 as compared with the 1999 level of emissions
Sectors not covered by the European Union (EU) emission trading system (non-ETS)	Target for the non-ETS sectors for the period 2013–2020 is to limit the growth of total GHG emissions to 11 per cent by 2020 above the 2005 level of emissions
Fuel and energy taxation	Fuel and Electricity Excise Duty Act (2005) (electricity excise EUR 3.2 per MWh); Environmental Charges Act (2005) (charge EUR 2 per t CO <sub>2</sub> , penalty rate EUR 100 per t CO <sub>2</sub> since 2008); this is in accordance with EU directive 2003/96/EC on restructuring the Community framework for the taxation of energy products and electricity
<i>Policies and measures by sector</i>	
<i>Energy</i>	
National Development Plan of the Energy Sector until 2020 (2009)	Sets priority on sustainable efficient and environmentally friendly energy supply, sets the goals, such as guaranteeing continuous energy supply, improving efficiency of energy supply and use, and ensuring reasonable energy prices, and identifies specific measures
Development Plan of the Estonian Electricity Sector until 2018 (2008)	Target is to reduce CO <sub>2</sub> emissions from 15.7 Mt CO <sub>2</sub> in 2007 to 5 Mt CO <sub>2</sub> by 2018. Amount of state expenditures will be approximately EUR 1.1 billion
National Development Plan for the Use of Oil Shale 2008–2015 (2008)	Sets a limit on annual mining of oil shale to 15 million tonnes by 2015
Electricity Market	Regulates generation, transmission, sale, export, import and transit of electricity and economic and technical management of national grid and electricity supply

<i>Major policies and measures</i>	<i>Examples/comments</i>
Act (2003)	system
District Heating Act (2003)	Regulates heat production, distribution and sale in district heating networks, and the terms for network connection; mitigation effect of renovation of district heating systems and residential buildings – Emission reduction was estimated at 15.6 Gg CO <sub>2</sub> eq
Renovation of large combustion plants	Emission reduction was estimated at 11.8 Gg CO <sub>2</sub> eq
<i>Renewable energy</i>	
Development Plan 2007–2013 for Enhancing the Use of Biomass and Bioenergy (2007)	Target is to increase the share of renewable energy sources (RES) in district heating from 21 per cent in 2005 to 33 per cent in 2013
National Renewable Energy Action Plan (2010)	Target is to increase the share of RES to 25 per cent by 2020 in gross final energy consumption; in line with EU directive 2009/28/EC on promotion of the use of energy from RES. Installation of new wind generators (up to 75 MW) results in emission reduction of 53 Gg CO <sub>2</sub> eq
Energy Act (1998); Electricity Market Act (2003)	Introduces obligation for electricity network enterprises to purchase electricity from RES
<i>Energy efficiency</i>	
National Energy Efficiency Programme for 2007–2013 (2007)	Target is to increase the share of “A”-label electric appliances sold in the market to 75 per cent by 2013
Energy Efficiency of Equipment Act (2003)	Introduces requirements for energy efficiency and energy labelling of certain household appliances, heating equipment and installations
EU directive 2002/91/EC on energy performance of buildings	Introduces a regulation on minimum requirements for energy performance of buildings and a regulation on energy performance certificates
Efficiency improvements in cement and lime production	Emission reduction was estimated at 13.9 Gg CO <sub>2</sub> eq
<i>Transport</i>	
Development Plan for Enhancing the Use of Biomass and Bioenergy for 2007–2013 (2007)	Target is to increase the share of biofuels in transport to 6 per cent by 2013 and to 10 per cent by 2020
Transport Development Plan for 2006–2013 (2006)	Target is to increase the number of lanes allocated for public transport by 20 per cent per year, to develop a traffic management and coordination system (emission reduction was estimated at 53 Gg CO <sub>2</sub> eq)
Increasing a share of new vehicles	Emission reduction was estimated at 23 Gg CO <sub>2</sub> eq
<i>Agriculture</i>	
Estonian Rural Development Strategy for 2007–	Sets the basis for using the EU Agricultural Fund for rural development, promotes the establishment of protected forests

<i>Major policies and measures</i>	<i>Examples/comments</i>
2013 (2007); Estonian Rural Development Plan for 2007–2013 (2007)	
Estonian Organic Farming Development Plan for 2007–2013 (2007); Estonian Organic Farming Action Plan for 2007–2013 (2007); Organic Farming Act (2007)	Regulates various aspects of organic farming; new technologies in plant cultivation; reduction of fertilizer use; promotion of organic farming (emission reduction was estimated at 15 Gg CO <sub>2</sub> eq)
Efficiency improvements and introduction of environmentally friendly technologies in cattle breeding	Emission reduction was estimated at 105 Gg CO <sub>2</sub> eq
<i>Forestry</i>	
Forest Act (2007)	Regulates management of forests as a natural RES
Forestry Development Plan until 2020 (2011)	Ensures viability, productivity and efficient use of forests
<i>Waste</i>	
Waste Act (1998)	Provides general requirements for preventing and minimizing waste generation and health and environmental hazards
National Waste Management Plan for 2008–2013 (2008)	Aims to prevent waste generation and promote waste recycling and reuse (emission reduction was estimated at 7.5 Gg CO <sub>2</sub> eq)

*Note:* The greenhouse gas reduction estimates, given for some measures (in parentheses), are reduction in CO<sub>2</sub> or CO<sub>2</sub> eq for the period 2003–2012.

## 1. Policy framework and cross-sectoral measures

31. The Ministry of the Environment is the highest executive body in Estonia responsible for implementing the national environmental policy, including the climate change policy. At the Ministry, the Climate and Radiation Department is responsible for development and implementation of climate change mitigation and adaptation policies and for coordination of the reporting activities under the Convention, its Kyoto Protocol and EU legislation. There are several Government bodies involved in the climate change policy: the State Chancellery supporting the Government and the Prime Minister in policy development; the Ministry of Economic Affairs and Communications responsible for energy policy, including energy efficiency and promotion of RES; and the Ministries of Agriculture, Finance and the Interior responsible for climate-related policies in their substantial fields of expertise.

32. At the local level, municipalities prepared the local energy action plans to apply for financial assistance grants or subsidies from national or EU funds to finance measures in the energy sector. Nearly one-fifth of the country's municipalities (50 out of 227) have

prepared such plans already. Estonia's local governments also introduced policies to promote cycling and walking in the cities.

33. Estonia is an EU member State and it is guided by EU regulations and directives. By 2010, the Estonian environment legislation was harmonized with the relevant EU legislation, except for the legislation on emissions from large combustion plants and from large oil shale fired power plants; it is planned that Estonia will become fully compliant with the EU requirements by 1 January 2016. Estonia reported that following the EU accession, it has developed several strategic development documents for planning the use of the EU structural funds. These funds have been critically important in the implementation of the national PaMs and in setting the development priorities in the sectors eligible for the EU funding. Furthermore, joint co-financing by the EU and the national budget of Estonia improves the effectiveness and delivery of the PaMs.

34. The key national medium- and long-term programmes are linked to the EU climate and energy package that sets the 2020 targets: 20 per cent reduction in GHG emissions below the 1990 levels; 20 per cent increase in energy efficiency; and 20 per cent share of RES in gross final energy consumption. The core elements of the EU climate and energy package are a revision and strengthening of the EU ETS, the EU effort-sharing decision<sup>7</sup> regulating emissions from sectors not covered by the EU ETS, such as transport, housing, agriculture and waste, and the binding national targets on promotion of RES.

35. According to the EU effort-sharing decision, Estonia is allowed to increase its total GHG emissions by 11 per cent by 2020 compared with the 2005 level. The national target for Estonia is to reach the share of 25 per cent RES in gross final energy consumption by 2020 (see para. 41 below).

36. Estonian installations participate in the EU ETS. For the first phase of the EU ETS (2005–2007), in its national allocation plan (NAP), Estonia included 43 installations and allocated the emission allowances in the amount of approximately 14.2 Mt CO<sub>2</sub> eq per year for the period 2005–2007. During the review, the ERT was informed that for the second phase of the EU ETS (2008–2012), Estonia submitted its NAP to the EC for approval and the EC reduced the country's total amount of allowances to 12.7 Mt CO<sub>2</sub> eq per year for the period 2008–2012. Estonia contested the decision in the Court of First Instance of the EC and the court annulled the EC's decision. At the time of the review, Estonia has revised its NAP and submitted it to the EC for approval on 8 February 2011.

## **2. Policies and measures in the energy sector**

37. Between 1990 and 2009, GHG emissions from the energy sector decreased by 60.2 per cent (21.76 Tg CO<sub>2</sub> eq), mainly driven by a decrease in energy use in industry caused by the closure of energy-intensive production facilities and structural changes in the economy after Estonia's independence in 1991. The emission trend during the period 1990–2009 demonstrated a decrease in emissions from each subsector in the energy sector, namely by 62.4 per cent in energy industries; by 73.1 per cent in manufacturing industries and construction; and by 13.4 per cent in transport. Fugitive emissions from fuels decreased by 57.6 per cent.

38. The main strategy document in the energy sector is the National Development Plan of the Energy Sector until 2020. This document sets out the basis for the other subsectoral development plans, such as the Development Plan of the Estonian Electricity Sector until 2018, the National Development Plan for the Use of Oil Shale for 2008–2015, the Development Plan for Enhancing the Use of Biomass and Bioenergy for 2007–2013, the

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<sup>7</sup> EU decision 406/2009/EC on the effort of member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020.

National Energy Efficiency Programme for 2007–2013, and the National Renewable Energy Action Plan until 2020. The objectives related to renewable energy, cogeneration and biofuel use are arising from the requirements of the EU climate and energy package (see para. 34 above). Estonia is also considering the option of constructing a nuclear power plant by 2023.

39. Estonia also has introduced fiscal measures, including excise duties and pollution charges, including a charge on carbon (EUR 2 per t CO<sub>2</sub> and a penalty rate of EUR 100 per t CO<sub>2</sub> starting from 2008). Estonia reported that electricity fuel excise, electricity excise (EUR 3.2 per MWh in 2008) and other taxes related to fuels and energy production form more than 14 per cent of all tax revenues annually.

40. **Energy supply.** The main primary energy source in Estonia is oil shale (62 per cent of the primary energy supply in 2009) followed by natural gas (11 per cent in 2009). The majority of the primary energy utilized in Estonia is of domestic origin. Estonia enacted the National Development Plan for the Use of Oil Shale for 2008–2015 that set a target of reducing the use of oil shale to 15 million tonnes per year by 2015 in order to use the natural resource in a rational and economical way, producing as little negative environmental and social impact as possible. Therefore, development of oil shale based energy production by using environmentally sound technologies is a high priority in Estonia. The Party decided to commence the gradual replacement of oil shale boilers of pulverized combustion with the ones utilizing the circulating fluidized bed combustion method, which increases the efficiency of energy production and decreases its carbon intensity.

41. **Renewable energy sources.** As an EU member State, Estonia harmonized the necessary legislation and transposed into the national legislation the relevant EU directives on RES,<sup>8</sup> the Energy Act and the Electricity Market Act. The Government approved a new National Renewable Energy Action Plan until 2020 that set the target to increase the share of RES in gross final energy consumption to 25 per cent by 2020 (from 18 per cent in 2005). In this context, Estonia split this overall target on the share of RES in three sectors as follows: by 2020 to achieve the share of 17.6 per cent in electricity production; the share of 38.4 per cent in heating and cooling; and the share of 9.9 per cent in fuel used in transport.

42. The National Renewable Energy Action Plan includes an ambitious target regarding wind energy. The target is to produce up to 1,500 GWh of electricity from wind energy annually by 2020. According to the 2010 data, wind farms with a capacity of 149 MW have been already installed. There is a number of conducted pre-feasibility studies to install wind energy capacity of approximately 1,000 MW by 2020. There are also projects aimed at installing the offshore wind energy farms. The main measures to support energy generation from RES are feed-in tariffs with purchase obligation and investment support for wind power plants. The Development Plan for Enhancing the Use of Biomass and Bioenergy for 2007–2013 set a target to increase the share of district heating produced from RES in total from 21 per cent in 2005 to 33 per cent in 2013.

43. **Energy efficiency.** Estonia's primary energy use was 124 PJ in 2007. In 2009, the parliament adopted the National Development Plan of the Energy Sector until 2020, which includes the measures to improve energy efficiency of both energy supply and use. It also takes into account the indicative energy saving objective set by the EU directive on energy efficiency<sup>9</sup> on saving 9 per cent of final energy consumption during the period 2008–2016, that corresponds to saving 10 PJ annually by 2016. In addition, to reach the same indicative objective, Estonia prepared its National Energy Efficiency Programme for 2007–2013 to

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<sup>8</sup> EU directive 2009/28/EC on the promotion of the use of energy from renewable sources.

<sup>9</sup> EU directive 2006/32/EC on energy end-use efficiency and energy services.

direct investments to energy efficiency projects and to disseminate information to energy consumers.

44. **Residential and commercial sectors.** The key PaMs in these sectors are targeting the improvements in energy efficiency in residential and public buildings, and equipment and appliances. Estonia has already introduced the Acts on energy efficiency of equipment and on regulation of minimum requirements for energy performance of buildings with the objective to introduce energy auditing and labelling of buildings and to improve the energy performance of buildings. The Government provides financial support for the refurbishment of residential buildings covering up to 10 per cent of the cost, and this corresponded to approximately 465 GWh of saved energy in 2007 and resulted in the reduction of demand for heating in residential buildings by 30–60 kWh/m<sup>2</sup> per year. The mitigation effect of the policy on the renovation of residential buildings will give an estimated emission reduction of 10.3 Gg CO<sub>2</sub> eq during 2003–2012. With regard to the public sector, the energy efficiency measures in more than 480 public buildings will be accomplished by 2012, and these measures are financed by the revenues raised from the use of the Kyoto Protocol mechanisms (see para. 78 below). Estonia started a programme to train energy auditors and certifiers of buildings. The Estonian Technical Surveillance Authority is responsible for the quality control of the energy audits and certificates.

45. Currently, the share of “A”-class electrical appliances is estimated at 50 per cent; and the target was set at 75 per cent to be reached by 2013, in accordance with the National Energy Efficiency Programme for 2007–2013. In 2006, the Energy Efficiency Consulting Centre was established to disseminate information to the public on ways to save energy and reduce energy consumption.

46. **Transport sector.** Between 1990 and 2009, GHG emissions from the transport sector decreased by 13.4 per cent (0.33 Tg CO<sub>2</sub> eq). The share of emissions from the transport sector was 6.1 per cent in 1990 and increased to 12.8 per cent in 2009 in total GHG emissions. The Estonian Transport Development Plan for 2006–2013 sets the goal to increase the share of new cars emitting CO<sub>2</sub> emissions less than 120 g/km from 0.5 per cent in 2005 to 30 per cent by 2013. Estonia also has introduced measures aimed at increasing the share of public transport, such as increasing the number of lanes allocated to public transport in the city road infrastructure and increasing the speed of passenger inter-city train connections.

47. In its NC5, Estonia has not reported any PaMs addressing the emissions from international transport. However, in response to a question raised by the ERT during the review, it informed the ERT that as the aviation sector will be included in the EU ETS from 2012, Estonia is not planning to have any additional measures targeting the emissions from international transport. The ERT recommends that Estonia identify the steps necessary to promote and implement the decisions of ICAO and IMO in order to limit or reduce the GHG emissions not controlled by the Montreal Protocol from aviation and marine bunkers.

48. **Industrial sector.** The NC5 reports that in 2007 around 70 per cent of GHG emissions from the industrial processes sector came from cement and lime production. The production facilities have almost reached their maximum capacity in terms of output, and further increase in output is only possible through plant renovation and/or expansion. In this context, Estonia included in the National Programme of Greenhouse Gas Emission Reduction for 2003–2012, the measures related to energy efficiency improvements in cement and lime production. Estonia has reported that the EU ETS created the incentives for emission reduction for the enterprises involved during the first phase of EU ETS (2005–2007).

49. The NC5 refers to the use of environmental management systems based on international standards, such as International Organization for Standardization and the Eco-

Management and Audit Scheme, and to voluntary agreements, under which enterprises adopt guidelines to improve environmental performance, including mitigation measures.

### 3. Policies and measures in other sectors

50. Between 1990 and 2009, emissions from the industrial processes (including solvent and other product use), agriculture and waste sectors decreased by 50.6 per cent (2.45 Tg CO<sub>2</sub> eq), mainly driven by transition to a market driven economy, decreasing livestock population and decreasing quantities of synthetic fertilizers and manure applied to agricultural lands.

51. **Industrial processes.** Between 1990 and 2009, emissions from the industrial processes sector decreased by 56.7 per cent (0.59 Tg CO<sub>2</sub> eq), mainly driven by transition to a market driven economy which led to a decrease in industrial production. In its NC5, Estonia has not reported on PaMs in the industrial processes sector.

52. Total emissions of F-gases have increased significantly since 1994 due to the increased use of these gases in refrigeration, air-conditioning systems and foam blowing. In response to a question raised by the ERT during the review, Estonia provided the additional information that it is in the process of implementing the EU regulation on F-gases<sup>10</sup> and other related regulations.

53. **Agriculture.** Between 1990 and 2009, emissions from the agriculture sector decreased by 57.0 per cent (1.72 Tg CO<sub>2</sub> eq), as a result of the decreasing livestock population and decreasing quantities of synthetic fertilizers and manure applied to agricultural lands.

54. Estonia has promoted environmentally friendly organic farming since 2000 and has provided grants for activities on long-term natural grasslands; cultivation of field crops and permanent crops; and vegetables, medicinal and aromatic herbs. The Development Plan and Action Plan for Organic Farming for 2007–2013 are aimed at increasing the land area allocated for organic farming, the number of producers and processors of organic products and the share of indigenous organic products. In 2009, a total of 128.8 thousand ha of agricultural land was used by 1,245 farms for organic farming, which constitutes 12.8 per cent of Estonia's total agricultural land. Estonia introduced new technologies in cattle breeding and in plant cultivation and promoted the reduction of fertilizer use.

55. **LULUCF.** Significant land-use changes lead to a highly fluctuating trend of emissions and removals over the period 1990–2009. This sector was a net source of emissions in 2000–2003 and a net carbon sink in the remaining years of that period. The LULUCF sector was a net sink removing 7.04 Tg CO<sub>2</sub> in 2009; the net GHG removals decreased by 32.5 per cent (3.38 Tg CO<sub>2</sub>) since 1990 due to the occurrence of wildfires in 2006 and 2008.

56. Approximately half of Estonia's territory is covered with forests. According to the information received during the review, the Estonian Forestry Development Plan until 2020, approved in February 2011, regulates forest management activities, in particular forest regeneration, cleaning and thinning. Estonia introduced international voluntary forest certification schemes, such as the Forest Stewardship Council and the Programme for the Endorsement of Forest Certification, with the aim of improving sustainability in forestry.

57. The Ministry of the Environment is responsible for implementing the activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol. Estonia carried out a study on the availability of the data required for estimating carbon removals under Article 3, paragraph 3, of the Kyoto Protocol. However, until now, Estonia has not calculated

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<sup>10</sup> EU regulation 842/2006 on certain fluorinated greenhouse gases.

quantitative estimates of its carbon removals or emissions, and the Ministry of the Environment is developing a system for estimation of carbon removals or emissions by forests. This is done by EEIC, which performs the data collection on forests and the forestry sector, analysis and assessments of this data, and compilation of the national forestry inventory.

58. **Waste management.** Between 1990 and 2009, emissions from the waste sector decreased by 16.5 per cent (0.13 Tg CO<sub>2</sub> eq), driven mainly by the reduction of the amount of paper and sludge disposed to landfills. Estonia adopted its National Waste Management Plan for 2008–2013. The main principles of this plan are as follows: to reduce the number of landfills non-compliant with environmental requirements, to increase the recovery rate of different waste categories and to develop the practices of waste separation at a source point and separate collection of municipal waste.

59. The principle of “producer’s responsibility” has been implemented since 2005 for packaging wastes as well as for wastes from electronic and electrical equipment, end-of-life vehicles and tyres. The producers or suppliers of goods must be able to collect these types of waste either from a consumer’s residence or from a place within a radius of 50 km from a consumer’s residence.

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

60. In its NC5, Estonia has 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. Estonia provided 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 the developing country Parties, as reported in the 2011 annual submission is presented in chapter II.I of this report. The ERT encourages Estonia to continue exploring and reporting on the adverse effects of its PaMs.

61. Estonia has regional and international initiatives on the exchange of best practices in the production of renewable energy and the cooperation on forestry issues between the Estonian Ministry of the Environment and the Forestry Administration of the Adjara Autonomous Republic of Georgia.

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

62. In its NC5, Estonia has reported the emission projections up to 2020 using the inventory data for 2006 as a reference year. The projections were reported by sector and by GHG under the ‘with measures’ and ‘with additional measures’ scenarios. During the review, Estonia provided the updated emission projections under the ‘with measures’ and ‘with additional measures’ scenarios using the inventory data for 2008 as a reference year. The updated projections were published in March 2011 in the Biennial report to the EC.<sup>11</sup>

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<sup>11</sup> Biennial Report of Estonia pursuant to Article 3(2) of decision 280/2004/EC concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol, Part I and Part II, 2011.

## 1. Projections overview, methodology and key assumptions

63. The GHG emission projections reported by Estonia in the NC5 include the ‘with measures’ and ‘with additional measures’ scenarios until 2020, presented relative to inventory data for 2006. Limited information has been reported in the NC5 on the ‘without measures’ scenario. In the NC5, the projections are presented on a gas-by-gas basis for the following GHGs: CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride (treating PFCs and HFCs collectively in each case). Projections are also provided in an aggregated format for each sector as well as for a national total, using global warming potential values.

64. However, the ERT noted that in its NC5, Estonia did not fully follow the UNFCCC reporting guidelines, as the projections presented on a sectoral basis did not fully correspond to the sectoral categories used in the section on PaMs; the emission projections related to fuel sold to ships and aircraft engaged in international transport were not reported separately; and the projections for the LULUCF sector were not reported. The ERT reiterates the recommendation of the previous review report that Estonia report, in its next national communication, the projections related to fuel sold to ships and aircraft engaged in international transport separately and not included in the totals. The ERT recommends that Estonia report the projections on a sectoral basis, including the projections for the LULUCF sector, using, to the extent possible, the same sectoral categories as in the section on PaMs in its next national communication.

65. However, during the review, Estonia provided to the ERT the updated projections presented on a sectoral basis relative to the inventory data for 2008 and using the same sectoral categories as were used in the section on PaMs. The ERT noted that Estonia provided a description of the updated projection scenarios but did not provide an explanation for the reasons behind the projections update. The ERT recommends that Estonia report, in its next national communication, the reasons for updating the projections and identifies the differences between the previous and latest projections.

66. The ERT noted that in the NC5 there are inconsistencies in the reporting of emission projections for the energy sector and there is a lack of clarity as to whether the transport emissions are included in the energy sector. However, during the review, Estonia provided a more precise description of the projection scenarios. The ERT encourages Estonia to conduct quality assurance/quality control of projection scenarios to avoid future errors and to improve the transparency and consistency of the reporting in its next national communication.

67. A thorough description of the methods and methodology used for preparing the projections in the energy sector is provided in the NC5. The projections were modelled using an integrated MARKAL-EFOM system (TIMES) that is based on the energy supply development model NEEDS (or NEEDS/TIMES). A long-term time horizon (by 2050 with a five year interval) is used to support the definition of long-term strategies, taking into account different standards of energy devices and technological development. During the review, Estonia informed the ERT that the updated projections in the energy sector are calculated using the LEAP programme.

68. In its NC5, Estonia has also provided a description of the methodologies used for preparing the projections in the other sectors. During the review, Estonia provided the updated projections together with information on key underlying variables and assumptions used for the projections. The projections for the industrial processes sector were based on the activity data submitted by six companies and on historical trends for one remaining company. The projections for the waste sector were based on the National Waste Management Plan for 2008–2013 and on expert judgment. The projections in the agriculture sector were based on the information collected through the project of the

Ministry of Agriculture on “Estonian agriculture, forestry and nature protection systematic development measures and analysis of future directions of EU-related policies” and also on expert judgment. The projections in the LULUCF sector were based on the trends foreseen and described in the Estonian Forestry Development Plan until 2020. However, the ERT encourages Estonia to improve the transparency of its reporting on the methodology used for the preparation of the projections in its next national communication.

69. According to the NC5, the main assumptions used for the energy sector projections are fuel prices, population growth rates and annual GDP growth rates. The main energy indicators used include the shares of oil shale in the energy balance, the share of RES in final energy consumption, energy losses in the transmission network, electricity production and consumption, and domestic energy consumption.

70. In its NC5, Estonia has reported the sensitivity analysis of the projections using different input parameters. One sensitivity scenario is based on the electricity generated from different RES and CO<sub>2</sub> emissions from the energy sector. During the review, Estonia provided additional information on the updated projections, but information on the sensitivity analysis has been limited and not fully transparent. The ERT encourages Estonia to undertake a sensitivity analysis of key drivers, namely a GDP growth rate and changes in oil and gas prices in each sector, and to report this information transparently in its next national communication.

## 2. Results of projections

71. According to the scenarios reported in the NC5 and the updated projections, Estonia expects to meet by far its Kyoto Protocol target during the first commitment period (2008–2012) by domestic efforts only. The Kyoto Protocol target for Estonia is to reduce total GHG emissions between 2008 and 2012 by 8 per cent below the base year level. This is equivalent to total GHG emissions of 39.21 Tg CO<sub>2</sub> eq per year on average during the period 2008–2012.

72. In the NC5, the projected total GHG emissions in 2010 are 15.96 Tg CO<sub>2</sub> eq and 15.97 Tg CO<sub>2</sub> eq, or 62.6 per cent and 62.5 per cent below the base year level, under the ‘with measures’ and ‘with additional measures’ scenarios, respectively. According to this information, Estonia will overachieve the Kyoto Protocol target by 23.25 Tg CO<sub>2</sub> eq and 23.24 Tg CO<sub>2</sub> eq under the ‘with measures’ and ‘with additional measures’ scenarios, respectively.

73. In the updated projections, the projected total GHG emissions in 2010 are 20.41 Tg CO<sub>2</sub> eq and 20.35 Tg CO<sub>2</sub> eq, or 52.1 per cent and 52.3 per cent below the base year level, under ‘with measures’ and ‘with additional measures’ scenarios, respectively. This means that Estonia will overachieve the Kyoto Protocol target by 18.80 Tg CO<sub>2</sub> eq and 18.86 Tg CO<sub>2</sub> eq under the ‘with measures’ and ‘with additional measures’ scenarios, respectively. The ERT noted that in the updated projections under the ‘with measures’ scenario, the projected emissions in 2010 are expected to be higher by 3.57 Tg CO<sub>2</sub> eq than the actual emissions in 2009 reported in the 2011 inventory submission, and higher by 4.45 Tg CO<sub>2</sub> eq than the projected emissions in 2010 reported in the NC5. The ERT also noted that Estonia did not report in the NC5 on its accounting for the activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol.

74. According to the projections presented by gas, under the ‘with additional measures’ scenario, in 2010, CO<sub>2</sub> emissions are projected to increase to 13.18 Tg CO<sub>2</sub> eq, CH<sub>4</sub> emissions to 1.83 Tg CO<sub>2</sub> eq, N<sub>2</sub>O emissions to 0.88 Tg CO<sub>2</sub> eq and emissions of F-gases to 0.08 Tg CO<sub>2</sub> eq. The key results of the emission projections reported in the NC5 and in the updated projections are shown in table 4 and the trends are illustrated in the figure below.

Table 4  
**Summary of greenhouse gas emission projections for Estonia**

	<i>Greenhouse gas emissions (Tg CO<sub>2</sub> eq per year)</i>	<i>Changes in relation to base year level (%)</i>	<i>Changes in relation to 1990 level (%)</i>
Inventory data 1990 <sup>a</sup>	41.05	-3.7	NA
Inventory data 2009 <sup>a</sup>	16.84	-60.5	-59.0
Kyoto Protocol base year <sup>b</sup>	42.62	NA	-3.8
Kyoto Protocol target <sup>b</sup>	39.21	-8	-4.5
<i>NC5</i>			
'With measures' projections for 2010	15.96	-62.6	-61.1
'With additional measures' projections for 2010	15.97	-62.5	-61.1
'With measures' projections for 2020	15.62	-63.4	-62.0
'With additional measures' projections for 2020	13.01	-69.5	-68.3
<i>Updated projections<sup>c</sup></i>			
'With measures' projections for 2010	20.41	-52.1	-50.3
'With additional measures' projections for 2010 <sup>c</sup>	20.35	-52.3	-50.4
'With measures' projections for 2020	19.69	-53.8	-52.0
'With additional measures' projections for 2020	18.92	-55.6	-53.9

*Sources:*

<sup>a</sup> Estonia's 2011 greenhouse gas (GHG) inventory submission; the emissions are without land use, land-use change and forestry (LULUCF);

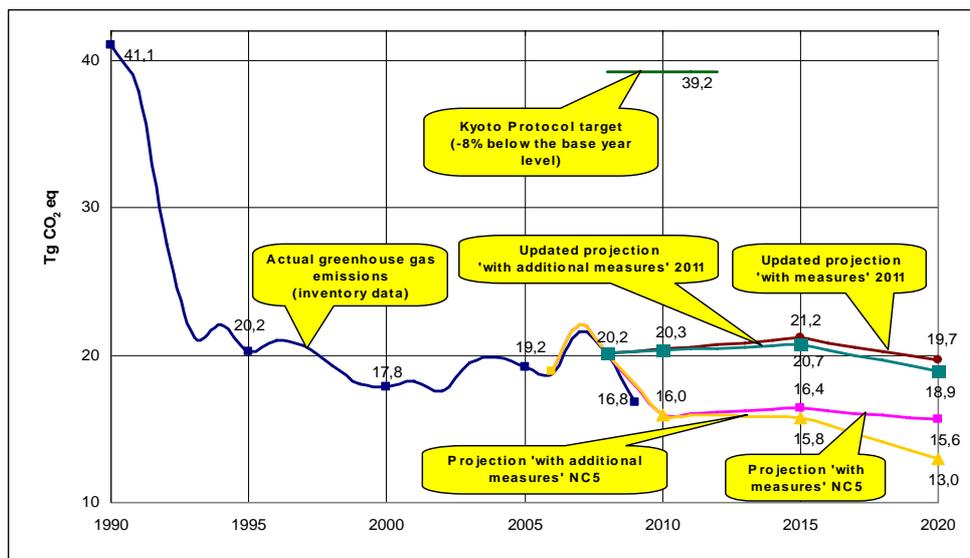
<sup>b</sup> FCCC/IRR/2007/EST;

<sup>c</sup> Updated projections provided by Estonia during the review; the projections are for total GHG emissions without LULUCF.

*Abbreviation:* NA = not applicable.

75. In its NC5, Estonia has reported that in the case of stable economic development, the projected emission trend until 2020 will be below the Kyoto Protocol target for the first commitment period and below the EU target for non-ETS sectors (11 per cent increase by 2020 above the 2005 level) under the 'with measures' and the 'with additional measures' scenarios. According to the updated projections, total GHG emissions continue to decrease during the period 2010–2020 and in 2020 drop to 52.0 per cent and 53.9 per cent below the 1990 level under the 'with measures' and 'with additional measures' scenarios, respectively.

### Greenhouse gas emission projections



Sources: (1) Data for the years 1990–2009: Estonia’s 2011 greenhouse gas inventory submission; the emissions are without land use, land-use change and forestry (LULUCF). (2) Data for the years 2010–2020: Estonia’s fifth national communication and the updated projections provided by Estonia during the review; the emissions are without LULUCF.

### 3. Total effect of policies and measures

76. In its NC5, Estonia has reported the total effect of PaMs under two scenarios, namely ‘with measures’ and ‘with additional measures’. Information was presented in terms of GHG emissions avoided or sequestered (on a CO<sub>2</sub> equivalent basis) until 2020. However, the ERT noted that Estonia did not provide the following reporting element required by the UNFCCC reporting guidelines: the total effect of PaMs presented by GHG. During the review, Estonia provided the ERT with some of the missing information. The ERT reiterates the recommendation from the previous review report that Estonia reports the total effect of PaMs presented by GHG.

77. During the review, Estonia informed the ERT that the total effect of implemented and adopted PaMs was estimated as a difference between the ‘without measures’ and ‘with measures’ scenarios and was equal to 0.72 Tg CO<sub>2</sub> eq in 2010 and 2.59 Tg CO<sub>2</sub> eq in 2020. The total effect of planned PaMs was estimated as the difference between the ‘with measures’ and ‘with additional measures’ scenarios and was equal to 0.01 Tg CO<sub>2</sub> eq in 2010 and 0.40 Tg CO<sub>2</sub> eq in 2020. The ERT noted that in the NC5, the ‘without measures’ scenario has been reported, but without a description of key assumptions.

78. During the review, Estonia provided the total effect of PaMs in the energy, transport and agriculture sectors. According to the updated projections, the PaMs implemented in the energy sector will deliver the largest emission reductions, equal to 0.66 Tg CO<sub>2</sub> eq in 2010 and 2.24 Tg CO<sub>2</sub> eq in 2020, followed by the effect of PaMs implemented in the transport sector, equal to 0.05 Tg CO<sub>2</sub> eq in 2010 and 0.32 Tg CO<sub>2</sub> eq in 2020, and in the agriculture sector, equal to 0.01 Tg CO<sub>2</sub> eq in 2010 and 0.03 Tg CO<sub>2</sub> eq in 2020. The ERT recommends that Estonia include the additional information on the total effect of PaMs presented by sector provided during the review in its next national communication. Table 5 provides an overview of the total effect of PaMs as reported by Estonia during the review.

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

Sector	2010				2020			
	<i>Effect of implemented and adopted measures (Tg CO<sub>2</sub> eq)</i>	<i>Relative value (% of 1990 emissions)</i>	<i>Effect of planned measures (Tg CO<sub>2</sub> eq)</i>	<i>Relative value (% of 1990 emissions)</i>	<i>Effect of implemented and adopted measures (Tg CO<sub>2</sub> eq)</i>	<i>Relative value (% of 1990 emissions)</i>	<i>Effect of planned measures (Tg CO<sub>2</sub> eq)</i>	<i>Relative value (% of 1990 emissions)</i>
Energy (without CO <sub>2</sub> from transport)	0.66	2.0	0.00	0.0	2.24	6.6	0.01	0.0
Transport – CO <sub>2</sub>	0.05	2.1	0.01	0.4	0.32	13.1	0.35	14.3
Agriculture	0.01	0.2	NA	NA	0.03	0.9	NA	NA
<b>Total</b>	<b>0.72</b>	<b>4.3</b>	<b>0.01</b>	<b>0.4</b>	<b>2.59</b>	<b>20.7</b>	<b>0.36</b>	<b>14.3</b>

*Source:* Updated projections provided by Estonia during the review.

*Note:* The total effect of implemented and adopted policies and measures (PaMs) is defined as the difference between the ‘without measures’ and the ‘with measures’ scenarios; the total effect of planned PaMs is defined as the difference between the ‘with measures’ and ‘with additional measures’ scenarios.

*Abbreviation:* NA = not available.

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

79. Estonia 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. Estonia has reported that it does not plan to make use of the Kyoto Protocol mechanisms to meet its Kyoto Protocol target for the first commitment period. In its NC5 and in the report on the updated projections provided during the review, Estonia has reported that it will meet its Kyoto Protocol target by domestic efforts only, and its total GHG emissions are expected to be around 50 per cent below the base year emissions during the first commitment period (2008–2012). Due to this, significant research and resources were not put into domestic action in order to meet the Kyoto Protocol target. In its NC5, Estonia has reported that it is a recipient country in the joint implementation projects and is involved in the international emissions trading under the Kyoto Protocol.

#### D. **Vulnerability assessment, climate change impacts and adaptation measures**

80. In its NC5, Estonia has provided the required information on the expected impacts of climate change in the country and some limited information on the outline of action taken with regard to adaptation. However, the ERT noted that Estonia has not provided any information on identified adaptation measures in the vulnerable sectors, as it has not yet conducted an adaptation assessment study and nor has it collected data. According to the NC5, in 2010, the Ministry of the Environment planned to prepare a national adaptation strategy which would include collection, analysis and development of guidance on climate change adaptation measures that should be integrated into national and local development plans. The ERT recommends that Estonia report more transparently on the outline of actions taken to implement Article 4, paragraph 1(b) and (e), of the Convention, with regard

to adaptation in its next national communication. Furthermore, the ERT encourages Estonia to conduct an assessment of its adaptation capacity in vulnerable sectors, to prepare a national adaptation strategy and to report on these activities in its next national communication.

81. Comparing the NC5 with the NC4, Estonia has increased the coverage of its reporting on climate change impacts and vulnerability in its NC5 and has included the reporting on the tourism sector, water resources and peatlands. 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	<i>Vulnerability:</i> Extension of the growing season of crops, increased agricultural productivity, greater potential for thermophilous crop yields, more favourable conditions for grassland husbandry and increased primary production, and reduced yields resulting from the increased prevalence of pests and diseases, and soil drought from May to July <i>Adaptation:</i> NA
Coastal zones	<i>Vulnerability:</i> Increased flooding and changes of coastal areas due to rising sea levels and wind storms, erosion of sandy beaches, destruction of harbour constructions and damage of valuable natural ecosystems <i>Adaptation:</i> NA
Forests	<i>Vulnerability:</i> Increase in temperature, increased timber yields and carbon sequestration, increase in spruce bark beetle, increased risk of forest fires, more favourable conditions for the spread of root rot and changes in species composition <i>Adaptation:</i> NA
Public health	<i>Vulnerability:</i> Potentially higher instance of sunburn and skin cancer, heat-related mortality and concentration of ticks; increased frequency of extreme weather events <i>Adaptation:</i> NA
Tourism	<i>Vulnerability:</i> Poor snow conditions affect skiing; sea level rise affects beach tourism; lack of ice cover and heavy storm damages affect tourist activities <i>Adaptation:</i> NA
Rivers and lakes	<i>Vulnerability:</i> Increased water run-off in winter; decreased maximum water discharge and run-off in spring; increased frequency of winter flooding; worsening water quality; negative impact on aquatic habitats <i>Adaptation:</i> NA
Groundwater	<i>Vulnerability:</i> Rise in precipitation would increase groundwater recharge (by 50–75 per cent) and the physical extent of wetlands; areas suffering from excess moisture would become even wetter <i>Adaptation:</i> NA
Peat land	<i>Vulnerability:</i> Formation, duration and disappearance of snow and ice cover could have a strong influence on nutrient supply and on fluxes associated with the biological processes of peat production in wetlands <i>Adaptation:</i> NA

*Abbreviation:* NA = not available.

82. The coastal zone is the key area vulnerable to climate change in Estonia. Rising sea levels and the increased frequency of wind storms are exacerbated by the risks of coastal

zone flooding, erosion of sandy beaches and destruction of harbour constructions. The ERT noted that in the NC5 there is no reference made to the tools, methodologies and climate change scenarios used for this vulnerability assessment.

83. In its NC5, Estonia has reported on the information relating to national and local adaptation measures, which are focused mainly on coping with storms, flood risk management and consequent disaster risk mitigation. During the review, Estonia provided more information on methodologies and models used for vulnerability assessments. To enhance the transparency of its reporting, the ERT encourages Estonia to provide, in its next national communication, information on the climate models and various approaches and methodologies used for its vulnerability assessments.

## **E. Research and systematic observation**

84. In its NC5, Estonia has provided information on its actions relating to research and systematic observation, addressing both domestic and international activities, including its participation in the activities of the Global Climate Observing System, the World Climate Research Programme, the Technical Conference on Meteorological and Environmental Instruments and Methods of Observation (2006) and the Baseline Surface Radiation Network. The NC5 also reported on the action taken to support related capacity-building in India by researchers from the University of Tartu on the measurement methods and data systems for the research of air ions and aerosols.

85. The leading organization conducting systematic observations is the Estonian Meteorological and Hydrological Institute (EMHI), which is the state institute responsible for activities in the area of climatology, hydrology and meteorology. EMHI manages 99 meteorological and hydrological monitoring stations and is responsible for Estonia's participation in the international satellite observation networks and activities. Estonian institutions have also participated in several international research efforts on GHG emissions from wetlands and agricultural land as well as in the development of a forestry monitoring system.

86. According to the NC5, the Ministry of Education and Research and the Estonian Research Council have financed climate change related research projects on atmospheric circulation processes, sea and terrestrial climatic observing systems, ionization, analyses of satellite images, climate modelling and climate monitoring, whereas the Ministry of the Environment and the Ministry of Agriculture have financed climate change related research projects that have expanded substantially in recent years. The ERT commends Estonia for its comprehensive reporting on research and systematic observation.

## **F. Education, training and public awareness**

87. In its NC5, Estonia has provided information on its actions relating to education, training and public awareness on both national and international levels, in the latter case, only as part of a regional programme. Compared with the NC4, the Party provided more extensive information in its NC5 on awareness-raising programmes implemented in Estonia, however, it was difficult to identify the level of advancement and the performance results of these programmes.

88. The ERT took note that the Ministry of the Environment has made an effort to integrate the subject of climate change into various environmental seminars organized for different stakeholders. The Ministry of Education and Research prepared the Development Plan for Education on Sustainable Development for 2009–2013. Although this development plan has not addressed the topic of climate change specifically, it has recommended

including the topics relating to climate change, its causes, consequences and adaptation as part of the sustainable development courses. The ERT encourages Estonia to integrate the topic of climate change at all education levels through the existing education policies in order to increase the level of public awareness and report on results of these efforts in its next national communication.

89. Estonia reported that public opinion towards a sustainable lifestyle has changed during the past decade due to increased public awareness relating to energy saving and the use of renewable energy. This change resulted from the wider dissemination of information to the public through the media and the Internet that has occurred in recent years. The access to environmental information in Estonia is regulated mainly by the Public Information Act.

90. Estonia reported on a number of activities implemented by the nongovernmental organizations (NGOs) aimed at raising public awareness, disseminating information and supporting educational work on renewable energy, energy efficiency and climate change. The ERT encourages Estonia to continue reporting on activities of NGOs and civil society and on the support provided by the Government to public awareness, training and education. Estonia reported on the awareness-raising programmes undertaken in the recent years, however, it has not provided information on how these programmes are monitored. The ERT encourages Estonia to report on the impact of these programmes and on the relevant monitoring mechanisms in its next national communication.

## **G. Evaluation of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol**

91. Estonia 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 8 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.

Table 8

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

<i>Supplementary information</i>	<i>Reference</i>
National registry	Chapter 3.5
National system	Chapter 3.4
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Chapter 5.3
Policies and measures in accordance with Article 2	Chapters 4.2 and 4.3
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	Chapter 4.1
Information under Article 10	Chapters 4.2.4; 8.3; 9.2; and 9.3
Financial resources <sup>a</sup>	Not provided

<sup>a</sup> As a country with an economy in transition, Estonia does not have to report on the implementation of Article 11 of the Kyoto Protocol, including on the provision of 'new and additional' financial resources.

92. Estonia has not reported the following elements of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol: national registry; and identification of steps taken to promote and/or implement any decisions by ICAO and IMO in order to limit or to reduce GHG emissions not included in the Montreal Protocol from aviation and marine bunker fuels. The ERT recommends that Estonia include information on 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 sections of this report.

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

93. Estonia 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 2010 and 2011 annual submissions, including the 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 complete and transparent. The ERT encourages it to continue exploring and reporting on how Estonia is striving to implement its commitments under Article 3 in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties.

94. The NIRs 2010 and 2011 contained information on the initiatives of Estonia aiming to minimize the adverse impacts, including the cooperation projects on water management and forestry with Moldova; best practices on RES use; and transfer of experience on innovation support and technology transfer to Georgia. Estonia reported that it does not have any subsidies for environmentally unsound and unsafe technologies and through its tax system it promotes sustainable production and technologies. Estonia contributed EUR 1 million over 2008–2010 to the Neighbourhood Investment Facility Trust Fund. The fund supports the strengthening of infrastructure interconnections between the EU and its neighbours in the areas of transport and energy, and addresses common environmental concerns. Estonia also conducts research on enhancing technologies that emit less GHGs but at the moment it does not cooperate with developing countries in this field.

### **III. Conclusions and recommendations**

95. The ERT concludes that the NC5 generally provides a good overview of the national climate policy of Estonia. The information provided in the NC5 includes most of mandatory information required by the UNFCCC reporting guidelines, except for information on PaMs subdivided by GHG, the total effect of PaMs presented by GHG and the emission projections for the LULUCF sector. The NC5 includes most elements of the supplementary information under Article 7 of the Kyoto Protocol, except for some information on the national registry and on identification of steps taken to promote and/or implement any decisions by ICAO and IMO in order to limit GHG emissions not included in the Montreal Protocol from aviation and marine bunker fuels.. During the review, Estonia provided the additional information on the missing reporting elements.

96. Estonia's total GHG emissions in 2009 were estimated to be 59.0 per cent below its 1990 level excluding LULUCF and 68.0 per cent below that including LULUCF. The main drivers of emission trends in Estonia include the transition from a centrally planned to a market driven economy, which started in the early 1990s, massive restructuring of its

economy, reduction of oil shale use, energy efficiency enhancement in the power generation and transport sectors, and the increase in forest cover.

97. In its NC5, Estonia has reported the projections up to 2020 under the ‘with measures’ and ‘with additional measures’ scenarios, using the inventory data for 2006 as a reference. According to the NC5, total GHG emissions in 2010 are expected to be 62.6 per cent and 62.5 per cent below the base year level under the ‘with measures’ and ‘with additional measures’ scenarios, respectively. During the review, Estonia provided the updated projections using the inventory data for 2008 as a reference. According to the updated projections, total GHG emissions in 2010 are expected to be 52.1 per cent and 52.3 per cent below the base year level under the ‘with measures’ and ‘with additional measures’ scenarios, respectively. The projections indicate that Estonia will meet its Kyoto Protocol target (which is an 8 per cent emission reduction) by far, under the ‘with measures’ scenario, and total GHG emissions are not expected to exceed the Kyoto Protocol target even by 2020.

98. The NC5 contains limited information on how the use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action, because Estonia does not plan to make use of the Kyoto Protocol mechanisms to meet its Kyoto Protocol target for the first commitment period. However, it is engaged in the joint implementation and emission trading mechanisms under the Kyoto Protocol as a recipient country.

99. The key medium- and long-term programmes are linked to the EU climate and energy package that sets the 2020 targets. Estonian installations participate in the EU ETS. In the non-ETS sectors, according to the EU effort-sharing decision, Estonia is allowed to increase its emissions by 11 per cent by 2020 compared with the 2005 level. Estonia adopted the National Energy Efficiency Programme as well as the National Renewable Energy Action Plan that set the pathway towards the national target of reaching a 25 per cent share of RES in gross final energy consumption by 2020. One of the key sectoral strategy documents is the National Development Plan of the Energy Sector. Estonia prepared the National Programme of Greenhouse Gas Emission Reduction to reach its Kyoto Protocol target and the national target to reduce GHG emissions by 21 per cent by 2010 as compared with the 1999 level.

100. In its NC5, Estonia identified coastal zone as the sector most vulnerable to climate change affected by rising sea levels and wind storms. Climate change also affects such sectors as agriculture, forestry, tourism and public health.

101. Estonia has provided information on its actions relating to research and systematic observation. There is a growing emphasis on climate-related research activities supported by the Government and international organizations. The advances in climate modelling, monitoring and research could be integrated into the future efforts to assess the sectoral impacts of and ecosystem vulnerability to climate change, to identify the socio-economic aspects of the impact of climate change and the potential response options available to Estonia.

102. Estonia has made an effort to integrate the subject of climate change into its education system at all levels and across all disciplines. This is incorporated into the Ministry of Education and Research’s Development Plan for Education on Sustainable Development for 2009–2013.

103. The ERT reiterates the conclusion of the ARR 2010 to further improve and strengthen Estonia’s national system, in particular in relation to the reporting on the LULUCF sector and activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol. The ERT concluded that Estonia’s national system continues to perform its required functions as set out in decision 19/CMP.1. and the national registry continues to fulfil the

requirements related to its reporting and accounting of information on Kyoto Protocol units, transaction procedures, conformance to the technical standards, public availability of information, security, data integrity, and recovery measures, set out in decision 13/CMP.1 and decision 5/CMP.1.

104. 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.

105. In the course of the review, the ERT formulated several recommendations relating to the completeness and transparency of the reporting under the Convention and its Kyoto Protocol. The key recommendations<sup>12</sup> are that Estonia:

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

(i) The testing of the performance procedure and backup plan for the national registry;

(ii) The steps Estonia is taking to promote and implement decisions of ICAO and IMO in order to limit or reduce the GHG emissions not controlled by the Montreal Protocol from aviation and marine bunkers;

(iii) The information on PaMs subdivided by GHG;

(iv) The emission projections for each sector, including the LULUCF sector;

(v) The total effects of PaMs presented by GHG;

(b) Improve the transparency by reporting the following:

(i) The detailed description of the 'with measures' scenario and implemented and adopted PaMs that it encompasses;

(ii) The more detailed information outlining the action taken to implement Article 4, paragraph 1(b) and (e), of the Convention, with regard to adaptation.

106. The ERT encourages Estonia to undertake a number of improvements regarding the transparency and completeness of its reporting; the most important of these are that the Party provide information on:

(a) The principal PaMs for all sectors and for all GHGs, in particular the PaMs in the industrial processes sector;

(b) The information about the cost of the PaMs, especially implemented and adopted PaMs, and the information on how the PaMs interact with other PaMs at the national level;

(c) The estimates of the mitigation impacts of individual PaMs for a particular year;

(d) The sensitivity analysis of the projections and the key drivers, namely those concerning the rate of GDP growth and oil and gas price changes in each sector, including the information on underlying assumptions.

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<sup>12</sup> The recommendations are given in full in the relevant sections of this report.

#### **IV. Questions of implementation**

107. During the review, the ERT assessed the NC5, including supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol and reviewed the 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. 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. Addendum 1: 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. Addendum 2: 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. Available at <<http://unfccc.int/resource/docs/2011/sbi/eng/inf02.pdf>>.

FCCC/ARR/2010/EST. Report of the individual review of the greenhouse gas inventory of Estonia submitted in 2010. Available at <<http://unfccc.int/resource/docs/2011/arr/est.pdf>>.

FCCC/ARR/2009/EST. Report of the individual review of the annual submission of Estonia submitted in 2009. Available at <<http://unfccc.int/resource/docs/2010/arr/EST.pdf>>.

FCCC/IDR.4/EST. Report of the centralized in-depth review of the fourth national communication of Estonia. Available at <<http://unfccc.int/resource/docs/2006/idr/est04.pdf>>.

Fourth national communication of Estonia. Available at <<http://unfccc.int/resource/docs/natc/estnc4pI.pdf>> and <<http://unfccc.int/resource/docs/natc/estnc4pII.pdf>>.

2009 GHG inventory submission of Estonia. Available at <[http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/4771.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/4771.php)>.

2010 GHG inventory submission of Estonia. Available at  
<[http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/5270.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/5270.php)>.

2011 GHG inventory submission of Estonia. Available at  
<[http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/5888.php](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. Inga Kindsigo (Estonian Research Centre), including additional material on updated policies and measures, GHG projections, the national registry and recent climate policy developments in Estonia. The following document<sup>1</sup> was also provided by Estonia:

*Biennial report of Estonia pursuant to Article 3(2) of Decision No 280/2004/EC concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol, Part I and Part II, 2011.* Available at  
<<http://cdr.eionet.europa.eu/ee/eu/ghgpro/envtx9qra>>.

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<sup>1</sup> Reproduced as received from the Party.