COMPLIANCE COMMITTEE **CC/ERT/2019/13**
5 September 2019

Report of the technical review of the seventh national communication of Iceland

Note by the secretariat

The report of the technical review of the seventh national communication of Iceland was published on 1 February 2019. For purposes of rule 10, paragraph 2, of the rules of procedure of the Compliance Committee (annex to decision 4/CMP.2, as amended by decisions 4/CMP.4 and 8/CMP.9), the report is considered received by the secretariat on the same date. This report, FCCC/IDR.7/ICE, contained in the annex to this note, is being forwarded to the Compliance Committee in accordance with section VI, paragraph 3, of the annex to decision 27/CMP.1.

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Framework Convention on Climate Change

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Report on the technical review of the seventh national communication of Iceland

Parties included in Annex I to the Convention were requested by decision 9/CP.16 to submit their seventh national communication to the secretariat by 1 January 2018. According to decision 15/CMP.1, Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol are required to include in their national communications supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. This report presents the results of the technical review of the seventh national communication and relevant supplementary information under the Kyoto Protocol of Iceland, conducted by an expert review team in accordance with the "Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention" and the "Guidelines for review under Article 8 of the Kyoto Protocol".

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Contents

Abbreviations and acronyms

Annex II Party	Party included in Annex II to the Convention
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BR	biennial report
CH_4	methane
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
CTF	common tabular format
ERT	expert review team
ESD	effort-sharing decision
EU	European Union
EU ETS	European Union Emissions Trading System
F-gas	fluorinated gas
GDP	gross domestic product
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
ICAO	International Civil Aviation Organization
IMO	International Maritime Organization
IPCC	Intergovernmental Panel on Climate Change
IPPU	industrial processes and product use
ISK	Icelandic króna
LULUCF	land use, land-use change and forestry
NA	not applicable
NC	national communication
NE	not estimated
NF_3	nitrogen trifluoride
NIR	national inventory report
NO	not occurring
non-Annex I Party	Party not included in Annex I to the Convention
non-ETS sectors	sectors not covered by the European Union Emissions Trading System
N_2O	nitrous oxide
PaMs	policies and measures
PFC	perfluorocarbon
reporting guidelines for supplementary information	"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol, Part II: Reporting of supplementary information under Article 7, paragraph 2"
SF_6	sulfur hexafluoride
UNFCCC reporting guidelines on NCs	"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications"
UNU	United Nations University
WAM	'with additional measures'
WEM	'with measures'
WOM	'without measures'

I. Introduction and summary

A. Introduction

1. This is a report on the in-country technical review of the NC7 of Iceland. The review was coordinated by the secretariat in accordance with the "Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention", particularly "Part V: UNFCCC guidelines for the technical review of national communications from Parties included in Annex I to the Convention" (annex to decision 13/CP.20), and the "Guidelines for review under Article 8 of the Kyoto Protocol" (annex to decision 22/CMP.1 and annex I to decision 4/CMP.11).[1]

2. In accordance with the same decisions, a draft version of this report was transmitted to the Government of Iceland, which confirmed that it had no comments on the report.

3. The review was conducted from 17 to 22 September 2018 in Reykjavik by the following team of nominated experts from the UNFCCC roster of experts: Mr. Vincent Agusiegbe (Nigeria), Ms. Jolanta Merkeliene (Lithuania), Mr. Takashi Morimoto (Japan), Ms. Sina Wartmann (Germany) and Mr. Jongikhaya Witi (South Africa). Ms. Wartmann and Mr. Witi were the lead reviewers. The review was coordinated by Ms. Kyoko Miwa (UNFCCC secretariat).

B. Summary

4. The ERT conducted a technical review of the information reported in the NC7 of Iceland in accordance with the UNFCCC reporting guidelines on NCs (decision 4/CP.5) and the reporting guidelines for supplementary information, in particular the supplementary information required under Article 7, paragraph 2, and on the minimization of adverse impacts under Article 3, paragraph 14, of the Kyoto Protocol (annex to decision 15/CMP.1 and annex III to decision 3/CMP.11).

1. Timeliness

5. The NC7 was submitted on 16 March 2018, after the deadline of 1 January 2018 mandated by decision 9/CP.16, and was resubmitted on 21 March 2018.

6. Iceland did not inform the secretariat about its difficulties with making a timely submission in accordance with decision 13/CP.20 and decision 22/CMP.1. The ERT noted with great concern the delay in the submission and recommended that Iceland make its next submission on time. As the submission was not made within six weeks after the due date (by 15 February 2018), the delay was brought to the attention of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol and the Compliance Committee and made public.

7. Iceland informed the ERT that the delay in submission was related to the limited human capacities in general required for the process to gather the required information and data from different agencies and institutions.

8. The ERT considers that options for achieving a timely submission include improving the planning process and ensuring the necessary arrangements for data collection and increasing capacities.

[1] At the time of the publication of this report, the Party had submitted its instrument of acceptance of the Doha Amendment; however, the amendment had not yet entered into force. The implementation of the provisions of the Doha Amendment is therefore considered in this report in the context of decision 1/CMP.8, paragraph 6, pending the entry into force of the amendment.

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

9. Issues and gaps identified by the ERT related to the reported information are presented in table 1. The information reported by Iceland in its NC7, including the supplementary information under the Kyoto Protocol, mostly adheres to the UNFCCC reporting guidelines on NCs.

Table 1
Assessment of completeness and transparency of mandatory information reported by Iceland in its seventh national communication, including supplementary information under the Kyoto Protocol

Section of NC	*Completeness*	*Transparency*	*Reference to description of recommendations*	*Supplementary information under the Kyoto Protocol*	*Completeness*	*Transparency*	*Reference to description of recommendations*
Executive summary	Complete	Transparent	–	National system	Complete	Transparent	–
National circumstances	Complete	Transparent	–	National registry	Not complete	Not transparent	Issue 1 in table 5
GHG inventory	Complete	Transparent	–	Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Mostly complete	Transparent	Issue 1 in table 12
PaMs	Complete	Mostly transparent	Issue 3 in table 7	PaMs in accordance with Article 2	Complete	Transparent	–
Projections and the total effect of PaMs	Partially complete	Transparent	Issues 3 and 5 in table 10; issues 1 and 3 in table 11	Domestic and regional programmes and/or arrangements and procedures	Complete	Transparent	–
Vulnerability assessment, climate change impacts and adaptation measures	Partially complete	Mostly transparent	Issue 1 in table 17	Information under Article 10[a]	Mostly complete	Mostly transparent	Issue 2 in table 15
Financial resources and transfer of technology	Complete	Mostly transparent	Issue 1 in table 15	Financial resources	Mostly complete	Transparent	Issue 1 in table 14
Research and systematic observation	Complete	Transparent	–	Minimization of adverse impacts in accordance with Article 3, paragraph 14	Complete	Transparent	–
Education, training and public awareness	Complete	Transparent	–				

Note: A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in chapter III below. The assessment of completeness and transparency by the ERT in this table is based only on the "shall" reporting requirements.

[a] The assessment refers to information provided by the Party on the provisions contained in Article 4, paragraphs 3, 5 and 7, of the Convention reported under Article 10 of the Kyoto Protocol, which is relevant to Annex II Parties only. Assessment of the information provided by the Party on the other provisions of Article 10 of the Kyoto Protocol is provided under the relevant substantive headings under the Convention, for example research and systematic observation.

3. Summary of reviewed supplementary information under the Kyoto Protocol

10. The supplementary information under Article 7, paragraph 2, of the Kyoto Protocol is incorporated in different sections of the NC7, and the supplementary information under Article 7, paragraph 1, of the Kyoto Protocol is reported in the NIR of the 2018 annual submission. Table 2 provides references to where the information is reported. The technical assessment of the information reported under Article 7, paragraphs 1 and 2, of the Kyoto Protocol is contained in the relevant sections of this report.

Table 2
Overview of supplementary information under the Kyoto Protocol reported by Iceland

Supplementary information	*Reference to section of NC7*
National registry	3.4.1
National system	3.4
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	4; BR3, annex I
PaMs in accordance with Article 2	4
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	4.1
Information under Article 10	3, 4.2, 6, 7, 8, 9
Financial resources	7
Minimization of adverse impacts in accordance with Article 3, paragraph 14	Reported in the NIR of the Party's 2018 annual submission

II. Technical review of the information reported in the seventh national communication, including the supplementary information under the Kyoto Protocol

A. Information on national circumstances and greenhouse gas emissions and removals

1. National circumstances relevant to greenhouse gas emissions and removals

(a) Technical assessment of the reported information

11. The national circumstances of Iceland explain the relationship between its historic and future emission trends and the climate change policy agenda. The changing nature of those circumstances defines the factors that affect the climate policy development and implementation of the Convention. The NC7 contains key data on legislation, population trends, geography and land use, climate and climate change, economic developments, energy, transport, the buildings sector, industry, trade, the services sector, agriculture, forestry, resource efficiency and waste management.

12. Iceland has extensive non-fossil based domestic energy sources in the form of hydropower and geothermal energy. In industry and in other fields where such replacement is feasible and economically viable, imported oil and coal have been replaced with those non-fossil based energy sources. In 2015, renewable energy sources (hydropower and geothermal energy) accounted for 99.9 per cent of electricity production and 99.0 per cent of space heating.

13. Iceland's largest manufacturing industry, aluminium production, is energy intensive. Production has risen sharply, by 308 per cent, from 210,000 t per year in 2000 to an estimated 857,000 t per year in 2015. Iceland's share of world aluminium production (excluding China) increased from 1 per cent in 2000 to 3 per cent in 2014. As a result, production of non-ferrous metals accounted for 79 per cent of the electricity consumption in Iceland in 2015.

14. The tourism sector in Iceland has been increasing rapidly over the past few years: the total number of foreign visitors was 1.8 million in 2016, which was a 39 per cent increase from 1.3 million in 2015. This sector poses challenges relating to environmental impacts.

15. The ERT noted that during the period 1990–2016 Iceland's population and GDP per capita increased by 31.2 and 55.5 per cent, respectively. In its NC7, Iceland explained that it is ranked first among countries of the Organisation for Economic Co-operation and Development in terms of per capita consumption of primary energy, and this can largely be explained by the big presence of power-intensive industries (aluminium production) and uniquely high self-sufficiency of energy sources owing to the high proportion of hydro and geothermal energy (84 per cent in the energy mix in 2015). GHG emissions per GDP unit and GHG emissions per capita decreased by 37.0 and 2.0 per cent, respectively, in the period between 1990 and 2016.

16. During the review, Iceland provided additional information on recent developments in climate change policy, in particular on the Climate Action Plan for 2018–2030 announced in September 2018. The new measures outlined in this plan are intended to boost the Party's efforts in cutting GHG emissions in order to help meet its targets for 2030 and achieve the Government of Iceland's ambitious aim of making the country carbon neutral by 2040. The plan comprises 34 measures, with a significant increase in funding amounting to almost ISK 7 billion (USD 58.01 million) for 2019–2030.

17. Table 3 illustrates the national circumstances of Iceland by providing some indicators relevant to emissions and removals.

Table 3
Indicators relevant to greenhouse gas emissions and removals for Iceland for the period 1990–2016

						Change (%)	
Indicator	*1990*	*2000*	*2010*	*2015*	*2016*	*1990–2016*	*2015–2016*
GDP per capita (thousands 2011 USD using purchasing power parity)	29.12	34.10	38.82	42.67	45.28	55.5	6.1
GHG emissions without LULUCF per capita (t CO_2 eq)	14.26	14.46	15.34	14.35	13.97	–2.0	–2.7
GHG emissions without LULUCF per GDP unit (kg CO_2 eq per 2011 USD using purchasing power parity)	0.49	0.42	0.40	0.34	0.31	–37.0	–8.3

Sources: (1) GHG emission data: Iceland's 2018 GHG inventory submission, version 3; (2) population and GDP: World Bank.

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

(b) Assessment of adherence to the reporting guidelines

18. The ERT assessed the information reported in the NC7 of Iceland and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting guidelines on NCs. There were no issues raised during the review relating to the topics discussed in this chapter of the review report.

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

(a) Technical assessment of the reported information

19. Total GHG emissions[2] excluding emissions and removals from LULUCF increased by 28.5 per cent between 1990 and 2016, whereas total GHG emissions including net emissions or removals from LULUCF increased by 8.5 per cent over the same period. Table 4 illustrates the emission trends by sector and by gas for Iceland.

Table 4
Greenhouse gas emissions by sector and by gas for Iceland for the period 1990–2016

	GHG emissions (kt CO_2 eq)					*Change (%)*		*Share (%)*	
	1990	*2000*	*2010*	*2015*	*2016*	*1990–2016*	*2015–2016*	*1990*	*2016*
Sector									
1. Energy	1 866.68	2 210.47	2 056.99	1 876.91	1 856.21	–0.6	–1.1	51.4	39.8
A1. Energy industries	13.83	11.04	11.19	3.64	2.21	–84.0	–39.3	0.4	0.0
A2. Manufacturing industries and construction	376.73	456.18	214.04	177.41	198.47	–47.3	11.9	10.4	4.3
A3. Transport	619.90	662.63	890.24	894.79	973.81	57.1	8.8	17.1	20.9
A4. and A5. Other	794.18	925.95	746.09	633.38	529.23	–33.4	–16.4	21.9	11.3
B. Fugitive emissions from fuels	62.04	154.66	194.71	167.69	152.49	145.8	–9.1	1.2	3.3
C. CO_2 transport and storage	NO	NO	NO	NO	NO	NA	NA	NA	NA
2. IPPU	958.01	1 008.55	1 951.13	2 023.00	1 974.23	106.1	–2.4	26.4	42.3
3. Agriculture	628.61	581.09	580.97	602.06	601.56	–4.3	–0.1	17.3	12.9
4. LULUCF	10 093.10	10 089.43	10 283.40	10 247.59	10 222.05	1.3	–0.2	NA	NA
5. Waste	180.89	266.89	290.99	246.65	237.33	31.2	–3.8	5.0	5.1
6. Other	NO	NO	NO	NO	NO	NA	NA	NA	NA
Gas[a]									
CO_2	2 237.42	2 933.99	3 620.93	3 536.41	3 499.97	56.0	–1.3	61.6	74.7
CH_4	542.75	601.72	636.05	599.01	594.55	9.5	-0.7	14.9	12.7
N_2O	357.59	336.80	299.93	303.20	299.71	–16.2	–1.1	9.8	6.4
HFCs	0.69	43.28	145.83	204.76	191.97	27 724.2	–6.2	0.0	4.1
PFCs	494.64	149.89	171.67	103.70	91.86	–81.4	–11.4	13.6	2.0
SF_6	1.10	1.31	4.66	1.53	1.28	16.5	–16.5	0.0	0.0
NF_3	NA, NO	NA, NO	NO	NO	NO	NA	NA	NA	NA

[2] In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions expressed in terms of CO_2 eq excluding LULUCF, unless otherwise specified. Values in this paragraph are calculated based on the 2018 annual submission, version 3.

	GHG emissions (kt CO_2 eq)					*Change (%)*		*Share (%)*	
	1990	*2000*	*2010*	*2015*	*2016*	*1990–2016*	*2015–2016*	*1990*	*2016*
Total GHG emissions without LULUCF	**3 634.19**	**4 066.99**	**4 879.07**	**4 748.61**	**4 669.34**	**28.5**	**−1.7**	**100.0**	**100.0**
Total GHG emissions with LULUCF	**13 727.29**	**14 156.43**	**15 162.47**	**14 996.21**	**14 891.39**	**8.5**	**−0.7**	**NA**	**NA**

Source: GHG emission data: Iceland's 2018 annual submission, version 3.

[a] Emissions by gas without LULUCF and without indirect CO_2.

20. The increase in total emissions was driven mainly by an increase in CO_2 emissions from anode consumption in the metal industry, which were mostly attributable to the increase in aluminium production which accounts for 36.4 per cent of national total CO_2 emissions except for LULUCF in 2016 under the IPPU sector. The other major factors responsible for the increase in total emissions were CO_2 emissions from fuel combustion in road transport.

21. Between 1990 and 2016, GHG emissions from the energy sector decreased by 0.6 per cent (10.46 kt CO_2 eq), owing mainly to decreases in GHG emissions from the category other sectors (common reporting format table category 1.A.4) and from manufacturing industries and construction (1.A.2). These decreases outweighed the increase in GHG emissions from the transport sector. The trend in GHG emissions from fuel combustion showed notable increases in transport (57.1 per cent or 353.91 kt CO_2 eq), owing to an increase in the mileage of vehicles, resulting in turn from an increase in the number of vehicles, that largely offset the decreases of emissions from other sectors under the fuel combustion (by 66.6 per cent or 264.95 kt CO_2 eq) and transport (38.4 per cent or 454.82 kt CO_2 eq). The decrease in the category other sectors resulted mainly from a decrease in CO_2 emissions from the fisheries sector, caused by a decrease in the number of ships in operation and an improvement in their energy efficiency. The decrease in manufacturing industries and construction (by 47.3 per cent or by 178.26 kt CO_2 eq) was mainly due to a decrease in CO_2 emissions from the fishmeal industry (resulting from a decrease in fishmeal production), a shift in energy use (from oil to electricity) and a decrease in CO_2 emissions from the cement industry (because of the closure of Iceland's only cement production plant in 2011). Fugitive emissions from fuel increased between 1990 and 2016 owing to an increase in CO_2 emissions from geothermal energy – these peaked in 2010 and decreased gradually thereafter, although electricity generation from geothermal energy increased.

22. Between 1990 and 2016, GHG emissions from the IPPU sector increased by 106.1 per cent (1,016.22 kt CO_2 eq), owing mainly to an increase in CO_2 emissions resulting from the increased production capacity of the aluminium industry in Iceland. IPPU is the most significant sector in the country, and accounted for 42.3 per cent of national total GHG emissions without LULUCF in 2016. Although GHG emissions from the IPPU sector showed a downward trend between 1990 and 1996 due to a decrease in PFC emissions, GHG emissions after 1997 showed an upward trend because of the increase in CO_2 and PFC emissions resulting from the expansion and establishment of aluminium production plants in 1997, 1998 and 2006, and because of the increase in HFC emissions that came about as HFCs were used as substitutes for ozone-depleting substances in response to the phasing out of chlorofluorocarbons and hydrochlorofluorocarbons.

23. Between 1990 and 2016, GHG emissions from the agriculture sector decreased by 4.3 per cent (27.06 kt CO_2 eq), owing mainly to a decrease in N_2O emissions from agricultural soils due to a decrease in the amount of inorganic fertilizer applied.

24. The LULUCF sector was a net source of 10,222.05 kt CO_2 eq in Iceland in 2016; net GHG emissions have increased by 128.95 kt CO_2 eq since 1990. The trend was mainly driven by an increase in CO_2 emissions from grassland on drained organic soil resulting from an increase in the area of drained organic soil in wetlands that have been drained for more than 20 years.

25. Between 1990 and 2016, GHG emissions from the waste sector increased by 31.2 per cent (56.44 kt CO_2 eq), owing mainly to an increase in CH_4 emissions from solid

waste disposal sites associated with the increase in the amount of waste treated in anaerobic managed solid waste disposal sites, which have a higher CH_4 emission production potential than unmanaged solid waste disposal sites. However, CH_4 emissions from solid waste disposal sites have been decreasing since 2007 because of (1) an approximate 40 per cent decrease in the amount of waste landfilled in 2016 compared with the 2005 amount, resulting from an increase in recycling and reuse, and (2) an increase in CH_4 recovered in accordance with regulation no. 738/2003 on the landfilling of waste, which requires the collection of landfill gases.

26. Key drivers affecting the increase in CO_2 emissions between 1990 and 2016 are the increase in CO_2 emissions from aluminium production under the IPPU sector by 813.4 per cent (1,132.33 kt CO_2) and the increase in CO_2 emissions from road transportation under the transport sector due to the increase of driving mileage resulting from the increase of the number of vehicles by 73.7 per cent (375.18 kt CO_2). The increase in CH_4 emissions for the same period is mainly caused by the increase in CH_4 emissions from solid waste disposal sites under the waste sector by 35.2 per cent (55.56 kt CO_2 eq). The decrease in N_2O emissions is mainly caused by the decrease in N_2O emissions from chemical industry under the IPPU sector due to the shutdown of the fertilizer production plant in 2001. Key drivers for the increase in F-gases include the use of HFC emissions as substitutes for ozone-depleting substances in response to the phase out of chlorofluorocarbons and hydrochlorofluorocarbons.

27. The summary information provided on GHG emissions in the NC7 was consistent with the information reported in the 2017 annual submission submitted in April 2017 (version 5), but not with the information reported in the common reporting format tables that were resubmitted in August 2017 (version 6).

(b) Assessment of adherence to the reporting guidelines

28. The ERT assessed the information reported in the NC7 of Iceland and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

3. National system for the estimation of anthropogenic emissions by sources and removals by sinks

(a) Technical assessment of the reported information

29. Iceland provided in the NC7 a description of how its national system for the estimation of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol is performing the general and specific functions defined in the annex to decision 19/CMP.1. The description includes all the elements mandated by paragraph 30 of the annex to decision 15/CMP.1. The ERT took note of the review of the changes to the national system reflected in the report on the individual review of the 2017 annual submission of Iceland.

30. During the review, Iceland provided additional information on the national system, including on progress in the development of further regulations relating to institutional arrangements under Act No. 70/2012. In June 2017, a new regulation (no. 520/2017) was adopted that clarifies institutional, legal and procedural arrangements between the Environment Agency of Iceland and various government agencies involved in Iceland's annual GHG inventory compilation process (see para. 29 above).

(b) Assessment of adherence to the reporting guidelines

31. The ERT assessed the information reported in the NC7 of Iceland and recognized that the reporting is complete and transparent. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

4. National registry

(a) Technical assessment of the reported information

32. In the NC7 Iceland did not include information on its national registry. During the review Iceland provided information on how its national registry performs the functions in accordance with the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and complies with the requirements of the technical standards for data exchange between registry systems. The ERT took note of the review of the changes to the national registry reflected in the report on the individual review of the 2017 annual submission of Iceland.

33. The national registry of Iceland has been operating since June 2012, when the EU ETS operations were centralized into a single EU registry operated by the European Commission. The countries included in the EU registry are the 28 EU member States plus Iceland, Liechtenstein and Norway. Responsibility for the administration of the Icelandic national registry lies with the Environment Agency of Iceland.

(b) Assessment of adherence to the reporting guidelines

34. The ERT assessed the information reported in the NC7 of Iceland and identified an issue relating to completeness. The finding is described in table 5.

Table 5
Findings on the national registry from the review of the seventh national communication of Iceland

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 32 Issue type: completeness Assessment: recommendation	Iceland did not report information on its national registry in the NC7. During the review, Iceland explained that information on the national registry was omitted from the NC7 in error. The Party provided the missing information on how its national registry performs the functions in accordance with the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and how it complies with the requirements of the technical standards for data exchange between registry systems. The ERT recommends that Iceland include in its next NC information on the national registry, including references to reports where the relevant information can be found.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the reporting guidelines for supplementary information. The reporting on the requirements not included in this table is considered to be complete and transparent.

B. Information on policies and measures and institutional arrangements

1. Domestic and regional programmes and/or legislative arrangements and procedures related to the Kyoto Protocol

(a) Technical assessment of the reported information

35. For the second commitment period of the Kyoto Protocol, from 2013 to 2020, Iceland committed to reducing its GHG emissions by 20 per cent below the base-year (1990) level. In accordance with Article 4 of the Kyoto Protocol,[3] an agreement was made between Iceland and the EU and its member States concerning Iceland's participation in the joint fulfilment of commitments in the second commitment period of the Kyoto Protocol. This commitment is further elaborated in Iceland's contribution to the achievement of the joint EU economy-wide emission reduction target of 20 per cent below the 1990 level by 2020 under the Doha Amendment to the Kyoto Protocol (see also EU decisions 2015/146 and 2015/1339).[4] Under the agreement, Iceland has the flexibility to include emissions and removals from the LULUCF sector as part of its target, which are calculated using an activity-based approach.

[3] See http://unfccc.int/resource/docs/2012/awglca15/eng/misc01a02.pdf.

[4] Available at https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32015D0146 and http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32015D1339, respectively.

Nevertheless, Iceland's priority is to implement domestic measures even though it also plans to use credits from the Kyoto Protocol's flexible mechanisms to achieve its target.

36. Implementation of the Kyoto Protocol by Iceland is underpinned by the Climate Change Strategy adopted in 2007, the Climate Action Plan endorsed by the Government of Iceland in 2010 and the Special Climate Action Plan 2015, the latter of which aims, inter alia, to strengthen mitigation actions by, for example, financing charging stations for electric cars, designing road maps for reducing emissions from agriculture and fisheries, and increasing funding for afforestation, revegetation and restoration of wetlands. In September 2018, the Icelandic Government announced a new Climate Action Plan for 2018–2030, which comprises 34 measures, including an increase in reforestation and a ban on new registrations of fossil fuel powered cars by 2030. The measures outlined in the plan are intended to boost Iceland's efforts in reducing GHG emissions (see paras. 16 above and 50 below).

37. The overall responsibility for climate change policymaking lies with the Ministry for Environment and Natural Resources and a number of other ministries and national institutions, such as the Ministry of Finance and Economic Affairs, the Ministry of Industries and Innovation, the Ministry of Transport and Local Government and the Icelandic Association of Local Authorities, are involved in the implementation of the policy. The Climate Change Committee, appointed in 2011 and chaired by the Ministry for the Environment and Natural Resources, is composed of representatives of various central government agencies and local authorities, and is responsible for monitoring and evaluating Iceland's progress in meeting its 2020 target. A Climate Council was established in June 2018 with the aim of involving non-governmental organizations in decision-making processes. The Council, consisting of representatives of universities, nature conservation associations, industry associations, the Icelandic Association of Local Authorities, the Farmers Association of Iceland and consumer organizations, has been tasked with delivering in 2019 recommendations on carbon neutrality.

38. Iceland has legislative arrangements and administrative procedures in place to make information publicly accessible. The website of the Icelandic Government contains official information on climate change, including relevant acts, regulations and policies, the latest news, questions and answers, information on the UNFCCC and relevant external links. Furthermore, a hub for ideas and suggestions from the public regarding the newly announced Climate Action Plan for 2018–2030 was launched on the website in 2017 after the Government of Iceland called for proposals from the public regarding the plan.

39. Iceland has national legislative arrangements and administrative procedures in place that seek to ensure that the implementation of activities under Article 3, paragraph 3, forest management under Article 3, paragraph 4, and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contributes to the conservation of biodiversity and the sustainable use of natural resources. Act No. 44/1999 on nature conservation sets general criteria for nature conservation and human interference with nature and provides the main legal basis for the protection of areas, organisms, ecosystems and biodiversity. The Soil Conservation Service of Iceland, which was founded in 1907 to promote sustainable land use and the reclamation and restoration of degraded land, initiated in 2016 a programme aimed at wetland restoration through which landowners receive advice and funding for restoring organic soils in wetlands. Rewetting of drained wetlands provides the potential to reduce CO_2 emissions.

(b) Assessment of adherence to the reporting guidelines

40. The ERT assessed the information reported in the NC7 of Iceland and recognized that the reporting is complete and transparent. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

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

(a) Technical assessment of the reported information

41. Iceland provided information on its package of PaMs implemented, adopted and planned, by sector, in order to fulfil its commitments under the Convention and its Kyoto Protocol. In its NC7, Iceland reported on its policy context and legal and institutional arrangements put in place to implement its commitments and monitor and evaluate the effectiveness of its PaMs.

42. Iceland provided information on a set of PaMs similar to those previously reported, and a brief overview of a set of PaMs under development. During the review, the Party provided an update on the status of the PaMs. Iceland also provided the information that no changes had been made since the previous submission to its institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress made towards its target.

43. At the national level, Iceland has introduced policies to achieve its domestic emission reduction target for sectors not included in the EU ETS (see para. 47 below). In the NC7, the Party states that the main instrument for defining and implementing mitigation PaMs is a succession of climate action plans. The Climate Action Plan 2010 included participation in the EU ETS, a carbon tax, and measures in the transport and LULUCF sectors. The plan was complemented by the Special Climate Action Plan in 2015, which provided additional funding for the period 2016–2018 for selected measures complementary to the 2010 plan, with a focus on the transport and LULUCF sectors.

44. Iceland gave priority to implementing the PaMs that make the most significant contribution to its emission reduction efforts; for example, the EU ETS, which covers approximately 40 per cent of national GHG emissions, and a carbon tax on all fossil fuel use. Iceland provided limited information on how it believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals in accordance with the objective of the Convention. Iceland reported on how it periodically updates its PaMs to reduce greater levels of emissions, using climate action plans. No PaMs have been discontinued since the previous submission.

45. Some PaMs are deferred to the local level. The local authorities have their own sources of revenue and budgets for mitigation actions, and are responsible for reducing GHG emissions in various areas, such as urban planning and land use, industrial waste management, granting licences, and the design and operation of public transport.

46. The two main overarching cross-sectoral policies reported by Iceland are its participation in the EU ETS and individual policies addressing emissions sources not covered by the EU ETS.

47. In operation since 2005, the EU ETS is a cap-and-trade system that covers all significant energy-intensive installations (mainly large point emissions sources such as power plants and industrial facilities) that produce 40–45 per cent of the GHG emissions of the EU. It is expected that the EU ETS will guarantee that the 2020 target (a 21 per cent emission reduction below the 2005 level) will be achieved for sectors under the scheme. The third phase of the EU ETS started in 2013 and the system now includes aircraft operations (since 2012) as well as N_2O emissions from chemical industries, PFC emissions from aluminium production and CO_2 emissions from industrial processes (since 2013). The EU ETS was transposed into Icelandic law in 2011 (Act No. 64/2011), for the participation by the Party in the EU ETS since 1 January 2012. Under this arrangement, relevant emissions sources in Iceland, notably those of industrial processes including aluminium industries, came under the EU ETS.

48. For EU member States, the ESD became operational in 2013 and covers sectors outside the EU ETS, including transport (excluding domestic and international aviation, and international maritime transport), residential and commercial buildings, agriculture and waste, together accounting for 55–60 per cent of the GHG emissions of the EU. The aim of the ESD is to decrease GHG emissions in the EU by 10 per cent below the 2005 level by 2020 through

binding annual emission reduction/limitation targets specific to each member State for 2013–2020. Iceland, whose non-ETS emissions sources account for 60 per cent of its total GHG emissions, is not part of the ESD as such. However, corresponding emissions are subject to a bilateral agreement between Iceland and the EU and its member States that covers all non-ETS sources, including LULUCF. Under this agreement, Iceland has a target to reduce emissions from non-ETS sectors by about 22 per cent below the 2005 level by 2020, which has been translated into an emission reduction of 15,327.22 kt CO_2 eq for the period 2013–2020.

49. Iceland highlighted the mitigation actions that are under development, such as the enhancement of the carbon tax and the Party's participation in the ESD from 2021 to 2030, which is under negotiation. However, the ERT noted that these mitigation actions will have an impact on GHG emissions only from 2019 onward and will thus deliver a limited contribution to Iceland's 2020 emission reduction target.

50. In its NC7, Iceland reported that a new Climate Action Plan 2018 had been agreed by the newly elected Icelandic Government in November 2017 (see para. 36 above). During the review, Iceland updated the ERT on the status of the plan and the key measures included in it. The plan comprises 34 measures that cover all sectors, with a focus on (1) the phase out of imported fossil fuels in transportation and a consequent shift to a carbon-free system running on renewable energy, and (2) an increase in carbon sequestration in land use, to be achieved by afforestation, revegetation and restoration of wetlands. While no additional budget has been provided for the Climate Action Plan 2010, the new plan in 2018 will receive almost ISK 7 billion in the period 2019–2023. The new plan is currently subject to public consultation, and an updated version, taking into account comments and suggestions by civil society, will be published in 2019. Given that the plan is under development, exactly how proposed measures and actions will be implemented and the extent of their impact are as yet unknown. However, given its allocation of ISK 7 billion, the plan is expected to have a significant impact in strengthening the mitigation efforts of Iceland.

51. Table 6 provides a summary of the reported information on the PaMs of Iceland.

Table 6
Summary of information on policies and measures reported by Iceland

Sector	*Key PaMs*	*Estimate of mitigation impact by 2020 (kt CO_2 eq)*	*Estimate of mitigation impact by 2030 (kt CO_2 eq)*
Policy framework and cross-sectoral measures	Climate Action Plan 2010 and Special Climate Action Plan 2015	NE	NE
	Participation in the EU ETS	NE	NE
Energy	Carbon tax	NE	NE
Transport	Implementation plan for clean transport	NE	NE
Renewable energy	National Renewable Energy Action Plan	NE	NE
Energy efficiency	Regulation no. 822/2004 on vehicle design and equipment and regulation no. 855/2012 on tyre labelling to implement EU regulations on the performance of vehicles	NE	NE
IPPU	Carbon tax	NE	NE
	Act No. 61/2013 on chemicals, regulation no. 970/2013 on ozone-depleting substances, and regulation no. 834/2010 to implement EC regulation no. 842/2006	NE	NE
Agriculture	–	NA	NA

Sector	*Key PaMs*	*Estimate of mitigation impact by 2020 (kt CO_2 eq)*	*Estimate of mitigation impact by 2030 (kt CO_2 eq)*
LULUCF	Revegetation activity, including establishing vegetation on eroded or desertified land	NE	NE
	Replacement of existing regulations on revegetation and soil conservation with new bills	NE	NE
	Planning land use under National Planning Strategy 2015–2026	NE	NE
Waste	National Plan on Waste Management for 2013–2024	NE	NE

Note: The estimates of mitigation impact are estimates of emissions of CO_2 or CO_2 eq avoided in a given year as a result of the implementation of mitigation actions.

52. While Iceland did not report the impacts of its PaMs, it provided information on indications that its mitigation actions are having an impact; for example, the significant increase in the sale of plug-in hybrid cars and the rapid build-up of charging stations, in which government support has played a part. Cycling and the use of public transport has also increased. The Party stated in the NC7 that there have been marked decreases in emissions from fisheries and fishmeal production, which are potentially due to actions promoted by industry but are also clearly supported by government action, such as the carbon tax and the promotion of a fisheries system that encourages minimum fishing effort for maximum gain. However, Iceland also stated that its cost-effective mitigation options are limited because energy generation mostly relies on renewable energy already, emissions from the IPPU sector are already covered under the EU ETS and livestock emissions are difficult to control as livestock are mostly free-ranging.

(b) Policies and measures in the energy sector

53. **Energy supply.** The NC7 states that 84 per cent of primary energy use in 2015 came from renewable energy sources – hydro and geothermal. Only 16 per cent came from imported fossil fuels, which were mainly used for transport and by fisheries. During the review, Iceland indicated that an additional power demand of 460 MW to 2050 had been forecasted by the Ministry of Energy and that this demand would be met using only renewable energy sources. Therefore, the ERT notes that supply-side measures are not considered a mainstream option for mitigation in the energy sector of Iceland.

54. **Renewable energy sources.** The NC7 states that in Iceland renewables account for 99 per cent of electricity production and 99 per cent of space heating. Implemented and planned PaMs in the energy sector therefore target a transition from fossil fuel to renewable energy use, for example through the electrification of fishmeal factories and a tax on liquid and gaseous fossil fuels. Resolution no. 18/15626, adopted in May 2017, tackles fossil fuel use by transportation and fishing and aims to increase the share of renewable energy in the transport sector from 6 per cent in 2017 to 10 per cent in 2020 and 40 per cent in 2030. Regarding the fisheries sector, the Party aims to increase the share of renewables from less than 1 per cent in 2017 to 10 per cent in 2030. The regulation on the blending of fossil fuels with renewables in fuel for transport is reported, which is an example of a supply-side measure already implemented.

55. A carbon tax covering emissions from fossil fuels that are not included in the EU ETS was introduced on 1 January 2010 by Act No. 129/2009. The tax is levied on fossil fuels in liquid or gaseous form with respect to their carbon content. The tax is foreseen to be raised gradually in the period 2018–2020 to increase its impact.

56. Iceland reported in its NC7 a domestic target of a 67 per cent share of energy from renewable sources in the gross final energy consumption by 2020. The target was set out in

the National Renewable Energy Action Plan, which was first published in accordance with Article 4 of EU directive 2009/28/EC. The ERT noted that the share of renewable energy sources in Iceland in 2015 was about 70.2 per cent, and thus the 2020 target has already been surpassed by 3.2 per cent. Iceland is striving to further increase its share of renewable energy sources in the future by considering adding future power generation capacity only in the form of renewables.

57. **Energy efficiency.** The Party did not report any significant policies or measures for energy efficiency. The ERT notes that this is due to the Party's high self-sufficiency with renewable energy sources for space heating and domestic use.

58. **Residential and commercial sectors.** The Party did not report any significant policies or measures for the residential and commercial sectors. The ERT notes that this is due to the Party's high self-sufficiency with renewable energy sources for space heating and domestic use.

59. **Transport sector.** In its NC7 and CTF table 3, Iceland reported on several measures to address GHG emissions from the transport sector, including taxes and levies for vehicles comprising changes in excise duty, biannual fees and value added tax. The excise duty on passenger cars has, since 1 January 2011, been based on the registered emissions of CO_2, measured in g/km driven. The Party also reported on tax exemptions for electric and hydrogen-powered vehicles and on a network of charging stations for electric cars. The action plan on energy change (resolution no. 18/156 of May 2017) foresees an increase in the share of renewable energy in the transport sector from 6 per cent in 2017 to 10 per cent in 2020 and 40 per cent in 2030. Act No. 40/2013, as amended, stipulates the use of a minimum percentage of renewable fuel used in land transportation. A minimum of 3.5 per cent, calculated as part of the total energy content of the fuel, has been required since 1 January 2014, and a minimum of 5 per cent since 1 January 2015. Further measures address the promotion of public transport and cycling. The current draft of the Climate Action Plan 2018 foresees a ban on cars using fossil fuel. City planning for denser urban areas and better access by public transport for smart growth has been promoted in Reykjavik and other municipalities with the involvement of local authorities.

60. The NC7 includes information on how Iceland promotes and implements the decisions of ICAO and IMO to limit emissions from aviation and marine bunker fuels. With regard to aviation, the EU ETS covers national flights and partly covers international flights. Iceland, as a member of ICAO, participated in the adoption of a global emission reduction scheme, the Carbon Offsetting and Reduction Scheme for International Aviation. Iceland is among the nations that have confirmed they will voluntarily participate in the scheme when its implementation starts. Preparation is under way and will include adoption and implementation of the proposed Annex 16, Volume IV, of the Chicago Convention on International Civil Aviation through the process under ICAO.

61. Iceland is a member of IMO and has contributed actively in the discussions on and development of the IMO strategy on the reduction of GHG emissions from ships. In November 2017, Iceland ratified Annex VI of the International Convention for the Prevention of Pollution from Ships covering the prevention of air pollution from ships, which took effect in February 2018. The Party will implement the strategy, of which an initial strategy was adopted in 2018, as far as it applies to ships on the Icelandic register of ships. Iceland also welcomes the development of the IMO Energy Efficiency Design Index requirements and will apply them to Icelandic fishing vessels and other vessels to the extent that they fall under the scope of Annex VI of the International Convention for the Prevention of Pollution from Ships, but not to cargo and passenger ships on the Icelandic registry of ships engaged on international voyages.

62. **Industrial sector.** A key measure to address emissions from fossil fuels that are not included in the EU ETS is the carbon tax. A notable example of emission reductions can be seen in the fishmeal industry, which constitutes by far the largest fossil fuel consumption in the industry sector, and which is incentivized by, among other things, the carbon tax to shift to cleaner energy sources. Oil boilers used in the industry have gradually been replaced with electric boilers resulting in less oil consumption (see paras. 12 and 21 above).

(c) Policies and measures in other sectors

63. **Industrial processes.** The most significant emissions sources in the IPPU sector that are covered under the EU ETS are aluminium and ferroalloys production. In Iceland, the EU ETS covers installations including three aluminium plants, a ferrosilicon plant and a fishmeal factory. These installations are responsible for about 40 per cent of Iceland's GHG emissions. Four installations (three fishmeal factories and a mineral wool producer) were excluded from the EU ETS because they have annual emissions below 25 kt CO_2 eq; however, they pay a fixed price per t CO_2 eq that is based on the annual average price per t CO_2 eq under the EU ETS.

64. Ozone-depleting substances are addressed through the implementation of EU legislation. Regulation 842/2006/EC regulating certain F-gases has been in force since 2010 through Iceland's Act No. 61/2013 on chemicals and regulation no. 970/2013 on ozone-depleting substances. Regulation 517/2014/EC, the new F-gas regulation, is expected to enter into force in 2019, and the current draft of the Climate Action Plan 2018 of Iceland correspondingly foresees a ban of HFC use from 2030 onward.

65. **Agriculture.** During the review, Iceland explained to the ERT that the sector has limited emission reduction potential because agricultural activity is limited due to the country's geography and climate, and agricultural activities mainly focus on livestock rearing and the cultivation of grass fields for producing winter feed for livestock. Emissions related to agricultural soils are thus limited. Livestock emissions are relevant but cannot easily be controlled as the majority of livestock (sheep) are free-ranging. Thus, mitigation actions focus on reducing fertilizer use.

66. **LULUCF.** The Climate Action Plan 2010 listed carbon sequestration by afforestation and revegetation as one of its key measures. Iceland is thus implementing projects for enhancing forests as carbon sinks and adapting forestry to climate change, including regional afforestation projects and the Mount Hekla afforestation project. Since 2016, the Soil Conservation Service of Iceland has run a programme on wetland restoration. The current draft of the Climate Action Plan 2018 foresees further afforestation, reforestation and rewetting activities.

67. **Waste management.** The total amount of solid waste generated in Iceland has significantly increased: from 400 kt in 1995 to more than 1,000 kt in 2016. During the review, Iceland explained to the ERT that this increase is partly linked to the large increase in tourism since 2013. The Party has transposed the acquis on waste covered by the EU directives targeting the reduction, reuse and recovery of waste. Regulation no. 737/2003 on waste management prescribes that municipalities must, in their regional waste management plans, describe what measures they will take to reduce biowaste destined for landfills. By 2020, biowaste going to landfills must be reduced to 35 per cent of the total amount of biowaste produced in 1995. Regulation no. 738/2003 requires the collection of landfill gases to be further outlined in operating permits. Landfill gas is now collected at two of Iceland's largest landfills, and the CH_4 collected is used for powering vehicles in the areas in which the landfills are located. In 2013, the Ministry for the Environment and Natural Resources published the National Plan on Waste Management for 2013–2024, and in 2016, established a waste prevention programme. The introduction of a landfill tax is currently being discussed with a view to implementing it in 2020. The current draft of the Climate Action Plan 2018 foresees a ban on landfilling organic waste from 2030.

(d) Minimization of adverse impacts in accordance with Article 2 and Article 3, paragraph 14, of the Kyoto Protocol

68. In the NC7 Iceland reported information on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts on other Parties, especially developing country Parties. Iceland stated in its NC7 that its efforts to reduce emissions and increase carbon sequestration can be expected to contribute to limiting the adverse effects of climate change in other countries because these effects can be reduced by limiting global warming through reductions in GHG

emissions. Iceland has focused on supporting developing countries through projects aimed at strengthening infrastructure to increase resilience to climate change.

69. Further information on how Iceland strives to implement its commitments under Article 3, paragraph 14, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties was reported in the 2018 annual submission. Iceland reported examples such as supporting developing countries in the area of the sustainable use of natural resources through the UNU Geothermal Training Programme; and cooperating with researchers from France and the United States of America on carbon dioxide capture and storage (CarbFix project led by Reykjavik Energy). Regarding the latter measure, an experimental project is under way at the Hellisheiði geothermal power station that injects CO_2 captured in geothermal steam back into underground basaltic rock.

(e) Assessment of adherence to the reporting guidelines

70. The ERT assessed the information reported in the NC7 of Iceland and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 7.

Table 7
Findings on policies and measures, including those in accordance with Article 2 of the Kyoto Protocol, from the review of the seventh national communication of Iceland

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 23 Issue type: completeness Assessment: encouragement	Iceland reported quantitative estimates of the impacts for some individual PaMs in the NC6, but not for any PaMs in the NC7. The explanation provided in the NC7 is that an economic analysis to evaluate the impact of mitigation actions on Iceland's emissions in a quantitative manner compared with a 'business as usual' scenario would not be cost-effective, considering the small volume of emissions. The overall emissions are small, and the Party considers that its PaMs should have a positive effect given that comparable actions are taken in neighbouring countries. During the review, Iceland further explained that the estimations of impacts reported in the NC6 were considered to be of insufficient quality and were thus not reported in the NC7. Work on new projections, including estimations of impacts for key PaMs, is under way. The ERT encourages Iceland to report in its next NC mitigation impacts for individual PaMs or to clearly explain why this may not be possible due to its national circumstances.
2	Reporting requirement specified in paragraph 24 Issue type: transparency Assessment: encouragement	Iceland did not report the costs of its PaMs in the NC7, although an explanation for not reporting them, in view of the cost-effectiveness for actions that address a small volume of emissions (see issue 1 above) is provided. The lack of reporting on costs was raised in the previous review report. During the review, Iceland explained that the budget allocations for PaMs are currently under discussion. The ERT reiterates the encouragement made in the previous review report for Iceland to report in its next NC the costs of existing and new PaMs.

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
3	Reporting requirement specified in paragraph 25	Iceland provides limited information in the NC7 to explain how it believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals consistent with the objective of the Convention.
	Issue type: transparency	In the NC7, the Party indicated that there are clear signals that mitigation actions have had an impact, and it is hoped mitigation actions will help this development. However, the Party did not provide more information for specific PaMs mentioned in the NC7.
	Assessment: recommendation	During the review, in response to a question raised by the ERT, Iceland explained that new projections are currently being prepared and these will give improved insights into how existing and planned PaMs are believed to modify longer-term trends.
		The ERT recommends that Iceland improve the transparency of its reporting by including in its next NC additional information on how it believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals consistent with the objective of the Convention.

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

C. Projections and the total effect of policies and measures, including information on supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol

1. Projections overview, methodology and results

(a) Technical assessment of the reported information

71. Iceland reported updated projections for 2020 and 2030 relative to actual inventory data for 2015 under the WEM scenario. The WEM scenario, which is referred to as the "base case scenario" in Iceland's NC7, is based on the 2016 GHG inventory submission and includes implemented PaMs up to 2016.

72. In addition to the WEM (base case) scenario, Iceland reported the "case 2 (medium case) scenario" in its NC7, but not in the CTF tables. During the review, in response to a question raised by the ERT, the Party clarified the difference between the WEM ("base case scenario") and "case 2 (medium case) scenario": the PaMs included in both scenarios are the same, but in the "case 2 (medium case) scenario", future emissions from two planned silicon factories are included. The WAM and WOM scenarios as defined in accordance with the UNFCCC reporting guidelines on NCs are not included in the NC7.

73. The projections are presented on a sectoral basis, using the same sectoral categories as those used in the reporting on mitigation actions for 1990–2030. The projections on a sectoral basis are also provided in an aggregated format for each sector as well as for a Party total using GWP values from the AR4. However, Iceland did not provide projections on a gas-by-gas basis for CO_2, CH_4, N_2O, PFCs, HFCs and SF_6 (treating PFCs and HFCs collectively in each case), or for NF_3 for any period.

74. Iceland did not report emission projections for indirect GHGs such as carbon monoxide, nitrogen oxides, non-methane volatile organic compounds or sulfur oxides.

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

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

76. The methodology used for the preparation of the projections is different from that used for the preparation of the emission projections for the NC6, as well as for the BR2. Iceland reported in the NC7 the assumptions such as possible mitigation potentials and options by sector, and the study that provide background information; however, the Party did not report supporting information further explaining what specific methodologies, models and

approaches were used in the preparation of the projection scenarios in the NC7. In addition, the changes made since NC6 or since the BR2 were not explained in the NC7. During the review, in response to a question raised by the ERT, the Party provided the ERT with the required information. The projections for all sectors were revised on the basis of a study of the mitigation potential and options of Iceland published by the Economic Institute of the University of Iceland and commissioned by the Ministry for the Environment and Natural Resources.[5] The key assumptions, including future economic growth, population and electricity demand, were updated when revising the projections. Furthermore, the GWP values used for the projections were changed from the GWP values from the AR2 used in the BR2 to those from the AR4; therefore, GWP values used for the projections, the GHG emissions reported and the quantified economy-wide emission reduction target were consistent.

77. To prepare its projections, Iceland relied on the following key underlying assumptions: GDP growth rate, population, electricity production by generation type, aluminium and ferrosilicon production and the amount of solid waste generation. These variables and assumptions were partially reported in CTF table 5. The assumptions were updated on the basis of the most recent economic developments known at the time of the preparation of the projections and were largely based on official sources such as national plans (e.g. National Energy Authority 2016 fuel forecast[6] and National Energy Authority 2016 electricity forecast[7]) and data provided by line ministries. During the review, Iceland provided additional key underlying assumptions, including livestock population by animal type, the amount of solid waste by treatment type, oil consumption and number of vehicles; these parameters, used in the BR2, had been updated to reflect the latest situation.

78. The tourism industry in Iceland has rapidly increased in recent years. The total number of foreign visitors increased from about 0.3 million in 2000 to 1.8 million in 2016. This increasing trend has a potential impact on GHG emissions from, for example, road transport and the waste sector (see paras. 14 and 67 above). The expected increase in the number of foreign tourists, which had not been incorporated in the projections for the NC6 or in the projections for the BR2, was taken into account in the projections reported in the NC7. During the review, Iceland provided assumptions for growth in the number of tourists is 2.5 per cent above GDP growth for the short term, 1.2 per cent above GDP growth in 2025 and 0.5 per cent above GDP growth in 2050 (based on expert assessment).

79. Iceland did not report any information on sensitivity analyses of the projections in the NC7. During the review, the Party confirmed that sensitivity analyses were not conducted for any assumptions or factors.

(c) Results of projections

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

Table 8
Summary of greenhouse gas emission projections for Iceland

	GHG emissions (kt CO_2 eq per year)	*Changes in relation to base-year[a] level (%)*	*Changes in relation to 1990 level (%)*
Kyoto Protocol base year[b]	3 633.56	NA	NA
Quantified emission limitation or reduction commitment under the Kyoto Protocol (2013–2020)[c]	Not available yet	NA	NA

[5] See http://www.ioes.hi.is/sites/hhi.hi.is/files/sjz/skyrsla_til_umhverfisraduneytis_lokadrog_10_feb_2017_logud3_jan_2018.pdf (in Icelandic).
[6] Available at https://orkustofnun.is/gogn/Skyrslur/OS-2016/OS-2016-02.pdf.
[7] Available at https://orkustofnun.is/gogn/Skyrslur/OS-2016/OS-2016-08.pdf.

	GHG emissions (kt CO_2 eq per year)	*Changes in relation to base-year[a] level (%)*	*Changes in relation to 1990 level (%)*
Quantified economy-wide emission reduction target under the Convention[d]	Not available yet	NA	NA
Inventory data 1990[e]	3 542.75	–2.5	NA
Inventory data 2015[e]	4 538.97	24.9	28.1
WEM projections for 2020[f]	5 769.91	58.8	62.9
WEM projections for 2030[f]	5 589.67	53.88	57.8

[a] "Base year" in this column refers to the base year used for the target under the Kyoto Protocol, while for the target under the Convention it refers to the base year used for that target.

[b] The Kyoto Protocol base-year level of emissions is provided in the initial review report, contained in document FCCC/IRR/2016/ISL.

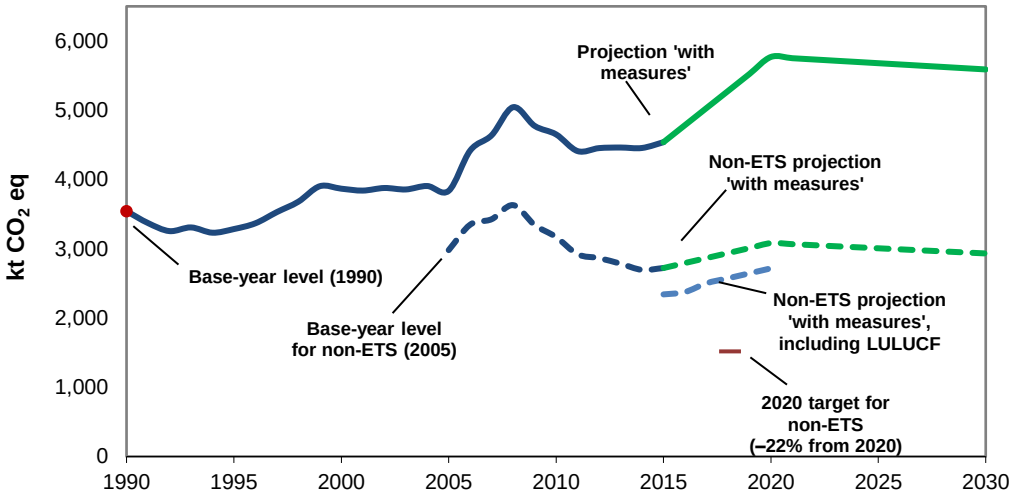
[c] The Kyoto Protocol target for the second commitment period (2013–2020) is a joint target of the EU and its 28 member States and Iceland. The target is to reduce emissions by 20 per cent compared with the base-year (1990) level by 2020. The target for non-ETS sectors is 22 per cent for Iceland.

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

[e] From Iceland's BR3 CTF table 6(a).

[f] From Iceland's NC7 and/or BR3.

Greenhouse gas emission projections reported by Iceland



Sources: (1) data for the years 1990–2015: Iceland's 2017 annual inventory submission, version 5; total GHG emissions excluding LULUCF; (2) data for the years 2016–2030: Iceland's NC7 and BR3; total GHG emissions excluding LULUCF.

81. Iceland's total GHG emissions excluding LULUCF are projected to be 5,769.91 and 5,589.67 kt CO_2 eq in 2020 and 2030, respectively, under the WEM scenario, which is an increase of 62.9 and 57.8 per cent, respectively, above the 1990 level. The 2020 projections suggest that Iceland should strive to contribute to the achievement of the joint EU economy-wide emission reduction target under the Convention (see para. 52 above).

82. Iceland's target for non-ETS sectors including LULUCF is to reduce its total emissions by 22 per cent below the 2005 level by 2020 (see para. 48 above). According to the projections under the WEM scenario, emissions from non-ETS sectors including LULUCF are estimated to reach 2,717.00 kt CO_2 eq by 2020, which is 8.8 per cent below the 2005 level. The ERT noted that this suggests that Iceland may face challenges in meeting its target under the WEM scenario.

83. Iceland presented the WEM scenario by sector for 2020 and 2030, as summarized in table 9.

Table 9
Summary of greenhouse gas emission projections for Iceland presented by sector

	GHG emissions and removals (kt CO_2 eq)			*Change (%)*	
		2020	*2030*	*1990–2020*	*1990–2030*
Sector	*1990*	*WEM*	*WEM*	*WEM*	*WEM*
Energy (not including transport)	1 160.01	955.64	1 047.61	–17.6	–9.7
Transport	617.06	954.32	686.36	54.7	11.2
Industry/industrial processes	954.20	2 819.92	2 827.70	195.4	196.3
Agriculture	646.47	768.52	835.16	18.9	29.2
LULUCF	10 133.65	10 274.30	10 274.30	1.4	1.4
Waste	165.01	272.52	192.83	65.2	16.9
Other (specify)	–	–	–	–	–
Total GHG emissions without LULUCF	**3 542.75**	**5 769.91**	**5 589.67**	**62.9**	**57.8**

Source: Iceland's BR3 CTF table 6.

84. According to the projections reported for 2020 under the WEM scenario, the most significant emission increase is expected to occur in the industry/industrial processes sector, amounting to a projected increase of 1,864.7 kt CO_2 eq (195.4 per cent) between 1990 and 2020. The most significant emission reduction is expected to occur in the energy sector (excluding transport), amounting to a projected reduction of 204.4 kt CO_2 eq (17.6 per cent) between 1990 and 2020. The pattern of projected emissions reported for 2030 under the same scenario is significantly different since emissions are expected to turn downward after peaking around 2020. The most significant emission increase is expected to occur in the industry/industrial processes sector, amounting to a projected increase of 1,873.5 kt CO_2 eq (196.3 per cent) between 1990 and 2030. The most significant emission reduction is expected to occur in the energy sector (excluding transport), amounting to a projected reduction of 112.4 kt CO_2 eq (9.7 per cent) between 1990 and 2030.

85. The patterns of projected emissions from the transport and waste sectors under the WEM scenario are different in 2020 and 2030. The emissions from both sectors in 2020 are projected to increase compared with the 2015 level while in 2030 they are projected to decrease compared with the 2015 level. This is due to the assumptions that, in the transport sector, the emission reduction effects of electric and other low-emission cars will be clear after 2020, and in the waste sector, the amount of waste landfilled will decrease linearly to 15 per cent of total waste in 2030.

86. The main reason for the emission increase in the industry/industrial processes sector in 2020 is the increase in silicon production. The construction of two plants is currently under way, and two more are planned to be built by 2030, although Iceland reported that the expected emissions from the latter two were not included in the projections under the WEM scenario. The ERT noted that, although there was no silicon production in Iceland in 2015, the projected emissions from silicon production are 913 kt CO_2 in 2030, accounting for approximately 16 per cent of projected total GHG emissions without LULUCF for that year; that is, silicon production will have a significant impact on total GHG emissions in 2020 and 2030.

87. The ERT noted that in CTF table 6(a) projected emissions from the LULUCF sector in 2020 and 2030 were reported to be the same as emissions in 2015: 10,274.30 kt CO_2. During the review, Iceland explained that there were no projections available for the LULUCF sector at the time of the preparation of the NC7 and therefore the value for 2015 was reported for 2020 and 2030.

88. Iceland did not present the WEM scenario by gas for 2020 and 2030. During the review, the Party explained that the study used for the projections treated GHG emissions on a sectoral basis, not by gas.

89. In the NC7, Iceland reported that it has started developing new projections in accordance with EU regulation 525/2013. To be completed in 2019, the new projections for the WEM scenario will take into account the policies included in the Climate Action Plan developed in 2018 (see para. 50 above) and will cover all IPCC sectors and the years 2020, 2025, 2030 and 2035. The new projections will include GHG emissions with and without the LULUCF sector as well as provide separate values for the EU ETS and non-ETS sectors. During the review, the Party informed the ERT that the outcome of the preparatory work for the new projections would be included in the next NC.

90. During the review, in response to a question raised by the ERT, Iceland provided the projected contribution from the LULUCF sector, based on an activity-based approach, that will be used to achieve the Party's quantified economy-wide emission reduction target for 2020, which is 2,914 kt CO_2 eq. This value is the cumulative total between 2013 and 2020; the future values between 2017 and 2020 are estimated using the 2013–2016 average. Iceland also provided separate projections for the EU ETS and non-ETS sectors for 2020 and 2030, which facilitate the assessment of whether the Party is on track to achieving its target.

(d) Assessment of adherence to the reporting guidelines

91. The ERT assessed the information reported in the NC7 of Iceland and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 10.

Table 10
Findings on greenhouse gas emission projections reported in the seventh national communication of Iceland

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 28 Issue type: completeness Assessment: encouragement	Iceland did not report a WAM or a WOM scenario in its NC7. During the review, Iceland explained that the WAM and WOM scenarios would be developed as part of the ongoing work on the preparation of new projections, if possible. The ERT encourages Iceland to include in its next NC the WAM and WOM scenarios.
2	Reporting requirement specified in paragraph 30 Issue type: completeness Assessment: encouragement	Iceland did not report a sensitivity analysis of its projections in its NC7. During the review, Iceland explained that a sensitivity analysis was not conducted owing to the limited resources available. The ERT encourages Iceland to include in its next NC the results of a sensitivity analysis of its projections, reporting them in a qualitative and, where possible, quantitative manner.
3	Reporting requirement specified in paragraph 35 Issue type: completeness	Iceland did not report projections on a gas-by-gas basis in its NC7. During the review, Iceland explained that the study used for the projections treated GHG emissions on a sectoral basis, not by gas.

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
	Assessment: recommendation	The ERT recommends that Iceland provide in its next NC projections on a gas-by-gas basis.
4	Reporting requirement specified in paragraph 35	Iceland did not report in its NC7 emission projections for indirect GHGs such as carbon monoxide, nitrogen oxides, non-methane volatile organic compounds and sulfur oxides.
	Issue type: completeness	During the review, Iceland explained that projections for indirect GHGs were not prepared owing to the limited resources available.
	Assessment: encouragement	The ERT encourages Iceland to include in its next NC projections for indirect GHGs such as carbon monoxide, nitrogen oxides, non-methane volatile organic compounds and sulfur oxides.
5	Reporting requirement specified in paragraph 36	Iceland did not report projections related to fuel sold to ships and aircraft engaged in international transport in its NC7.
	Issue type: completeness	During the review, Iceland explained that projections related to fuel sold to ships and aircraft engaged in international transport were not prepared although energy use related to both aviation and navigation had been updated and could be converted to GHG emissions.
	Assessment: recommendation	The ERT recommends that Iceland include in its next NC projections related to fuel sold to ships and aircraft engaged in international transport, to the extent possible.
6	Reporting requirement specified in paragraph 38	Iceland did not present diagrams illustrating unadjusted inventory data and a WEM projection of total GHG emissions for the period 1990–2020 in its NC7. The ERT also noted that no equivalent information to compare unadjusted inventory data and a WEM projection is provided in the NC7.
	Issue type: completeness	The ERT encourages Iceland to include in its next NC diagrams illustrating unadjusted inventory data and a WEM projection of total GHG emissions for the period 1990–2020.
	Assessment: encouragement	
7	Reporting requirement specified in paragraph 43	Iceland did not provide in its NC7 information on the type of model or approach used and its characteristics, a summary of the strengths and weaknesses of the model or approach used, and how the model or approach used accounts for any overlap or synergies that may exist among different PaMs.
	Issue type: completeness	During the review, the Party explained that the projections for all sectors were on the basis of a study of the mitigation potential and options of Iceland published by the Economic Institute of the University of Iceland and commissioned by the Ministry for the Environment and Natural Resources (see para. 76 above). Iceland explained that, recognizing that the approach used to develop projections for the NC7 and their characteristics did not fully meet the requirements of the UNFCCC reporting guidelines for NCs, the work on the preparation of new projections is ongoing.
	Assessment: encouragement	The ERT encourages Iceland to include in its next NC a description on the model or approach used and its characteristics, a summary of the strengths and weaknesses of the model or approach used, and how the model or approach used accounts or does not account for any overlap or synergies that may exist among different PaMs.
8	Reporting requirement specified in paragraph 44	Iceland did not report in its NC7 the reference for the description of its model or approach used for the projection and its characteristics, summary of the strengths and weaknesses of the model or approach used, and how the model or approach used accounts for any overlap or synergies that may exist among different PaMs in relation to paragraph 43 of the UNFCCC reporting guidelines on NCs.
	Issue type: completeness	The ERT encourages Iceland to include in its next NC the reference for the description on the type of model or approach used in relation to paragraph 43 of the UNFCCC reporting guidelines on NCs.
	Assessment: encouragement	
9	Reporting requirement specified in paragraph 45	Iceland did not report in its NC7 information on the main differences in the assumptions, methods employed and results between projections in the NC7 and those in earlier NCs.

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
	Issue type: completeness Assessment: encouragement	During the review, Iceland explained that the projections for all sectors reported in the NC7 were revised on the basis of a study of the mitigation potential and options conducted by assignment of the Ministry for the Environment and Natural Resources; and updated key assumptions, including future economic growth, population electricity demand. The Party also explained that the GWP values used for the projections were from the AR4 rather than the AR2. The ERT encourages Iceland to include in its next NC information on the main differences in the assumptions, methods employed and results between projections in the current NC and those in earlier NCs.
10	Reporting requirement specified in paragraph 46 Issue type: completeness Assessment: encouragement	Iceland did not report qualitative or quantitative information related to the sensitivity of projections to underlying assumptions. During the review, Iceland explained that a sensitivity analysis was not conducted owing to the limited resources available. The ERT encourages the Party to provide in its next NC qualitative and quantitative information related to the sensitivity of projections to underlying assumptions.

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

2. Assessment of the total effect of policies and measures

(a) Technical assessment of the reported information

92. In the NC7 Iceland presented neither the estimated nor the expected total effect of implemented and adopted PaMs, in accordance with the WEM scenario, compared with a situation without such PaMs.

(b) Assessment of adherence to the reporting guidelines

93. The ERT assessed the information reported in the NC7 of Iceland and identified issues relating to completeness and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 11.

Table 11
Findings on the assessment of the total effect of policies and measures from the review of the seventh national communication of Iceland

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 39 Issue type: completeness Assessment: recommendation	Iceland did not provide the estimated and expected total effect of implemented and adopted PaMs in its NC7. In section 4.2 of the NC7 on PaMs, the Party stated that an economic analysis had not been made to evaluate the impact of mitigation actions on Iceland's emissions in a quantitative manner, compared with a 'business as usual' scenario, because the overall emissions are small and a detailed economic analysis would not be cost-effective. During the review, Iceland further explained that the estimation of effects for key PaMs is currently being conducted in its work on new projections. The ERT recommends that Iceland include in its next NC the expected total effect of implemented and adopted PaMs.
2	Reporting requirement specified in paragraph 39 Issue type: completeness	Iceland did not provide the estimated and expected total effect of planned PaMs in its NC7. In section 4.2 of the NC7 on PaMs, the Party stated that an economic analysis had not been made to evaluate the impact of mitigation actions on Iceland's emissions in a quantitative manner, compared with a 'business as usual' scenario, because the

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
	Assessment: encouragement	overall emissions are small and a detailed economic analysis would not be cost-effective. During the review, Iceland further explained that the estimation of effects for key PaMs is currently being conducted in its work on new projections. The ERT encourages Iceland to include in its next NC the expected total effect of planned PaMs.
3	Reporting requirement specified in paragraph 40 Issue type: completeness Assessment: recommendation	Iceland did not provide an estimate of the total effect of its PaMs, in accordance with the WEM definition, compared with a situation without such PaMs in its NC7. In section 4.2 of the NC7 on PaMs, the Party stated that an economic analysis had not been made to evaluate the impact of mitigation actions on Iceland's emissions in a quantitative manner, compared with a 'business as usual' scenario, because the overall emissions are small and a detailed economic analysis would not be cost-effective. During the review, Iceland further explained that the estimation of effects for key PaMs is currently being conducted in its work on new projections. The ERT recommends that Iceland include in its next NC an estimate of the total effect of its PaMs, in accordance with the WEM definition, compared with a situation without such PaMs, presented in terms of GHG emissions avoided or sequestered, by gas (on a CO_2 eq basis), in 1995 and 2000, and also for 2005, 2010, 2015, 2020 and subsequent years of projections reported (not cumulative savings).

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

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

(a) Technical assessment of the reported information

94. In the NC7 Iceland did not provide information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action. In the NC7 Iceland explained that it retains the option of using market-based mechanisms to acquire carbon credits during the second commitment period in line with the rules of relevant EU climate legislation applicable to Iceland.[8] During the review, the Party further explained that it is unlikely it will reach its target with domestic measures alone; therefore, it plans to use the market-based mechanisms to meet its Kyoto Protocol target, and it foresees making a budgetary decision and commencing the necessary preparations for the purchase of units in 2019.

95. During the review, Iceland informed the ERT that its Kyoto Protocol target (assigned amount units for the second commitment period) is 15,327.22 kt CO_2 eq. According to preliminary estimates, which are based on actual 2013–2016 GHG emission data and take into account that GHG emissions for the period 2017–2020 were estimated on the basis of average 2013–2016 emission data, the total emissions for the period 2013–2020 are 23,150 kt CO_2 eq. Iceland is planning to use 2,914 kt CO_2 of removal units to meet its Kyoto Protocol target. The Party indicated during the review that its expected use of the mechanisms under the Kyoto Protocol equates to 4,908 kt CO_2 eq.

(b) Assessment of adherence to the reporting guidelines

96. The ERT assessed the information reported in the NC7 of Iceland and identified an issue relating to completeness. The finding is described in table 12.

[8] Council decision (EU) 2015/1339 of 13 July 2015, available at http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32015D1339, and Council decision (EU) 2015/1340 of 13 July 2015, available at http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32015D1340.

Table 12
Findings on supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol from the review of the seventh national communication of Iceland

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 33	Iceland reported in its NC7 that it retains the option of using market-based mechanisms in the second commitment period of the Kyoto Protocol; however, it did not provide information on how its potential use of mechanisms is supplemental to domestic action in meeting its Kyoto Protocol target.
	Issue type: completeness	During the review, Iceland provided information on its potential use of Kyoto Protocol flexible mechanisms (see para. 95 above).
	Assessment: recommendation	The ERT recommends that Iceland report in its next NC on how its use of the mechanisms is supplemental to domestic action, and how its domestic action constitutes a significant element of the effort made to meet its emission reduction commitments.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the reporting guidelines for supplementary information. The reporting on the requirements not included in this table is considered to be complete and transparent.

D. Provision of financial and technological support to developing country Parties, including information under Articles 10 and 11 of the Kyoto Protocol

1. Financial resources, including under Article 11 of the Kyoto Protocol

(a) Technical assessment of the reported information

97. Iceland reported information on the provision of financial support required under the Convention and its Kyoto Protocol, including on financial support provided, committed and pledged, allocation channels and annual contributions.

98. Iceland indicated what "new and additional" financial resources it has provided and the information on how it has determined such resources as being "new and additional".

99. Iceland described how its resources address the adaptation and mitigation needs of non-Annex I Parties. Iceland channels most of its multilateral environmental contributions through funds and projects that provide support to climate change adaptation and mitigation in the least developed countries, gender mainstreaming, capacity-building through UNU programmes based in Iceland, in addition to active participation in the work of international organizations on renewable energy and fisheries. Of high importance to Iceland is the increased focus on energy and fisheries by the World Bank where Iceland supports projects such as the Global Program on Fisheries (PROFISH) and the Energy Sector Management Assistance Program. Iceland did not describe how those resources assist non-Annex I Parties to mitigate and adapt to the adverse effects of climate change, facilitate economic and social response measures, and contribute to technology development and transfer and capacity-building related to mitigation and adaptation.

100. With regard to the most recent financial contributions aimed at enhancing the implementation of the Convention by developing countries, the Party stated in its NC7 that its international development cooperation strategy emphasizes the least developed countries. Iceland reported information on the assistance that it has provided to developing country Parties that are particularly vulnerable to the adverse effects of climate change to help them to meet the costs of adaptation to those adverse effects. The priority region is sub-Saharan Africa, specifically Malawi, Mozambique and Uganda, with which Iceland has bilateral agreements on development cooperation. The sustainable use of natural resources is a key element in Iceland's development efforts; developing countries benefit from Icelandic expertise and experience in renewable energy and sustainable fisheries.

Table 13
Summary of information on provision of financial support by Iceland in 2013–2016
(Millions of United States dollars)

Allocation channel of public financial support	*Year of disbursement*			
	2013	*2014*	*2015*	*2016*
Official development assistance	34.91	37.34	39.86	58.72
Climate-specific contributions through multilateral channels, including:				
Global Environment Facility	–	–	–	–
Least Developed Countries Fund	0.266	0.900	0.148	0.093
Special Climate Change Fund	–	–	–	–
Adaptation Fund	–	–	–	–
Green Climate Fund	–	–	0.149	0.191
Trust Fund for Supplementary Activities	0.066	0.100	0.091	0.129
Financial institutions, including regional development banks	–	–	–	0
United Nations bodies	–	0.399	0.017	0.019
Other	0.471	0.581	0.235	–
Climate-specific contributions through bilateral, regional and other channels				
Other	–	–	0.235	0

Sources: (1) Query Wizard for International Development Statistics, available at http://stats.oecd.org/qwids/; (2) BR3 CTF tables.

101. Iceland in its NC7 indicated that there is no internationally agreed definition of what constitutes "new and additional" financial resources under Article 4, paragraph 3, of the Convention. One definition, supported by a number of countries, is that "new and additional" financial resources for climate-related activities should be additional to the international development aid goal of 0.7 per cent of gross national income. Iceland further indicated that utilizing this definition and bearing in mind that Iceland's official development assistance reached its peak of 0.37 per cent in 2008, it would not be in a position to identify any new and additional financial resources for climate-related activities. Hence, as was also done in previous years, Iceland decided to look at the increasing official development assistance volumes in 2016 (an increase of ISK 2087 million from 2012 to 2016). The new and additional funding was therefore drawn from the growing aid programme and has not diverted funds from existing development priorities or programmes. During the review, the Party further confirmed that it has increased the amount of official development assistance in nominal terms in ISK from 2013 to 2016, and it considers that this indicates its resources of financial support in climate-related activities are "new and additional". The Party suggested that this approach could be considered as Iceland's national definition of "new and additional" financial resources.

(b) Assessment of adherence to the reporting guidelines

102. The ERT assessed the information reported in the NC7 of Iceland and identified issues relating to completeness and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 14.

Table 14
Findings on financial resources, including under Article 11 of the Kyoto Protocol, from the review of the seventh national communication of Iceland

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 51	Iceland did not use table 3 of the UNFCCC reporting guidelines on NCs to report its financial contributions to the Global Environment Facility but it indicated in the textual part of the report that the Party is not a member of the organization and has therefore not made any financial contributions to it.
	Issue type: completeness	During the review, Iceland explained that this was an omission and that this table would be used in the next submission.
	Assessment: recommendation	The ERT recommends that Iceland report in its next NC on financial contributions to the Global Environment Facility using table 3 of the UNFCCC reporting guidelines on NCs.
2	Reporting requirement specified in paragraph 53	Iceland did not use tables 4 and 5 of the UNFCCC reporting guidelines on NCs to report its climate-specific financial contributions. Iceland did not report in the NC7 relevant information to explain through which allocation channels (bilateral, regional and other multilateral institutions) it made public financial contributions. The Party reported the relevant information in CTF tables 7, 7(a) and 7(b) for 2015 and 2016. However, the information for 2013 and 2014 is missing.
	Issue type: transparency	During the review, the Party explained that the financial contributions reported in the BR2 for 2013 and 2014 are still relevant. By error, this information was not included in NC7.
	Assessment: encouragement	The ERT encourages Iceland to report in its next NC its financial contributions by allocation channel using tables 4 and 5 of the UNFCCC reporting guidelines on NCs.

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

2. Technology development and transfer, including information under Article 10 of the Kyoto Protocol

(a) Technical assessment of the reported information

103. Iceland provided information on steps, measures and activities related to technology transfer, access and deployment benefiting developing countries, including information on activities undertaken by the public and private sectors. Iceland provided examples of support provided for the deployment and enhancement of the endogenous capacities and technologies of non-Annex I Parties.

104. The ERT noted that Iceland reported on its PaMs as well as success stories in relation to technology transfer, and in particular on measures taken to promote, facilitate and finance the transfer and deployment of climate-friendly technologies, but not failure stories. An example of success story provided in the NC7 is a UNU project to introduce new fish processing method to the local communities in several African countries. The Party invites UNU fellows from those countries to the project to introduce a new type of solar dryer/smoker to improve the efficiency in the production and reduce the use of fuelwood in those countries.

105. Iceland provided information on steps taken to promote, facilitate and finance the transfer of technology to developing countries and to build their capacity in order to facilitate implementation of Article 10 of the Kyoto Protocol. Iceland's support for technology transfer in relation to the implementation of the Convention includes a broad spectrum of activities comprising transfer of both hard and soft technologies. The extent of this technology transfer is significant and cannot be clearly separated from other activities under the Party's international development cooperation, including financial flows. Many development projects funded by Iceland, such as those for water, sanitation and hygiene and fisheries training include both technology transfer and capacity-building components. Recognizing

that climate change disproportionally affects developing countries and aligning with Iceland's emphasis on the least developed countries in its international development cooperation strategy, the Government of Iceland focuses its technology transfer and capacity-building in low-income countries.

106. In terms of Iceland's measures related to the promotion, facilitation and financing of the transfer of, or access to, environmentally sound technologies, there is a focus on renewable energy. The sustainable use of natural resources is a priority area in Iceland's international development cooperation, where Icelandic technical expertise, extensive knowledge and experience in the use of geothermal energy contributes to the Sustainable Development Goals.

107. The ERT noted that the NC7 does not include information on the development of cost-effective national and, where appropriate, regional programmes for improving the quality of local emission factors, activity data and/or models for the preparation and periodic updating of national inventories of GHGs in accordance with Article 10, paragraph (a), of the Kyoto Protocol. During the review, Iceland provided the ERT with information on its participation in several Nordic expert working groups aiming to, as applicable, harmonize the methodologies and emission factors used in the preparation of national GHG inventories. A working group on F-gas emissions is discussing subcategory-specific methodologies and emission factors at the highest level of detail and investigating common approaches. Iceland has a representative in a Nordic emission factor experts group that focuses on air pollutants but has also been a useful platform for discussing inventories in general.

(b) Assessment of adherence to the reporting guidelines

108. The ERT assessed the information reported in the NC7 of Iceland and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 15.

Table 15
Findings on technology development and transfer, including information under Article 10 of the Kyoto Protocol, from the review of the seventh national communication of Iceland

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement[a] specified in paragraph 55 Issue type: transparency Assessment: recommendation	Iceland reported in its NC7 examples of success stories related to its technology transfer support programmes and provided a few examples through cases studies. The ERT noted, however, that table 6 of the UNFCCC reporting guidelines on NCs was not used to report this information and that no information was provided on failure stories. During the review, Iceland indicated that its international development cooperation portfolio is relatively small and flexible. This might result in fewer failure stories as ministry staff are able to change the direction of a project quickly if midterm reviews and evaluations are negative. One example the Party provided during the review was concerning the activity for the fisheries sector in Namibia in the period 1990–2010. In the period 2004–2006, the Electronic Landings Data Collection project was evaluated as a significant failure for the ministries involved in. The information technology system functioned very well but the lack of ownership by the Ministry's Directorate of Operations was a barrier to proper and full implementation. It was suggested that the procedures for launching the interventions should have been reviewed to ensure that a local and regional expertise pool was available if the technology failed, as it was new to the region, and that it should have ensured supply points for maintenance purposes were available. The ERT recommends that in its next NC Iceland use table 6 of the UNFCCC reporting guidelines on NCs, where feasible, when providing information on its success and failure stories related to its technology transfer activities.

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
2	Reporting requirement[b] specified in Paragraph 39 Issue type: completeness Assessment: recommendation	Iceland did not report information under Article 10, paragraph (a), of the Kyoto Protocol in its NC7 on its participation in regional activities to improve the quality of emission factors, activity data and/or models for the preparation and periodic updating of national GHG inventories. During the review, Iceland described its participation in several Nordic expert working groups aiming to harmonize the methodologies and emission factors used in the preparation of national GHG inventories. The ERT recommends that Iceland include in its next NC, to the extent possible, information on national or regional activities related to the development or improvement of emission factors, activity data and/or models for the preparation and periodic updating of national GHG inventories, in accordance with Article 10, paragraph (a), of the Kyoto Protocol.

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

[a] Paragraph numbers listed under reporting requirement refer to the relevant paragraphs of the UNFCCC reporting guidelines on NCs.

[b] Paragraph numbers listed under reporting requirement refer to the relevant paragraph of the reporting guidelines for supplementary information.

E. Vulnerability assessment, climate change impacts and adaptation measures

1. Technical assessment of the reported information

109. In the NC7 Iceland provided the required information on the expected impacts of climate change in the country and its vulnerabilities. However, information on the adaptation policies covering regional, sectoral and cross-sectoral vulnerabilities and considerations and an outline of the action taken to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation were not provided in the NC7. The ERT noted that any specific policies to address adaptation have not yet taken place.

110. The impact of climate change in terrestrial ecosystems in Iceland is well documented in the NC7. Iceland has experienced a warming rate of 0.35 °C per decade – considerably higher than the global average warming trend (0.2 °C). All non-surging glaciers are receding, highland permafrost string bogs are expected to disappear with further warming, and there is an increased risk of landslides from slopes where permafrost thaws. Significant impacts are expected in the energy (hydropower), transport, agriculture and forestry sectors. Iceland has made significant efforts in understanding the impacts of climate change in the country, in particular given the worldwide relevance of its research on glaciated areas and marine ecosystems.

111. During the review, Iceland provided further information and elaborated on projected impacts, mainly in the natural system. The Party has determined that while in some respects the impacts of increasing temperature on economic sectors such as agriculture, fisheries and forestry are likely to be positive owing to longer growing seasons and increasing yields and species, these positive impacts are accompanied by risks, such as an increase in the number and vigour of pests. Major run-off changes resulting from rapid glacier retreat and greater precipitation have increased surface water and caused sea level rise, and might overwhelm the existing capacity of water management systems such as sewage, which in turn could affect infrastructure, including roads and communication lines.

112. In the NC7 and during the review, the ERT noted that the national plans for adaptation to climate change in Iceland are, in most cases, not yet in place. However, work on identifying the possible impacts of and the country's vulnerability to climate change is ongoing. At the request of the Ministry for the Environment and Natural Resources, the Scientific Council on Climate Change, chaired by the Icelandic Meteorological Office, published in 2018 a report

on climate change and its effects in Iceland.[9] The main findings of the report are that the effects of climate change are clearly visible, with retreating glaciers the most visible of these. The report also identifies effects on the ocean and its biological component, on agricultural land and on fauna in general. It states that adaptation to climate change is unavoidable and makes recommendations regarding further research and for a comprehensive plan on vulnerability and adaptation. On the basis of the latter recommendation the Ministry aims to prepare a comprehensive impact and adaptation plan. Table 16 summarizes the information on vulnerability and adaptation to climate change presented in the NC7 of Iceland.

Table 16
Summary of information on vulnerability and adaptation to climate change reported by Iceland

Vulnerable area	*Examples/comments/adaptation measures reported*
Agriculture and food security	*Vulnerability*: Warmer temperatures have improved yields and made it possible to expand and introduce new crops such as winter wheat and rapeseed. Animal husbandry (sheep) has also benefited through an increase in fodder. Increases in cultivation might increase the demand for cold water, and it is difficult to forecast the net economic impact on farming, because factors other than climate change are involved. *Adaptation*: Not reported.
Biodiversity and natural ecosystems	*Vulnerability*: Elevated temperatures are bringing new pests, which in turn are projected to bring new diseases to Iceland. The new invasive species introduced are predicted to compete with indigenous species both on land and in the sea. The arrival of new arthropod herbivore species on trees and shrubs and outbreaks of pests in birch woodlands are highest during warm periods. Highland permafrost string bogs are likely to disappear with projected warming; these bogs hold much soil organic matter and the thawing of these soils could therefore result in GHG emissions. *Adaptation*: Research studies and data evaluation are ongoing.
Coastal zones	*Vulnerability*: Receding glaciers and the consequent uplift and run-off from melting glaciers may reduce to some degree the impact of rising sea level, but not everywhere. Downtown Reykjavik might be vulnerable to flooding. *Adaptation*: Studies have been done on the impact of sea level rise in downtown Reykjavik, but adaptation measures are yet to be explored and implemented.
Drought	*Vulnerability*: Glacier retreat leading to changes in river run-off. The increase in surface water from melting glaciers and glacier run-off is affecting fluvial erosion and will lead to changes in the courses of glacial rivers. This is already impacting the design and operation of hydroelectric power plants. As glaciers recede and ultimately disappear, drought may become an issue though it is not a current concern. *Adaptation*: Studies are ongoing but adaptation measures are not well understood or developed.
Fisheries	*Vulnerability*: The carrying capacity of the Icelandic marine ecosystem could be enhanced as a result of warmer temperatures, given the improved survival of larvae and juveniles of most aquatic species. The number of new fish species in Icelandic waters is increasing and is expected to result in an increased abundance of some commercial stock (e.g. mackerel), while statistics show other species are in decline (e.g. Arctic char, in all parts of Iceland). Ocean acidification may cause a decline in fisheries' productivity. *Adaptation*: Studies are ongoing.
Forests	*Vulnerability*: Higher temperatures are likely to result in longer growing seasons and an increase in the coverage of natural and managed forests. Warmer temperatures can, however, also cause an early start in the growth cycle and increase vulnerability to new pests. Forest fires become a real threat with enhanced tree growth. *Adaptation*: Studies are ongoing.

[9] Available at http://www.vedur.is/media/loftslag/Skyrsla-loftslagsbreytingar-2018-Vefur.pdf (in Icelandic).

Vulnerable area	*Examples/comments/adaptation measures reported*
Human health	*Vulnerability*: Warmer temperatures and the increase in tourism can result in increased vulnerability because new pests and diseases may arrive in the country (e.g. instances of downy birch defoliated by foreign insects have already been observed). *Adaptation*: Studies are ongoing.
Infrastructure and economy	*Vulnerability*: Increasing temperatures, melting glaciers, increasing surface water and more frequent precipitation are increasing the frequency of river and coastal flooding and erosion. The rapid retreat of glaciers leads to changes in fluvial erosion from currently glaciated areas and changes in the courses of glacial rivers – this increases the frequency of river and coastal flooding and erosion and might in turn affect infrastructure such as roads and other communication lines. A higher water table and a higher sea level may slow down sewage delivery in the sewage system and cause backflow. More intense precipitation can cause road damage, flood roads, cause avalanches and increase the need for road maintenance. The capacity of existing infrastructure – sewage systems, roads and bridges – needs to be modified to accommodate greater volumes and changes in the hydrological system. *Adaptation*: Studies are ongoing, but adaptation plans are not well developed.
Water resources	*Vulnerability*: The increase in surface water from melting glaciers and glacier run-off is affecting fluvial erosion and will lead to changes in the courses of glacial rivers, with impacts on the design and operation of hydroelectric power plants. *Adaptation*: Studies are ongoing.

113. Iceland provides in the NC7 information on the Party's support of and cooperation with non-Annex I Parties for most of the sectors in preparing for adaptation and enhancing resilience, although the Party does not specifically indicate that such support aims to address adaptation. This support covers areas such as ecosystems, land reclamation, sustainable fisheries, and gender and climate change. Adaptation-related programmes are aimed at building technological capacity for fisheries in developing countries such as Mozambique, and infrastructure support for water and sanitation for rural communities and schools in countries such as Malawi and Mozambique. The water, sanitation and hygiene (WASH) for children programme involves technology transfer support to develop water and sanitation infrastructure in rural communities and schools. The UNU Fisheries Training Programme involves research and training for practising professionals from developing countries in the field of fisheries.

2. Assessment of adherence to the reporting guidelines

114. The ERT assessed the information reported in the NC7 of Iceland and identified issues relating to completeness and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 17.

Table 17
Findings on the vulnerability assessment, climate change impacts and adaptation measures from the review of the seventh national communication of Iceland

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 49 Issue type: completeness Assessment: recommendation	Iceland did not include in the NC7 information on any actions taken to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation, even though extensive information on impacts was provided. During the review, Iceland provided information describing the adaptation measures of Iceland's hydropower company in response to a changing climate and indicated that the power sector remains the only socioeconomic sector for which adaptation measures have been developed and for which information on vulnerability assessment is available. The ERT noted the wide range of climate change impacts anticipated across many socioeconomic sectors in Iceland.

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
		The ERT reiterates the recommendation made in the previous review report that Iceland report in its next NC an outline of the action taken to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation, including, but expanding on, the information provided during the review.
2	Reporting requirement specified in paragraph 49 Issue type: completeness Assessment: encouragement	Iceland provided extensive information in the NC7 on the expected impacts of climate change on its terrestrial ecosystems. However, the ERT noted that Iceland provided limited information on the specific results of scientific research in the field of vulnerability assessment for key sectors, areas and species and reporting has not improved since the NC6. During the review, the Party provided additional information on the latest study that includes the information on vulnerability. The ERT reiterates the encouragement made in the previous review report for Iceland to include in its next NC information on the specific results of scientific research in the field of vulnerability assessment for key sectors, areas and species.

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

F. Research and systematic observation

1. Technical assessment of the reported information

115. Iceland provided information on its actions relating to research and systematic observation, addressing both domestic and international activities, including a broad overview of current and ongoing research projects, but it did not provide information on its general policy and funding relating to research and systematic observation. In the NC7, Iceland described in detail its participation in the World Climate Programme, the International Geosphere–Biosphere Programme, the Global Climate Observing System and the IPCC. The ERT noted that the Party focused on ocean and hydrological systems, whose significance goes beyond national borders. During the review, Iceland explained its participation in the Pan-Arctic Regional Climate Outlook Forum. Iceland did not provide information on the identification of opportunities for and barriers to free and open international exchange of data and information and on action taken to overcome such barriers.

116. Iceland has implemented and planned international and domestic policies and programmes on climate change research, systematic observation and climate modelling that aim to advance capabilities to predict and observe the physical, chemical, biological and human components of the Earth's system over space and time. Key priority research projects presented in the NC7 include CarbFix,[10] a collaborative research project led by Reykjavik Energy that aims to develop safe, simple and economical methods and technology for permanent CO_2 mineral storage in basalts. During the review, Iceland elaborated on the CarbFix experimental project and its feasibility study on sequestering CO_2 in basaltic bedrock and storing it there permanently as a mineral. The NC7 also includes information on a Carbon Recycling International project for developing a new fuel production technology based on a one-step catalytic synthesis of CO_2 and hydrogen,[11] and the Iceland Deep Drilling Project,[12] which the Party expects could potentially have a significant impact on the exploitation of geothermal energy worldwide. The ERT noted that all these research projects are relatively new and currently lack sufficient data or have inconclusive results. Depending on their eventual success in practice, these technologies might be replicable by other countries. Therefore, to the extent that it is technologically and strategically feasible, Iceland's sharing relevant data with the global community would assist the collective effort to combat climate change.

[10] See https://www.carbfix.com/.
[11] See http:/carbonrecycling.is/mefco2-project/.
[12] See https://iddp.is/.

117. For the fishery sector, projects are ongoing on renewable fuel for ships, including a project involving the design and construction of a 52-metre trawler with energy efficiency optimized to reduce fuel consumption and emissions and using methanol (produced by carbon capture) as a fuel, thus resulting in near net zero carbon emissions.

118. In terms of activities related to systematic observation, Iceland reported on national plans, programmes and support for ground- and space-based climate observing systems, including satellite and non-satellite climate observation. Iceland also reported on challenges related to the maintenance of a consistent and comprehensive observation system. The Icelandic Meteorological Office participates in the global atmospheric observing systems. Both the Meteorological Office and the Marine and Freshwater Research Institute contribute to oceanographic observations, and they have both supported Météo-France in deploying surface drifters with barometers and sea surface temperature monitors for weather and climate observations in recent years.

119. The NC7 does not clearly reflect actions taken to support capacity-building and the establishment and maintenance of observation systems and related data and monitoring systems in developing countries.

2. Assessment of adherence to the reporting guidelines

120. The ERT assessed the information reported in the NC7 of Iceland and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 18.

Table 18
Findings on research and systematic observation from the review of the seventh national communication of Iceland

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 61 Issue type: completeness Assessment: encouragement	Iceland did not include in its NC7 information on its general policy and funding relating to research and systematic observation. During the review, Iceland informed the ERT that according to the proposal for the Icelandic national budget for 2019, new funding will be allocated for research and systematic observation related to climate change. The Party plans to fund domestic research programmes on climate risks, impacts and vulnerability assessments that will be implemented in cooperation with research institutions, such as the Icelandic Meteorological Office and the Marine and Freshwater Research Institute. The ERT encourages Iceland to include in its next NC information on its general policy and funding relating to research and systematic observation.
2	Reporting requirement specified in paragraph 62 Issue type: completeness Assessment: encouragement	Iceland did not include information in its NC7 about opportunities for and barriers to free and open international exchange of data and information, or on action taken to overcome those barriers. During the review, the Party confirmed that it has experienced no barriers to free and open international exchange of data and information. The ERT encourages Iceland to include in its next NC information on the identification of opportunities for and barriers to free and open international exchange of data and information and on action taken to overcome such barriers. If no opportunities or barriers are identified, the Party should report this.
3	Reporting requirement specified in paragraph 63 Issue type: completeness Assessment: encouragement	Iceland did not include information in its NC7 on a socioeconomic analysis of both the impacts of climate change and response options. During the review, Iceland described an initiative by a power company that has carried out an in-depth socioeconomic analysis looking at the impacts of imminent climate change on its operations. Iceland's hydropower company is taking expected climate change impacts into account in its operational strategies and its planning for plant design for adaptation. The ERT encourages Iceland to report in its next NC the results of a socioeconomic analysis of both the impacts of climate change and response options.

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
4	Reporting requirement specified in paragraph 64	Iceland did not include information in its NC7 on exchange and archiving of data with regards to support to developing countries to establish and maintain observing systems.
	Issue type: completeness	During the review, Iceland confirmed that it has not taken actions to support developing countries to establish and maintain observing systems.
	Assessment: encouragement	The ERT encourages Iceland to report in its next NC on the exchange and archiving of data in the area of support to developing countries for establishing and maintaining observation systems and related data and monitoring systems.

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

G. Education, training and public awareness

1. Technical assessment of the reported information

121. In the NC7 Iceland provided information on its actions relating to education, training and public awareness at the domestic and international level. The Party provided information on the general policy on education, training and public awareness, primary, secondary and higher education, public information campaigns, training programmes, education materials, resource or information centres, the involvement of the public and non-governmental organizations and its participation in international activities. Key policy documents that drive the agenda on education, training and public awareness relating to sustainability and climate change include Welfare for the Future (first published in 2002 and revised in 2007 and 2010), the Climate Change Strategy (2007) and the Climate Action Plan (2010). These policies contain actions relating to education, public participation, awareness-raising, the media and the role of civil society.

122. Local authorities have taken steps towards raising sustainability and climate change awareness. Reykjavik has, in cooperation with Festa (the Icelandic Center for Corporate Social Responsibility), taken decisive steps towards increasing climate change awareness and actions of companies in the city. The companies were asked to sign a joint declaration on actions intended to fight climate change and adapt to it; 107 companies had signed it at the point that the NC7 was prepared. These companies have been invited to participate in training sessions, dialogue events, conferences and workshops on climate change and corporate social responsibility. Information on the progress of the companies is available on Festa's website.[13]

123. During the review, Iceland provided additional information regarding the Ministry of Education, Science and Culture's participation in preparing the second phase of Iceland's new Climate Action Plan, adopted in September 2018. The ERT noted that Iceland's reporting could be improved if the Party included the information on formal or informal public participation meetings in the preparation or domestic review of the NC in its next submission.

124. Several public information and participation campaigns conducted in Iceland by public and private entities have contributed to the reduction of emissions. One example is the annual Bike to Work campaign[14] conducted by the National Olympic and Sports Association of Iceland, with financial support from the public sector. The two-week campaign encourages the public to leave their cars at home and cycle, walk or use public transport to get to work and has been widespread and successful, with good participation from the public. The same association conducts other campaigns aimed at encouraging people to use their own energy for transport, such as the Lífshlaupið campaign[15] (promoting physical movement or sport count), and the Bike to School and Walk to School campaigns directed at students.

[13] https://festasamfelagsabyrgd.is/english/.
[14] See https://www.hjoladivinnuna.is/ (in Icelandic).
[15] See https://www.lifshlaupid.is/ (in Icelandic).

125. The special climate change agenda of the Government issued in 2015 introduced the Melting Glaciers project on glaciers as a natural laboratory to study climate change, which was implemented by the Vatnajökull National Park and the Icelandic Meteorological Office. The project aims to increase public awareness of climate change through the visibility of its effects, namely the melting glaciers in Iceland. Information and educational materials relating to the project have been disseminated, such as a brochure published in 2017.[16]

126. In 2012, Iceland ratified the Aarhus Convention, thus ensuring the public right to participation and information on environmental matters. In this regard, the Ministry of Environment and a total of 18 non-governmental organizations meet annually. The purpose of these engagements is to increase the involvement of those organizations and the public in the field of climate change and environmental protection.

127. Iceland continues to support UNU programmes on training and capacity-building in developing countries, placing priority on geothermal energy, land restoration, gender equality and sustainable fisheries.

2. Assessment of adherence to the reporting guidelines

128. The ERT assessed the information reported in the NC7 of Iceland and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

III. Conclusions and recommendations

129. The ERT conducted a technical review of the information reported in the NC7 of Iceland in accordance with the UNFCCC reporting guidelines on NCs. The ERT concludes that the reported information mostly adheres to the UNFCCC reporting guidelines on NCs and that the NC7 provides an overview of the national climate policy of Iceland.

130. The information provided in the NC7 includes most of the elements of the supplementary information under Article 7 of the Kyoto Protocol, with the exception of information on the national registry, supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol, and information under Article 10 of the Kyoto Protocol. Supplementary information under Article 7, paragraph 1, of the Kyoto Protocol on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol was provided by Iceland in its 2017 annual submission.

131. Iceland's total GHG emissions excluding LULUCF covered by its quantified economy-wide emission reduction target were estimated to be 28.5 per cent above its 1990 level, whereas total GHG emissions including LULUCF were 8.5 per cent above its 1990 level, in 2016. Emission increases were driven by strong economic growth (55.5 per cent in GDP per capita), population increase (31.2 per cent), the expansion of the aluminium production industry (by 400 per cent) and fuel combustion in road transport (57.1 per cent or 353.91 kt CO_2 eq). Those factors outweighed the growth in the share of renewables in energy generation (geothermal power and hydropower), the transition to electric boilers in the fishmeal industry, the closure of the cement production plant in 2011 and afforestation and revegetation.

132. Iceland's main policy framework relating to energy and climate change is its succession of climate action plans: the Climate Action Plan 2010, the Special Climate Action Plan 2015 and the new Climate Action Plan 2018. Key legislation supporting Iceland's climate change goals includes Council decision (EU) 2015/1340 concerning Iceland's participation in the joint fulfilment of commitments of the European Union, its member States and Iceland for the second commitment period of the Kyoto Protocol. The mitigation actions likely having the most significant mitigation impact, although the quantified impacts were not reported, are participation in the EU ETS and the introduction of a carbon tax, which is

[16] Available at https://www.vatnajokulsthjodgardur.is/static/files/Utgefid-efni/VJP-sameiginlegt/horfandi-joklar_2017_pdf-af-baekling.pdf (in English and Icelandic).

to be further strengthened by gradual increases over the period 2018–2020. Other measures include the National Renewable Energy Action Plan, the transition to non-fossil fuel use in transport (e.g. through exemptions from excise duty and the carbon tax for carbon-neutral fuels), reforestation and revegetation, and a reduction in the share of organic waste going to landfill.

133. The GHG emission projections provided by Iceland include those under the WEM scenario. In this scenario, emissions are projected to be 62.9 per cent above the 1990 level in 2020. On the basis of the reported information, the ERT concludes that Iceland may face challenges in achieving its 2020 target under the WEM scenario. Iceland's target for non-ETS sectors including LULUCF is to reduce its total emissions by 22 per cent below the 2005 level by 2020. Iceland takes part in a joint effort with the EU and its member States to achieve the joint EU economy-wide emission reduction target of 20 per cent below the 1990 level by 2020 under the Doha Amendment to the Kyoto Protocol. Iceland is not part of the ESD of the EU, as such, but corresponding emissions are subject to a bilateral agreement between Iceland and the EU and its member States that covers all non-ETS sources including LULUCF. Under this agreement, Iceland has a target to reduce emissions by about 22 per cent below the 2005 level by 2020 for non-ETS sectors, which has been translated into an emission reduction of 15,327.22 kt CO_2 eq for the period 2013–2020. According to the projections under the WEM scenario, emissions from non-ETS sectors including LULUCF are estimated to reach 2,717.00 kt CO_2 eq by 2020, which are 8.8 per cent below the 2005 level. On the basis of the reported information, the ERT concludes that Iceland may face challenges in achieving its target for non-ETS sectors.

134. The projections indicate that Iceland is not on track to meet its Kyoto Protocol target for the second commitment period, even if the Party were to use the removal units from the contribution of the LULUCF sector. During the review, Iceland informed the ERT that it would need to make use of the flexible mechanisms under the Kyoto Protocol to meet its 2020 target and that the required number of units from market-based mechanisms is estimated at 4,908 kt CO_2 eq.

135. The Party is planning to use units from the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol to meet its Kyoto Protocol target, since it is unlikely to reach its target with domestic measures alone. The Party foresees making a budgetary decision and commencing the necessary preparations for the purchase of units in 2019.

136. Iceland continues to provide climate financing to developing countries in line with its climate finance programmes such as its water and sanitation support programmes, the geothermal exploration project in the East Africa Rift Valley, and the gender and climate change programme in the least developed countries in Africa. It has increased its public financial contributions by 62.1 per cent since the NC6, and its public financial support in 2015 and 2016 totalled USD 10.89 and 11.23 million per year, respectively. For those years, Iceland's support provided for adaptation was higher than its support provided for mitigation actions. The biggest share of financial support went to projects in the water and sanitation sector and to cross-cutting projects, followed by the energy and agriculture sectors. Most technology transfer support offered by Iceland targets aquaculture, water and sanitation in the case of adaptation, and geothermal energy in the case of mitigation. Adaptation-related programmes in developing countries are aimed at building technological capacity for fisheries (e.g. Mozambique) and infrastructure support for water and sanitation in rural communities and schools (e.g. Malawi and Mozambique).

137. Increasing temperatures have brought positive effects to some economic sectors such as agriculture, fisheries and forestry owing to longer growing seasons and increasing yields and species. Iceland has also benefited from the rapidly increasing tourism sector; increases in visitor numbers are partly due to the longer peak season. However, changes in river run-off due to glacier retreat and increasing surface water and precipitation are increasing the frequency of river and coastal flooding and erosion, and in turn affecting infrastructure. Iceland does not have a national adaptation plan in place, but work on identifying the possible impacts of and the country's vulnerability to climate change is ongoing.

138. Iceland has implemented and planned various international and domestic programmes on climate change research and systematic observation. Regarding research, particular focus

is given to technologies for carbon dioxide capture and storage (CarbFix project, Carbon Recycling International project), geothermal energy exploitation (Iceland Deep Drilling Project) and development of renewable fuels for the fisheries sector. Iceland participates in international projects and contributes through its unique geographical characteristics to international research and systematic observation; for example, it participates in the Pan-Arctic Regional Climate Outlook Forum. The Party expects that new funding will be allocated for research and systematic observation by the Climate Action Plan 2018, and plans to fund domestic research programmes on climate risks, impacts and vulnerability assessments that will be implemented in cooperation with research institutions.

139. Key policy documents that provide Iceland's education, training and public awareness agenda relating to sustainability and climate change include Welfare for the Future (first published in 2002 and revised in 2007 and 2010), the Climate Change Strategy (2007) and the Climate Action Plan (2010 and 2018). These policies contain actions relating to education, public participation, awareness-raising, the media and the role of civil society. Iceland continues to support UNU training programmes on, among other subjects, geothermal energy, gender equality and land restoration.

140. In the course of the review, the ERT formulated the following recommendations for Iceland to improve its adherence to the UNFCCC reporting guidelines on NCs and its reporting of supplementary information under the Kyoto Protocol:[17]

(a) To improve the completeness of its reporting by:

(i) Providing information on the national registry, including references to reports where the relevant information can be found (see issue 1 in table 5);

(ii) Providing projections on gas-by-gas basis (see issue 3 in table 10);

(iii) Providing projections related to fuel sold to ships and aircraft engaged in international transport (see issue 5 in table 10);

(iv) Providing the expected total effect of implemented and adopted PaMs (see issue 1 in table 11);

(v) Including an estimate of the total effect of its PaMs, in accordance with the WEM definition, compared with a situation without such PaMs, presented in terms of GHG emissions avoided or sequestered, by gas (on a CO_2 eq basis), in 1995 and 2000, and also for 2005, 2010, 2015, 2020 and subsequent years of projections reported (not cumulative savings) (see issue 3 in table 11);

(vi) Providing information on how its use of the mechanisms is supplemental to domestic action, and how its domestic action constitutes a significant element of the effort made to meet its emission reduction commitments (see issue 1 in table 12);

(vii) Reporting financial contributions to the Global Environment Facility using table 3 of the UNFCCC reporting guidelines on NCs (see issue 1 in table 14);

(viii) Providing information on national or regional activities related to the development or improvement of emission factors, activity data and/or models for the preparation national GHG inventories, in accordance with Article 10, paragraph (a), of the Kyoto Protocol (see issue 2 in table 15);

(ix) Reporting an outline of the action taken to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation (see issue 1 in table 17);

(b) To improve the transparency of its reporting by:

(i) Elaborating in more detail on how PaMs are believed to be modifying longer-term trends in anthropogenic GHG emissions and removals (see issue 3 in table 7);

(ii) Using table 6 of the UNFCCC reporting guidelines on NCs when providing information on its success and failure stories related to its technology transfer activities (see issue 1 in table 15);

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

(c) To improve the timeliness of its reporting by submitting its next NC on time (see para. 6 above).

IV. Questions of implementation

141. During the review the ERT assessed the NC7, including the supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol, and reviewed the information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol with regard to timeliness, completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. No questions of implementation were raised by the ERT during the review.

Annex

Documents and information used during the review

A. Reference documents

2017 GHG inventory submission of Iceland. Available at https://unfccc.int/process/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories/submissions-of-annual-greenhouse-gas-inventories-for-2017.

2018 GHG inventory submission of Iceland. Available at https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/national-inventory-submissions-2018.

BR3 of Iceland. Available at https://unfccc.int/sites/default/files/resource/Iceland_NC7_BR3_2018_Final_I.pdf.

BR3 CTF tables of Iceland. Available at https://unfccc.int/sites/default/files/resource/71853_Iceland-BR3-1-Iceland_ISL_2018_v1.0.xlsx.

Compilation of economy-wide emission reduction targets to be implemented by Parties included in Annex I to the Convention. Available at https://unfccc.int/topics/mitigation/workstreams/pre-2020-ambition/compilation-of-economy-wide-emission-reduction-targets-to-be-implemented-by-parties-included-in-annex-i-to-the-convention.

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

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

"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol". Annex to decision 15/CMP.1. Available at http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf.

"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol". Annex III to decision 3/CMP.11. Available at http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf.

"Guidelines for review under Article 8 of the Kyoto Protocol". Annex to decision 22/CMP.1. Available at http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf.

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

NC7 of Iceland. Available at https://unfccc.int/sites/default/files/resource/Iceland_NC7_BR3_2018_Final_I.pdf.

Report on the individual review of the annual submission of Iceland submitted in 2017. FCCC/ARR/2017/ISL. Available at https://unfccc.int/sites/default/files/resource/docs/2018/arr/isl.pdf.

Report on the review of the report to facilitate the calculation of the assigned amount for the second commitment period of the Kyoto Protocol of Iceland. FCCC/IRR/2016/ISL. Available at https://unfccc.int/sites/default/files/resource/docs/2017/irr/isl.pdf.

Report of the technical review of the second biennial report of Iceland. Available at https://unfccc.int/sites/default/files/resource/docs/2016/trr/isl.pdf.

Report on the technical review of the sixth national communication of Iceland. Available at https://unfccc.int/sites/default/files/resource/docs/2015/idr/isl06.pdf.

Revisions to the guidelines for review under Article 8 of the Kyoto Protocol. Annex I to decision 4/CMP.11. Available at http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf.

"UNFCCC biennial reporting guidelines for developed country Parties". FCCC/SBSTA/2014/INF.6. Annex I to decision 2/CP.17. Available at http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Helga Barðadóttir (Ministry for the Environment and Natural Resources), including additional material. The following documents[1] were provided by Iceland:

Iceland's International Development Strategy 2013–2016 (in Icelandic). Available at https://www.althingi.is/altext/pdf/141/s/0995.pdf.

Sigfússonet, Bergur et al. (2018). "*Reducing emissions of carbon dioxide and hydrogen sulphide at Hellisheidi power plant in 2014-2017 and the role of CarbFix in achieving the 2040 Iceland climate goals*" Energy Procedia, vol. 146 p. 135-145.

Matter, JM, Stute, M,. Et al. (2016). Science, vol. 352.

Snæbjörnsdóttir, Sandra Ósk. (2017). *Mineral storage of carbon in basaltic rocks*. PhD dissertation, Faculty of Earth Sciences, University of Iceland, 156 pp. Available at https://hdl.handle.net/20.500.11815/244.

Veðurstofa Íslands. 2018. *Loftslagsbreytingar og áhrif þeirra á Íslandi Skýrsla vísindanefndar um loftslagsbreytingar 2018* (Climate change and their impact in Iceland Report of the Scientific Committee on Climate Change 2018). Reykjavik: Veðurstofa Íslands. Available at http://www.vedur.is/media/loftslag/Skyrsla-loftslagsbreytingar-2018-Vefur.pdf.

Orkustofnun. 2016. *Raforku spá 2016 – 2050, Endurreikningur á spá frá 2015 út frá nýjum gögnum og breyttum forsendum* (Power forecast 2016 – 2050, Reckoning of 2015 forecast based on new data and changed assumptions, Energy Forecast Committee). Reykjavík: Orkustofnun. Available at https://orkustofnun.is/gogn/Skyrslur/OS-2016/OS-2016-08.pdf.

Orkustofnun. 2016. *Eldsneytisspá 2016 – 2050, Orkuspárnefnd* (Fuel Forecast 2016 – 2050, Energy Forecast Committee). Reykjavík: Orkustofnun. Available at https://orkustofnun.is/gogn/Skyrslur/OS-2016/OS-2016-02.pdf.

Parliamentary Document. 2012. *Tillaga til þingsályktunar um áætlun um alþjóðlega þróunarsamvinnu Íslands 2013–2016* (Proposal for a parliamentary resolution on the Program for International Development Cooperation 2013-2016.) Parliamentary Document 995 - 582. Submitted to Parliament at 141th Legislative Congress 2012-2013. Reykjavík. Available at https://www.althingi.is/altext/pdf/141/s/0995.pdf.

[1] Reproduced as received from the Party.