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## Report on the individual review of the annual submission of Iceland submitted in 2014\*

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

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## I. Introduction and summary

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

2. In accordance with the Article 8 review guidelines, a draft version of this report was sent to the Government of Iceland, which provided comments that were considered and incorporated, as appropriate, into this final version of the report. All encouragements and recommendations in this report are for the next annual submission, unless otherwise specified.

3. All recommendations and encouragements included in this report are based on the expert review team’s (ERT’s) assessment of the 2014 annual submission against the Article 8 review guidelines. The ERT has not taken into account the fact that Parties will prepare the submissions due by 15 April 2015 using the revised “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” (hereinafter referred to as the UNFCCC Annex I inventory reporting guidelines) adopted through decision 24/CP.19. Therefore, when preparing the next annual submissions, Parties should evaluate the implementation of the recommendations and encouragements in this report, in the context of those guidelines.

4. In 2012, the main greenhouse gas (GHG) emitted by Iceland was carbon dioxide (CO<sub>2</sub>), accounting for 74.4 per cent of total GHG emissions<sup>1</sup> expressed in CO<sub>2</sub> equivalent (CO<sub>2</sub> eq), followed by nitrous oxide (N<sub>2</sub>O) (10.2 per cent) and methane (CH<sub>4</sub>) (10.2 per cent). Hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF<sub>6</sub>) collectively accounted for 5.1 per cent of the overall GHG emissions in the country. The industrial processes sector accounted for 42.2 per cent of total GHG emissions, followed by the energy sector (38.4 per cent), the agriculture sector (15.2 per cent), the waste sector (4.1 per cent) and the solvent and other product use sector (0.1 per cent). Total GHG emissions amounted to 4,467.73 Gg CO<sub>2</sub> eq and increased by 26.3 per cent between the base year<sup>2</sup> and 2012. The ERT concluded that the description in the national inventory report (NIR) of the trends for the different gases and sectors is reasonable.

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<sup>1</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.

<sup>2</sup> “Base year” refers to the base year under the Kyoto Protocol, which is 1990 for all gases. The base year emissions include emissions from sources included in Annex A to the Kyoto Protocol only.

5. Tables 1 and 2 show GHG emissions from sources included in Annex A to the Kyoto Protocol (hereinafter referred to as Annex A sources), emissions and removals from the LULUCF sector under the Convention and emissions and removals from activities under Article 3, paragraph 3, and, if any, elected activities under Article 3, paragraph 4, of the Kyoto Protocol (KP-LULUCF), by gas and by sector and activity, respectively.
6. Information to be included in the compilation and accounting database can be found in annex I to this report.

Table 1

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

		<i>Gg CO<sub>2</sub> eq</i>								<i>Change (%)</i>	
		<i>Greenhouse gas</i>	<i>Base year</i>	<i>1990</i>	<i>1995</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>Base year–2012</i>
Annex A sources	CO <sub>2</sub>	2 160.11	2 160.11	2 318.22	3 605.13	3 571.84	3 431.81	3 332.75	3 323.79	53.9	
	CH <sub>4</sub>	436.60	436.60	451.96	489.97	487.53	487.91	472.68	456.81	4.6	
	N <sub>2</sub> O	520.59	520.59	477.11	503.91	468.99	453.39	447.94	457.70	-12.1	
	HFCs	NA, NE, NO	NA, NE, NO	7.95	70.63	94.99	122.53	121.35	144.12	NA	
	PFCs	419.63	419.63	58.84	349.00	152.75	145.63	63.22	79.74	-81.0	
	SF <sub>6</sub>	1.15	1.15	1.30	3.15	3.17	4.89	3.19	5.57	384.3	
KP-LULUCF	Article 3.3 <sup>b</sup>										
	CO <sub>2</sub>				-103.37	-115.59	-135.54	-153.40	-172.87		
	CH <sub>4</sub>				NA	NA	NA	NA	NA		
	N <sub>2</sub> O				0.11	0.12	0.12	0.13	0.07		
	Article 3.4 <sup>c</sup>										
	CO <sub>2</sub>	-349.47			-501.76	-509.07	-521.18	-533.92	-543.12	55.4	
CH <sub>4</sub>	NA			NA	NA	NA	NA	NA	NA		
N <sub>2</sub> O	NA			NA	NA	NA	NA	NA	NA		

*Abbreviations:* Annex A sources = source categories included in Annex A to the Kyoto Protocol, KP-LULUCF = land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, NA = not applicable, NE = not estimated, NO = not occurring.

<sup>a</sup> The base year for Annex A sources refers to the base year under the Kyoto Protocol, which is 1990 for all gases. The base year for cropland management, grazing land management and revegetation under Article 3, paragraph 4, of the Kyoto Protocol is 1990. For activities under Article 3, paragraph 3, of the Kyoto Protocol and forest management under Article 3, paragraph 4, only the inventory years of the commitment period must be reported.

<sup>b</sup> Activities under Article 3, paragraph 3, of the Kyoto Protocol, namely afforestation and reforestation, and deforestation.

<sup>c</sup> Elected activities under Article 3, paragraph 4, of the Kyoto Protocol, including forest management, cropland management, grazing land management and revegetation.

Table 2  
Greenhouse gas emissions by sector and activity, base year<sup>a</sup> to 2012

	Sector	Base year	Gg CO <sub>2</sub> eq							Change (%)
			1990	1995	2008	2009	2010	2011	2012	Base year–2012
Annex A sources	Energy	1 778.70	1 778.70	1 916.25	2 074.66	2 021.22	1 869.15	1 769.76	1 717.57	–3.4
	Industrial processes	869.03	869.03	545.54	2 019.52	1 860.59	1 889.77	1 798.50	1 883.22	116.7
	Solvent and other product use	9.07	9.07	7.51	7.18	6.31	6.15	6.30	6.17	–31.9
	Agriculture	736.54	736.54	666.97	704.50	679.83	671.00	668.50	678.00	–7.9
	Waste	144.75	144.75	179.12	215.93	211.32	210.08	198.07	182.77	26.3
	LULUCF	NA	1 175.07	1 109.98	858.65	834.23	791.15	745.67	706.14	NA
	<b>Total (with LULUCF)</b>	<b>NA</b>	<b>4 713.14</b>	<b>4 425.38</b>	<b>5 880.44</b>	<b>5 613.50</b>	<b>5 437.31</b>	<b>5 186.80</b>	<b>5 173.87</b>	<b>NA</b>
	<b>Total (without LULUCF)</b>	<b>3 538.08</b>	<b>3 538.08</b>	<b>3 315.39</b>	<b>5 021.79</b>	<b>4 779.27</b>	<b>4 646.16</b>	<b>4 441.13</b>	<b>4 467.73</b>	<b>26.3</b>
	Other <sup>b</sup>	NA	NA	NA	NA	NA	NA	NA	NA	NA
KP-LULUCF	Article 3.3 <sup>c</sup>									
	Afforestation and reforestation				–103.35	–115.54	–135.51	–153.72	–172.91	
	Deforestation				0.08	0.08	0.08	0.46	0.11	
	<b>Total (3.3)</b>				<b>–103.27</b>	<b>–115.47</b>	<b>–135.43</b>	<b>–153.27</b>	<b>–172.81</b>	
	Article 3.4 <sup>d</sup>									
	Forest management				NA	NA	NA	NA	NA	
	Cropland management	NA			NA	NA	NA	NA	NA	NA
Grazing land management	NA			NA	NA	NA	NA	NA	NA	
Revegetation	–349.47			–501.76	–509.07	–521.18	–533.92	–543.12	55.4	
<b>Total (3.4)</b>	<b>–349.47</b>			<b>–501.76</b>	<b>–509.07</b>	<b>–521.18</b>	<b>–533.92</b>	<b>–543.12</b>	<b>55.4</b>	

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

<sup>a</sup> The base year for Annex A sources refers to the base year under the Kyoto Protocol, which is 1990 for all gases. The base year for revegetation under Article 3, paragraph 4, of the Kyoto Protocol is 1990. For activities under Article 3, paragraph 3, of the Kyoto Protocol only the inventory years of the commitment period must be reported.

<sup>b</sup> Emissions/removals reported in the sector other (sector 7) are not included in Annex A to the Kyoto Protocol and are therefore not included in national totals.

<sup>c</sup> Activities under Article 3, paragraph 3, of the Kyoto Protocol, namely afforestation and reforestation, and deforestation.

<sup>d</sup> Elected activities under Article 3, paragraph 4, of the Kyoto Protocol, including forest management, cropland management, grazing land management and revegetation.

## II. Technical assessment of the annual submission

### A. Overview

#### 1. Annual submission and other sources of information

7. The 2014 annual submission was submitted on 15 April 2014; it contains a complete set of common reporting format (CRF) tables for the period 1990–2012 and an NIR. Iceland also submitted the information required under Article 7, paragraph 1, of the Kyoto Protocol, including information on: activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, accounting of Kyoto Protocol units, changes in the national system and in the national registry and the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol. The standard electronic format (SEF) tables were submitted on 15 April 2014. The annual submission was submitted in accordance with decision 15/CMP.1.

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

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

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

#### 3. Overall assessment of the inventory

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

Table 3

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

<i>Issue</i>	<i>Expert review team assessment</i>	<i>General findings and recommendations</i>
The ERT's findings on completeness		
Annex A sources <sup>a</sup>	Complete	<p>Mandatory: none</p> <hr/> <p>Non-mandatory: CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions from lubricants in international marine bunkers; CO<sub>2</sub> emissions from road paving with asphalt; CH<sub>4</sub> and N<sub>2</sub>O emissions from mineral wool production; CH<sub>4</sub> emissions from aluminium production; CO<sub>2</sub> emissions from food and drink; potential SF<sub>6</sub> emissions from imports in bulk and in products; N<sub>2</sub>O emissions from other (solvent and other product use); CH<sub>4</sub> emissions from direct soil emissions (agricultural soils); and CO<sub>2</sub> emissions from solid waste disposal on land</p> <p>The ERT encourages the Party to estimate and report emissions from all non-mandatory categories</p>
Land use, land-use change and forestry <sup>a</sup>	Not complete	Mandatory: carbon stock changes (CSC) in mineral soils in forest land remaining forestland and cropland remaining cropland; CSC in all pools for forest land converted to

Issue	Expert review team assessment	General findings and recommendations
		<p>cropland, CSC in mineral soils for natural birch shrubland – old, in grassland remaining grassland; CSC in living biomass for cropland, grassland, wetlands and other land converted to settlements, CSC in living biomass and soils in land converted to other land; N<sub>2</sub>O emissions from forest land and other land from disturbances associated with land-use conversion to cropland; CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions from wildfires on forest land remaining forest land and forest land converted to grassland; CO<sub>2</sub> emissions from wildfires on land converted to forest land and grassland remaining grassland; and CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions from controlled burning under cropland remaining cropland and grassland remaining grassland</p> <p>The ERT recommends that the Party estimate and report emissions from all mandatory categories. Please see paragraphs 66, 72 and 73 below.</p> <hr/> <p>Non-mandatory: CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions from harvested wood products; CSC in dead organic matter for natural birch shrubland – old under grassland remaining grassland; CSC in all pools from settlements remaining settlements; CSC in dead organic matter and soils for cropland, grassland, wetlands and other land converted to settlements; CSC in all pools from other land remaining other land; CSC in dead organic matter in land converted to other land; CH<sub>4</sub> and N<sub>2</sub>O emissions from drainage of mineral soils on forest land and peatland on wetlands; CH<sub>4</sub> emissions from organic soils on grassland; and CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions from controlled burning on wetlands remaining wetlands</p> <p>The ERT encourages the Party to estimate and report emissions from all non-mandatory categories</p>
<p>KP-LULUCF</p>	<p>Complete</p>	
<p>The ERT’s findings on recalculations and time-series consistency</p>		
<p>Transparency of recalculations</p>	<p>Sufficiently transparent</p>	
<p>Time-series consistency</p>	<p>Sufficiently consistent</p>	<p>Please see paragraphs 21, 36, 73 and 74 below for category-specific findings</p>
<p>The ERT’s findings on QA/QC procedures</p>	<p>Sufficient</p>	<p>Iceland has elaborated a QA/QC plan and has implemented tier 1 QA/QC procedures in accordance with that plan. The ERT finds that the mistakes in multiple sectors suggests that the tier 1 QC procedures could be further enhanced</p>
		<p>Please see paragraphs 19 and 46 below for category-specific recommendations</p>
<p>The ERT’s findings on transparency</p>	<p>Not sufficiently transparent</p>	<p>Please see paragraphs 12, 21–23, 31–33, 54, 56, 58, 61, 63, 67, 68, 69, 78, 79, 80, 81, 86, 98 and 99 below for category-specific recommendations</p>



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

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

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

##### Inventory planning

11. The NIR described the national system for the preparation of the inventory. As indicated by the Party in its NIR and confirmed in response to questions raised by the ERT during the review (see para. 98 below), there were no changes to the inventory planning process. The description of the inventory planning process, as contained in the report of the individual review of the annual submission of Iceland submitted in 2013,<sup>3</sup> remains relevant.

12. In the previous review report, the ERT strongly recommended that the Environmental Agency of Iceland (EA) formalize the agreements with the National Energy Authority of Iceland (NEA) in order to ensure the compilation or development of energy balances annually for the purpose of compiling a complete and accurate GHG emissions inventory for the energy sector. Currently, NEA produces fuel consumption data by collecting data from fuel sales. Even though Iceland has a law in place (Act No. 70/2012) that requires NEA to develop energy balances annually, that requirement has not been fulfilled. The current ERT noted that in its NIR (page 13) Iceland states under future improvement that the NEA should prepare a national energy balance annually and submit it to EA. The ERT strongly reiterates the recommendation made in previous review reports that Iceland ensure that one organization has a full understanding of the complete energy balance and can compile a transparent and complete energy balance.

##### Inventory preparation

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

Table 4

##### **Assessment of inventory preparation by Iceland**

<i>Issue</i>	<i>ERT assessment</i>	<i>ERT findings and recommendations</i>
<i>Key category analysis</i>		
Was the key category analysis performed in accordance with the IPCC good practice guidance and the IPCC good practice guidance for LULUCF?	Yes	Level and trend analysis performed, including and excluding LULUCF
Approach followed?	Tier 1	
Were additional key categories identified	Yes	The activities revegetation and

<sup>3</sup> FCCC/ARR/2013/ISL, paragraphs 10–13.

<i>Issue</i>	<i>ERT assessment</i>	<i>ERT findings and recommendations</i>
using a qualitative approach?		afforestation/reforestation were identified as key categories
Has Iceland identified key categories for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol following the guidance on establishing the relationship between the activities under the Kyoto Protocol and the associated key categories in the UNFCCC inventory?	Yes	
Does Iceland use the key category analysis to prioritize inventory improvements?	Yes	
<i>Assessment of uncertainty analysis</i>		
Approach followed?	Tier 1	See para. 67
Was the uncertainty analysis carried out in accordance with the IPCC good practice guidance and the IPCC good practice guidance for LULUCF?	Yes	
Quantitative uncertainty (including LULUCF)	Level = 33.5%	
	Trend = 16.0%	
Quantitative uncertainty (excluding LULUCF)	Not provided	
	Not provided	

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

#### Inventory management

14. There were no changes to the inventory management process carried out by the Party for the 2014 annual submission, as indicated by Iceland in response to questions raised by the ERT during the review. The description of the inventory management process, as contained in the report of the individual review of the annual submission of Iceland submitted in 2013,<sup>4</sup> remains relevant.

#### **5. Follow-up to previous reviews**

15. Iceland has estimated potential emissions of HFCs and SF<sub>6</sub> (see paras. 39 and 51 below) and has included information on solid waste disposal sites (see para.79 below) in response to the recommendations made in previous review reports.

16. Recommendations from previous reviews that have not yet been implemented, as well as issues the ERT identified during the 2014 annual review, are discussed in the relevant sectoral chapters of the report and in table 10 below.

<sup>4</sup> FCCC/ARR/2013/ISL, paragraph 15.

## B. Energy

### 1. Sector overview

17. The energy sector is the second largest sector in the GHG inventory of Iceland. In 2012, emissions from the energy sector amounted to 1,717.57 Gg CO<sub>2</sub> eq, or 38.4 per cent of total GHG emissions. Since 1990, emissions have decreased by 3.4 per cent. The key driver for the fall in emissions is the decrease in emissions from fuel combustion by 10.0 per cent during the period 1990–2012. Conversely, emissions from other (fugitive emissions from oil, natural gas and other sources (geothermal energy)) increased by 179.8 per cent. Within the sector, 49.7 per cent of the emissions were from transport, followed by 29.1 per cent from other sectors and 10.7 per cent from manufacturing industries and construction. Fugitive emissions from oil, natural gas and other sources accounted for 10.1 per cent. The remaining 0.4 per cent were from energy industries. Emissions from energy industries are very small, mainly because electricity and heat production in Iceland are generated from renewable sources. Emissions from energy industries accounted for 0.2 per cent of the total GHG emissions for 2012. From 2011 to 2012, emissions from fuel combustion decreased by 2.7 per cent, while emissions from geothermal energy decreased by 5.0 per cent. Total emissions from the energy sector decreased by 2.9 per cent from 2011 to 2012. Fisheries and road transportation are the largest single contributors to the sectoral emissions.

18. Iceland has not made recalculations between the 2013 and 2014 annual submissions for the energy sector.

19. The ERT noted several errors related to activity data (AD) in the 2014 annual submission; for example, where coke was recorded as coal, and where coking coal was recorded as coke. In the NIR (page 63), Iceland reported that coke was recorded as coal instead of coke and that there were also errors in the recording of steam coal instead of coking coal. In response to a question raised by the ERT during the review, Iceland explained that it is working with the Icelandic Customs Office to resolve the errors in the reporting of these fuels. The ERT recommends that the Party correct these errors in future submissions.

20. Based on the information provided in the NIR, Iceland does not compile an energy balance. For the estimation of GHG emissions from the energy sector, AD are provided by NEA, which collects data from the oil companies on fuel sales by category. The division of fuel sales by category does not accurately reflect the Intergovernmental Panel on Climate Change (IPCC) categories; therefore, NEA makes adjustments to the data, where necessary, to better reflect the IPCC categories. The ERT notes that an energy balance is an extremely valuable tool to ensure the completeness and accuracy of the reporting of fuel consumption data in the energy sector, even though the Party has a very high share of renewable energy consumption and a lower share of fossil fuel use (see para. 12 above and para. 23 below).

21. In cases where fuel consumption was not reported for certain years of the time series, Iceland did not transparently report in the NIR the reason for excluding such fuel consumption and associated emissions for those years. In response to a question raised by the ERT during the review, Iceland provided the following responses: electrode consumption was not reported for the years 2005, 2011 and 2012 because it did not occur during that period; steam coal was not reported for 2011 and 2012 because the plant which consumed steam coal ceased operation in 2011; and petroleum coke was only consumed in 2005 because the Elkem ferrosilicon plant which consumed petroleum coke ceased operation. The ERT strongly recommends that Iceland transparently report the justification of significant high inter-annual changes and gaps in the time series of fuel consumption and associated emissions.

22. There was a lack of transparency with regard to emission categories which, according to “Guidelines for the preparation of national communications by Parties included in Annex I

to the Convention, Part I: UNFCCC reporting guidelines on annual inventories” (hereinafter referred to as the UNFCCC reporting guidelines), should have been reported in a different category from that reported by Iceland (e.g. emissions from other transportation activities). Iceland reported these emissions as “NO” (not occurring); however, in response to a question raised by the ERT, Iceland explained that these emissions do occur but have been accounted for elsewhere. The ERT recommends that Iceland provide transparent information in cases where GHG emissions have been accounted for elsewhere and use the notation key “IE” (included elsewhere) to report such emissions.

23. In the previous review report, the ERT recommended that the Party enhance the transparency of the information on the methodology applied for the modification of fuel consumption. For the preparation of the GHG emissions inventory for the energy sector, the Party receives AD from NEA, which collects the data directly from companies based on fuel sales by sector. The format in which the data is collected does not reflect the IPCC categories; as a result, EA has to modify the data to ensure consistency with the IPCC categories (specifically for energy industries, manufacturing industries and construction, and other sectors). The ERT reiterates the recommendation made in the previous review report that Iceland provide more transparent information on the modification methodologies applied when re-categorizing the data received from NEA. In addition, the ERT recommends that Iceland, for future annual submissions, consider the possibility of redefining the coordination agreement between NEA and EA in order to change the data collection process by preparing a data collection template that is consistent with the IPCC categories.

**2. Reference and sectoral approaches**

24. Table 5 provides a review of the information reported under the reference approach and the sectoral approach, as well as comparisons with other sources of international data. Issues identified in table 5 are more fully elaborated in paragraphs 25–32 below.

Table 5  
**Review of reference and sectoral approaches**

<i>Issue</i>	<i>Expert review team assessment</i>	<i>Paragraph cross references</i>
Difference between the reference approach and the sectoral approach	Energy consumption: 0.09 PJ, 0.44%  CO <sub>2</sub> emissions: –18.33 Gg CO <sub>2</sub> , –1.23%	25–26
Are differences between the reference approach and the sectoral approach adequately explained in the NIR and the CRF tables?	Yes	25–26
Are differences with international statistics adequately explained?	No	26
Is reporting of bunker fuels in accordance with the UNFCCC reporting guidelines?	No	27–28
Is reporting of feedstocks and non-energy use of fuels in accordance with the UNFCCC reporting guidelines?	Yes	29–30

*Abbreviations:* CRF = common reporting format, NIR = national inventory report, UNFCCC reporting guidelines = “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories”.

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

25. The Party has provided an explanation for the differences between the reference approach and the sectoral approach in CRF table 1.A(c) (the differences for the entire time series were less than 2.0 per cent); however, no explanation was provided in the NIR. The ERT encourages Iceland to provide the results of the comparison between these approaches in the NIR as well, and describe any differences.

26. Iceland is not a member of the International Energy Agency (IEA), but provides data thereto on a voluntary basis. There were various differences in the energy consumption values between the CRF tables and the IEA data. Iceland stated in the NIR (page 63) that the difference is due to the difference in the IEA conversion factors from physical units to energy units. However, this does not sufficiently explain the differences, for example: for civil aviation, the aviation gasoline is reported as 22.04 PJ in CRF table 1.A(a), but zero amounts have been reported to IEA; for navigation, the residual fuel oil is reported as 7.27 PJ, but zero amounts have been reported to IEA. The ERT encourages Iceland to investigate the reason for the differences and provide further information on the differences, or monitor the provision of data to IEA to ensure that the correct data are provided.

#### International bunker fuels

27. Iceland has assumed that all flights departing from Keflavik Airport are international, even though in some cases domestic flights do depart from that airport. However, the deviations between national and international usage is considered to level out, by the assumption that all flights departing from other airports are national flights. The split between international and domestic aviation is not in line with the criteria provided in the *IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC good practice guidance). Iceland highlighted in the NIR (pages 59–60) that it will soon be participating in the European Union Emissions Trading System for aviation and this will result in an increase in the data available to allow a better differentiation of fuel consumption between international and domestic aviation in the near future, and allow for the implementation of a tier 2 methodology for civil aviation. The ERT reiterates the recommendation made in previous review reports that Iceland improve the differentiation of fuel consumption for international and domestic aviation to ensure accuracy.

28. Iceland divides the amount of fuel sales for international and domestic navigation using the identification numbers of ships to categorize them as Icelandic or owned by foreign companies (NIR, page 60). This methodology is not in line with the criteria for dividing international and domestic marine transport provided in the IPCC good practice guidance. The ERT reiterates the recommendation made in the previous review report that Iceland improve the methodology for distinguishing between international and domestic navigation.

#### Feedstocks and non-energy use of fuels

29. The ERT noted that Iceland did not include in its national total emissions the CO<sub>2</sub> emissions associated with the emissive part of lubricants reported in CRF table 1.A(d), which should be a default amount of 50 per cent in accordance with the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the Revised 1996 IPCC Guidelines). In response to questions raised by the ERT during the review, Iceland responded that it did not have sufficient information on the final use of lubricants associated with the release of CO<sub>2</sub> emissions to report them. The ERT is of the view that, in cases where the final non-energy use of lubricants is not known, the non-reporting of emissions associated with this fuel could result in a potential underestimation of emissions. The ERT also noted that, according to the Revised 1996 IPCC Guidelines, there is a tier 1

method to account for the CO<sub>2</sub> emissions from the emissive part of the non-energy use of fuels under the sectoral approach.<sup>5</sup>

30. The ERT considered that the Party's reporting method may have resulted in a potential underestimation of emissions; as a result, the ERT included this issue in its list of potential problems and further questions raised by the ERT. In response to the list, Iceland explained that lubricants are assumed to not be burned during usage; however, some lubricants are burned along with the fuel, specifically in older vehicles. Iceland believes that the amount burned is negligible and explained to the ERT that it will continue to improve the inventory and will estimate the emissive part of lubricants that is burned with fuel in the next annual submission. Furthermore, Iceland considers lubricants as hazardous waste under Regulation No. 809/1999, and therefore monitors the collection and receipt of waste lubricants. The Party provided the ERT with the applicable regulation that governs the collection, handling and recovery or destruction of lubricant waste and a sufficient explanation of how waste oil is collected and recycled. Iceland also provided a detailed description of the value chain of waste oil in Iceland. The ERT accepts the explanation provided by Iceland and recommends that the Party include the information provided as the explanation in its inventory. In addition, although the ERT did not consider the issue further during the review, the ERT strongly recommends that Iceland investigate any emissive use of lubricants in the transport sector as well as other industries, and if appropriate, report these emissions.

### 3. Key categories

#### Stationary combustion: liquid and solid fuels – CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O<sup>6</sup>

31. Iceland has applied a CO<sub>2</sub> emission factor (EF) of 25.80 t C/TJ for the calculation of CO<sub>2</sub> emissions from combustion of steam coal in the category manufacturing industries and construction, which is the lowest in the range of default values from the Revised 1996 IPCC Guidelines (25.8 – 27.6 t C/TJ). Iceland did not provide any background information on how the EF was derived. In response to a question raised by the ERT during the review, Iceland explained that the EF is sourced from the cement industry where the coking coal is used and that it does not have any information on how the EF was derived. The ERT recommends that Iceland investigate how the EF was derived and include this information in the NIR to ensure transparency.

32. Iceland did not report emissions from off-road and ground activities occurring in airports, reporting them as "NO" in the NIR (page 49, table 3.1). In response to a question raised by the ERT during the review, Iceland explained that these emissions have been included elsewhere. The ERT recommends that Iceland report transparent information in cases where emission sources have been accounted for elsewhere in order to ensure transparency.

33. The basis of the methodologies applied for the estimation of CO<sub>2</sub> emissions from waste incineration was not clearly stated in the NIR in the context of energy recovery. The ERT recommends that Iceland improve the transparency of its reporting by providing the sources of the methodologies applied for the estimation of CO<sub>2</sub> emissions from waste incineration.

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<sup>5</sup> Please see *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* Volume 3, Reference Manual, page 1.32, "Carbon release during the non-energy-use of fuels" and Volume 2, Workbook, section 1.2.2, pages 1.9–1.14, "CO<sub>2</sub> emissions by source categories", and pages 1.38–1.53.

<sup>6</sup> CH<sub>4</sub> and N<sub>2</sub>O emissions from this category are not key. However, since all issues related to this category are discussed as a whole, the individual gases are not assessed in separate sections.

34. Iceland has reported that the AD for mobile combustion in the construction sector are provided by NEA. Oil, which is reported under vehicle usage, is in some instances actually used for machinery and vice versa, as machinery sometimes tanks its fuel at tank stations (thereby reported as road transport). In other cases, fuel sold to contractors, for use in machinery, is used for road transport (but is reported under construction). In response to a question raised by the ERT during the review, Iceland explained that its assumption is based on expert judgement. To ensure accuracy, the ERT recommends that Iceland correct the differentiation between fuel consumed for stationary and mobile combustion, because the CH<sub>4</sub> and N<sub>2</sub>O EFs are different for stationary and mobile combustion.

Road transportation: liquid fuels – CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O<sup>7</sup>

35. In the NIR (page 58), Iceland provided the future improvement plan for the methodology used to estimate GHG emissions from road transportation, which will involve application of the COPERT model. EA has already contacted the Icelandic Road Traffic Directorate (IRTD) to request the necessary data; however, the Party explained in the NIR that IRTD does not have all of the necessary data for the higher-tier methods. Therefore, EA will make efforts, in cooperation with IRTD, to initiate work on the collection of data needed for use in the COPERT model. For example, IRTD informed EA that the requested data could be determined only for a small fraction of the vehicle fleet, namely, new cars imported since 2000. The categorization of other parts of the vehicle fleet (i.e. all cars imported prior to 2000, used cars imported since 2000 and all other vehicle types imported, both new and used, for all years of the time series) was not deemed possible, at least until the performance of further and extensive analyses, which have not yet been carried out because of a lack of resources. The ERT reiterates the recommendation made in the previous review report that Iceland continue to make efforts to apply higher-tier methods to the estimation of GHG emissions from road transportation in future submissions, in view of the fact that road transportation is a key category.

36. The ERT noted that Iceland applies two different data sets for the division of different vehicle groups of the same time series. For example, the division of vehicle groups for the period 1990–2005 is based on NEA estimates, which are not described in the NIR, while the division for the period 2006–2012 is based on the mileage driven in each vehicle group according to the information from IRTD, as indicated in the NIR (page 57). To ensure time-series consistency, the ERT recommends that Iceland apply a consistent methodology for the division of the vehicle groups and apply recalculations for the earlier years of the time series (1990–2005), especially in view of the fact that this is a key category.

## C. Industrial processes and solvent and other product use

### 1. Sector overview

37. The industrial processes sector is the main sector in the GHG inventory of Iceland. In 2012, emissions from the industrial processes sector amounted to 1,883.22 Gg CO<sub>2</sub> eq, or 42.2 per cent of total GHG emissions, and emissions from the solvent and other product use sector amounted to 6.17 Gg CO<sub>2</sub> eq, or 0.1 per cent of total GHG emissions. Since 1990, emissions have increased by 116.7 per cent in the industrial processes sector, and decreased by 31.9 per cent in the solvent and other product use sector. The key drivers for the rise in emissions in the industrial processes sector are the increase in CO<sub>2</sub> emissions from ferrosilicon and aluminium production and from HFC emissions from consumption of

<sup>7</sup> CH<sub>4</sub> and N<sub>2</sub>O emissions from this category are not key. However, since all issues related to this category are discussed as a whole, the individual gases are not assessed in separate sections.

halocarbons and SF<sub>6</sub>. Within the industrial processes sector, 92.0 per cent of the emissions were from metal production, followed by 7.9 per cent from consumption of halocarbons and SF<sub>6</sub>. The remaining 0.1 per cent was from mineral products. Emissions from chemical industry were reported as “NA” (not applicable) “NO”, while emissions from other production were reported as “NE” (not estimated) and other (industrial processes) were reported as “NA”.

38. Iceland has made minor recalculations between the 2013 and 2014 annual submissions for the industrial processes sector in the category consumption of halocarbons and SF<sub>6</sub>. The recalculations were made following changes in AD. Compared with the 2013 annual submission, the recalculations increased emissions in the industrial processes sector by 0.05 Gg CO<sub>2</sub> eq in 2011, with negligible impact on total national emissions. The recalculations were adequately explained in the NIR (chapter 10.2.2).

39. Iceland followed all of the sector-specific recommendations made in the previous review report and included additional explanations for the methodological approaches, emission trends and fluorinated gas regulations. The ERT commends Iceland for its improvement in the transparency of the inventory.

## 2. Decision 14/CP.7

40. Iceland wishes to avail itself of the provisions of decision 14/CP.7 and has therefore provided information in the NIR on four possible eligible projects: three in aluminium production and one in ferrosilicon production. Two of the projects concern the expansion of plants already existing before 1990, and the other two are greenfield plants from the mid-1990s.

41. However, the ERT noted that two of the projects (Rio Tinto Alcan (aluminium) and Elkem (ferrosilicon)) include both physical expansion (installation of the new line at the Rio Tinto project and a new furnace at the Elkem project) and process improvements, which led to an increase in production at the old facilities. Paragraph 1 of decision 14/CP.7 defines a single project as the expansion of the industrial process facility, meaning that physical expansion should have taken place at the site to be eligible for the provisions of decision 14/CP.7. Thus, the ERT concluded that industrial processes CO<sub>2</sub> emissions from the new installations at Rio Tinto (line 3) and Elkem (furnace 3) are eligible for the provisions of decision 14/CP.7; and industrial processes CO<sub>2</sub> emissions from the process improvements for lines 1 and 2 at Rio Tinto and from furnaces 1 and 2 at Elkem are not eligible for the provisions of decision 14/CP.7.

42. In addition, the ERT concluded that industrial processes CO<sub>2</sub> emissions from Alcoa Fjardaal and Century Aluminium, are eligible for the provisions of decision 14/CP.7.

43. During the review, Iceland provided disaggregated data on the CO<sub>2</sub> process emissions for the old and new installations to enable the ERT to calculate the emissions eligible under decision 14/CP.7. The ERT prepared table 6 below based on its calculation with the disaggregated data provided by the Party.

44. During the review, the ERT noticed differences between the data reported for Alcoa Fjardaal and Century Aluminium in the disaggregated data provided and those in the NIR. During the review week, in response to the questions raised by the ERT, Iceland explained that the disaggregated data provided are correct because the data in the NIR were missing a few recalculations. However, the ERT noted that the disaggregated data provided are the same as the data for aluminium production amount in the background estimation also provided in the review week.



45. Iceland provided a table with corrected numbers as part of comments to the draft annual review report. The ERT accepted the CO<sub>2</sub> emissions from Alcoa Fjardaal and Century Aluminium and applied them to table 6.

46. During the review, by mistake, the Party provided some incorrect data to the ERT. The ERT recommends that Iceland enhance its quality assurance/quality control (QA/QC) procedures to avoid such mistakes.

47. According to paragraph 2 of decision 14/CP.7, only “emissions from a single project which adds in any one year of that period more than 5 per cent to the total carbon dioxide emissions in 1990 of a Party listed in Annex B to the Protocol” can be considered. The ERT concludes that this threshold is equal to 107,932 t, calculated as 5 per cent of the total CO<sub>2</sub> emissions in 1990 reported by Iceland (2,158.64 Gg) as described in table 2 of Iceland’s initial review report.<sup>8</sup> The ERT noted that emissions from each facility amount to more than 107,932 t.

48. Following the recommendations made in the previous review report, Iceland provided additional information in the NIR and also provided information in its replies to questions raised by the ERT during the review on the technologies used at the plants, as well as providing a comparison of the project implied emission factors (IEFs) with the benchmarks of the Best Available Techniques (BAT) reference document (BREF) for the non-ferrous metal industries.<sup>9</sup> This information allowed the ERT to conclude that all four projects adhere to the BAT requirements and that paragraph 2(c) of decision 14/CP.7 is fulfilled.

49. Table 6 shows CO<sub>2</sub> industrial process emissions from single projects, as defined by decision 14/CP.7 and as calculated by the ERT during the review.

50. During the review, the ERT concluded as follows:

(a) The industrial processes CO<sub>2</sub> emissions from Alcoa Fjardaal and Century Aluminium are eligible for the provisions of decision 14/CP.7;

(b) The new installations at Rio Tinto (line 3) and Elkem (furnace 3) are eligible for the provisions of decision 14/CP.7;

(c) The process improvements for lines 1 and 2 at Rio Tinto and from furnaces 1 and 2 at Elkem are not eligible for the provisions of decision 14/CP.7;

(d) If the Party wishes to make use of decision 14/CP.7, it may apply the values in table 6, as assessed by the ERT.

Table 6

**CO<sub>2</sub> industrial process emissions from single projects, as defined by decision 14/CP.7**

	<i>t CO<sub>2</sub>eq</i>				
	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>
<b>Rio Tinto Alcan</b>	<b>107 657</b>	<b>108 311</b>	<b>110 724</b>	<b>106 984</b>	<b>117 101</b>
Lines 1 and 2	(26 158) <sup>a</sup>	(26 965)	(27 743)	(24 342)	(25 137)
Line 3	107 657	108 311	110 724	106 984	117 101
<b>Alcoa Fjardaal (Total expansion)<sup>b</sup></b>	<b>496 974</b>	<b>530 133</b>	<b>539 837</b>	<b>514 271</b>	<b>521 870</b>
<b>Century Aluminium (Total expansion)</b>	<b>408 877</b>	<b>417 671</b>	<b>411 274</b>	<b>421 881</b>	<b>431 827</b>
<b>Elkem</b>	<b>121 354</b>	<b>122 257</b>	<b>135 574</b>	<b>141 591</b>	<b>182 935</b>

<sup>8</sup> FCCC/IRR/2007/ISL.

<sup>9</sup> See <[http://eippcb.jrc.ec.europa.eu/reference/BREF/nfm\\_bref\\_1201.pdf](http://eippcb.jrc.ec.europa.eu/reference/BREF/nfm_bref_1201.pdf)>.

	<i>t CO<sub>2</sub> eq</i>				
	2008	2009	2010	2011	2012
Furnaces 1 and 2	0	0	0	0	(36 014)
Furnace 3	121 354	122 257	135 574	141 591	146 921
5% threshold (see para. 47 above )	107 932	107 932	107 932	107 932	107 932
<b>Total CO<sub>2</sub> emissions from single projects in Iceland (decision 14/CP.7)</b> (a)	<b>1 134 862</b>	<b>1 178 372</b>	<b>1 197 409</b>	<b>1 184 727</b>	<b>1 217 720</b>
Total national CO <sub>2</sub> emissions (b)	3 605 128	3 571 836	3 431 810	3 332 750	3 323 787
Total Annex A sources (c)	5 021 786	4 779 267	4 646 161	4 441 127	4 467 730
<b>Total national CO<sub>2</sub> emissions excluding emissions from single projects</b> (b) – (a)	<b>2 470 266</b>	<b>2 393 464</b>	<b>2 234 401</b>	<b>2 148 023</b>	<b>2 106 068</b>
<b>Total Annex A sources excluding emissions from single projects</b> (c) – (a)	<b>3 886 924</b>	<b>3 600 895</b>	<b>3 448 752</b>	<b>3 256 400</b>	<b>3 250 011</b>

*Abbreviation:* Annex A sources = source categories included in Annex A to the Kyoto Protocol.

<sup>a</sup> The numbers in parentheses are not eligible under paragraph 1 of decision 14/CP.7, because those are not physical expansion but process improvements.

<sup>b</sup> Those numbers are based on the table with corrected numbers provided by the Party as part of comments to the draft annual review report by Iceland, as mentioned in paragraph 45 above, which is consistent with table 4.6 of the NIR.

### 3. Key categories

#### Consumption of halocarbons and SF<sub>6</sub> – HFCs, PFCs and SF<sub>6</sub>

51. Following the recommendations made in the previous review report, Iceland has reported potential emissions of HFCs and SF<sub>6</sub> in its 2014 annual submission. The ERT commends Iceland for the improvements made to the inventory completeness and reporting. However, the ERT noted that Iceland only reported actual emissions of PFCs in CRF table 2(I), even though potential emissions can occur for all sources where actual emissions exist. The ERT encourages Iceland to estimate and report potential PFC emissions.

## D. Agriculture

### 1. Sector overview

52. In 2012, emissions from the agriculture sector amounted to 678.00 Gg CO<sub>2</sub> eq, or 15.2 per cent of total GHG emissions. Since 1990, emissions have decreased by 7.9 per cent. The key driver for the fall in emissions is the decrease in the sheep population and the decrease in the amount of synthetic nitrogen (N) fertilizer applied to agricultural soils. Within the sector, 51.8 per cent of the emissions were from agricultural soils, followed by 36.0 per cent from enteric fermentation. The remaining 12.2 per cent were from manure management. Emissions from rice cultivation and field burning of agricultural residues were reported as “NA, NO”, and emissions from prescribed burning of savannahs and other (agriculture) were reported as “NA”.

53. Iceland has made recalculations between the 2013 and 2014 annual submissions for this sector. The most significant recalculations made by Iceland between the 2013 and 2014 annual submissions were in the following categories: enteric fermentation and manure management. The recalculation was made following changes in EFs. Compared with the 2013 annual submission, the recalculations decreased emissions in the agriculture sector by

18.95 Gg CO<sub>2</sub> eq (1.3 per cent), and decreased total national emissions by 0.4 per cent. The recalculations were adequately explained.

54. In NIR table 6.1 and in CRF tables 4 and 4.F, the Party specified that field burning of agricultural crop residues does not occur; however, no additional information is provided to justify this statement. In response to a question raised by the ERT during the review, Iceland specified that field burning of agricultural crop residues is prohibited by law and that the practice has fallen out of use since the 1980s. The ERT recommends that Iceland improve the transparency of its reporting by including in the NIR the information provided to the ERT during the review.

55. The ERT found that Iceland did not provide a description of category-specific QA/QC activities in the section of the NIR on the agriculture sector; additionally, the NIR does not contain a description of how the Party ensures time-series consistency. In response to a question raised by the ERT during the review, Iceland provided a description of the QA/QC activities performed and, respectively, of how time-series consistency is ensured. The ERT encourages Iceland to include the description provided during the review in the section of the NIR on the agriculture sector.

56. The ERT noted significant inter-annual changes in the young cattle population and in the level of N<sub>2</sub>O emissions from synthetic N fertilizer applied to agricultural soils (e.g. N<sub>2</sub>O emissions from the application of synthetic N fertilizer decreased by 21.9 per cent in 2009 (0.21 Gg) compared with the level in 2008 (0.27 Gg)). In response to questions raised by the ERT during the review, Iceland provided additional information explaining the inter-annual changes. The ERT recommends that the Party improve the transparency of the NIR by including detailed explanations of the AD, EFs and emission trends for all categories.

## 2. Key categories

### Enteric fermentation – CH<sub>4</sub>

57. Iceland uses both tier 1 and tier 2 methods from the IPCC good practice guidance to estimate emissions from enteric fermentation: a tier 2 method with country-specific EFs is used to estimate emissions from mature dairy cattle, mature non-dairy cattle, young cattle and sheep, while a tier 1 method with default EFs is used to estimate emissions from the remaining livestock types. AD are provided by the Icelandic Food and Veterinary Authority. The approach implemented by the Party is in line with the IPCC good practice guidance.

58. In the NIR (page 118), the Party states that the CH<sub>4</sub> EFs associated with enteric fermentation for poultry and fur-bearing animals were taken from the 2011 NIR of Norway because the Revised 1996 IPCC Guidelines do not contain any. No additional information on the suitability of the Norwegian EFs to Iceland's national circumstances is provided. In response to a question raised by the ERT during the review, the Party replied that the climates of Iceland and Norway are similar, and that the farming practices are similar, because of the fact that farming practices started with expertise and livestock from Norway, and the fact that farmers from Iceland who wish to pursue their education to a level that is not possible in Iceland most frequently go to Norway to pursue their studies. The ERT concluded that the CH<sub>4</sub> EFs for poultry and fur-bearing animals taken from the NIR of Norway are suitable to Iceland's national circumstances. The ERT recommends that Iceland include in the NIR the information provided to the ERT during the review, in order to improve the transparency of the reporting.

### Manure management – CH<sub>4</sub> and N<sub>2</sub>O

59. Iceland used a tier 2 method from the IPCC good practice guidance to estimate CH<sub>4</sub> emissions from cattle and sheep. The EFs for cattle and sheep have been derived based on country-specific values for volatile solid excretion and the fraction of manure handled using

different manure management systems; default values from the Revised 1996 IPCC Guidelines have been used for the maximum methane-producing capacity for manure; and the Party used default methane conversion factors from the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the 2006 IPCC Guidelines), the use of which is justified by the national circumstances of Iceland. For the other livestock categories, except rabbits and fur-bearing animals, default EFs from the Revised 1996 IPCC Guidelines have been used; for rabbits and fur-bearing animals, default values from the 2006 IPCC Guidelines have been used, as they are not available in the Revised 1996 IPCC Guidelines or the IPCC good practice guidance. The approach implemented by the Party is in line with the IPCC good practice guidance.

60. To estimate N<sub>2</sub>O emissions from livestock manure management, Iceland used the method presented in the IPCC good practice guidance together with country-specific AD, except for the N excretion, for which values in the 2006 IPCC Guidelines were used (as they are better suited to the national circumstances), and default EFs from the IPCC good practice guidance. The approach is in line with the IPCC good practice guidance.

61. The previous review report recommended that Iceland include more information in the NIR regarding the circumstances under which the country-specific N excretion data have been estimated to demonstrate that emissions have been accurately reported. The current ERT asked Iceland to provide further details on the provision of additional information in the NIR. In response to the question raised by the ERT, Iceland informed the ERT that Iceland will work with the expert, who is the author of the article providing the basis for this country-specific N excretion data, to provide more detailed information on the data for next submission. The ERT could not conclude whether there was a potential problem during the review week. The ERT strongly reiterates the recommendation made in the previous review report that Iceland include more information in the NIR regarding this issue.

#### Agricultural soils – N<sub>2</sub>O

62. Iceland used both tier 1a and tier 1b methods from the IPCC good practice guidance to estimate direct and indirect N<sub>2</sub>O emissions from agricultural soils; country-specific and default AD and mainly default EFs are used. The approach is in line with the IPCC good practice guidance.

63. In the previous review report, the ERT recommended that Iceland include in the inventory a comparison of the country-specific value of the EF associated with the N<sub>2</sub>O emissions from the cultivation of histosols with peer-reviewed studies. In response to a question raised by the ERT during the current review, Iceland responded that the research conducted by the Agricultural University of Iceland in this field has not been fully published in peer-reviewed papers but is a work in progress. The ERT reiterates the recommendation made in the previous review report that the Party include in the inventory the above-mentioned comparison.

## **E. Land use, land-use change and forestry**

### **1. Sector overview**

64. In 2012, net emissions from the LULUCF sector amounted to 706.14 Gg CO<sub>2</sub> eq. Since 1990, net emissions have decreased by 39.9 per cent. The key drivers for the fall in emissions are the increase in net removals in afforested lands, as a consequence of both the area increase and the change in the age class dynamic, and the increase in net removals in revegetated lands, as a consequence of the area increase. Within the sector, 1,067.72 Gg CO<sub>2</sub> eq of net emissions were from cropland, followed by 78.66 Gg CO<sub>2</sub> eq from other (LULUCF), 18.05 Gg CO<sub>2</sub> eq from wetlands, 0.11 Gg CO<sub>2</sub> eq from settlements and

0.0002 Gg CO<sub>2</sub> eq from other land. Net removals of 267.24 Gg CO<sub>2</sub> eq were reported from forest land and 191.15 Gg CO<sub>2</sub> eq from grassland.

65. Iceland has made recalculations between the 2013 and 2014 annual submissions for this sector. The two most significant recalculations made by Iceland between the 2013 and 2014 annual submissions were in the following categories: forest land (for cultivated forests) and grassland. The recalculations were made following changes in AD and EFs. Compared with the 2013 annual submission, the recalculations decreased net emissions in the LULUCF sector by 0.61 Gg CO<sub>2</sub> eq and had a negligible impact on total national emissions. The recalculations were adequately explained.

66. The ERT noted that carbon stock changes in some land-use conversion categories have been reported as “NE” (e.g. forest land converted to cropland); however, according to the responses received by the ERT during the review, they should be reported as “NO”. Further, some carbon pools in the key categories are estimated using a tier 1 method. Finally, carbon stock changes in soil organic matter (mineral soils) under cropland remaining cropland and most of grassland remaining grassland are not estimated on the basis that no changes in management practices have occurred in the latest 20 years. The ERT recommends that the Party further enhance the completeness and accuracy of its GHG inventory in accordance with the available data sets, ongoing projects for data collection and analysis, and relevant national circumstances, in particular enhancing information reported on carbon stock change in soil organic matter associated with management changes in cropland and grassland mineral soils.

67. The ERT noted that the information on the uncertainty analysis could be improved because the following reporting elements remain unclear: the source of information on the uncertainties of various data sources used for estimating the GHG emissions and removals for each category; and information on how the overall uncertainty of the GHG estimates has been calculated. The ERT recommends that the Party enhance the transparency of the information in the NIR on the uncertainty analysis. For instance, the ERT encourages the Party to use a table 6.1 of the IPCC good practice guidance, for each GHG estimate, the uncertainty of the AD, EFs and parameters used, as well as the source of such information, and the uncertainty of the GHG estimate, including the procedure applied to calculate it and the equations used.

68. Although a relatively extensive section of the NIR has been dedicated to explaining the methodologies and data sources used for preparing the land representation, the information reported is not sufficiently clear to enable the ERT to assess whether the land representation is consistent and accurate. For instance, in NIR table 7.5, it is not clear what “the year before conversion period” is, what “the year at end of conversion period” is, or for which conversion period the cumulated areas reported have been estimated for each land-use conversion category. The ERT recommends that Iceland enhance the transparency of its reporting by selecting the required information and organizing it in a manner that enables the reader to clearly understand the data sources, their quality and the methodology applied to derive the land representation and judge its consistency and accuracy, rather than by increasing the quantity of information provided. For instance, the transparency of the information provided on land representation may be enhanced by reporting in a tabular format the following information for each land category: the data sources; the time series of raw data; the methodology applied for filling in gaps in the raw data (if any); the methodology applied (including assumptions and inferences) to derive the land category areas from the raw data; the methodology applied for filling in gaps in the time series of areas (if any); the transition time of the land category (for “land in conversion” categories); and other information (if any).

## 2. Key categories

### Forest land – CO<sub>2</sub>

69. In the previous stages of the review, the ERT identified significant inter-annual changes in the implied carbon stock change factor in the category forest land remaining forest land between 2004 and 2005 (an increase of 18.1 per cent), 2009 and 2010 (an increase of 25.7 per cent) and 2010 and 2011 (an increase of 16.3 per cent). In the land converted to forest land category, the net increment increased by 100 per cent from 2008 to 2012. As noted in the previous review report, Iceland reported the use of a tier 3 method (including use of models and measurements) to estimate the carbon stock changes from living biomass. Further, the ERT notes that the stock-difference approach, if it were applied incorrectly, may lead to incorrect results in the estimates of carbon stock changes, as explained in the 2006 IPCC Guidelines (Volume 4, chapter 2). The ERT reiterates the recommendation made in the previous review report that, to enhance the transparency of the GHG inventory, Iceland provide an additional description of the processes by which the carbon stock changes and associated emissions and removals are estimated, including tables with raw data and intermediate outputs stratified by year and forest type.

### Land converted to cropland – CO<sub>2</sub>

70. To estimate the carbon stock in biomass after conversion in land converted to cropland, the Party has applied the IPCC default EFs for annual crops. However, the ERT notes that hayfields have a biomass carbon content throughout the year which is significantly higher, on average, than annual crops whose carbon stock resides in biomass only for a portion of the year. Further, hayfields are the largest cultivated crop type in Iceland. The ERT therefore encourages Iceland to develop a country-specific EF for the average carbon content of hayfields across the country and throughout the year.

71. The ERT noted that Iceland reports a net source from the conversion of grassland to cropland. In response to a question raised by the ERT during the review regarding the unusual emission/removal trend, the Party explained that the trend is calculated on the basis of preliminary results from the Iceland Geographical Land Use Database (IGLUD) sampling of mineral soils in grassland and cropland. Noting that cropland is usually cultivated on better soils and that the grassland category also covers degraded areas, including those that are revegetated, the ERT recommends that the Party ensure the equivalence of climatic, historical and edaphic conditions when analysing pairs of samples (i.e. in cropland and grassland), to determine the dynamic of the soil carbon stocks associated with conversion among the two land uses.

### Grassland – CO<sub>2</sub>

72. As noted in the previous review report, Iceland has not included estimates of the carbon stock changes in large areas of degraded grassland, which are likely to be a source of CO<sub>2</sub> emissions. In response to questions raised by the ERT during the review, the Party indicated that data are currently unavailable and the inclusion of estimates is pending. The ERT reiterates the recommendation made in the previous review report that Iceland enhance the completeness of the GHG inventory by preparing estimates for the emissions from all areas of grassland.

## 3. Non-key categories

### N<sub>2</sub>O emissions from disturbance associated with land-use conversion to cropland – N<sub>2</sub>O

73. Although Iceland reports in CRF table 5(III) AD for grassland converted to cropland, the associated N<sub>2</sub>O emissions have not been estimated. To enhance the completeness of the GHG inventory, the ERT recommends that Iceland report a complete time series of N<sub>2</sub>O emissions from disturbance associated with land-use conversion to cropland.

CO<sub>2</sub> emissions from agricultural lime application – CO<sub>2</sub>

74. Iceland reports CO<sub>2</sub> emissions from agricultural lime application in grassland only for the year 2003 onwards. To ensure the consistency of the time series of CO<sub>2</sub> emissions from agricultural lime application in grassland, the ERT recommends that Iceland ensure the time-series consistency of its reporting for this category.

**F. Waste****1. Sector overview**

75. In 2012, emissions from the waste sector amounted to 182.77 Gg CO<sub>2</sub> eq, or 4.1 per cent of total GHG emissions. Since 1990, emissions have increased by 26.3 per cent. The key drivers for the rise in emissions are the increased amount of landfilled solid waste and the shift from unmanaged to managed anaerobic solid waste disposal sites. Within the sector, 88.6 per cent of the emissions were from solid waste disposal on land, followed by 6.3 per cent from wastewater handling and 4.0 per cent from waste incineration. The remaining 1.1 per cent were from other (waste).

76. Iceland has not made recalculations between the 2013 and 2014 annual submissions for this sector.

77. Iceland did not include in the NIR information on QA/QC procedures or planned improvements for the waste sector. The ERT encourages Iceland to include information on sector-specific and category-specific QA/QC procedures and category-specific planned improvements for the waste sector in the next annual submission.

**2. Key categories**Solid waste disposal on land – CH<sub>4</sub>

78. Iceland has applied a tier 2 first-order decay (FOD) model to estimate CH<sub>4</sub> emissions from solid waste disposal on land based on a tailored version of the FOD waste model contained in the 2006 IPCC Guidelines that allows Iceland to include 10 waste types with country-specific parameters in its calculations, covering all waste generated in Iceland. The ERT recommends that Iceland improve the transparency of the inventory by including information in the NIR on the AD used (e.g. the time series of waste amounts between 1950 and 2012) in its next annual submission.

79. The ERT noted that, following recommendations made in the previous review report, Iceland has provided more information in the NIR on recovered landfill gas (e.g. the amount, CH<sub>4</sub> concentration and purity) and on the share of the measured and estimated CH<sub>4</sub> recovery data compared with the previous annual submission. The ERT commends the Party for this improvement. However, the ERT strongly reiterates the recommendation made in the previous review report that Iceland include in the NIR more information on landfill gas utilization (e.g. energy content of recovered gas, place of utilization) in order to improve the transparency of its reporting.

**3. Non-key categories**Wastewater handling – CH<sub>4</sub> and N<sub>2</sub>O

80. Iceland has estimated CH<sub>4</sub> emissions from wastewater handling using a tier 1 method and a default methane conversion factor (MCF) and EFs for septic systems only, based on the national circumstances. The method used to estimate CH<sub>4</sub> emissions from domestic wastewater handling is based on the method from the 2006 IPCC Guidelines (equation 6.1), but the equation presented in the NIR is different from that provided in the

2006 IPCC Guidelines. The ERT recommends that Iceland develop a country-specific MCF and EFs for the estimation of emissions from wastewater handling, in order to enhance accuracy, and also recommends that Iceland provide a clearer description on the method applied and the correct equation.

81. The NIR does not fully transparently describe how sludge removal has been taken into account in the calculations of N<sub>2</sub>O emissions and, in the case of sludge application to agricultural soils, in which sector and category the resulting emissions have been accounted. Iceland indicated in the NIR that one facility is in the process of attempting to use sewage sludge as fertilizer. The ERT reiterates the recommendation made in the previous review report that Iceland increase the transparency of its reporting by including more background data on sludge removal (e.g. the amount and N content) in the NIR, clearly indicating in which category the resulting emissions are accounted.

82. Iceland used the default method from the 2006 IPCC Guidelines (equation 6.8) to estimate N<sub>2</sub>O emissions from human sewage by using a constant value per capita protein intake (31.15 kg/capita/year) for the whole time series. However, the protein supply data for Iceland published by the Food and Agriculture Organization of the United Nations in its statistical database (FAOSTAT) are significantly higher and show some annual variations (e.g. the data from FAOSTAT are for 2011 and correspond to 47.9 kg/capita/year). In response to questions raised by the ERT during the review, Iceland explained that the average value is determined by using the protein intake of the national population at different ages, multiplied by the shares of the age group in the population using the mean value for the period 1990–2013. Nevertheless, considering the relatively high discrepancy, the ERT reiterates the recommendation made in the previous review report that Iceland investigate this issue further and report on any new results based on the yearly per capita protein intake.

Other (waste) – CH<sub>4</sub> and N<sub>2</sub>O

83. Although not a mandatory category under the UNFCCC reporting guidelines, Iceland has reported CH<sub>4</sub> and N<sub>2</sub>O emissions from composting. However, the ERT noted that the NIR contains limited information on the amount of waste composted. In response to a question raised by the ERT during the review, Iceland provided AD collected from all large or commercial producers. The ERT therefore encourages Iceland to include the time series of the AD used in the NIR to increase the transparency of its reporting.

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

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

Overview

84. Table 7 provides an overview of the information reported and parameters selected by Iceland under Article 3, paragraphs 3 and 4, of the Kyoto Protocol.

Table 7

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

<i>Issue</i>	<i>Expert review team assessment, if applicable</i>	<i>Findings and recommendations</i>
Assessment of Iceland’s reporting in accordance with the requirements in paragraphs 5–9 of	Sufficient	The transparency of the reporting on afforestation and reforestation could be improved (see para. 86 below)



<i>Issue</i>	<i>Expert review team assessment, if applicable</i>	<i>Findings and recommendations</i>
the annex to decision 15/CMP.1		
Activities elected under Article 3, paragraph 4, of the Kyoto Protocol	Activities elected: revegetation  Years reported: 1990, 2008, 2009, 2010, 2011 and 2012	The consistency of the information reported across different activities (e.g. afforestation and reforestation, and deforestation) could be improved (see para. 87 below)
Period of accounting	Commitment period accounting	
Iceland's ability to identify areas of land and areas of land-use change in accordance with paragraph 20 of the annex to decision 16/CMP.1	Sufficient	

85. Chapter G.I includes the ERT's assessment of the 2014 annual submission against the Article 8 review guidelines and decisions 15/CMP.1 and 16/CMP.1. In accordance with decision 6/CMP.9, Parties will begin reporting of KP-LULUCF activities in the submissions due by 15 April 2015 using revised CRF tables, as contained in the annex to decision 6/CMP.9. Owing to this change in the CRF tables for KP-LULUCF activities and the change from the first commitment period to the second commitment period, paragraphs 86–89 below contain the ERT's assessment of the Party's adherence to the current reporting guidelines and do not provide specific recommendations for reporting these activities in the 2015 annual submission.

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

##### *Afforestation and reforestation – CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O*

86. Similar to the reporting of forest land under the Convention (see para. 69 above), Iceland reported the carbon stock changes in living biomass for afforestation and reforestation using a tier 3 method (including the use of models and measurements). To enhance the transparency of the reporting for activities under Article 3, paragraph 3, of the Kyoto Protocol, the ERT reiterates the recommendation made in the previous review report that Iceland provide an additional description of the process by which the carbon stock changes and associated emissions and removals are estimated, including tables with raw data and intermediate outputs stratified by year and forest type.

##### *Deforestation – CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O*

87. The ERT notes that, when linear functions are applied to estimate the carbon stock changes in a carbon pool, a principle of symmetry needs to be applied to the way in which Iceland estimates the carbon stock changes in the soil organic matter of mineral soils. Symmetry means that pairs of land-use changes have the same annual net carbon stock change, although with a different sign. In particular, given that the value 0.37 t C/ha/year is reported as the annual net gain of soil organic carbon (SOC) in mineral soils in afforestation for the category "grassland converted to forest land – cultivated forest", it is expected that the deforestation in the same category results in a net loss of SOC equivalent, in absolute terms, of the net gain reported under afforestation. Nevertheless, Iceland reports a net carbon stock loss in SOC associated with deforestation of forest land to grassland of

0.61 t C/ha/year. The ERT recommends that Iceland recalculate the carbon stock changes in soil organic matter by ensuring symmetry among the pairs of land-use conversions (e.g. grassland converted to forest land, and forest land converted to grassland).

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

*Revegetation – CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O*

88. Although strongly recommended in previous review reports, Iceland did not report the carbon stock losses from conversion to other land uses for areas of land that have been revegetated since 1 January 1990. The ERT noted the explanation received from the Party during the review, namely that “revegetation is a long-term process and, given the relatively short time since 1990, very little land has been subject to actual changes in land use”. The ERT noted that not reporting land-use changes of revegetated land corresponded to a potential underestimation of emissions and therefore included this issue in the list of potential problems and further questions raised by the ERT. The ERT asked Iceland to submit a complete time series of estimates of the carbon stock changes associated with conversion to other land uses for areas of land that have been revegetated since 1 January 1990. In response to the list of potential problems and further questions, the Party clarified that revegetated land is not made available for other uses (i.e. converted to other categories), unless the land management meets the requirements set by Soil Conservation Service of Iceland (SCSI) on land management. One of the basic requirements is that land does not degrade from the state it was in at the time of conversion. This limits the potential use for these areas as grazing land. It is thus assumed that a net carbon loss does not occur from these lands and that they continue to follow the same carbon trajectory as other revegetation areas. The ERT acknowledges that sustainable grazing of revegetated land that has reached a stage compatible with grazing ensures an accumulation of carbon at a pace at least equivalent to that reported for other revegetated land not yet suitable for grazing and therefore the ERT agrees with the explanation by Iceland and considered the potential problem resolved.

89. The ERT noted that Iceland reports under revegetation the areas where the revegetation activity started before 1 January 1990, although, according to the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry* (pages 4.85 and 4.86), Parties should report areas under revegetation that are subject to the activity “from 1990” onwards. Nevertheless, Iceland uses constant factors associated with linear functions to estimate the carbon stock changes from revegetated land at both points in time: the base year and the commitment period (2008–2012); consequently, the ERT notes that the inclusion of lands revegetated before 1 January 1990 has no impact on the amount of net removals accounted under revegetation.

## 2. Information on Kyoto Protocol units

Standard electronic format and reports from the national registry

90. Iceland has reported information on its accounting of Kyoto Protocol units in the required SEF tables, as required by decisions 15/CMP.1 and 14/CMP.1. The ERT took note of the findings included in the standard independent assessment report (SIAR) on the SEF tables and the SEF comparison report.<sup>10</sup> The SIAR was forwarded to the ERT prior to the review, pursuant to decision 16/CP.10. The ERT reiterated the main findings contained in the SIAR.

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<sup>10</sup> The SEF comparison report is prepared by the international transaction log (ITL) administrator and provides information on the outcome of the comparison of data contained in the Party’s SEF tables with corresponding records contained in the ITL.

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

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

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

93. Table 8 shows the accounting quantities for KP-LULUCF as reported by the Party and the final values after the review.

Table 8

**Accounting quantities for activities under Article 3, paragraph 3, and, if any, activities under Article 3, paragraph 4, of the Kyoto Protocol, in t CO<sub>2</sub> eq**

	<i>2014 annual submission<sup>a</sup></i>	
	<i>As reported</i>	<i>Revised estimates Final accounting quantity<sup>b</sup></i>
Afforestation and reforestation		
Non-harvested land	–681 031	–681 031
Harvested land	NA	NA
Deforestation	802	802
Forest management	NA	NA
Article 3.3 offset <sup>c</sup>	NA	NA
Forest management cap <sup>d</sup>	NA	NA
Cropland management	NA	NA
Grazing land management	NA	NA
Revegetation	–861 730	–861 730

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

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

<sup>b</sup> The “final accounting quantity” is the quantity of Kyoto Protocol units that the Party shall issue or cancel under each activity under Article 3, paragraph 3, and paragraph 4, if relevant, based on the final accounting quantity in the 2014 annual submission.

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

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

94. Based on the information provided in table 8 for the activity afforestation and reforestation, Iceland shall: for non-harvested land, issue 681,031 removal units (RMUs) in its national registry; for harvested land, neither cancel assigned amount units (AAUs), emission reduction units (ERUs) and/or certified emission reduction units (CERs) nor issue RMUs in its national registry.

95. Based on the information provided in table 8 for the activity deforestation, Iceland shall cancel 802 AAUs, ERUs, CERs and/or RMUs in its national registry.

96. Based on the information provided in table 8 for the activity revegetation, Iceland shall issue 861,730 RMUs in its national registry.

#### Calculation of the commitment period reserve

97. Iceland has reported its commitment period reserve in its 2014 annual submission. The Party reported that its commitment period reserve has not changed since the initial report review (16,671,462 t CO<sub>2</sub> eq) as it is based on the assigned amount and not the most recently reviewed inventory. The ERT agrees with this figure.

### **3. Changes to the national system**

98. Iceland provided information on changes to its national system in its 2014 annual submission; however, as this information in the 2014 NIR (chapter 13) was the same as that provided in the 2013 annual submission (chapter 12), it was not clear from the information provided in the NIR whether there were changes in the national system since the 2013 previous annual submission. In response to questions raised by the ERT during the review, the Party acknowledged that there were no changes in the national system since the previous annual submission. The ERT concluded that the Party's national system continues to be in accordance with the requirements of national systems outlined in decision 19/CMP.1. The ERT recommends that the Party report in its annual submission any change(s) in its national system in accordance with decision 15/CMP.1, annex, chapter I.F and/or further relevant decisions of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP).

### **4. Changes to the national registry**

99. Iceland reported that there are changes in its national registry since the previous annual submission. The Party described the changes, which relate to the registry contacts, database structure, conformance to technical standards, publicly available information and test results, in its NIR. The ERT concluded that, taking into account the confirmed changes in the national registry, Iceland's national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant decisions of the CMP.

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

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

environmental and economic impacts on developing country Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention. The Government of Iceland has supported developing countries in the area of sustainable utilization of natural resources through its administration of the United Nations University Geothermal Training Programme, which started 35 years ago, and has built up expertise/capacity of 554 experts from 53 countries through training in the utilization of geothermal energy. Icelandic researchers cooperate with researchers in France and the United States of America to study the feasibility of sequestering the CO<sub>2</sub> into basaltic bedrock and store it there permanently as a mineral.

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

### III. Conclusions and recommendations

#### A. Conclusions

102. Table 9 summarizes the ERT's conclusions on the 2014 annual submission of Iceland, in accordance with the Article 8 review guidelines.

Table 9

#### Expert review team's conclusions on the 2014 annual submission of Iceland

<i>Issue</i>	<i>Expert review team assessment</i>	<i>Paragraph cross references for identified problems</i>
The ERT concludes that the inventory submission of Iceland is complete with regard to categories, gases, years and geographical boundaries and contains both an NIR and CRF tables for 1990–2012		
Annex A sources <sup>a</sup>	Complete	See table 3 above
LULUCF <sup>a</sup>	Not complete	See table 3 and paragraphs 66 and 72 above
KP-LULUCF	Complete	See table 3 above
The ERT concludes that the inventory submission of Iceland has been prepared and reported in accordance with the UNFCCC reporting guidelines	Generally	See paragraphs 27–28
Iceland's inventory is in accordance with the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF	Generally	See paragraphs 27–28
The submission of information required under Article 7, paragraph 1, of the Kyoto Protocol has been prepared and reported in accordance with decision 15/CMP.1	Generally	See paragraph 98
Iceland has reported information on its accounting of Kyoto Protocol units in accordance with decision 15/CMP.1, annex, chapter I.E, and used the required reporting format tables as specified by decision 14/CMP.1	Yes	

<i>Issue</i>	<i>Expert review team assessment</i>	<i>Paragraph cross references for identified problems</i>
The national system continues to perform its required functions as set out in the annex to decision 19/CMP.1	Yes	
The national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant CMP decisions	Yes	
Information on single projects under decision 14/CP.7	Sufficient	See paragraphs 40–50 above
Did Iceland provide information in the NIR on changes in its reporting of the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol?	Yes	

*Abbreviations:* Annex A sources = source categories included in Annex A to the Kyoto Protocol, CMP = Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, CRF = common reporting format, ERT = expert review team, IPCC = Intergovernmental Panel on Climate Change, IPCC good practice guidance = IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, IPCC good practice guidance for LULUCF = IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NIR = national inventory report, Revised 1996 IPCC Guidelines = *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, UNFCCC reporting guidelines = “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories”.

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

## B. Recommendations

103. The ERT identified the issues for improvement listed in table 10. All recommendations are for the next annual submission, unless otherwise specified. The ERT notes that this review report of the 2014 annual submission will be published after 15 April 2015. Where recommendations cannot be fully implemented in time for the 2015 annual submission, the ERT recommends that the Party provide an update on progress of implementation in the NIR.

Table 10  
**Recommendations identified by the expert review team**

<i>Sector</i>	<i>Category/cross-cutting issue</i>	<i>Recommendation</i>	<i>Reiteration of previous recommendation?</i>	<i>Paragraph cross references</i>
Cross-cutting	General	Estimate and report emissions from all mandatory categories of LULUCF sector	No	Table 3
		Ensure that one organization has a full understanding of the complete energy balance and can compile a transparent and complete energy balance	Yes	12
Energy	General	Correct the errors related to AD to ensure the accuracy of its reporting	No	19

<i>Sector</i>	<i>Category/cross-cutting issue</i>	<i>Recommendation</i>	<i>Reiteration of previous recommendation?</i>	<i>Paragraph cross references</i>
		Transparently report the justification of significant high inter-annual changes and gaps in the time series of fuel consumption and associated emissions	No	21
		Provide transparent information in cases where GHG emissions have been accounted for elsewhere and use the notation key “IE” to report such emissions	No	22
		Provide more transparent information on the modification methodologies applied when re-categorizing the data received from NEA	Yes	23
		For future annual submissions, consider the possibility of redefining the coordination agreement between NEA and EA in order to change the data collection process by preparing a data collection template that is consistent with the IPCC categories	No	23
	International bunker fuels	Improve the differentiation of fuel consumption for international and domestic aviation to ensure accuracy	Yes	27
		Improve the methodology for distinguishing between international and domestic navigation	Yes	28
	Feedstocks and non-energy use of fuels	Include explanation of how waste oil is collected and recycled and a detailed description of the value chain of waste oil in Iceland in its inventory	No	30
		Investigate any emissive use of lubricants in the transport sector as well as other industries, and if appropriate, report these emissions	No	30
	Stationary combustion: liquid and solid fuels – CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O	Investigate how the EF was derived and include this information in the NIR to ensure transparency	No	31
		Report transparent information in cases where emission sources have been accounted for elsewhere in order to ensure transparency	No	32
		Improve the transparency of reporting regarding energy recovery in waste incineration by providing the sources of the methodologies applied for the estimation of CO <sub>2</sub> emissions from waste incineration	No	33
		Correct the differentiation between fuel consumed for stationary and mobile combustion, because the CH <sub>4</sub> and N <sub>2</sub> O EFs are different for stationary and mobile combustion	No	34
	Road transportation: liquid fuels – CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O	Continue to make efforts to apply higher-tier methods to the estimation of GHG emissions from road transportation in future annual submissions	Yes	35

<i>Sector</i>	<i>Category/cross-cutting issue</i>	<i>Recommendation</i>	<i>Reiteration of previous recommendation?</i>	<i>Paragraph cross references</i>
		Apply a consistent methodology for the division of the vehicle groups and apply recalculations for the earlier years of the time series (1990–2005)	No	36
Industrial processes and solvent and other product use	General	Enhance QA/QC procedures to avoid reporting wrong numbers to the ERT	No	46
Agriculture	General	Improve the transparency of reporting by including in the NIR the information that field burning of agricultural crop residues is prohibited by law and that the practice has fallen out of use since the 1980s	No	54
		Improve the transparency of the NIR by including detailed explanations of the AD, EFs and emission trends for all categories of the agricultural sector	No	56
	Enteric fermentation – CH <sub>4</sub>	Include in the NIR the information on the CH <sub>4</sub> EFs associated with enteric fermentation for poultry and fur-bearing animals	No	58
	Manure management – CH <sub>4</sub> and N <sub>2</sub> O	Include more information in the NIR regarding the circumstances under which the country-specific N excretion data have been estimated to demonstrate that emissions have been accurately reported	Yes	61
	Agricultural soils – N <sub>2</sub> O	Include in the inventory a comparison of the country-specific value of the EF associated with the N <sub>2</sub> O emissions from the cultivation of histosols with peer-reviewed studies	Yes	63
LULUCF	General	Further enhance the completeness and accuracy of its GHG inventory in accordance with the available data sets, ongoing projects for data collection and analysis, and relevant national circumstances, in particular enhancing information reported on carbon stock change in soil organic matter associated with management changes in cropland and grassland	No	66
		Enhance the transparency of the information on the uncertainty analysis, for instance by reporting in a tabular format, for each GHG estimate, the uncertainty of the AD, EFs and parameters, as well as the source of such information, and the uncertainty of the GHG estimate, including the procedure applied to calculate it and the equations used	No	67
		Enhance the transparency of reporting by selecting the required information and organizing it in a manner that enables the reader to clearly understand	No	68



<i>Sector</i>	<i>Category/cross-cutting issue</i>	<i>Recommendation</i>	<i>Reiteration of previous recommendation?</i>	<i>Paragraph cross references</i>
		the data sources, their quality and the methodology applied to derive the land representation and judge its consistency and accuracy, rather than by increasing the quantity of information provided		
	Forest land – CO <sub>2</sub>	Provide an additional description of the processes by which the carbon stock changes and associated emissions and removals are estimated, including tables with raw data and intermediate outputs stratified by year and forest type	Yes	69
	Land converted to cropland – CO <sub>2</sub>	Ensure the equivalence of climatic, historical and edaphic conditions when analysing pairs of samples (i.e. in cropland and grassland), to determine the dynamic of the soil carbon stocks associated with conversion among the two land uses	No	71
	Grassland – CO <sub>2</sub>	Enhance the completeness of the GHG inventory by preparing estimates for the emissions from all areas of grassland	Yes	72
	N <sub>2</sub> O emissions from disturbance associated with land-use conversion to cropland – N <sub>2</sub> O	Report a complete time series of N <sub>2</sub> O emissions from disturbance associated with land-use conversion to cropland	No	73
	CO <sub>2</sub> emissions from agricultural lime application – CO <sub>2</sub>	Ensure the time-series consistency of reporting for this category	No	74
Waste	Solid waste disposal on land – CH <sub>4</sub>	Improve the transparency of the inventory by including information in the NIR on the AD used (e.g. the time series of waste amounts between 1950 and 2012)	No	78
		Include in the NIR more information on landfill gas utilization (e.g. energy content of recovered gas, place of utilization)	Yes	79
	Wastewater handling – CH <sub>4</sub> and N <sub>2</sub> O	Develop a country-specific MCF and EFs for the estimation of emissions from wastewater handling	No	80
		Provide a clearer description on the method applied and the correct equation	No	80
		Increase the transparency of its reporting by including more background data on sludge removal (e.g. the amount and N content) in the NIR, clearly indicating in which category the resulting emissions are accounted	Yes	81

<i>Sector</i>	<i>Category/cross-cutting issue</i>	<i>Recommendation</i>	<i>Reiteration of previous recommendation?</i>	<i>Paragraph cross references</i>
		Investigate the issue on value per capita protein intake further and report on any new results based on the yearly per capita protein intake	Yes	82
KP-LULUCF	Afforestation and reforestation – CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O	Provide an additional description of the process by which the carbon stock changes and associated emissions and removals are estimated, including tables with raw data and intermediate outputs stratified by year and forest type	Yes	86
	Deforestation – CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O	Recalculate the carbon stock changes in soil organic matter by ensuring symmetry among the pairs of land-use conversions (e.g. grassland converted to forest land, and forest land converted to grassland)	No	87
National system		Report in the annual submission any change(s) in its national system in accordance with decision 15/CMP.1, annex, chapter I.F and/or further relevant decisions of the CMP	No	98

*Abbreviations:* AD = activity data, CMP = Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, EA = Environmental Agency of Iceland, EF = emission factor, ERT = expert review team, GHG = greenhouse gas, IE = included elsewhere, IPCC = Intergovernmental Panel on Climate Change, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, MCF = methane conversion factor, N = nitrogen, NEA = National Energy Authority of Iceland, NIR = national inventory report, QA/QC = quality assurance/quality control.

#### IV. Questions of implementation

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

## Annex I

## Information to be included in the compilation and accounting database

Table 11  
**Information to be included in the compilation and accounting database in t CO<sub>2</sub> eq for 2012, including the commitment period reserve**

	<i>As reported</i>	<i>Revised estimates</i>	<i>Adjustment<sup>a</sup></i>	<i>Final<sup>b</sup></i>
<b>Commitment period reserve</b>	16 671 462			16 671 462
<b>Annex A emissions for 2012</b>				
CO <sub>2</sub>	3 323 787			3 323 787
CH <sub>4</sub>	456 814			456 814
N <sub>2</sub> O	457 702			457 702
HFCs	144 116			144 116
PFCs	79 745			79 745
SF <sub>6</sub>	5 566			5 566
<b>Total Annex A sources<sup>c</sup></b>	<b>4 467 730</b>			<b>4 467 730</b>
<b>Activities under Article 3, paragraph 3, for 2012</b>				
3.3 Afforestation and reforestation on non-harvested land for 2012	-172 913			-172 913
3.3 Afforestation and reforestation on harvested land for 2012	NA			NA
3.3 Deforestation for 2012	107			107
<b>Activities under Article 3, paragraph 4, for 2012<sup>d</sup></b>				
3.4 Forest management for 2012				
3.4 Cropland management for 2012				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2012				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2012	-543 123			-543 123
3.4 Revegetation for the base year	-349 465			-349 465

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

<sup>a</sup> "Adjustment" is relevant only for Parties for which the expert review team has calculated one or more adjustment(s).

<sup>b</sup> "Final" includes revised estimates, if any, and/or adjustments, if any.

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

<sup>d</sup> Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Table 12  
**Information to be included in the compilation and accounting database in t CO<sub>2</sub> eq for 2011**

	<i>As reported</i>	<i>Revised estimates</i>	<i>Adjustment<sup>a</sup></i>	<i>Final<sup>b</sup></i>
<b>Annex A emissions for 2011</b>				
CO <sub>2</sub>	3 332 750			3 332 750
CH <sub>4</sub>	472 684			472 684
N <sub>2</sub> O	447 936			447 936
HFCs	121 346			121 346
PFCs	63 219			63 219
SF <sub>6</sub>	3 192			3 192
<b>Total Annex A sources<sup>c</sup></b>	<b>4 441 127</b>			<b>4 441 127</b>
<b>Activities under Article 3, paragraph 3, for 2011</b>				
3.3 Afforestation and reforestation on non-harvested land for 2011	-153 721			-153 721
3.3 Afforestation and reforestation on harvested land for 2011	NA			NA
3.3 Deforestation for 2011	456			456
<b>Activities under Article 3, paragraph 4, for 2011<sup>d</sup></b>				
3.4 Forest management for 2011				
3.4 Cropland management for 2011				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2011				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2011	-533 918			-533 918
3.4 Revegetation for the base year	-349 465			-349 465

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

<sup>a</sup> "Adjustment" is relevant only for Parties for which the expert review team has calculated one or more adjustment(s).

<sup>b</sup> "Final" includes revised estimates, if any, and/or adjustments, if any.

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

<sup>d</sup> Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Table 13  
**Information to be included in the compilation and accounting database in t CO<sub>2</sub> eq for 2010**

	<i>As reported</i>	<i>Revised estimates</i>	<i>Adjustment<sup>a</sup></i>	<i>Final<sup>b</sup></i>
<b>Annex A emissions for 2010</b>				
CO <sub>2</sub>	3 431 810			3 431 810
CH <sub>4</sub>	487 908			487 908
N <sub>2</sub> O	453 395			453 395
HFCs	122 527			122 527
PFCs	145 632			145 632
SF <sub>6</sub>	4 889			4 889
<b>Total Annex A sources<sup>c</sup></b>	<b>4 646 161</b>			<b>4 646 161</b>
<b>Activities under Article 3, paragraph 3, for 2010</b>				
3.3 Afforestation and reforestation on non-harvested land for 2010	-135 505			-135 505
3.3 Afforestation and reforestation on harvested land for 2010	NA			NA
3.3 Deforestation for 2010	80			80
<b>Activities under Article 3, paragraph 4, for 2010<sup>d</sup></b>				
3.4 Forest management for 2010				
3.4 Cropland management for 2010				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2010				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2010	-521 184			-521 184
3.4 Revegetation for the base year	-349 465			-349 465

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

<sup>a</sup> "Adjustment" is relevant only for Parties for which the expert review team has calculated one or more adjustment(s).

<sup>b</sup> "Final" includes revised estimates, if any, and/or adjustments, if any.

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

<sup>d</sup> Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Table 14  
**Information to be included in the compilation and accounting database in t CO<sub>2</sub> eq for 2009**

	<i>As reported</i>	<i>Revised estimates</i>	<i>Adjustment<sup>a</sup></i>	<i>Final<sup>b</sup></i>
<b>Annex A emissions for 2009</b>				
CO <sub>2</sub>	3 571 836			3 571 836
CH <sub>4</sub>	487 529			487 529
N <sub>2</sub> O	468 993			468 993
HFCs	94 992			94 992
PFCs	152 747			152 747
SF <sub>6</sub>	3 171			3 171
<b>Total Annex A sources<sup>c</sup></b>	<b>4 779 267</b>			<b>4 779 267</b>
<b>Activities under Article 3, paragraph 3, for 2009</b>				
3.3 Afforestation and reforestation on non-harvested land for 2009	-115 545			-115 545
3.3 Afforestation and reforestation on harvested land for 2009	NA			NA
3.3 Deforestation for 2009	80			80
<b>Activities under Article 3, paragraph 4, for 2009<sup>d</sup></b>				
3.4 Forest management for 2009				
3.4 Cropland management for 2009				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2009				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2009	-509 073			-509 073
3.4 Revegetation for the base year	-349 465			-349 465

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

<sup>a</sup> "Adjustment" is relevant only for Parties for which the expert review team has calculated one or more adjustment(s).

<sup>b</sup> "Final" includes revised estimates, if any, and/or adjustments, if any.

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

<sup>d</sup> Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Table 15  
**Information to be included in the compilation and accounting database in t CO<sub>2</sub> eq for 2008**

	<i>As reported</i>	<i>Revised estimates</i>	<i>Adjustment<sup>a</sup></i>	<i>Final<sup>b</sup></i>
<b>Annex A emissions for 2008</b>				
CO <sub>2</sub>	3 605 128			3 605 128
CH <sub>4</sub>	489 972			489 972
N <sub>2</sub> O	503 908			503 908
HFCs	70 629			70 629
PFCs	348 998			348 998
SF <sub>6</sub>	3 151			3 151
<b>Total Annex A sources<sup>c</sup></b>	<b>5 021 786</b>			<b>5 021 786</b>
<b>Activities under Article 3, paragraph 3, for 2008</b>				
3.3 Afforestation and reforestation on non-harvested land for 2008	-103 347			-103 347
3.3 Afforestation and reforestation on harvested land for 2008	NA			NA
3.3 Deforestation for 2008	80			80
<b>Activities under Article 3, paragraph 4, for 2008<sup>d</sup></b>				
3.4 Forest management for 2008				
3.4 Cropland management for 2008				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2008				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2008	-501 758			-501 758
3.4 Revegetation for the base year	-349 465			-349 465

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

<sup>a</sup> "Adjustment" is relevant only for Parties for which the expert review team has calculated one or more adjustment(s).

<sup>b</sup> "Final" includes revised estimates if any and/or adjustments if any.

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

<sup>d</sup> Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

## Annex II

### Documents and information used during the review

#### A. Reference documents

Intergovernmental Panel on Climate Change. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. Available at <http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>.

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

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

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

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

“Guidelines for the technical review of greenhouse gas inventories from Parties included in Annex I to the Convention”. FCCC/CP/2002/8. Available at <http://unfccc.int/resource/docs/cop8/08.pdf>.

“Guidelines for national systems for the estimation of anthropogenic greenhouse gas emissions by sources and removals by sinks under Article 5, paragraph 1, of the Kyoto Protocol”. Decision 19/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=14>.

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

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Status report for Iceland 2014. Available at <http://unfccc.int/resource/docs/2014/asr/isl.pdf>.

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

FCCC/ARR/2013/ISL. Report of the individual review of the annual submission of Iceland submitted in 2013. Available at <http://unfccc.int/resource/docs/2014/arr/isl.pdf>.

Standard independent assessment report template, parts 1 and 2. Available at [http://unfccc.int/kyoto\\_protocol/registry\\_systems/independent\\_assessment\\_reports/items/4061.php](http://unfccc.int/kyoto_protocol/registry_systems/independent_assessment_reports/items/4061.php).



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

Responses to questions during the review were received from Mr. Páll Valdimar Kolka Jónsson (Environment Agency of Iceland), including additional material on the methodology and assumptions used.

## Annex III

### Acronyms and abbreviations

AAU	assigned amount unit
AD	activity data
BAT	best available technology
BREF	Best Available Techniques reference document
CER	certified emission reduction unit
CH <sub>4</sub>	methane
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
C	carbon
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> eq	carbon dioxide equivalent
CRF	common reporting format
EA	Environmental Agency of Iceland
EF	emission factor
ERT	expert review team
ERU	emission reduction units
FAOSTAT	statistical database of the Food and Agriculture Organization of the United Nations
FOD	first-order decay
GHG	greenhouse gas; unless indicated otherwise, GHG emissions are the sum of CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, HFCs, PFCs and SF <sub>6</sub> without GHG emissions and removals from LULUCF
ha	hectare
HFCs	hydrofluorocarbons
IE	included elsewhere
IEA	International Energy Agency
IEF	implied emission factor
IGLUD	Iceland Geographical Land Use Database
IPCC	Intergovernmental Panel on Climate Change
IRTD	Icelandic Road Traffic Directorate
ITL	international transaction log
kg	kilogram (1 kg = 1,000 grams)
KP-LULUCF	land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol
LULUCF	land use, land-use change and forestry
MCF	methane conversion factor
N	nitrogen
N <sub>2</sub> O	nitrous oxide
NA	not applicable
NE	not estimated
NEA	National Energy Authority of Iceland
NIR	national inventory report
NO	not occurring
PFCs	perfluorocarbons
PJ	petajoule (1 PJ = 10 <sup>15</sup> joule)
QA/QC	quality assurance/quality control
RMU	removal unit
SEF	standard electronic format
SF <sub>6</sub>	sulphur hexafluoride
SIAR	standard independent assessment report

SOC	soil organic carbon
t	tonne
TJ	terajoule (1 TJ = 10 <sup>12</sup> joule)
UNFCCC	United Nations Framework Convention on Climate Change

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