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## Report on the technical review of the third biennial report of Estonia

Developed country Parties were requested by decision 2/CP.17 to submit their third biennial report to the secretariat by 1 January 2018. This report presents the results of the technical review of the third biennial report of Estonia, conducted by an expert review team in accordance with the “Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”.

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## Abbreviations and acronyms

2006 IPCC Guidelines	<i>2006 IPCC Guidelines for National Greenhouse Gas Inventories</i>
AEA	annual emission allocation
Annex II Party	Party included in Annex II to the Convention
AR4	Fourth Assessment Report of the Intergovernmental Panel on Climate Change
BR	biennial report
CH <sub>4</sub>	methane
CHP	combined heat and power
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> eq	carbon dioxide equivalent
CTF	common tabular format
EEDP 2030+	Estonian Energy Development Plan until 2030
ERT	expert review team
ESD	effort-sharing decision
ESTE A	Estonian Environment Agency
EU	European Union
EU ETS	European Union Emissions Trading System
GDP	gross domestic product
GHG	greenhouse gas
GPCP 2050	General Principles of Climate Policy until 2050
HFC	hydrofluorocarbon
IE	included elsewhere
IPCC	Intergovernmental Panel on Climate Change
IPPU	industrial processes and product use
KP2	second commitment period of the Kyoto Protocol
LULUCF	land use, land-use change and forestry
NA	not applicable
NC	national communication
NF <sub>3</sub>	nitrogen trifluoride
NIR	national inventory report
NO	not occurring
N <sub>2</sub> O	nitrous oxide
non-ETS sectors	sectors not covered by the European Union Emissions Trading System
PaMs	policies and measures
PFC	perfluorocarbon
RES	renewable energy sources
SF <sub>6</sub>	sulfur hexafluoride
UNFCCC reporting guidelines on BRs	“UNFCCC biennial reporting guidelines for developed country Parties”
UNFCCC reporting guidelines on NCs	“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications”
WAM	‘with additional measures’
WEM	‘with measures’

## **I. Introduction and summary**

### **A. Introduction**

1. This is a report on the centralized technical review of the BR3<sup>1</sup> of Estonia. The review was organized by the secretariat in accordance with the “Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”, particularly “Part IV: UNFCCC guidelines for the technical review of biennial reports from Parties included in Annex I to the Convention” (annex to decision 13/CP.20).

2. In accordance with the same decisions, a draft version of this report was transmitted to the Government of Estonia, which provided comments that were considered and incorporated, as appropriate into this final version of the report.

3. The review was conducted from 12 to 17 March 2018 in Bonn, Germany by the following team of nominated experts from the UNFCCC roster of experts: Ms. Asia Adlan (Sudan), Mr. Menouer Boughedaoui (Algeria), Mr. Christo Christov (Bulgaria), Ms. Nancy Liliana Gamba Cabezas (Colombia), Mr. Domenico Gaudio (Italy), Mr. Liviu Gheorghe (Romania), Mr. Dirk Günther (Germany), Ms. Fui Pin Koh (Malaysia), Ms. Sangchan Limjirakan (Thailand), Mr. Juan Luis Martin Ortega (Spain), Mr. Engin Mert (Turkey), Ms. Gherghita Nicodim (Romania), Mr. Koki Okawa (Japan), Ms. Marcela Itzel Olguin-Alvarez (Mexico), Mr. Brian Quirke (Ireland), Ms. Kristina Saarinen (Finland), Ms. Marina Shvangiradze (Georgia) and Ms. Caroline Tagwireyi (Zimbabwe). Mr. Gaudio, Ms. Saarinen and Ms. Shvangiradze were the lead reviewers. The review was coordinated by Ms. Veronica Colerio, Ms. Suvi Monni and Ms. Sevdalina Todorova (UNFCCC secretariat).

### **B. Summary**

4. The ERT conducted a technical review of the information reported in the BR3 of Estonia in accordance with the UNFCCC reporting guidelines on BRs (annex I to decision 2/CP.17).

#### **1. Timeliness**

5. The BR3 was submitted on 29 December 2017, before the deadline of 1 January 2018 mandated by decision 2/CP.17. The CTF tables were also submitted on 29 December 2017. An updated version of the BR3 was submitted on 9 March 2018.

#### **2. Completeness, transparency of reporting and adherence to the reporting guidelines**

6. Issues and gaps identified by the ERT related to the reported information are presented in table 1. The information reported by Estonia in its BR3 mostly adheres to the UNFCCC reporting guidelines on BRs.

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<sup>1</sup> The BR submission comprises the text of the report and the CTF tables, which are both subject to the technical review.

Table 1  
**Summary of completeness and transparency of mandatory information reported by Estonia in its third biennial report**

<i>Section of BR</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of recommendations</i>
GHG emissions and trends	Complete	Transparent	
Assumptions, conditions and methodologies related to the attainment of the quantified economy-wide emission reduction target	Complete	Mostly transparent	Issues 1 and 2 in table 3
Progress in achievement of targets	Complete	Mostly transparent	Issue 1 in table 5, issue 1 in table 7, issue 4 in table 11
Provision of support to developing country Parties <sup>a</sup>	NA	NA	NA

*Note:* A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in chapter III below.

<sup>a</sup> Estonia is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3, 4 and 5, of the Convention.

## II. Technical review of the information reported in the third biennial report

### A. Information on greenhouse gas emissions and removals related to the quantified economy-wide emission reduction target

#### 1. Information on greenhouse gas inventory arrangements, emissions, removals and trends

##### (a) Technical assessment of the reported information

7. Total GHG emissions<sup>2</sup> excluding emissions and removals from LULUCF decreased by 55.3 per cent between 1990 and 2015, while total GHG emissions including net emissions or removals from LULUCF decreased by 59.4 per cent over the same period. Table 2 illustrates the emission trends by sector and by gas for Estonia.

Table 2  
**Greenhouse gas emissions by sector and by gas for Estonia for the period 1990–2015**

<i>Sector</i>	<i>GHG emissions (kt CO<sub>2</sub> eq)</i>					<i>Change (%)</i>		<i>Share (%)</i>	
	<i>1990</i>	<i>2000</i>	<i>2010</i>	<i>2014</i>	<i>2015</i>	<i>1990–2015</i>	<i>2014–2015</i>	<i>1990</i>	<i>2015</i>
1. Energy	36 397.39	14 974.85	18 939.30	18 691.23	15 863.86	–56.4	–15.1	90.1	87.9
A1. Energy industries	29 281.48	12 144.17	15 432.26	14 936.02	12 237.23	–58.2	–18.1	72.5	67.8
A2. Manufacturing industries and construction	2 506.62	580.39	512.80	706.01	497.63	–80.1	–29.5	6.2	2.8
A3. Transport	2 477.19	1 682.11	2 261.03	2 264.43	2 323.82	–6.2	2.6	6.1	12.9
A4. and A5. Other	2 081.83	540.95	710.10	767.30	789.65	–62.1	2.9	5.2	4.4
B. Fugitive emissions from fuels	50.27	27.23	23.11	17.47	15.53	–69.1	–11.1	0.1	0.1
C. CO <sub>2</sub> transport and storage	NO	NO	NO	NO	NO	NA	NA	NA	NA

<sup>2</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. Values in this paragraph were calculated on the basis of the 2017 annual submission, version 3.

	GHG emissions (kt CO <sub>2</sub> eq)					Change (%)		Share (%)	
	1990	2000	2010	2014	2015	1990–2015	2014–2015	1990	2015
2. IPPU	965.73	697.60	537.58	707.69	512.92	-46.9	-27.5	2.4	2.8
3. Agriculture	2 669.72	1 078.02	1 192.37	1 341.93	1 337.62	-49.9	-0.3	6.6	7.4
4. LULUCF	-1 734.71	-3 396.68	-1 924.39	-1 754.94	-2 359.23	36.0	34.4	NA	NA
5. Waste	369.90	562.80	474.20	340.27	326.08	-11.8	-4.2	0.9	1.8
6. Other	NO	NO	NO	NO	NO	NA	NA	NA	NA
Indirect CO <sub>2</sub> <sup>a</sup>	IE	IE	IE	IE	IE	NA	NA	NA	NA
<i>Gas<sup>b</sup></i>									
CO <sub>2</sub>	37 069.22	15 362.56	19 015.14	18 910.21	15 885.37	-57.1	-16.0	91.7	88.1
CH <sub>4</sub>	1 909.61	1 238.80	1 196.23	1 106.43	1 059.09	-44.5	-4.3	4.7	5.9
N <sub>2</sub> O	1 423.92	630.15	754.82	844.86	870.96	-38.8	3.1	3.5	4.8
HFCs	NO	79.15	175.54	217.52	222.82	NA	2.4	0.0	1.2
PFCs	NO	NO	NO	NO	NO	NA	NA	NA	NA
SF <sub>6</sub>	NO	2.61	1.73	2.10	2.25	NA	7.2	0.0	0.0
NF <sub>3</sub>	NO	NO	NO	NO	NO	NA	NA	NA	NA
<b>Total GHG emissions without LULUCF</b>	<b>40 402.74</b>	<b>17 313.27</b>	<b>21 143.45</b>	<b>21 081.13</b>	<b>18 040.48</b>	<b>-55.3</b>	<b>-14.4</b>	<b>100.0</b>	<b>100.0</b>
<b>Total GHG emissions with LULUCF</b>	<b>38 668.03</b>	<b>13 916.58</b>	<b>19 219.06</b>	<b>19 326.18</b>	<b>15 681.26</b>	<b>-59.4</b>	<b>-18.9</b>	<b>NA</b>	<b>NA</b>

Source: GHG emission data: Estonia's 2017 annual submission, version 3.

<sup>a</sup> Indirect CO<sub>2</sub> emissions from non-methane volatile organic compounds from solvent use and road paving with asphalt are reported under subcategory 2.D.3 other and therefore are already included under the IPPU sector.

<sup>b</sup> Emissions by gas without LULUCF and without indirect CO<sub>2</sub>, whenever reported separately.

8. The decrease in total emissions was driven mainly by the restructuring of the economy due to the transition from a centrally planned economy to a market economy and the successful implementation of the necessary reforms. The decrease in GHG emissions between 1990 and 2000 is related to major structural changes in the economy after Estonia gained its independence from the former Soviet Union, which was followed by a small increase. After 2000, fluctuations in emissions are due mainly to economic trends, changes in the energy supply structure, electricity production level and weather conditions.

9. In brief, Estonia's national inventory arrangements were established in accordance with Article 143 of the country's Atmospheric Air Protection Act<sup>3</sup> and Articles 6 and 23 (item 8) of the Statutes of the Ministry of the Environment<sup>4</sup> and follow the reporting requirements related to national inventory arrangements contained in the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories" as required by paragraph 3 of the UNFCCC reporting guidelines on BRs. Estonia has not made any changes to its inventory arrangements since the BR2.

10. The Ministry of the Environment is the national entity with overall responsibility for organizing and coordinating the compilation of the GHG inventory reports and submitting them to the UNFCCC secretariat and the European Commission. The inventory is produced by the Ministry of the Environment, the Estonian Environmental Research Centre and ESTEA in collaboration. The Estonian Environmental Research Centre is the inventory coordinator and is responsible for preparing the estimates for the energy, IPPU, agriculture and waste sectors. The Data Management Department of ESTEA is responsible for LULUCF estimates under the Convention and its Kyoto Protocol. Sectoral experts collect activity data, estimate emissions and/or removals, implement quality control procedures and record the results, enter sectoral data in the reporting software and prepare the sectoral

<sup>3</sup> Available at <https://www.riigiteataja.ee/en/eli/517012017003/consolide>.

<sup>4</sup> Available at <https://www.riigiteataja.ee/akt/13243657>.

parts of the NIR. Those experts are also responsible for archiving activity data, estimates and all other relevant information.

**(b) Assessment of adherence to the reporting guidelines**

11. The ERT assessed the information reported in the BR3 of Estonia and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

**B. Assumptions, conditions and methodologies related to the attainment of the quantified economy-wide emission reduction target**

**1. Technical assessment of the reported information**

12. For Estonia the Convention entered into force on 25 October 1994. Under the Convention Estonia committed to contributing to the achievement of the joint EU economy-wide emission reduction target of 20 per cent below the 1990 level by 2020. The EU offered to move to a 30 per cent reduction target on the condition that other developed countries commit to a comparable target and developing countries contribute according to their responsibilities and respective capabilities under a new global climate change agreement.

13. The target for the EU and its member States is formalized in the EU 2020 climate and energy package. The legislative package regulates emissions of CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs and SF<sub>6</sub> using global warming potential values from the AR4 to aggregate the GHG emissions of the EU until 2020. Emissions and removals from the LULUCF sector are not included in the quantified economy-wide emission reduction target under the Convention. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms as well as new market mechanisms for compliance purposes, subject to a number of restrictions in terms of origin and type of project and up to an established limit. Companies can make use of such units to fulfil their requirements under the EU ETS.

14. The EU 2020 climate and energy package includes the EU ETS and the ESD (see chapter II.C.1 below). The EU ETS covers mainly point emissions sources in the energy, industry and aviation sectors. An EU-wide emissions cap has been put in place for the period 2013–2020 with the goal of reducing emissions by 21 per cent below the 2005 level by 2020. Emissions from the non-ETS sectors are regulated through member State specific targets that add up to a reduction at the EU level of 10 per cent below the 2005 level by 2020.

15. Under the ESD, Estonia has a target of limiting its emission growth to 11 per cent above the 2005 level by 2020 for the non-ETS sectors. National emission targets for the non-ETS sectors for 2020 have been translated into binding quantified AEAs for the period 2013–2020. Estonia's AEAs change following a linear path from 6,296.99 kt CO<sub>2</sub> eq in 2013 to 6,023.72 kt CO<sub>2</sub> eq in 2020.<sup>5</sup> During the review, Estonia clarified the reported levels of historical emissions for the sectors covered by the ESD and for the EU ETS sectors for the years 2005–2013. The ERT noted the usefulness of this information in enhancing the transparency of the reported GHG emissions for 2005.

16. Estonia reported in the BR3 on its ratification of the Paris Agreement in 2016 and its joint commitment with the EU and its member States to a binding target of at least 40 per cent domestic reduction of GHG emissions by 2030 in comparison with 1990. The target will be reached by reducing emissions from the EU ETS and non-ETS sectors by 43 per cent and 30 per cent, respectively, by 2030 compared with 2005.

17. Estonia's key medium- and long-term programmes and plans are derived from the EU 2020 climate and energy package. The country's Sustainable Development Act, last

<sup>5</sup> European Commission decision 2017/1471 of 10 August 2017 amending decision 2013/162/EU of 26 March 2013 to revise member States' AEAs for the period from 2017 to 2020.

amended on 1 January 2017, prescribes the principles of sustainable development, thus serving as the basis for all environment-related legislation and relevant national programmes. The national targets and objectives under the climate and energy policy are set out in the National Reform Programme Estonia 2020, namely limiting growth in emissions from non-ETS sectors to 11 per cent above the 2005 level, achieving a 25 per cent share of renewables in final energy consumption by 2020 and keeping energy consumption at the 2010 level (118 PJ). The Estonian low-carbon strategy GPCP 2050 was adopted on 5 April 2017 with the aim of reducing GHG emissions by 80 per cent by 2050 compared with 1990. On 19 October 2017, Estonia approved EEDP 2030+, which sets further national targets under the Convention. The expected outcomes of the plan are for GHG emissions to be reduced by 70 per cent in the energy sector, share of renewable energy increased to 50 per cent of final energy consumption, and final energy consumption in 2020 and 2030 kept at the same level as in 2010. The national targets are transcribed in packages of measures, as discussed in section II.C.1 of this report.

18. Estonia reported a description of its target, including associated conditions and assumptions, in BR3 table 3.1 and CTF tables 2(a)–(f).

## 2. Assessment of adherence to the reporting guidelines

19. The ERT assessed the information reported in the BR3 of Estonia and identified an issue relating to transparency and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 3.

Table 3

### Findings on the quantified economy-wide emission reduction target from the review of the third biennial report of Estonia

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation
1	Reporting requirement specified in paragraph 5  Issue type: transparency  Assessment: recommendation	The ERT noted that emissions and removals from the LULUCF sector are not included in the quantified economy-wide emission reduction target under the Convention for the EU member States reported in BR3 table 3.1 and CTF table 2(d) by Estonia. However, CTF table 2(b) indicates that the sector is included in the Party's target. The ERT also noted that this inconsistency was already highlighted in the previous review report (FCCC/TRR.2/EST, para. 12).  The ERT reiterates the recommendation made in the previous review report that the Party improve the transparency of its reporting by clearly and consistently reporting on the exclusion of LULUCF from the target under the Convention in CTF table 2(b) in its next BR and further recommends that consistent information is provided in the textual part of the BR and the CTF tables.
2	Reporting requirement specified in paragraph 5  Issue type: transparency  Assessment: recommendation	The ERT noted that CTF tables 2(e)I and 2(e)II were left blank in Estonia's submission. Footnotes 1–4 have been referred to in CTF table 2(e)I, but explanatory text has been included only for footnotes 1 and 2. Carry-over units were not reported by the Party in the table, and footnote 1 indicates that no carry-over units will be used to achieve the Party's 2020 target. The same information has been repeated in BR3 table 3.1 covering the mechanisms listed in CTF table 2(e).  During the review Estonia explained that the total quantities of emission reduction units, certified emission reductions and assigned amount units that Estonia requested to be carried over to the second commitment period were 2,127.34, 440.52 and 19,868.93 kt CO <sub>2</sub> eq, respectively. The Party provided a version of CTF table 2(e)I filled in with data and relevant notation keys.  The ERT recommends that Estonia improve the transparency of the reporting in its next BR by clearly and consistently reporting on the intended use of market-based mechanisms in the BR and the CTF tables, for example by using numerical data and/or appropriate notation keys and footnotes.

*Note:* Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on BRs.



## **C. Progress made towards the achievement of the quantified economy-wide emission reduction target**

### **1. Mitigation actions and their effects**

#### **(a) Technical assessment of the reported information**

20. Estonia provided information on its package of PaMs implemented, adopted and planned, by sector and by gas, in order to fulfil its commitments under the Convention and its Kyoto Protocol. The Party reported on its policy context and legal and institutional arrangements put in place to implement its commitments and monitor and evaluate the effectiveness of its PaMs.

21. Estonia provided information on a set of PaMs similar to those previously reported. The Party indicated (in section 4.2 of the BR3) that there had been no significant changes since the previous submission to its institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress made towards its target. During the review Estonia explained that, according to established practice, the relevant ministries analyse annually national development plans and/or the implementation reports under their area of administration to see if the country is on track with an activity and/or emission reduction target and, if not, what needs to be done. Under GPCP 2050 the climate policy will be reviewed and, if necessary, updated every four years, and the main principles of the climate policy will be taken into consideration in preparing and implementing cross-sectoral and sectoral strategies.

22. Estonia did not report in the BR3 on its self-assessment of compliance with its emission reduction target or on national rules for taking action against non-compliance).

23. The key overarching cross-sectoral policy in the EU is the 2020 climate and energy package, adopted in 2009, which includes the revised EU ETS and the ESD. The package is supplemented by renewable energy and energy efficiency legislation and legislative proposals on the 2020 targets for CO<sub>2</sub> emissions from cars and vans, the carbon capture and storage directive, and the general programmes for environmental conservation, namely the 7<sup>th</sup> Environment Action Programme and the clean air policy package.

24. In operation since 2005, the EU ETS is a cap-and-trade system that covers all significant energy-intensive installations (mainly large point emissions sources such as power plants and industrial facilities), which produce 40–45 per cent of the GHG emissions of the EU. It is expected that the EU ETS will guarantee that the 2020 target (a 21 per cent emission reduction below the 2005 level) will be achieved for sectors under the scheme. The third phase of the EU ETS started in 2013 and the system now includes aircraft operations (since 2012) as well as N<sub>2</sub>O emissions from chemical industries, PFC emissions from aluminium production and CO<sub>2</sub> emissions from industrial processes (since 2013).

25. The ESD became operational in 2013 and covers sectors outside the EU ETS, including transport (excluding domestic and international aviation, and international maritime transport), residential and commercial buildings, agriculture and waste, together accounting for 55–60 per cent of the GHG emissions of the EU. The aim of the ESD is to decrease GHG emissions in the EU by 20 per cent below the 1990 level by 2020 and it includes binding annual targets for each member State for 2013–2020. Under the ESD, Estonia has a target of limiting its emission growth to 11 per cent above the 2005 level by 2020 for the non-ETS sectors.

26. Estonia introduced national-level policies to achieve its targets under the ESD and domestic emission reduction targets. The key cross-sectoral policies reported are the National Reform Programme Estonia 2020 and GPCP 2050 (see para. 24 above), the National Renewable Energy Action Plan, with renewable energy goals for up until 2020, the National Energy Efficiency Programme and the Estonian Rural Development Plan 2014–2020. The key measures reported are in the energy sector and include supporting the use of RES- and efficient CHP-based electricity production and improving the efficiency of the use of oil shale. The mitigation effect of supporting renewable and efficient CHP-based

electricity production is the most significant of the measures, with estimated mitigation impacts of 1,309.86, 1,554.50, 1,570.58 and 1,729.97 kt CO<sub>2</sub> eq for 2020, 2025, 2030 and 2035, respectively. The key policies in the transport sector are supporting the use of biofuels and promoting public transport, energy-efficient cars, hybrid buses, hybrid trolleys, electrical buses and non-motorized transport; changing public behaviour; and managing or reducing fuel demand. The mitigation effect of increasing the share of biofuel use is the most significant in the transport sector, with 251.80, 294.30, 329.60 and 319.60 kt CO<sub>2</sub> eq estimated emission reductions by 2020, 2025, 2030 and 2035, respectively. Other policies that have delivered significant emission reductions are renovating district heating systems, improving the traffic system by updating the lighting system, updating parking policies and restructuring city streets.

27. Estonia highlighted the domestic mitigation actions that are under development, such as additional renovation of heat networks for reducing losses (with mitigation potential of 168.90, 198.10, 365.00 and 440.60 kt CO<sub>2</sub> eq by 2020, 2025, 2030 and 2035, respectively) and introducing road usage fees for cars and heavy-duty vehicles based on mileage, location and environmental performance (with the potential to reduce emissions by 69.9, 194.5, 324.3 and 360.7 kt CO<sub>2</sub> eq by 2020, 2025, 2030 and 2035, respectively).

28. Table 4 provides a summary of the reported information on the PaMs of Estonia.

Table 4

**Summary of information on policies and measures reported by Estonia**

<i>Sector</i>	<i>Key PaMs</i>	<i>Estimate of mitigation impact by 2020 (kt CO<sub>2</sub> eq)</i>	<i>Estimate of mitigation impact by 2030 (kt CO<sub>2</sub> eq)</i>
Policy framework and cross-sectoral measures	GPCP 2050	NE	NE
	National Reform Programme Estonia 2020	NE	NE
	National Renewable Energy Action Plan	NE	NE
Energy	EEDP 2030+	NE	NE
	Improvement of the efficiency of the use of oil shale	881.40	155.50
Transport	Increase of the use of biofuels in transport	251.80	329.60
	Road usage fees for cars and heavy-duty vehicles	69.90	324.30
Renewable energy	Support for renewable and efficient CHP-based electricity production	1 309.86	1 570.58
	Investment support for wind parks	66.00	66.00
Energy efficiency	Additional renovation of heat networks	168.90	365.00
	Renovation of boiler houses	65.20	140.60
	Renovation of heat networks	48.20	104.20
IPPU	EU regulation 517/2014 on reducing emissions and replacing fluorinated gases by other substances	22.82	108.80
Agriculture	Introduction of effective fertilization technologies	NE	NE
	Reduction of pollution caused by nutrients from agriculture	NE	NE
LULUCF	Natura 2000 support for private forest land	NE	NE
	Improvement of economic and ecological vitality of forest	NE	NE
	Support for growing local plant varieties	NE	NE
Waste	Limit on percentage of biodegradable waste deposited	11.97	50.63
	Increase of reuse and recycling of waste materials	NE	NE

*Note:* The estimates of mitigation impact are estimates of emissions of CO<sub>2</sub> or CO<sub>2</sub> eq avoided in a given year as a result of the implementation of mitigation actions.

29. The ERT noted that most of the reported measures have already been implemented and some of their impacts are already quantifiable; examples of implementation costs and mitigation results were provided in the submission.

**(b) Policies and measures in the energy sector**

30. The energy sector is the main source of GHG emissions in Estonia, with a share of 87.9 per cent of the country's total emissions in 2015 (see table 2 above). Stationary combustion contributes 85.3 per cent of the emissions from the sector and therefore represents the biggest mitigation potential.

31. **Energy supply.** The National Development Plan for the Energy Sector until 2020 from 2009 envisages steady, efficient, environmentally benign energy supply at reasonable prices while ensuring the sustainable use of energy in Estonia. On 19 October 2017 Estonia approved EEDP 2030+ with the aim of ensuring energy supply while taking into account the long-term energy and climate policy of the EU. The expected outcomes of the plan are that GHG emissions are reduced by 70 per cent in the energy sector, the share of renewable energy increased to 50 per cent of final energy consumption and 28 per cent of domestic primary energy consumption, and final energy consumption in 2020 and 2030 kept at the 2010 level.

32. In Estonia, oil shale is the main domestic fuel and oil shale firing power plants produce more than 80 per cent of the electricity in the country. Its long-term balanced use was established with the adoption in March 2016 of the National Development Plan for the Use of Oil Shale 2016–2030, which includes an assessment of the use of shale fuel oil and oil shale gas taking into account economic, social, security and environmental issues.

33. The National Development Plan for the Electricity Sector until 2018 from 2009 forecasts a significant decrease in electricity production from oil shale and an increase in the proportion from other sources of energy. The plan provides scenarios for restructuring electricity production in Estonia and states that the capacity of wind turbines (mainly wind farms) could be increased significantly (up to 900 MW).

34. **Renewable energy sources.** The data presented in the BR3 demonstrate that the share of RES in the fuel mix in Estonia is continuously increasing. As an EU member State, Estonia has a renewables target for 2020 under EU legislation (directive 2009/28/EC) of a 25 per cent share of RES in total energy consumption by 2020. In 2010 Estonia approved the National Renewable Energy Action Plan up to 2020 to ensure that it is complying with the EU renewable target, with specific measures planned to that end. Under the Estonian Rural Development Plan 2014–2020, which affects both the agriculture and energy sector, the production of heat and electricity from biogas is supported, with planned investment in activities of EUR 18 million by 2020. Estonia has a feed-in tariff system for RES- and efficient CHP-based electricity production. Under the system, renewable energy plants that do not exceed 100 MW are provided with EUR 0.0537/kWh.

35. **Energy efficiency.** Increasing energy efficiency is one of Estonia's key goals. Obligations to improve energy efficiency are derived from EU strategies and legislation (under the overall EU indicative target to improve energy efficiency by 20 per cent by 2020 compared with 1990). The latest National Energy Efficiency Action Plan was presented to the European Commission in May 2017. The improved energy efficiency and reduced energy intensity of the economy are also key in the updated National Reform Programme Estonia 2020, which foresees the implementation of long-term structural changes in the energy sector in accordance with and energy efficiency objectives (see para. 26 above).

36. Estonia aims to increase energy efficiency by implementing measures particularly in district heating, which has quite large potential for increasing energy efficiency, which will in turn result in lower GHG emissions. The goals for heat supply are set in EEDP 2030+, which are to use the full potential of CHP plants, promote the use of local fuels and reduce the share of imported fuel use in heat supply. It is expected that the share of the use of RES for heat supply will be more than 60 per cent, the share of imported fuel use less than 30 per cent and the use of primary energy less than 19 TWh/year by 2030.

37. **Residential and commercial sector.** Estonia has implemented and planned several measures to reduce emissions from the buildings sector. Key measures aiming to reduce emissions from the residential and commercial/institutional sector are focused on energy conservation through reconstruction of buildings. Estonia aims to reconstruct 10 per cent of existing public and commercial buildings (to at least energy efficiency class D), 10 per cent of existing private houses (to at least energy efficiency class E) and 15 per cent of existing apartment buildings (to at least energy efficiency class E) in a 20-year period. According to the BR3, between 2010 and 2013, a total of 540 public buildings were reconstructed at a total cost of EUR 165.6 million. Furthermore, in seven cities street lighting was replaced with efficient lighting systems. Additional reconstruction measures are in the planning stage, such as additional reconstruction of 20 per cent of existing public and commercial buildings (to at least energy efficiency class C), 40 per cent of existing private houses (to at least energy efficiency classes C and D) and 50 per cent of existing apartment buildings (to at least energy efficiency class C) in a 20-year period.

38. **Transport sector.** Reducing GHG emissions from the transport sector is one of the main goals for Estonia in meeting its targets under the ESD as the sector is growing in line with GDP. The Estonian Parliament approved the Transport Development Plan 2014–2020 in February 2014. The Party aims to decrease emissions from transport by decreasing the use of fuel-based vehicles, upgrading rail transport, increasing vehicles' use of RES and more efficient fuels and improving the traffic system. The targeted share of biofuel use for transport is 10 per cent by 2020.

39. The BR3 includes information on how Estonia promotes and implements the decisions of the International Civil Aviation Organization and the International Maritime Organization to limit emissions from aviation and marine bunker fuels.

40. **Industrial sector.** The BR3 indicates that the second National Energy Efficiency Action Plan states that increasing energy efficiency in manufacturing industries is mainly ensured by increasing environmental awareness and measures that are related to the wider energy policy, such as opening up the electricity market, the renewable energy charge, fuel and electricity excise duties and reduced differences in excise duty rates. At the beginning of 2017 the Ministry of the Environment launched a measure for increasing industrial resource efficiency, primarily for small and medium-sized companies to make energy savings. The actions supported are raising awareness, educating experts, conducting audits and making investments. While currently investment support is provided to the five most important sectors (mining, food processing, wood, pulp and paper, and non-metallic mineral industries), a new study is planned with a view to opening up investment to other sectors of manufacturing industries. According to the Party's Energy Sector Organization Act, large companies are mandated to have regular energy audits.

(c) **Policies and measures in other sectors**

41. **Industrial processes.** IPPU emissions make a minor contribution to the total emissions of Estonia, namely 2.8 per cent in 2015 (512.92 kt CO<sub>2</sub> eq with indirect CO<sub>2</sub> and 497.04 kt CO<sub>2</sub> eq without indirect CO<sub>2</sub>) (see table 2 above). The only measure relevant to the IPPU sector reported in the BR3 was linked to fluorinated gases. In January 2017, Estonia's Ambient Air Protection Act was repealed and replaced by the Atmospheric Air Protection Act, which covers all relevant legislation regarding fluorinated gases, including EU regulation 517/2014 on fluorinated GHGs. Its aim is the reduction of emissions of fluorinated gases and their replacement by other substances via bans on the use of fluorinated gases with high global warming potential and equipment using such gases.

42. **Agriculture.** Emissions from agriculture contributed 7.4 per cent (1,337.6 kt CO<sub>2</sub> eq) of total national GHG emissions in 2015 (see table 2 above). In the BR3 Estonia identified PaMs under the Estonia Rural Development Plan 2014–2020, which are also referred to in the Climate Change Mitigation and Adaptation Action Plan in Agriculture Sector 2012–2020 and in the Estonian Organic Farming Development Plan 2014–2020, to limit and reduce GHG emissions from the agriculture sector. Estonia plans to support organic farming and environmentally friendly land management. The Party also plans to reduce GHG and ammonia emissions by promoting the use of biomass, producing renewable energy, investing in livestock buildings (including manure storage) and increasing the

technological capacity of agricultural enterprises. The ERT noted that the BR3 does not include information on the expected impact of the measures in the agriculture sector.

43. **LULUCF.** The LULUCF sector is the only possible sink of GHG emissions in Estonia and plays an important role in the national carbon cycle. In 2015 the LULUCF sector acted as a CO<sub>2</sub> sink of 2,359.2 kt CO<sub>2</sub> eq. Compared with 1990, CO<sub>2</sub> removals from the LULUCF sector have increased by 36.0 per cent and by 34.4 per cent compared with 2014 (see table 4 above). The main policy for forest management in Estonia is the Forest Act, which provides the legal framework for ensuring the protection and sustainable management of forests as an ecosystem. In addition, the Estonian Forestry Development Programme until 2020 is the official sustainable development strategy for the Estonian forest sector. It includes measures to ensure the productivity and viability of forest, support local varieties and enhance carbon sequestration. The programme comprises various measures, such as timely regeneration of forest, improving forest health condition and providing support for growing local plant varieties. Natura 2000 will help to preserve carbon stock including private forest land areas. The expected impact of the measures in the LULUCF sector is difficult to assess and was not reported by Estonia.

44. **Waste management.** In 2015 the waste sector contributed 1.8 per cent (326.08 kt CO<sub>2</sub> eq) of the total GHG emissions of Estonia, which is 11.8 per cent below the sectoral emission level in 1990 and 4.2 per cent below that in 2014 (see table 2 above). General waste-related requirements and rules are stipulated in Estonia's Waste Act, which requires all landfills to meet EU-established requirements. It includes the limit on the percentage of biodegradable waste deposited, which should not exceed 20 per cent of the total amount of deposited municipal waste by July 2020. The ERT noted that the amount of biodegradable waste in the total amount by weight of municipal waste deposited in landfills was 57 per cent in 2011 and had decreased to 48 per cent by 2014.

45. The Waste Act and the National Waste Management Plan for 2014–2020 aim to increase the proportion of waste materials such as paper, metal, plastic and glass reused and/or recycled to 50 per cent of the total weight of waste materials by 2020 so as to reduce the GHG emissions originating from the waste sector. The level of reuse and recycling of waste materials was 27 per cent in 2011, which had increased to 35 per cent by 2014. Additionally the National Waste Management Plan defines PaMs for the prevention and reduction of waste generated, reduction of environmental risks arising from waste, and the improvement of monitoring and supervision. The expected impact of the measures in the waste sector was not always reported.

**(d) Response measures**

46. Estonia did not report on the assessment of the economic and social consequences of response measures.

**(e) Assessment of adherence to the reporting guidelines**

47. The ERT assessed the information reported in the BR3 of Estonia and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 5.

Table 5

**Findings on mitigation actions and their effects from the review of the third biennial report of Estonia**

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
1	<p>Reporting requirement specified in paragraph 6</p> <p>Issue type: transparency</p> <p>Assessment: recommendation</p>	<p>The ERT noted that in the BR3 and CTF table 3 Estonia reported on the impact of individual mitigation measures for the energy, transport and IPPU sectors for 2020, 2025, 2030 and 2035. However, such information was not reported for the agriculture and LULUCF sectors and for most of the measures in the waste sector. In the relevant tables for quantitative information in the BR3 and in CTF table 3, the notation key “NE” is used with the explanation that estimates of mitigation impact are not available due to lack of quantifiable activity data for the reported measures.</p> <p>During the review the Party confirmed the difficulty of estimating the impacts of those measures.</p> <p>Noting the provided information, the ERT recommends that Estonia improve the transparency of its reporting by providing information on the expected impact of individual measures for all sectors or by clearly explaining why in certain cases this may not be possible because of Estonia’s national circumstances.</p>
2	<p>Reporting requirement specified in paragraph 8</p> <p>Issue type: completeness</p> <p>Assessment: encouragement</p>	<p>The ERT noted that the BR3 does not include information on the assessment of the economic and social consequences of response measures.</p> <p>During the review the Party explained that there has been no separate study on the economic and social consequences of response measures and that its intention is to provide information to the extent possible in its next BR.</p> <p>The ERT reiterates the encouragement in the previous review report (FCCC/TRR.2/EST, para. 28) for the Party to improve in its next BR the completeness of its reporting on the assessment of the economic and social consequences of response measures, or include a reference to the sections of the submission and of the last NC/BR where relevant information has been provided.</p>
3	<p>Reporting requirement specified in paragraph 24</p> <p>Issue type: completeness</p> <p>Assessment: encouragement</p>	<p>Estonia did not report in the BR3 on its self-assessment of compliance with its emission reduction target or on national rules for taking action against non-compliance.</p> <p>In response to a question raised by the ERT during the review, the Party provided information on the monitoring arrangements foreseen at the EU level and in the national legislation in order to assess compliance with emission reduction targets.</p> <p>The ERT encourages the Party to improve the completeness of the reporting in its next BR by providing, to the extent possible, information on its self-assessment of compliance with emission reductions in comparison with emission reduction commitments or the level of emission reduction that is required by science, and on the progress made in the establishment of national rules for taking local action against domestic non-compliance with emission reduction targets, for instance by including the information provided during the review.</p>

*Note:* Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on BRs.

**2. Estimates of emission reductions and removals and the use of units from market-based mechanisms and land use, land-use change and forestry**

**(a) Technical assessment of the reported information**

48. For 2014 Estonia reported in CTF table 4 annual total GHG emissions excluding LULUCF of 21,081.13 kt CO<sub>2</sub> eq, which is 47.8 per cent below the 1990 level. During the review Estonia reported that in 2014 emissions from the non-ETS sectors relating to the target under the ESD amounted to 6,104.97 kt CO<sub>2</sub> eq.

49. For 2015 Estonia reported in CTF table 4 annual total GHG emissions excluding LULUCF of 18,040.48 kt CO<sub>2</sub> eq, which is 55.3 per cent below the 1990 level. During the

review Estonia reported that in 2015 emissions from the non-ETS sectors relating to the target under the ESD amounted to 6,144.4 kt CO<sub>2</sub> eq.

50. On its use of units from LULUCF activities, Estonia reported blank cells in CTF table 4 for 2015 and 2016 and left CTF table 4(a) empty for 2015 and 2016 because it will not use units from the LULUCF sector to achieve its target under the Convention. The ERT notes that the use of notation key “NA”, as planned by the Party, would further improve the reporting on the contribution from LULUCF in the table. Furthermore, Estonia reported “NA” for the quantified units from market-based mechanisms in CTF tables 4 and 4(b) for 2015 and 2016. In BR3 section 3.2 the Party reported that no quantitative information can be provided on the use of flexible mechanisms in BR3 CTF table 4(b) because it has not used its surplus AEA.

51. Table 6 illustrates Estonia’s total GHG emissions, the contribution of LULUCF and the use of units from market-based mechanisms to achieve its target.

Table 6

**Summary of information on the use of units from market-based mechanisms and land use, land-use change and forestry by Estonia to achieve its target**

<i>Year</i>	<i>Emissions excluding LULUCF (kt CO<sub>2</sub> eq)</i>	<i>Contribution of LULUCF (kt CO<sub>2</sub> eq)<sup>a</sup></i>	<i>Emissions including contribution of LULUCF (kt CO<sub>2</sub> eq)</i>	<i>Use of units from market-based mechanisms (kt CO<sub>2</sub> eq)<sup>b</sup></i>
1990	40 402.74	NA	NA	NA
2010	21 143.45	NA	NA	NA
2011	21 182.67	NA	NA	NA
2012	20 118.05	NA	NA	NA
2013	21 856.28	NA	NA	0
2014	21 081.13	NA	NA	0
2015	18 040.48	NA	NA	0
2016	NA	NA	NA	0

*Sources:* Estonia’s BR3 and CTF tables 1, 4, 4(a)I, 4(a)II and 4(b).

<sup>a</sup> The EU unconditional commitment to reduce GHG emissions by 20 per cent below the 1990 level by 2020 does not include emissions/removals from LULUCF.

<sup>b</sup> Estonia reported “NA” for 2015 and 2016 in CTF table 4.

52. In assessing the progress towards the achievement of the 2020 target, the ERT noted that Estonia’s emission reduction target for the non-ETS sectors is 11 per cent above the 2005 level (see para. 15 above). In 2015 Estonia’s emissions from the non-ETS sectors were 3.2 per cent (6,144.40 kt CO<sub>2</sub> eq) below the AEA under the ESD for 2015.

53. The ERT noted that Estonia is making progress towards its emission reduction target by implementing and planning mitigation actions that are delivering significant emission reductions. On the basis of the results of the projections (see para. 71 below), the ERT also noted that the Party is making progress towards achieving its target under the Convention.

54. The ERT further noted that Estonia is also on track to achieving its national targets set out in the National Reform Programme Estonia 2020 (see para. 26 above). Estonia has already reached its 2020 target for share of RES, with a 28.6 per cent share in final energy consumption in 2015. Additionally, Estonia is on track to achieving the targets for the ESD sector (GHG emissions already below the 2005 level in 2015) and keeping final energy consumption (116 PJ in 2015) at the 2010 level.

**(b) Assessment of adherence to the reporting guidelines**

55. The ERT assessed the information reported in the BR3 of Estonia and identified an issue relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on BRs. The finding is described in table 7.

Table 7

**Finding on estimates of emission reductions and removals and the use of units from the market-based mechanisms and land use, land-use change and forestry from the review of the third biennial report of Estonia**

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation</i>
1	Reporting requirement specified in paragraph 10  Issue type: transparency  Assessment: recommendation	<p>In CTF table 4, columns D and E, Estonia reported blank spaces under the “Quantity of units from the market-based mechanisms under the Convention” for the years 1990–2014, and “NA” for 2015–2016. The Party did not further explain the use of the notation key “NA” or the blank spaces in footnotes to the table. In the BR3 the Party reported that no quantitative information can be provided on the use of flexible mechanisms because it has not used its surplus AEs.</p> <p>The ERT recommends that the Party improve the transparency of its reporting on the assessment of progress by providing in its next BR submission the information on the contribution of market-based mechanisms in CTF table 4, through the use of numerical values, notation keys or appropriate footnotes, covering all relevant years starting from 2013. The ERT notes that the notation key “NA” could be used when a Party does not plan to use units from market-based mechanisms; and the value “0” when the Party intends to use units from market-based mechanisms but does not use units in a given year.</p>

*Note:* Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on BRs.

### 3. Projections overview, methodology and results

#### (a) Technical assessment of the reported information

56. Estonia reported updated projections for 2020, 2025, 2030 and 2035 relative to actual inventory data for 2014 under the WEM scenario. The WEM scenario reported by Estonia includes implemented and adopted PaMs. The ERT noted that the sectoral projection tables included in the BR3 do not include historical data for 1990, 1995, 2000, 2005 or 2010.

57. In addition to the WEM scenario, Estonia also reported a WAM scenario, which includes planned PaMs. Estonia provided definitions of its scenarios, explaining that its WEM scenario includes current PaMs in all sectors, while its WAM scenario includes a number of additional measures in the energy and transport sectors. The definitions of the scenarios correspond to those provided in the UNFCCC reporting guidelines on NCs.

58. The projections are presented on a sectoral basis, using to the extent possible the same sectoral categories as those used in the reporting on mitigation actions, and on a gas-by-gas basis for CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, PFCs, HFCs and SF<sub>6</sub> (treating PFCs and HFCs collectively). The projections are also provided in an aggregated format for each sector as well as for a national total using global warming potential values from the AR4.

59. Estonia did not report emission projections for indirect GHGs such as carbon monoxide, nitrogen oxides, non-methane volatile organic compounds and sulfur oxides in its submission.

60. Emission projections related to fuel sold to ships and aircraft engaged in international transport were reported separately and were not included in the totals.

61. Estonia reported on factors and activities affecting emissions for each sector except for international bunker fuels.

#### (b) Methodology, assumptions and changes since the previous submission

62. The methodology used for the preparation of the projections is an updated version of that used for the preparation of the emission projections for the BR2 (see para. 72 below).

63. The Balmorel model for analysing the electricity and CHP sectors from an international perspective while minimizing the total costs of the system was used for the



energy sector. It combines the bottom-up modelling approach with top-down economic analysis, projections and forecasts. Using the energy demand projected by the model, GHG emissions were calculated following the 2006 IPCC Guidelines. The LEAP<sup>6</sup> model was used to calculate the GHG emission projections for the transport sector. Fuel consumption data from EEDP 2030+ alongside expert judgment and emission factor data from the 2006 IPCC Guidelines and country-specific emission factors were used to estimate GHG emissions from the sector.

64. For the IPPU sector, top-down assessments and models were used only for the subcategories product uses as substitutes for ozone-depleting substances and urea-based catalysts for motor vehicles. For the others categories, bottom-up approaches, companies' own projections and expert judgment were combined and used. Projections for the agriculture sector were calculated using a bottom-up approach from the 2006 IPCC Guidelines. Projected values of agricultural output, fertilizer use, number of livestock and cultivated agricultural land area were based on expert judgment. Projections for the LULUCF sector were calculated using averages for the period 1990–2015 adjusted to the reference year. Projections for the waste sector for solid waste disposal were calculated using the bottom-up waste model from the 2006 IPCC Guidelines; while for wastewater treatment and discharge, human population projections and expert judgment were used.

65. Estonia reported supporting information further explaining changes to methodologies since the BR2. There have been several methodological developments since the projections reported in the BR2, mostly related to the energy and transport sectors. The LEAP model is now used only for the transport sector projections, the projections for the energy sector are based on EEDP 2030+ and the renewed sectoral development plans are used for the projections for all sectors.

66. Estonia provided information on the changes since the submission of its BR2 in the assumptions used in the preparation of the projection scenarios as well as a comparison of the projection results.

67. To prepare its projections, Estonia relied on the following key underlying assumptions: GDP growth rate, GDP in constant prices, EU ETS carbon price, international (wholesale) fuel import prices, final energy consumption by sector, number of livestock (cattle, sheep, poultry, swine), nitrogen input from application of synthetic fertilizer and municipal solid waste generation. These variables and assumptions were reported in CTF table 5. The assumptions were updated on the basis of the most recent economic developments and new national development plans known at the time of the preparation of the projections.

68. Estonia also provided information on sensitivity analyses. However, sensitivity analyses were not conducted for the key assumptions, such as GDP and population growth for most sectors. Only for the waste sector the analysis assessed the assumptions for GDP growth and population trends to compare the Party's projections with the projections based on the harmonized values given by the European Commission as recommended parameters for reporting on GHG projections in 2017. In the BR3 section on sensitivity, possible changes in the energy development of the country against the adopted EEDP 2030+ were analysed. It is envisaged that, instead of seven additional solid heat carrier technology shale oil production plants, only three will be built in the period 2015–2035 and that electricity not produced from oil shale gas will be imported. The sensitivity analysis for the IPPU sector was based on an alternative fluorinated gas phase-out scenario that is reported as possible but not probable.

### (c) Results of projections

69. The projected emission levels under different scenarios and information on the Kyoto Protocol targets and the quantified economy-wide emission reduction target are presented in table 8 and the figure below.

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<sup>6</sup> Long-range Energy Alternatives Planning system.

Table 8  
**Summary of greenhouse gas emission projections for Estonia**

	<i>GHG emissions (kt 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>
Quantified economy-wide emission reduction target under the Convention <sup>a</sup>	NA	NA	NA
Inventory data 1990 <sup>b</sup>	40 402.74	NA	NA
Inventory data 2015 <sup>b</sup>	18 040.48		
WEM projections for 2020 <sup>c</sup>	19 331.99	-52.2	-52.2
WAM projections for 2020 <sup>c</sup>	18 759.23	-53.6	-53.6
WEM projections for 2030 <sup>c</sup>	17 033.46	-57.8	-57.8
WAM projections for 2030 <sup>c</sup>	15 197.73	-62.4	-62.4

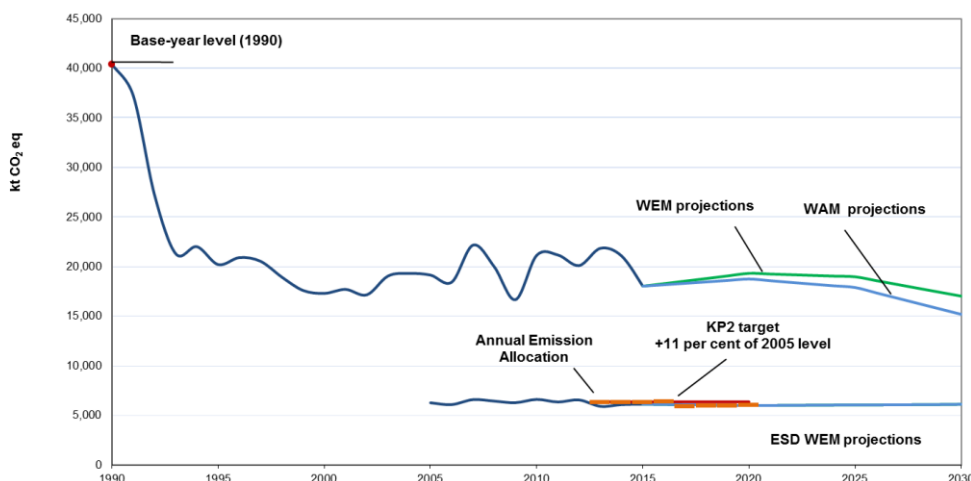
*Note:* The projections are for GHG emissions without LULUCF.

<sup>a</sup> The quantified economy-wide emission reduction target under the Convention is a joint target of the EU and its 28 member States. The target is to reduce emissions by 20 per cent compared with the base-year (1990) level by 2020.

<sup>b</sup> From Estonia’s BR3 CTF table 6.

<sup>c</sup> From Estonia’s BR3.

**Greenhouse gas emission projections reported by Estonia**



*Sources:* (1) Data for the years 1990–2015: Estonia’s 2017 annual inventory submission, version 3; total GHG emissions excluding LULUCF; (2) data for the years 2015–2030: Estonia’s BR3; total GHG emissions excluding LULUCF; (3) data on historical emissions from non-ETS sectors for 2005–2014 and projected emissions from non-ETS sectors for 2015–2030 provided by the Party during the review.

70. Estonia’s total GHG emissions excluding LULUCF in 2020 and 2030 are projected to be 19,331.99 and 17,033.46 kt CO<sub>2</sub> eq, respectively, under the WEM scenario, which represents a decrease of 52.2 and 57.8 per cent, respectively, below the 1990 level. Under the WAM scenario, emissions in 2020 and 2030 are projected to be lower than those in 1990 by 53.6 and 62.4 per cent and amount to around 18,759.23 and 15,197.73 kt CO<sub>2</sub> eq, respectively. The 2020 projections suggest that Estonia will continue contributing to the achievement of the EU target under the Convention.

71. Estonia’s target for the non-ETS sectors is to limit its emission growth to 11 per cent above the 2005 level by 2020. Estonia’s AEs, which correspond to its national emission target for the non-ETS sectors, linearly increase from 6,296.99 kt CO<sub>2</sub> eq in 2013 to 6,369.96 kt CO<sub>2</sub> eq in 2016 and then decrease to 6,023.72 kt CO<sub>2</sub> eq for 2020. According to the projections under the WEM scenario, emissions from non-ETS sectors are estimated to

reach 6,008.68 kt CO<sub>2</sub> eq by 2020. The projected level of emissions under the WEM scenario is below the AEAs for 2020. The ERT noted that this suggests that Estonia expects to meet its target under the WEM scenario.

72. Estonia presented the WEM and WAM scenarios by sector for 2020 and 2030, as summarized in table 9.

Table 9

**Summary of greenhouse gas emission projections for Estonia presented by sector**

Sector	GHG emissions and removals (kt CO <sub>2</sub> eq)					Change (%)			
	1990	2020		2030		1990–2020		1990–2030	
		WEM	WAM	WEM	WAM	WEM	WAM	WEM	WAM
Energy (not including transport)	33 920.20	14 248.40	13 919.63	11 606.97	10 905.62	-58.0	-59.0	-65.8	-67.8
Transport	2 477.19	2 359.29	2 115.30	2 626.03	1 491.65	-4.8	-14.6	6.0	-39.8
Industry/ industrial processes	965.73	1 005.01	1 005.01	972.47	972.47	4.1	4.1	0.7	0.7
Agriculture	2 669.72	1 468.13	1 468.13	1 623.55	1 623.55	-45.0	-45.0	-39.2	-39.2
LULUCF	-1 734.71	-2 139.81	-2 139.81	-1 703.67	-1 703.67	23.4	23.4	-1.8	-1.8
Waste	369.90	251.16	251.16	204.44	204.44	-32.1	-32.1	-44.7	-44.7
Other (specify)	NO	NO	NO	NO	NO	NO	NO	NO	NO
<b>Total GHG emissions without LULUCF</b>	<b>40 402.75</b>	<b>19 331.99</b>	<b>18 759.23</b>	<b>17 033.46</b>	<b>15 197.73</b>	<b>-52.2</b>	<b>-53.6</b>	<b>-57.8</b>	<b>-62.4</b>

Source: Estonia's BR3 CTF table 6.

73. According to the projections reported for 2020 under the WEM scenario, the most significant emission reductions are expected to occur in the energy (excluding transport) sector, amounting to projected reductions of 19,671.80 kt CO<sub>2</sub> eq (58.0 per cent), and in the agriculture sector, amounting to projected reductions of 1,201.59 kt CO<sub>2</sub> eq (45.0 per cent), between 1990 and 2020. The pattern of projected emissions reported for 2030 under the same scenario slightly changes owing to the further reduction of emissions in the energy sector and the slight increase of emissions in the agriculture sector after 2020. According to the projections reported for 2030 under the WEM scenario, the most significant emission reductions are expected to occur again in the energy (excluding transport) sector, amounting to projected reductions of 22,313.23 kt CO<sub>2</sub> eq (65.8 per cent), and in the agriculture sector, amounting to projected reductions of 1,046.17 kt CO<sub>2</sub> eq (39.2 per cent), between 1990 and 2020. The emission reductions in the period after 2020 in the energy sector are to be achieved by implementing emission reduction PaMs, while the agriculture sector emissions are expected to slightly increase owing to the projected increase in volume of agricultural production.

74. Projections under the WAM scenario are presented by sector for the energy and transport sectors and foresee reduced final consumption of energy owing to additional measures for energy efficiency and use of biofuels. Additional measures are not envisaged to be taken in the other sectors, for which only WEM scenarios are reported. The projected effect of the additional measures in the energy sector is an emission reduction of 328.77 kt CO<sub>2</sub> eq (2.3 per cent) in 2020 and 701.35 kt CO<sub>2</sub> eq (6.0 per cent) in 2030 and in the transport sector is 243.99 kt CO<sub>2</sub> eq (10.3 per cent) in 2020 and 1,134.38 kt CO<sub>2</sub> eq (43.2 per cent) in 2030 compared with the WEM scenario. The Party totals under the WAM scenario decrease by 572.76 kt CO<sub>2</sub> eq (3.0 per cent) for 2020 and 1,835.73 kt CO<sub>2</sub> eq (10.8 per cent) for 2030 compared with the WEM scenario.

75. Estonia did not present a 'without measures' scenario.

Table 10  
Summary of greenhouse gas emission projections for Estonia presented by gas

Gas	GHG emissions and removals (kt CO <sub>2</sub> eq)					Change (%)			
	1990	2020		2030		1990–2020		1990–2030	
		WEM	WAM	WEM	WAM	WEM	WAM	WEM	WAM
CO <sub>2</sub>	37 069.22	17 078.06	16 531.67	14 737.45	12 969.66	-53.9	-55.4	-60.2	-65.0
CH <sub>4</sub>	1 909.61	1 080.79	1 062.23	1 133.89	1 090.04	-43.4	-44.4	-40.6	-42.9
N <sub>2</sub> O	1 423.92	975.94	968.13	1 050.77	1 026.68	-31.5	-32.0	-26.2	-27.9
HFCs	NO	194.70	194.70	108.72	108.72	-	-	-	-
PFCs	NO	NO	NO	NO	NO	-	-	-	-
SF <sub>6</sub>	NO	2.50	2.50	2.63	2.63	-	-	-	-
NF <sub>3</sub>	NO	NO	NO	NO	NO	-	-	-	-
<b>Total GHG emissions without LULUCF</b>	<b>40 402.75</b>	<b>19 331.99</b>	<b>18 759.23</b>	<b>17 033.46</b>	<b>15 197.73</b>	<b>-52.2</b>	<b>-53.6</b>	<b>-57.8</b>	<b>-62.4</b>

Source: Estonia's BR3 CTF table 6.

76. For 2020 the most significant reductions are projected for CO<sub>2</sub> emissions: 19,991.18 kt CO<sub>2</sub> eq (53.9 per cent) between 1990 and 2020 and 22,331.77 kt CO<sub>2</sub> eq (60.2 per cent) between 1990 and 2030. CH<sub>4</sub> emissions are expected to reduce by 828.82 kt CO<sub>2</sub> eq (43.4 per cent) between 1990 and 2020 and 775.72 kt CO<sub>2</sub> eq (40.6 per cent) between 1990 and 2030. N<sub>2</sub>O emissions are expected to reduce by 447.98 kt CO<sub>2</sub> eq (31.5 per cent) between 1990 and 2020 and 373.15 kt CO<sub>2</sub> eq (26.2 per cent) between 1990 and 2030.

77. The projections under the WAM scenario presented by gas follow the same pattern as under the WEM scenario reported for 2020 and 2030.

78. The comparison of the results with the projections presented in the BR2 shows a significant decrease in the projected emissions for 2020 (by 21.5 per cent) and for 2030 (by 13.5 per cent) in the recent projections for the WEM scenario and for 2020 (by 21.6 per cent) and for 2030 (by 15.9 per cent) for the WAM scenario. The reasons for the significant differences in the projected emissions between the submissions were not explained.

**(d) Assessment of adherence to the reporting guidelines**

79. The ERT assessed the information reported in the BR3 of Estonia and identified issues relating to transparency, completeness and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 11.

Table 11  
Findings on greenhouse gas emission projections reported in the third biennial report of Estonia

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement <sup>a</sup> specified in paragraph 35  Issue type: completeness  Assessment: encouragement	According to paragraph 35 of the UNFCCC reporting guidelines on NCs, Parties may provide projections of the indirect GHGs carbon monoxide, nitrogen oxides, non-methane volatile organic compounds and sulfur oxides. The ERT noted that Estonia did not report emission projections for indirect GHGs.  During the review, Estonia explained that indirect emissions of carbon monoxide, nitrogen oxides, non-methane volatile organic compounds and sulfur oxides comprise a minor part of Estonia's GHG emissions and thus are not a priority in Estonia's improvement plans compared to major parts at this point of time.  Noting the complete submission regarding the reporting of the direct GHG emissions, the ERT encourages Estonia to further improve the completeness of its reporting by including in its next BR projections of the indirect GHGs carbon

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
		monoxide, nitrogen oxides, non-methane volatile organic compounds and sulfur oxides.
2	<p>Reporting requirement<sup>a</sup> specified in paragraph 42</p> <p>Issue type: transparency</p> <p>Assessment: encouragement</p>	<p>The emission projections related to fuel sold to ships and aircraft engaged in international transport were reported correctly but the ERT noted that the Party did not provide sufficient information to allow the ERT to obtain a basic understanding of the approach used for these projections. Specifically, Estonia did not provide information on the applied methodology and the projected activity data. In response to a question from the ERT during the review, the Party explained the underlying assumptions and the approach used for developing the projections.</p> <p>The ERT encourages the Party to increase the transparency of its reporting by including in the next submission information on the approach used for making the projections of emissions from international bunkers, for example by discussing the main assumptions and methods used.</p>
3	<p>Reporting requirement<sup>a</sup> specified in paragraph 47</p> <p>Issue: transparency</p> <p>Assessment: encouragement</p>	<p>Estonia reported information on key underlying assumptions and values of variables in both CTF table 5 and BR3 table 5.1.</p> <p>The ERT noted that the assumptions list reported in CTF table 5 and that in BR3 table 5.1 “Main assumptions used in the projections” differ. In CTF table 5 “Nitrogen in crop residues returned to soils” is not reported, but it is reported in table 5.1 of the NIR. In BR3 table 5.1 only cattle is reported as livestock while sheep, poultry and swine are not reported even though they are reported in CTF table 5.</p> <p>The ERT encourages the Party to improve the transparency of its reporting by consistently reporting on underlying assumptions in the submission, including the CTF tables and the BR.</p>
4	<p>Reporting requirement<sup>a</sup> specified in paragraph 48</p> <p>Issue type: transparency</p> <p>Assessment: recommendation</p>	<p>According to the UNFCCC reporting guidelines on NCs, Parties shall present relevant information on factors and activities for each sector to provide the reader with an understanding of emission trends in 1990–2020. The ERT noted that Estonia included information on projections and key assumptions in the CTF tables for the 1990–2030 period, but commented on the trends and drivers for the period 2015–2030 only and did not present information or comment on the period 1990–2014 in the sectoral information sections.</p> <p>During the review, Estonia explained that the sectoral historical emission data from 1990 are presented in figures 5.1, 5.2, 5.3, 5.4 and 5.5 of the BR3 and that the Party will improve the description of trends and driver for the entire period in the next BR. The ERT recommends that Estonia improve the transparency of its reporting on projections by providing sectoral projection tables that include historical data from 1990 and comment on the trends and drivers for the entire period 1990–2030.</p>

*Note:* The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on NCs and on BRs.

<sup>a</sup> Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs.

#### **D. Provision of financial, technological and capacity-building support to developing country Parties**

80. Estonia is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3, 4 and 5, of the Convention. However, Estonia provided information in the BR3 on its provision of support to developing country Parties. The ERT commends Estonia for reporting this information and suggests that it continue to do so in future BRs if such information is available.

81. Estonia pledged to contribute EUR 1 million annually until 2020 for financing international climate cooperation by supporting environmentally sustainable development in developing countries by contributing to bilateral projects, multilateral organizations and regional funds. Estonia has decided to channel EUR 5 million from the revenues from the auctioning of EU ETS allowances to international climate cooperation and 100 per cent of

the revenues from EU ETS aviation auctions to funding innovative climate projects and start-ups in 2015–2020. To date, funding from the private sector has been mobilized for domestic climate-related activities rather than for climate cooperation. In future Estonia is planning to involve the private sector in financing climate cooperation in developing countries. Estonia has been and plans to continue supporting developing countries in the fight against climate change via bi- and multilateral channels under bi- and multilateral agreements.

82. Estonia provided in CTF tables 7, 7(a) and 7(b) quantitative information on financial support allocated in 2015 and 2016 through multilateral and bilateral channels towards mitigation, adaptation and cross-cutting activities (reported in euros without converting the amounts into United States dollars). The total climate-specific financial contributions provided by Estonia through multilateral channels in 2015 and 2016 were EUR 1,205,525 and 384,099, respectively, mainly via multilateral climate change funds. Most of the support was channelled through official development assistance in accordance with the methodology of the Development Assistance Committee of the Organisation for Economic Co-operation and Development.

### III. Conclusions and recommendations

83. The ERT conducted a technical review of the information reported in the BR3 and CTF tables of Estonia in accordance with the UNFCCC reporting guidelines on BRs. The ERT concludes that the reported information mostly adheres to the UNFCCC reporting guidelines on BRs and provides an overview of emissions and removals related to the Party's quantified economy-wide emission reduction target; assumptions, conditions and methodologies related to the attainment of the target; and progress made by Estonia in achieving its target.

84. Estonia's total GHG emissions excluding LULUCF covered by its quantified economy-wide emission reduction target were estimated to be 55.3 per cent below its 1990 level, whereas total GHG emissions including LULUCF were 59.4 per cent below its 1990 level in 2015. The decrease in GHG emissions is related to major structural changes in the economy after Estonia gained its independence from the former Soviet Union and to efficiency improvements in energy production and consumption.

85. Under the Convention, Estonia committed to contributing to the achievement of the joint EU quantified economy-wide emission reduction target of a 20 per cent reduction in emissions below the 1990 level by 2020. The target covers all sectors and CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs and SF<sub>6</sub>, expressed using global warming potential values from the AR4. Emissions and removals from the LULUCF sector are not included. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms and new market mechanisms for compliance purposes up to an established limit and subject to a number of restrictions on the origin and the type of project. Companies can make use of such units to fulfil their requirements under the EU ETS.

86. Under the ESD, Estonia has a target of limiting its emission growth to 11 per cent above the 2005 level by 2020. For 2015–2020 the Party's AEAs (its national emission target for the non-ETS sectors) increase linearly from 6,296.99 kt CO<sub>2</sub> eq in 2013 to 6,369.96 kt CO<sub>2</sub> eq in 2016 and then decrease to 6,023.72 kt CO<sub>2</sub> eq for 2020.

87. Estonia's main policy framework relating to energy and climate change is derived from EU climate policy. The low-carbon strategy GPCP 2050, adopted in 2017, aims at long-term emission reduction with a target of 80 per cent emission reduction by 2050 compared with 1990. Key legislation supporting Estonia's climate change goals includes various documents, such as the National Reform Programme Estonia 2020 (envisaging that emissions from non-ETS sectors should not exceed the level of 11 per cent growth by 2020 compared with the 2005 level, a 25 per cent share of renewables in final energy consumption by 2020 and keeping energy consumption at the 2010 level (118 PJ)) and the Sustainable Development Act. The expected outcomes of the EEDP 2030+ are GHG emission reduction by 70 per cent in the energy sector, the share of renewable energy increased to 50 per cent of final energy consumption, and final energy consumption in 2020

and 2030 kept at the same level as in 2010. The actions with the most significant mitigation impact are supporting RES, efficiency improvements in the use of oil shale and efficient CHP-based electricity production, increasing the share of biofuel use for transport, and renovation of boiler houses and heat networks.

88. For 2015 Estonia reported in CTF table 4 total GHG emissions excluding LULUCF of 21,081.13 kt CO<sub>2</sub> eq, which is 55.3 per cent below the 1990 level. LULUCF is not included in the target under the Convention and was therefore not reported on. Estonia expects to exceed its 2020 target and therefore does not plan to use the market-based mechanisms to meet its Kyoto Protocol target.

89. The GHG emission projections provided by Estonia in its BR3 correspond to the WEM and WAM scenarios. Under those scenarios, emissions are projected to be 52.2 and 53.6 per cent below the 1990 level by 2020, respectively. The ERT noted that Estonia is making progress towards its emission reduction target by implementing mitigation actions that deliver significant emission reductions. On the basis of the results of the projections for 2020 under the WEM and WAM scenarios, the ERT concludes that Estonia expects to meet its 2020 target under the WEM and WAM scenarios. The projected level of emissions under the WEM scenario is below the AEAs for 2020. On the basis of the reported information, the ERT concludes that Estonia expects to meet its target for the non-ETS sectors.

90. Estonia is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3, 4 and 5, of the Convention. However, Estonia provided information in the BR3 on its provision of support to developing country Parties.

91. In the course of the review, the ERT formulated recommendations for Estonia to improve its adherence to the UNFCCC reporting guidelines on BRs in its next BR.<sup>7</sup> The key recommendations are that Estonia improve the transparency of its reporting by:

(a) Clearly and consistently reporting on the exclusion of LULUCF from the target under the Convention in CTF table 2(b) and ensure consistent reporting between the textual part of the BR and the CTF tables (issue 1, table 3);

(b) Clearly and consistently reporting on the intended use of market-based mechanisms in the BR and the CTF tables, for example by using numerical data and/or appropriate notation keys and footnotes (issue 2, table 3);

(c) Providing information on the expected impact of individual measures for all sectors or by clearly explaining why in certain cases this may not be possible because of Estonia's national circumstances (issue 1, table 5);

(d) Providing information on the contribution of market-based mechanisms in CTF table 4, through the use of numerical values, notation keys or appropriate footnotes, covering all relevant years starting from 2013 (issue 1, table 7);

(e) Providing sectoral projection tables that include historical data for 1990, 1995, 2000, 2005 and 2010 and commenting on the trends and drivers for the entire period 1990–2030 (issue 4, table 11).

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<sup>7</sup> The recommendations are given in full in the relevant chapters of this report.

## Annex

### Documents and information used during the review

#### A. Reference documents

2017 GHG inventory submission of Estonia. Available at [http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/10116.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/10116.php).

BR3 of Estonia. Available at [http://unfccc.int/files/national\\_reports/biennial\\_reports\\_and\\_iar/submitted\\_biennial\\_reports/application/pdf/9367451\\_estonia-br3-1-br3\\_est\\_29122017.pdf](http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/9367451_estonia-br3-1-br3_est_29122017.pdf).

BR3 CTF tables of Estonia. Available at [http://unfccc.int/national\\_reports/biennial\\_reports\\_and\\_iar/biennial\\_reports\\_data\\_interface/items/10132.php](http://unfccc.int/national_reports/biennial_reports_and_iar/biennial_reports_data_interface/items/10132.php).

“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories”. Annex to decision 24/CP.19. Available at <http://unfccc.int/resource/docs/2013/cop19/eng/10a03.pdf>.

“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 technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”. Annex to decision 13/CP.20. Available at <http://unfccc.int/resource/docs/2014/cop20/eng/10a03.pdf>.

NC7 of Estonia. Available at [http://unfccc.int/files/national\\_reports/annex\\_i\\_natcom/application/pdf/37608415\\_estonia-nc7-1-nc7\\_est\\_30122017.pdf](http://unfccc.int/files/national_reports/annex_i_natcom/application/pdf/37608415_estonia-nc7-1-nc7_est_30122017.pdf).

Report of the technical review of the second biennial report of Estonia. FCCC/TRR.2/EST. Available at [http://unfccc.int/documentation/documents/advanced\\_search/items/6911.php?preref=600009039#beg](http://unfccc.int/documentation/documents/advanced_search/items/6911.php?preref=600009039#beg).

Report on the technical review of the sixth national communication of Estonia. FCCC/IDR.6/EST. Available at [http://unfccc.int/documentation/documents/advanced\\_search/items/6911.php?preref=600008402#beg](http://unfccc.int/documentation/documents/advanced_search/items/6911.php?preref=600008402#beg).

“UNFCCC biennial reporting guidelines for developed country Parties”. Annex I to decision 2/CP.17. Available at <http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf>.

#### B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Cris-Tiina Türkson (Estonian Environmental Research Centre), including additional material. The following documents<sup>8</sup> were provided by Estonia:

Ministry of Environment. 2017. *Low-carbon strategy General Principles of Climate Policy until 2050*. Available at [http://www.envir.ee/sites/default/files/low\\_carbon\\_strategy\\_until\\_2050.pdf](http://www.envir.ee/sites/default/files/low_carbon_strategy_until_2050.pdf)

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