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

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 Greece, 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

AEA	annual emission allocation
BR	biennial report
CH_4	methane
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
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
HFC	hydrofluorocarbon
ICAO	International Civil Aviation Organization
IMO	International Maritime Organization
LULUCF	land use, land-use change and forestry
MEEN	Ministry of Environment and Energy of Greece
Mtoe	million tonnes of oil equivalent
NA	not applicable
NC	national communication
NE	not estimated
NF_3	nitrogen trifluoride
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"
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 Greece. 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 Greece, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

3. The review was conducted from 4 to 9 February 2019 in Athens by the following team of nominated experts from the UNFCCC roster of experts: Mr. Amr Osama Abdel-Aziz (Egypt), Ms. Veronika Ginzburg (Russian Federation), Ms. Maria Jose Lopez (Belgium), Ms. Ekaterine Mikadze (Georgia), Ms. Katherine Monahan (Canada) and Mr. Adriano Santhiago de Oliveira (Brazil). Mr. Abdel-Aziz and Ms. Lopez were the lead reviewers. The review was coordinated by Ms. Ruta Bubniene and Mr. James Howland (UNFCCC secretariat).

B. Summary

4. The ERT conducted a technical review of the information reported in the NC7 of Greece 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 22 December 2017, before the deadline of 1 January 2018 mandated by decision 9/CP.16.

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

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

[1] At the time of the publication of this report, Greece 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.

Table 1
Assessment of completeness and transparency of mandatory information reported by Greece 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	Complete	Transparent	
GHG inventory	Complete	Transparent		Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Complete	Transparent	
PaMs	Complete	Mostly Transparent	Issue 1 in table 8	PaMs in accordance with Article 2	Complete	Mostly Transparent	Issue 7 in table 8
Projections and the total effect of PaMs	Complete	Transparent		Domestic and regional programmes and/or arrangements and procedures	Complete	Transparent	
Vulnerability assessment, climate change impacts and adaptation measures	Complete	Mostly Transparent	Issue 1 in table 19	Information under Article 10[a]	Complete	Transparent	
Financial resources and transfer of technology	Mostly complete	Mostly transparent	Issues 1 and 2 in table 16 Issues 2 and 3 in table 17	Financial resources	Mostly complete	Transparent	Issue 4 in table 16
Research and systematic observation	Mostly complete	Transparent	Issue 1 in table 20	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 only to Parties included in Annex II to the Convention. An 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

7. 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 national inventory report of the 2017 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 Greece

Supplementary information	*Reference to section of NC7*
National registry	3.4
National system	3.3
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	5.3
PaMs in accordance with Article 2	4.3
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	4.1, 4.2
Information under Article 10	3.3, 4.1, 4.2, 7.5, 8, 9
Financial resources	7.2, 7.3, 7.4
Minimization of adverse impacts in accordance with Article 3, paragraph 14	4.4

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

8. The national circumstances of Greece explain the relationship between its historic and future emission trends and the climate change policies. The changing nature of those circumstances defines the factors that affect the climate policy development and implementation of the Convention. The NC7 includes a brief description of Greece's government structure, population, geography, land use, climate profile and economic sectoral profiles, focusing on transport and the energy system as the main drivers of emission trends. It identifies parameters related to national circumstances that affect GHGs and describes comprehensively the national circumstances influencing national emission and removal trends.

9. The political system of Greece is a parliamentary democracy with the President being the Head of State. Legislative power is vested in the national parliament, which comprises 300 members, each elected by direct, secret and universal ballot. The parliamentary term is four years. The parliament conducts legislative work and assumes the task of government and national administration in general. At the top administrative level is the national

government, with ministers appointed by the Prime Minister. The ministries mainly develop and implement national laws.

10. Greece is divided into seven decentralized administrations, 13 administrative regions and 325 municipalities. Regions and municipalities are self-governing entities (i.e. authorities are elected by registered residents).

11. MEEN is the competent authority for climate change issues. The Council of Ministers is responsible for the final approval of PaMs related to climate change. PaMs, as well as all other issues and actions regarding climate change mitigation, are discussed within the framework of an interministerial collaboration.

12. In 2016 the tertiary sector accounted for 77.9 per cent of the total gross value added (72.9 per cent in 2000). Tourism accounts for 18.6 per cent of GDP. The contribution of the secondary sector to the total gross value added decreased from 21.0 per cent in 1990 to 16.8 per cent in 2016, with manufacturing representing about 59.0 per cent, construction 25.5 per cent, energy industries 14.0 per cent and mining about 1.6 per cent.

13. Over the period 2008–2016, the Greek economy faced its most severe crisis, with six consecutive years of recession and a cumulative decline exceeding 30 per cent of GDP in real terms in 2016 compared with 2007. Prior to this nine-year period, Greece's growth performance was high. The annual GDP growth rate during the period 2000–2004 was approximately 4.5 per cent, due to financial market liberalization coupled with membership in the Economic and Monetary Union, which led to a substantial increase in credit expansion and a reduction in borrowing costs, the stimulus given by the Summer Olympic Games hosted in Athens in 2004 and the Community Structural Funds.

14. Greece is a country of islands and mountains. Settlements (developed land including transportation infrastructure and human settlements) account for 4.1 per cent of the total national land-use area. In 2016, the total area of agricultural land in Greece was approximately 3.3 Mha, more than half of which is on relatively steep slopes that are cultivated without taking measures to protect against soil erosion. The area of agricultural land decreased by 19 per cent between 1990 and 2015. In 2015, the livestock population was approximately 46.3 million, including cattle (1.5 per cent), sheep (18.3 per cent), goats (10.3 per cent), pigs (1.6 per cent) and poultry (68.2 per cent). The livestock population increased by approximately 4.9 per cent from the 1990 level, mostly owing to an increase in the poultry population. Forests, other wooded land and grasslands cover 6.5 Mha (49.7 per cent of the land area), of which approximately 3.4 Mha are considered productive forests. However, forests in Greece are less productive than in other European countries, on the basis of European average values, and therefore their contribution to GDP is lower. This is owing to the low density, quality and quantity of growing stock, which is a result of human-induced activities in the past, including wildfires, grazing and illegal felling, as well as a lack of systematic silvicultural treatment.

15. Over the period 1990–2015, waste generation increased from 3.1 to 5.3 Mt, while the per capita solid waste generation rate increased from 0.82 kg/person/day in 1990 to 1.23 kg/person/day in 2015. The number of wastewater treatment plants has increased considerably since 1999.

16. The energy sector relies on fossil fuels to meet the bulk of the country's energy requirements. The energy supply sector in Greece consists of (a) primary lignite production, (b) refineries, (c) transport and distribution of natural gas and (d) electricity generation. Gross inland consumption in 2015 amounted to approximately 940 PJ. The consumption of solid fuels and oil products accounted for 75.4 per cent of the total, while biomass and other renewable energy sources (mostly hydropower, solar, wind and geothermal) contributed 3.1 and 6.5 per cent, respectively. The share of natural gas in gross inland consumption was 10.8 per cent, with the remaining share covered by net electricity imports. From 2007 to 2015, gross inland consumption decreased significantly at an average annual rate of 4.7 per cent. In 2015, Greece reported a total installed electricity generating capacity of 18,942 MW (4,302 MW lignite, 3,972 MW natural gas, 3,392 MW hydropower, 2,596 MW photovoltaics, 2,503 MW oil, 2,091 wind and 78 MW biogas/biomass). The final energy consumption in Greece in 2015 totalled 16.4 Mtoe (41 per cent from the residential and tertiary sectors, 40 per cent

from transport and 19 per cent from industry), having decreased considerably during the recession period.

17. Total kilometres travelled for passenger cars and heavy- and light-duty trucks steadily decreased during the recession period to approximately the 1990 level, while the totals for two-wheeled vehicles and buses increased. The Greek maritime fleet is one of the largest in the world, representing 16 per cent of the world's shipping capacity and 50 per cent of EU shipping capacity.

18. The ERT noted that during the period 1990–2016 Greece's population and GDP increased by 5.7 and 23.7 per cent, respectively, while GHG emissions per capita and GHG emissions per unit of GDP decreased by 15.9 and 28.2 per cent, respectively. Since 2000 there has been a decoupling of GHG emissions from economic development, as the annual growth rate of GHG emissions for the period 2000–2007 (approximately 1.0 per cent) is lower than both the annual growth rate of gross inland energy consumption (approximately 1.64 per cent for the same period) and the GDP annual growth rate (approximately 4.6 per cent). Moreover, the impact of the population increase on GHG emissions was small. The decreasing trend of GHG emissions in 2008–2015 is attributed, among other factors (such as the promotion of renewable energy sources, energy efficiency measures, road infrastructure and public transportation improvements), to the economic recession the country was facing. Table 3 illustrates the national circumstances of Greece by providing some indicators relevant to emissions and removals.

Table 3
Indicators relevant to greenhouse gas emissions and removals for Greece 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)	20.69	24.84	28.73	24.17	24.21	17.0	0.2
GHG emissions without LULUCF per capita (t CO_2 eq)	10.11	11.69	10.64	8.81	8.50	−15.9	−3.5
GHG emissions without LULUCF per GDP unit (kg CO_2 eq per 2011 USD using purchasing power parity)	0.49	0.47	0.37	0.36	0.35	−28.2	−3.6

Sources: (1) GHG emission data: Greece's 2018 GHG inventory submission, version 1; (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

19. The ERT assessed the information reported in the NC7 of Greece and identified an issue relating to completeness and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 4.

Table 4
Findings on national circumstances relevant to greenhouse gas emissions and removals from the review of the seventh national communication of Greece

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 8 Issue type: completeness Assessment: encouragement	The Party reported on its national circumstances in its NC7 (chapter 2). The Party provided most key information related to the GHG emission and removal trends in its NC7, but failed to describe some key national circumstances driving some of its significant emission trends related to electricity generation, transport and F-gases. During the review, Greece provided information on these national circumstances, including a dependency on oil for generating electricity on the Party's many non-interconnected islands, the age of its passenger car fleet (40 per cent of passenger cars are more than 20 years old), an increase in the use of air conditioning and the phase-out of ozone-depleting substances which increases the use of HFCs. The ERT encourages Greece to provide in its next NC information that best describes its national circumstances and historic trends, including information on energy, transportation and industry.

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

(a) Technical assessment of the reported information

20. Total GHG emissions[2] excluding emissions and removals from LULUCF decreased by 11.1 per cent between 1990 and 2016, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 12.6 per cent over the same period. This reflects an increase in total GHG emissions excluding LULUCF of 32.2 per cent between 1990 and 2005, and then a decrease in total emissions by 32.8 per cent from 2005 to 2016. Table 5 illustrates the emission trends by sector and by gas for Greece.

Table 5
Greenhouse gas emissions by sector and by gas for Greece for the period 1990–2016

	GHG emissions (kt CO_2 eq)					*Change (%)*		*Share (%)*	
Sector	*1990*	*2000*	*2010*	*2015*	*2016*	*1990–2016*	*2015–2016*	*1990*	*2016*
1. Energy	76 870.29	96 674.35	93 078.01	71 024.71	66 826.84	–13.1	–5.9	74.6	72.9
A1. Energy industries	43 252.76	54 932.09	52 211.41	40 911.69	37 021.08	–14.4	–9.5	42.0	40.4
A2. Manufacturing industries and construction	9 404.85	9 932.57	6 898.61	5 249.74	5 361.50	–43.0	2.1	9.1	5.9
A3. Transport	14 506.98	18 859.96	22 476.45	17 100.42	17 438.52	20.2	2.0	14.1	19.0
A4. and A5. Other	8 496.39	11 487.51	10 156.14	6 657.04	6 179.16	–27.3	–7.2	8.2	6.7
B. Fugitive emissions from fuels	1 209.31	1 462.22	1 335.40	1 105.82	826.58	–31.6	–25.3	1.2	0.9

[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 on the basis of the 2018 annual submission, version 1.

	GHG emissions (kt CO_2 eq)					*Change (%)*		*Share (%)*	
Sector	*1990*	*2000*	*2010*	*2015*	*2016*	*1990–2016*	*2015–2016*	*1990*	*2016*
C. CO_2 transport and storage	NO	NO	NO	NO	NO	–	–	–	–
2. Industrial processes and product use	11 226.96	15 176.41	11 665.99	11 915.70	12 394.17	10.4	4.0	10.9	13.5
3. Agriculture	10 140.24	9 146.79	8 838.65	7 846.02	7 846.58	–22.6	0.0	9.8	8.6
4. LULUCF	–2 118.97	–1 936.05	–3 038.38	–3 691.69	–3 308.82	56.2	–10.4	–	–
5. Waste	4 863.82	5 348.87	4 781.00	4 523.60	4 539.81	–6.7	0.4	4.7	5.0
6. Other	NO	NO	NO	NO	NO	–	–	–	–
Indirect CO_2	NE, NO	NE, NO	NE, NO	NE, NO	NE, NO	–	–	–	–
Gas[a]									
CO_2	83 375.36	102 982.30	97 342.98	74 962.45	71 373.08	–14.4	–4.8	80.9	77.9
CH_4	10 906.80	11 629.75	11 003.49	10 044.50	9 679.15	–11.3	–3.6	10.6	10.6
N_2O	7 443.14	6 346.44	5 489.25	4 258.87	4 298.76	–42.2	0.9	7.2	4.7
HFCs	1 182.82	5 261.86	4 392.63	5 919.62	6 116.04	417.1	3.3	1.1	6.7
PFCs	190.26	122.26	129.44	119.52	135.17	–29.0	13.1	0.2	0.1
SF_6	2.93	3.81	5.86	5.06	5.20	77.6	2.8	0.0	0.0
NF_3	NA, NO	NA, NO	NA, NO	NO, NA	NO, NA	–	–	–	–
Total GHG emissions without LULUCF	**103 101.31**	**126 346.42**	**118 363.64**	**95 310.03**	**91 607.40**	**–11.1**	**–3.9**	**100.0**	**100.0**
Total GHG emissions with LULUCF	**100 982.34**	**124 410.38**	**115 325.27**	**91 618.34**	**88 298.58**	**–12.6**	**–3.6**	**–**	**–**

Source: GHG emission data: Greece's 2018 annual submission, version 1.

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

21. The increase in Greece's total GHG emissions between 1990 and 2005 was driven by economic growth and improvements in living standards, which increased energy demand, particularly in the residential, service and transport sectors. The decrease in total emissions from 2006 was driven mainly by the economic crisis, which began in 2009, but also by PaMs introduced, particularly in the energy sector.

22. Between 1990 and 2016, GHG emissions from the energy sector decreased by 13.1 per cent (10,043.45 kt CO_2 eq). Factors contributing to this trend include the decommissioning or refurbishment of lignite-fired power plants and the shift towards natural gas and renewable energy sources, leading to a 14.4 per cent decrease in GHG emissions from the energy sector. At the same time, GHG emissions from fuel combustion from transport increased by 20.2 per cent (2,931.54 kt CO_2 eq), while GHG emissions in all other energy subsectors decreased over the same period.

23. Between 1990 and 2016, GHG emissions from industrial processes and product use increased by 10.4 per cent (1,167.21 kt CO_2 eq). The lowest value, seen in 2011, was the result of the economic crisis, but the general increase can be attributed to the increase in F-gas emissions related to HFCs. Between 1990 and 2016, GHG emissions from the agriculture sector decreased by 22.6 per cent (2,293.66 kt CO_2 eq), owing mainly to the economic crisis, a more efficient use of fertilizers and a trend towards urbanization. Between 1990 and 2016, GHG emissions from the waste sector decreased by 6.7 per cent (324.01 kt

CO_2 eq), owing mainly to the increase in recycling rates and biogas capture, as well as the increased use of aerobic wastewater handling facilities.

24. Between 1990 and 2016, CO_2 emissions decreased by 14.4 per cent, owing mainly to the decrease in energy demand caused by the economic crisis. Over the same period, CH_4 emissions decreased by 11.3 per cent, mainly owing to an increase in biogas capture in the waste sector, while N_2O emissions decreased by 42.2 per cent, mainly owing to a more efficient use of synthetic nitrogen fertilizers in the agriculture sector. While PFCs decreased by 29.0 per cent, mainly owing to production improvements in the aluminium sector, HFCs and SF_6 emissions increased by 417.1 and 77.6 per cent, respectively. For HFCs, this increase was attributed to their use in replacing ozone-depleting substances under the Montreal Protocol.

25. The summary information provided on GHG emissions was consistent with the information reported in the 2017 annual submission.

26. MEEN has the overall responsibility for the GHG inventory at the national level and plays an active role in its planning and management. MEEN assigns the task of preparing the GHG inventory to external consultants at the National Technical University of Athens/School of Chemical Engineering and a LULUCF expert retained on a contractual basis. Appointed persons at governmental ministries and agencies provide the necessary data.

(b) Assessment of adherence to the reporting guidelines

27. The ERT assessed the information reported in the NC7 of Greece and identified an issue relating to transparency and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 6.

Table 6
Findings on greenhouse gas inventory information from the review of the seventh national communication of Greece

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 12 Issue type: transparency Assessment: encouragement	The Party did not provide diagrams for the GHGs reported in the summary tables. During the review, Greece provided diagrams and charts that clearly depicted sectoral emission trends over the historical period. The ERT encourages Greece to provide a descriptive summary and diagrams for sector-level GHGs reported in the summary tables.
2	Reporting requirement specified in paragraph 12 Issue type: transparency Assessment: encouragement	The Party did not provide a description of the factors underlying the emission trends in respect of transport and fugitive emissions. During the review, Greece provided details on factors influencing these specific trends. The ERT encourages Greece to describe the factors underlying each of the emission trends in respect of transport and fugitive emissions its next NC.

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

(a) Technical assessment of the reported information

28. Greece 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 national system reflected in the report on the individual review of the 2017 annual submission of Greece.

(b) Assessment of adherence to the reporting guidelines

29. The ERT assessed the information reported in the NC7 of Greece 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

30. In the NC7 Greece 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 national registry reflected in the report on the individual review of the 2017 annual submission of Greece.

(b) Assessment of adherence to the reporting guidelines

31. The ERT assessed the information reported in the NC7 of Greece 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.

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

32. For the second commitment period of the Kyoto Protocol, from 2013 to 2020, Greece committed to contributing to the joint EU effort to reduce GHG emissions by 20 per cent below the base-year level. The use of flexible mechanisms for the 2020 target is described in section A.I.3.2.2 and table A.I.3 of the NC7.

33. Greece ratified the Kyoto Protocol in 2002 (Law 3017/2002) and adopted a national programme for achieving its commitment by a decision of the Council of Ministers (DCM5/2003). Under Law 3017/2002, MEEN is designated as the governmental body responsible for the coordination of all other competent ministries and any other public or private entities involved in the implementation of the provisions of the Kyoto Protocol and the formulation and monitoring of the national programme. Under this law, all issues related to the implementation of the provisions of the Kyoto Protocol, including the establishment of any necessary administrative structures and procedures or enforcement rules, are to be resolved and adopted by common ministerial decisions of MEEN or other competent ministries, as appropriate. The same procedure applies to the introduction into national legislation of any decisions of the Conference of the Parties and/or the CMP or any necessary modifications to the national programme.

34. With Joint Ministerial Decision 54409/2632/2004, the EU directive on establishing a scheme for GHG emission allowance trading (directive 2003/87/EC) has been transposed into Greek legislation. With this decision, amended later by Joint Ministerial Decision 181478/965/2017, the Division of Climate Change and Air Quality of MEEN is designated as the responsible authority for the implementation of the related provisions.

35. With Law 4345/2015, the ratification of the Doha Amendment to the Kyoto Protocol has been transposed into Greek legislation.

36. MEEN is responsible for formulating policies concerning environmental protection, energy, climate change and forestry; coordinating implementation efforts; and ensuring compliance with the current legislative framework. For this purpose, MEEN cooperates both

with other competent ministries and with regional, prefectural and local authorities. Other ministries are responsible for taking into account environmental policy and climate change targets in their respective fields. Climate change mitigation is one of the main targets identified in the policy for sustainable development launched by MEEN in 2002, the objective of which is to develop a set of principles for formulating an action plan that addresses international challenges, in accordance with EU policy directions and on the basis of specific national circumstances. PaMs, as well as all other issues and actions regarding mitigation, are discussed within the framework of an interministerial committee comprising representatives from all competent ministries. Final approval of PaMs related to climate change mitigation is the responsibility of the Council of Ministers.

37. Information about the GHG inventory and projections, PaMs for reducing GHG emissions, and legislative arrangements and enforcement and administrative procedures in place to meet the national commitments under the Kyoto Protocol are publicly accessible on the UNFCCC and European Environment Agency websites and on the MEEN website (http://www.ypeka.gr/).

38. Greece has national legislative arrangements and administrative procedures in place to ensure that activities implemented under Article 3, paragraph 3, forest management activities implemented under Article 3, paragraph 4, and any elected activities implemented under Article 3, paragraph 4, of the Kyoto Protocol also contribute to the conservation of biodiversity and the sustainable use of natural resources. Law 998/1979 on the protection of the country's forest and other wooded land lays down specific protection measures for maintaining, developing and improving the country's forests and other forested lands.

39. Forest management is carried out in accordance with specific rules and guidelines regarding the provision of products, growing stock and other uses in order to preserve and promote the sustainability of forests. Law 4173/1929 on Greece's Forest Code regulates matters such as protection, management, ownership rights on forest land, taxation, exploitation of State and privately owned forests, and improvement works. The Forest Code is the primary legislation on forestry.

40. Law 3208/2003 covers the principle of sustainability, conservation of biodiversity and multiple uses of forest lands. This law sets out special measures to protect the landscape and conserve biodiversity that must be taken during the management, planning and use of forest ecosystems. Pursuant to Article 24 of the Constitution of Greece, land-use changes to forests are prohibited unless they are in the public interest. Thus, deforestation activities are limited and permitted only in specific cases that benefit the public, for example, for the construction of roads or railways or the installation of high-tension power lines. Such deforestation activities are subject to direct administrative procedures (Legislative Decree No. 86/1969, Law 998/1979, Law 1734/1987) and must be authorized by the Forest Service, which is the responsible authority. Any other temporary loss of forest cover is not considered deforestation and is declared instantly reforested with the aim of allowing it to recover to its former state.

(b) Assessment of adherence to the reporting guidelines

41. The ERT assessed the information reported in the NC7 of Greece and recognized that the reporting is complete, transparent and adhering to the reporting guidelines for supplementary information. 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

42. Greece provided information on its package of PaMs implemented and adopted in order to fulfil its commitments under the Convention and its Kyoto Protocol. Greece 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.

43. Greece provided information on PaMs by sector. This information is not consistently subdivided by gas, although information about the gases affected by each PaM is presented in table 4.13a of the NC7.

44. Greece provided information on a set of PaMs similar to those previously reported, but did not indicate cases where PaMs had been either amended or newly introduced since the previous submission.

45. Greece reported that all the PaMs listed in previous NCs were still in place. However, a comparison of the current and previous submissions shows that some PaMs reported previously are no longer in place. For example, Greece reported in its NC6 the commissioning of new carbon capture ready power units (section 4.3.2.3) as one of the main measures taken to improve the conventional power generation system; however, this activity is not reported in the NC7.

46. Greece also confirmed 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.

47. Greece gave priority to implementing the PaMs that make the most significant contribution to its emission reduction efforts, based on the ERT's assessment of the estimated emission impacts of various PaMs reported. However, Greece did not describe how it gives priority to PaMs that have the most significant impacts on GHG emissions and removals.

48. Greece provided information on how it believes its PaMs are changing longer-term trends in anthropogenic GHG emissions and removals in accordance with the objective of the Convention. Greece described how it periodically updates its PaMs to reduce emissions further.

49. Greece did not explicitly discuss the effects of PaMs achieved since its NC6, although some information on the progress of the implementation of policies and emission reductions in 2015 was presented in the NC7. For example, tables 4.7, 4.9 and 4.13a provide information on effects (renewable energy share in electricity generation, natural gas penetration, estimated mitigation effect, etc.) achieved in 2015.

50. Greece reported that a significant portion of PaMs are implemented at the local level because half of GHG emissions are created in cities, which account for up to 80 per cent of the total energy consumption. Local PaMs reported by the Party include traffic and public transport measures, incorporation of renewable energy projects into regional development plans, implementation of infrastructure projects and recycling of electric appliances, batteries and packaging materials.

51. The key overarching cross-sectoral policy in the EU is the 2020 climate and energy package, adopted in 2009, which includes the revised EU ETS and the ESD. The package is supplemented by renewable energy and energy efficiency legislation and the carbon capture and storage directive.

52. In operation since 2005, the EU ETS is a cap-and-trade system that covers all significant energy-intensive installations (mainly large point emissions sources such as power plants and industrial facilities), which produce 40–45 per cent of the GHG emissions of the EU. It is expected that the EU ETS will guarantee that the 2020 target (a 21 per cent emission reduction below the 2005 level) will be achieved for sectors under the scheme. The third phase of the EU ETS started in 2013 and the system now includes aircraft operations (since 2012) as well as N_2O emissions from chemical industries, PFC emissions from aluminium production and CO_2 emissions from some industrial processes that were not covered in the previous phases of the EU ETS (since 2013).

53. 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, and it includes binding annual targets for each member State for 2013–2020.

54. Other overarching cross-sectoral policies, which constitute a legislative framework that supports and sets the targets of the respective national policies for restricting GHG emissions in Greece, are the EU 2030 climate and energy framework; aviation and marine bunker regulations (ICAO, IMO); financing mechanisms (Green Fund, LIFE, European Structural and Investment Funds, etc.); and fiscal measures such as the EU directive on energy taxation (directive 2003/96/EC), taxation of energy products, car registration tax and road taxes. The Second National Climate Change Programme continues to be the most important national policy supporting climate change mitigation in Greece.

55. Greece reported information related to adopted and implemented PaMs, but noted in section 5.2 of the NC7 that it had not reported any planned policies because it believes the national mitigation commitments (ESD target) will be met without the need for any additional policies. However, the NC7 refers to planned policies under the new 2030 climate and energy framework.

56. Greece reported that EU policy takes into account the minimization of adverse effects of PaMs for reducing emissions in section 4.4 of its NC7. Greece also informed the ERT that its climate change policies are formulated in line with EU policy and thus it did not report any national policies on minimizing adverse social, environmental and economic impacts on developing country Parties.

57. Greece introduced national-level policies to achieve its target under the ESD. The key policies reported are the promotion of natural gas, improvements to the conventional power generation system, the promotion of renewable energy sources, the implementation of energy efficiency measures, the implementation of road transport measures, the recovery of organic waste and biogas, the reduction of emissions of F-gases and the implementation of the Common Agricultural Policy. The policies with the most significant impacts on climate change mitigation are the promotion of renewable energy sources and improvements to the conventional power generation system. Other policies that have delivered significant emission reductions are the promotion of natural gas and energy efficiency and transport measures.

58. Greece did not include in its NC7 any domestic mitigation actions that are under development. However, during the review Greece provided information regarding a number of nationally planned PaMs, for example as part of the new National Energy and Climate Plan and the Action Plan on Emissions Reduction. Table 7 provides a summary of the reported information on the PaMs of Greece.

Table 7
Summary of information on policies and measures reported by Greece

Sector	*Key PaMs*	*Estimate of mitigation impact by 2020 (kt CO_2 eq)*
Energy		32 162
Improvements in the conventional power generation system	Decommissioning of old thermal power units; commissioning of new power units that have lower emissions; increase of the natural gas share in electricity production; interconnection of certain islands with the mainland grid	11 700
Natural gas promotion	Promotion of natural gas in residential, tertiary and industrial sectors	1 225
Transport	Promotion of natural gas and biofuel use in transport; road transport measures	1 007
Renewable energy	Promotion of renewable energy sources for electricity generation	15 000
Energy efficiency	Implementation of National Energy Efficiency Action Plan in industry and residential and tertiary sectors	3 230

Sector	*Key PaMs*	*Estimate of mitigation impact by 2020 (kt CO_2 eq)*
Industrial processes and product use	Reduction of emissions of F-gases	460
Agriculture	Common Agricultural Policy, Rural Development Programme, green direct payments	905
Waste	Recovery of organic waste and biogas	1 300

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.

59. Greece provided a brief description of the estimation method used for quantifying GHG emission impacts in its NC7; however, the information provided was insufficient for the ERT to perform a technical assessment of the estimated impacts of the PaMs. During the review, Greece provided detailed information on the methodologies used to estimate the mitigation effects of individual PaMs.

60. Greece reported on the effects of 16 individual mitigation actions for 2020, 2025 and 2030 and the estimated ex post impacts of 13 of them in 2015 in table 4.13a of the NC7.

61. The ERT noted that there was a significant difference between the reported mitigation effects of the same PaMs in two consecutive submissions, but no explanation for this difference was provided. For example, the estimated effect of the implementation of biofuel in transport decreased from 2,173 kt CO_2 eq in the NC6 to 650 kt CO_2 eq in the current submission. In addition, the estimated effects of natural gas promotion increased. The Party clarified during the review that this difference was due to changes in national circumstances since previous submissions and the use of actual, up-to-date effects of certain PaMs in projections up to 2020.

(b) Policies and measures in the energy sector

62. The Second National Climate Change Programme continues to be the most important national policy framework supporting climate change mitigation in the energy sector.

63. Greece reported only CO_2-related mitigation impacts of PaMs in the energy sector (NC7, table 4.13a), stating that CO_2 accounts for more than 99 per cent of affected gases. The ERT noted that reducing the non-CO_2 GHGs that make up the remaining 1 per cent of emissions could have a significant impact on some sectors and that transparency could be improved if Greece provided information on the effects of reducing non-CO_2 GHGs through PaMs in the energy sector.

64. **Energy supply**. The most significant PaM related to energy supply is the improvement of the conventional power generation system, which includes gradually decommissioning old, inefficient and thus more polluting thermal power units; commissioning new power units that meet the best available technology standard (in terms of emission control) and Greece's new industrial emissions directive; increasing the natural gas share in electricity production; and interconnecting a number of islands with the mainland grid.

65. Lignite is still the dominant fuel in the energy mix, followed by natural gas and renewable energy sources (solar and wind), although Greece has made substantial progress in diversifying its energy mix for electricity generation, having reduced its lignite capacity by 913 MW during 2010–2016.

66. Some of the northern Cycladic islands are currently being connected to the mainland grid. This project is considered critical for two important government energy policies: enhancing the reliability of the electricity supply and supporting the development of renewable energy sources. The Cycladic islands have high wind potential, a large part of which has not yet been exploited.

67. The other significant policy related to energy supply is the promotion of natural gas. Decommissioned lignite is mainly replaced by natural gas in electricity and heat production. Natural gas is becoming an increasingly important fuel in Greece, accounting for 28 per cent of power generation and 15 per cent of the total primary energy supply in 2016, and more than doubling its share in total final consumption over the last decade. Power generation is the largest gas-consuming sector, accounting for half of the total gas consumption in 2015. The contribution of natural gas to the generation of power in the national energy system was 55 PJ in 2015, and is expected to account for almost 90 per cent of fuels used in power generation in 2020.

68. Action taken to increase the use of natural gas was reported by the Party, including fiscal measures such as discounts on connection fees, marketing, the development of networks (infrastructure), liberalization of the electricity and natural gas markets, participation in the EU ETS and the restriction of environmental permits for industrial installations.

69. **Renewable energy sources**. Greece developed its policy on renewable energy promotion under the EU renewable energy directive (directive 2009/28/EC). The National Renewable Energy Action Plan (time frame 2010–2020) set the following indicative sector targets for the contribution of renewable energy sources to gross final energy consumption: 20 per cent for heating and cooling, 10 per cent for transportation and 40 per cent for gross final electricity consumption.

70. In 2015, the share of renewable energy in final energy consumption was around 26 per cent for heating and cooling and 1.4 per cent for transportation. The share of renewable energy represented almost 19 per cent of the total electricity generated in 2016.

71. **Energy efficiency**. The EU 2020 climate and energy package includes an energy efficiency target of 20 per cent by 2020. In Greece, energy efficiency measures were developed and implemented through the 2011 Energy Efficiency Plan and the EU energy efficiency directive (directive 2012/27/EU). The directive establishes a common framework of measures for the promotion of energy efficiency within the EU. Every three years, Greece prepares and submits a National Energy Efficiency Action Plan, which covers significant energy efficiency measures and their expected and/or achieved energy savings. Greece reported that measures under its National Energy Efficiency Action Plan include cross-cutting measures as well as measures addressing residential and tertiary private sector buildings, the tertiary public sector, industry, the transport sector, and efficient heating and cooling systems.

72. As a member of the EU, in compliance with the EU energy efficiency directive, Greece set a total final consumption target of 18.4 Mtoe for 2020, which represents a 12 per cent reduction compared with the 2005 level. However, due to the economic crisis, total final consumption fell to 16.4 Mtoe in 2015, 11 per cent below the 2020 reduction target. During the review the Party informed the ERT that it was difficult to distinguish the effects of energy efficiency measures from the reduction in energy consumption resulting from the economic crisis.

73. **Residential and commercial sectors**. Several actions are included in the National Energy Efficiency Action Plan concerning the conservation and rational use of energy in the residential and tertiary sectors. In addition to the introduction of natural gas and renewable energy, measures involve improving the thermal behaviour of residential sector buildings and promoting energy-efficient appliances and heating equipment.

74. The residential and commercial sectors account for small but growing shares of total natural gas consumption. Following a drop between 2011 and 2013, natural gas consumption hit record levels in these sectors in 2015, accounting for one fifth of the total gas consumption. However, natural gas consumption represented only 8 per cent of the total energy consumption in the residential and commercial sectors in 2015.

75. Greece reported that the effect of the implemented and adopted PaMs under the National Energy Efficiency Action Plan concerning the residential and tertiary sectors on GHG emissions is estimated to be a reduction of 2.9 Mt CO_2 eq for 2020. The ERT noted that

this estimate was 93 kt CO_2 eq in 2015, which is a considerable difference. During the review the Party explained that this is the result of delays in the implementation of some measures.

76. **Transport sector**. The most significant PaMs in the transport sector are increasing biofuel use, increasing natural gas use and road transport measures such as infrastructure improvements, EU vehicle efficiency policies and mode shifting. Greece reported that implemented and adopted PaMs in the transport sector would have an estimated effect of a 1,007 kt CO_2 eq reduction in GHG emissions for 2020.

77. Natural gas (0.7 PJ in 2015) is also consumed in the transport sector, with natural gas powered buses having already been introduced in Athens. The Party reported that it faced difficulties with introducing certified biofuel into the transport sector and meeting its targets, with renewables accounting for just 1.4 per cent of transport energy in 2015, which the Party reported as lagging in view of the 2020 target of 10 per cent.

78. The Party reported on the policies and strategies of the United Nations and other international organizations with respect to aviation and marine bunker fuels in its NC7. Greece's reported policies focus on EU activities and developments within ICAO and IMO.

79. **Industrial sector**. Greece reported that the EU ETS is the main policy instrument for reducing GHG emissions in the industrial sector.

80. Energy efficiency improvements and cogeneration plants in parts of the industrial sector have been promoted since the First National Climate Change Programme, through the provisions of development assistance acts, Law 2244/93 (for cogeneration plants), the Operational Programme for Energy within the 2nd Community Support Framework (1994–1999) and the Operational Programme for Competitiveness. Such improvements include energy-saving interventions; developing and implementing systems for the recovery, saving and substitution of conventional energy; conducting energy audits and benchmarking; streamlining equipment; upgrading facilities; and installing new energy-efficient technologies.

81. The penetration of natural gas in the industrial sector was reported as 18.1 PJ in 2015 with a target of 24.5 PJ by 2020. The industrial sector is the second-largest consumer of natural gas, accounting for 29 per cent of the total natural gas consumption in 2015.

82. Achievable emission reductions through the implementation of adopted PaMs in the industrial sector (cogeneration plants and PaMs included in the National Energy Efficiency Action Plan) are estimated to reach 300 kt CO_2 eq in 2020.

(c) Policies and measures in other sectors

83. **Industrial processes**. The main PaM in this sector is the implementation of two EU legislative acts: the EU directive on mobile air-conditioning units (directive 2006/40/EC) and the F-gas regulation (No. 517/2014), which covers all other key applications related to the use of F-gases. During the review, Greece explained that the latter policy promotes two main strategies: preventing leakage and emissions and controlling the use of F-gases.

84. The most relevant initiatives for preventing leakage and emissions are emission prevention and leak checks, control of by-production, end of life treatment of products and equipment, training and qualifications, and information for users (labelling, product information). The most relevant initiatives for controlling the use of F-gases are a ban on new applications, a ban on uses and phase-out of HFCs. These PaMs are estimated to bring about a reduction of 460 kt CO_2 eq in 2020 and 2,300 kt CO_2 eq in 2030.

85. **Agriculture**. Most PaMs in this sector were developed as a result of the Common Agricultural Policy, which is applicable to all EU member States. In implementing the Common Agricultural Policy, Greece has introduced a system of direct payments to farmers (green direct payments), subject to meeting requirements for the provision of environmental public goods, viable food production, sustainable management of farmland and environmentally friendly practices. In order to receive payments, farmers must comply with a set of basic rules.

86. The 2014–2020 Rural Development Programme is a PaM focused on enhancing farm viability and competitiveness, preserving and enhancing ecosystems and promoting local

development in rural areas. It will be used to fund actions under the six rural development priorities, with an emphasis on enhancing sustainable forestry and the competitiveness of the agriculture sector and on restoring, preserving and enhancing ecosystems related to forestry and agriculture.

87. The 2014–2020 Rural Development Programme is required to spend at least 30 per cent of the total funds received from the European Agricultural Fund for Rural Development on climate change mitigation and adaptation, and other environmental issues. The Programme carries out the following actions related directly to reducing GHG emissions: organic farming; decreasing the use of synthetic nitrogen fertilizers; disengagement of subsidies from agricultural production (reduction of the rate of intensity of agricultural land use); using environmentally friendly livestock farming methods, including improving the management of animal waste; increasing energy efficiency and renewable energy generation and use, including biomass; improving the management of soil (agricultural practices in mountainous areas, green cover and permanent grassland) and increasing carbon removals.

88. Other PaMs focus on the promotion of organic farming, reduction of fertilizer use, reduction of the rate of intensity of agricultural land use and improvement of animal waste management. These PaMs were estimated to bring about a reduction of 800 kt CO_2 eq in 2015, 905 kt CO_2 eq in 2020 and 1,250 kt CO_2 eq in 2030.

89. **LULUCF**. Greece provided detailed information on PaMs in this sector, including the conservation and protection of existing forest land, a gradual increase in forest land and actions to improve degraded forest lands. During the review the Party provided additional information on the Public Investment Programme, the regular budget of MEEN, the Special Body of Forests (Green Fund), projects under the Operational Programme for Transport Infrastructure, Environment and Sustainable Development (2014–2020) and projects under the Operational Programme for Rural Development (2014–2020). Other projects in this sector, in particular those highlighted during the review, were based on small-scale case studies. As a next step, in view of their success, these practices will be presented to the EU and national stakeholders for possible incorporation into policy or legislative frameworks.

90. The ERT noted that impacts were not estimated for LULUCF PaMs. Greece explained during the review that there was a great deal of uncertainty regarding the impacts of PaMs in the LULUCF sector in general, and that many of these PaMs were small-scale pilot projects, making an accurate estimation of the impacts even more difficult.

91. **Waste management**. PaMs in this sector focus on the recovery of organic waste and biogas. Greece has implemented a number of measures aiming at reducing landfills, enhancing recycling and improving landfill management. The main results from those measures are a reduction in biodegradable waste landfilled through the installation of solid waste treatment facilities, the promotion of measures for separating biowaste, recycling, energy recovery and the use of sludge in agriculture as a fertilizer or for composting.

92. Greece reported both EU and national policies and regulations for the sector, such as the revised National Waste Management Plan, which calls for 50 per cent of waste (recyclable and biowaste) to be recovered through recycling and reuse at the local level; the development of regional waste management plans; financing of projects with provisions for the recovery of resources, energy and secondary materials; regulation of the alternative management of packaging waste and other products; and application of the "pay as you throw" principle.

93. The regulation for the management of biodegradable waste is expected to facilitate reductions of 800 kt CO_2 eq in 2020 and 1,000 kt CO_2 eq in 2030. The flaring or recovery of biogas in solid waste disposal sites is also expected to facilitate reductions of 500 kt CO_2 eq in 2020 and 700 kt CO_2 eq in 2030.

94. Greece also reported on actions concerning the collection, treatment and discharge of urban wastewater, as well as the implementation of regulations for the use of sludge in agriculture.

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

95. In the NC7 Greece 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.

96. Greece reported that it formulates its climate policy in line with EU policy, which takes into account the minimization of adverse effects of emission-reducing PaMs, in accordance with Article 4, paragraphs 8 and 9, of the Convention and Article 2 of the Kyoto Protocol. Greece reported examples of EU policies that seek to minimize adverse impacts when implementing PaMs, specifically those related to biomass and biofuels. Greece did not report any additional national-level policies that seek to minimize adverse effects on developing country Parties. The Party also referred the ERT to its 2018 annual submission for further information.

(e) Assessment of adherence to the reporting guidelines

97. The ERT assessed the information reported in the NC7 of Greece and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 8.

Table 8
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 Greece

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement[a] specified in paragraph 17	In the sections on specific PaMs the Party provided information on the relevant GHGs affected, but did not subdivide the reporting by GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, SF_6) affected.
	Issue type: transparency	During the review, Greece explained that each section covers a sectoral policy and specifies which gases are affected for each PaM. This information is included in table 4.13a.
	Assessment: recommendation	The ERT recommends that Greece organize its reporting on PaMs by sector and subdivided by gas affected in order to improve transparency in its next NC.
2	Reporting requirement[a] specified in paragraph 23	The Party provided a brief description of the general method used to quantify GHG emission impacts in its NC7; however, this was insufficient for the ERT to understand the origin of the estimated values of individual PaMs. This description of the general approach to estimating the mitigation impact of PaMs does not specify how it is applied to individual PaMs, nor does it describe the assumptions, conditions or actions that were considered when estimating impacts on GHG emissions.
	Issue type: transparency	During the review, Greece provided detailed information on the methodologies used to estimate the mitigation effect of each PaM.
	Assessment: encouragement	The ERT notes the improvement to reporting on this issue since the NC6 and encourages Greece to include in its next NC a description of the estimation methods used for each PaM reported that sufficiently describes each method. The ERT notes that this description could include the methods for calculating the with measures and hypothetical baseline scenarios for individual PaMs, as well as the key assumptions involved.

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
3	Reporting requirement[a] specified in paragraph 24 Issue type: transparency Assessment: encouragement	The Party only reported information related to the costs or non-mitigation benefits of a few PaMs in its NC7, for example, the benefits of road transport measures and energy efficiency measures not related to CO_2 mitigation. During the review, Greece further highlighted the non-CO_2 benefits of these two measures. The ERT encourages Greece to increase the transparency of reporting by providing information on the costs and non-mitigation benefits of each PaM, where available, in its next NC.
4	Reporting requirement[a] specified in paragraph 26 Issue type: transparency Assessment: encouragement	The Party presented PaMs that are similar in many ways to those reported in the NC6, as some have been implemented over several years. The ERT noted that the descriptions of some PaMs had been altered since the NC6, and that some PaMs were no longer in place. For example, in section 4.3.2.3 of the NC6, Greece reported the commissioning of new carbon capture ready power units as one of the main PaMs implemented and adopted to improve the conventional power generation system. However, this measure is not reported in the NC7. During the review, the Party clarified that there were no carbon capture ready power units under the energy planning and WEM scenario reported in the NC7, and carbon capture and storage is not included in the new National Energy and Climate Plan presented during the review. The ERT encourages Greece to provide an explanation as to why PaMs listed in previous NCs are no longer being implemented in order to increase the transparency of reporting. The ERT also notes that it would be helpful if the Party reported on overall changes to its PaMs since its last NC.
5	Reporting requirement[a] specified in paragraph 16 Issue type: transparency Assessment: encouragement	Greece did not report on actions taken to implement commitments under Article 4, paragraph 2(e)(ii), of the Convention. Specifically, it did not report on its actions to identify and periodically update policies and practices that lead to greater levels of GHG emissions than would otherwise occur other than for the implementation of EU policies. During the review, Greece provided some examples of how a mitigation policy was amended to ensure that it did not lead to greater levels of GHG emissions. The Party also emphasized that as an EU member State, impact assessments conducted by the EU are applicable to Greece. The ERT reiterates the encouragement of the previous ERT that Greece report in its next NC on actions taken to implement commitments under Article 4, paragraph 2(e)(ii), of the Convention, which requires that Parties identify and periodically update their own policies and practices which encourage activities that lead to greater levels of anthropogenic GHG emissions than would otherwise occur.
6	Reporting requirement[a] specified in paragraph 15 Issue type: completeness Assessment: encouragement	The Party reported on PaMs that had already been adopted or implemented, but did not report on any planned PaMs in its NC7. The Party stated in section 5.2 of its NC7 that no planned policies were reported, since the national mitigation commitments (ESD target) would be met without the need of additional policies. However, specific policies are planned under the new 2030 EU energy and climate framework as evidenced by the information provided by the Party in page 106 of its NC. During the review, Greece provided information on its new National Energy and Climate Plan, which had just been finalized, and reconfirmed that it did not provide any information about planned PaMs in the NC7 because these are not considered necessary for achieving its target. The ERT encourages Greece to report on the PaMs planned at the national, state, provincial, regional and local level.
7	Reporting requirement[b] specified in paragraph 35	The Party provided information in its NC7 on the activities of ICAO and IMO, but it did not specify the steps it took to promote and/or implement any decisions by

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
	Issue type: transparency	ICAO and IMO in order to limit or reduce emissions of GHGs from aviation and marine bunker fuels.
	Assessment: recommendation	During the review, Greece explained that no specific national PaMs had been implemented, except those required under ICAO and IMO. In addition, Greece provided a copy of its Action Plan on Emissions Reduction submitted to ICAO in September 2018.
		The ERT recommends that in its next NC Greece specify the steps it has taken to promote and/or implement any decisions by the ICAO and the IMO in order to limit or reduce emissions of GHGs not controlled by the Montreal Protocol from aviation and marine bunker fuels.

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 number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs.

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

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

98. Greece reported updated projections for 2020 and 2030 relative to actual inventory data for 2015 under the WEM scenario. The WEM scenario reported by Greece includes implemented and adopted PaMs until 2017.

99. Greece did not report a WAM or WOM scenario. It stated in its NC7 that a WAM scenario was not provided because it expects to meet its 2020 commitments solely on the basis of its currently adopted and implemented PaMs. During the review, Greece explained that it is currently drafting its integrated National Energy and Climate Plan, which will cover the period from 2021 to 2030 and take into account Greece's longer-term perspective and associated mitigation commitments.

100. Greece provided a definition of its WEM scenario, stating that it is based on the latest available official energy planning scenario, coupled with methodologies for non-energy sectors that calculate emissions using activity data, emission factors and sector-specific assumptions. In its NC7 it states that its implemented and adopted PaMs, as presented in chapter 4, are incorporated in the WEM scenario. During the review, Greece explained that only selected PaMs from chapter 4 were included in the modelling results, specifically those that include specific quantifiable parameters for that sector.

101. The WEM scenario includes specific assumptions about the electricity sector, reflecting factors such as the decommissioning of lignite-fired power plants and the interconnection of islands to the mainland grid. For example, the installed power of lignite plants is assumed to decrease by 17.0 per cent by 2020 and by 57.4 per cent by 2030 compared with the 2010 level. The WEM scenario also includes conditions based on national targets and EU directives, such as penetration rate of renewable energy of 20 per cent as well as energy efficiency savings aligned with the National Energy Efficiency Action Plan. The definition indicates that the scenario was prepared in accordance with the UNFCCC reporting guidelines on NCs.

102. The projections are presented on a sectoral basis, using the same sectoral categories as those used in the reporting on mitigation actions, and 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) for 1990–2040. The projections are also provided in an aggregated format for each sector as well as

for a Party total using global warming potential values from the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.

103. Greece reported emission projections for indirect GHGs such as nitrogen oxides, non-methane volatile organic compounds and sulfur oxides, with the exception of carbon monoxide. The ERT noted that transparency could be increased by including in its next NC information on the methodology used to develop these projections, including references to any related documentation.

104. The ERT noted the improvement in the transparency of several reporting elements, and further noted that Greece successfully responded to the recommendation and encouragements from the technical review of the NC6 regarding the reporting of projections using the same sectoral categories as those used in the section on PaMs and clearly identifying the global warming potential used in the analysis.

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

106. Greece reported on factors and activities affecting emissions for each sector, but did not always represent these data in tabular format. The ERT also noted that it was challenging to clearly identify which specific PaMs or underlying assumptions were driving the expected changes in emission trends for each sector. Likewise, Greece did not clearly identify the years in which each PaM was assumed to be implemented in its emission projections for the non-energy sectors.

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

107. The methodology used for the preparation of the projections is identical to that used for the preparation of the emission projections for the BR2 for the energy sector. Greece described the updates used in the modelling since the BR2, such as updated inventory data, as well as the updates to key assumptions, such as macroeconomic parameters and energy sector developments. Greece did not specify whether it had made any changes to the methodology used for the preparation of the projections for the non-energy sector. The ERT notes that any changes to methodologies in the non-energy sectors should also be reported.

108. To prepare its projections, Greece relied on the following key underlying assumptions: an annual GDP growth rate of 2.2 and 2.0 per cent for 2025 and 2030, respectively; a population decrease of 200,000 between 2020 and 2030; an increase in energy prices (oil, coal, natural gas) between 2020 and 2030; and an increase in the EU ETS carbon price from EUR 8 in 2020 to EUR 20 in 2030.

109. These variables and assumptions were reported in CTF table 5. The assumptions were updated on the basis of the most recent economic developments known at the time the projections were prepared. However, the historical data corresponding to these variables was not reported in the table. Likewise, projected GDP data for 2020 were not included. In response to a question raised by the ERT during the review, Greece explained that these historical variables were not used as inputs to the TIMES-MARKAL model. Greece elaborated that useful energy demand is calculated exogenously according to the expected GDP, gross value added and demographic projections and becomes the main key assumption inputted into the TIMES-MARKAL model.

110. The ERT noted that any key variables and assumptions used within the calculations included in the projection analysis should be provided on both a projected and a historical basis. This would increase the transparency of the reporting by demonstrating how these drivers have evolved over time and are expected to evolve over the projection period. The ERT further noted that Greece could explain that final useful energy demand is a key driver of energy projections and provide these data in CTF table 5.

111. Sensitivity analyses were not conducted for the key variables reported in CTF table 5. However, a sensitivity analysis was conducted for two scenarios that explored variations in the assumed annual rate of change in the final useful energy demand. The sensitivity analysis only included CO_2 emissions from the energy sector because they account for more than 80 per cent of GHG emissions in Greece, and are the only GHG emissions reported in the TIMES-MARKAL modelling analysis.

112. In response to a question raised by the ERT during the review, Greece noted that additional sensitivity analyses regarding energy prices and CO_2 allowance costs were performed, with the main impact being on Greece's electricity production portfolio, but this information was not presented in the NC7.

113. The results of the sensitivity analysis conducted showed that energy-related CO_2 emissions are projected to be 4.7 per cent lower than the WEM scenario in 2030 when the annual rate of change in the final useful energy demand was assumed to be 30 per cent lower. For the second scenario, energy-related CO_2 emissions were projected to be 1.1 per cent lower in 2030 when the annual rate of change in the final useful energy demand was assumed to be 30 per cent lower in the industrial sector and 30 per cent higher in the tertiary sector compared with the WEM scenario.

114. The ERT noted that the BR2 included sensitivity analyses for four scenarios with alternative sets of PaMs, renewable energy targets and CO_2 emission targets. These BR2 results showed that CO_2 emissions in 2020 were projected to be higher than those in the WEM scenarios for sensitivities with reduced shares of renewable energy penetration and CO_2 emission targets.

(c) Results of projections

115. The projected emission levels and information on the Kyoto Protocol target and the quantified economy-wide emission reduction target are presented in table 9 and the figure below.

Table 9
Summary of greenhouse gas emission projections for Greece

	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]	107 564.14	NA	NA
Quantified emission limitation or reduction commitment under the Kyoto Protocol (2013–2020)[b]	NA	NA	NA
Quantified economy-wide emission reduction target under the Convention[c]	NA	NA	NA
Inventory data 1990[d]	103 081.19	NA	NA
Inventory data 2015[d]	95 310.03	NA	–7.5
WEM projections for 2020[e]	91 515.29	NA	–11.2
WEM projections for 2030[e]	86 036.49	NA	–16.5

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

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

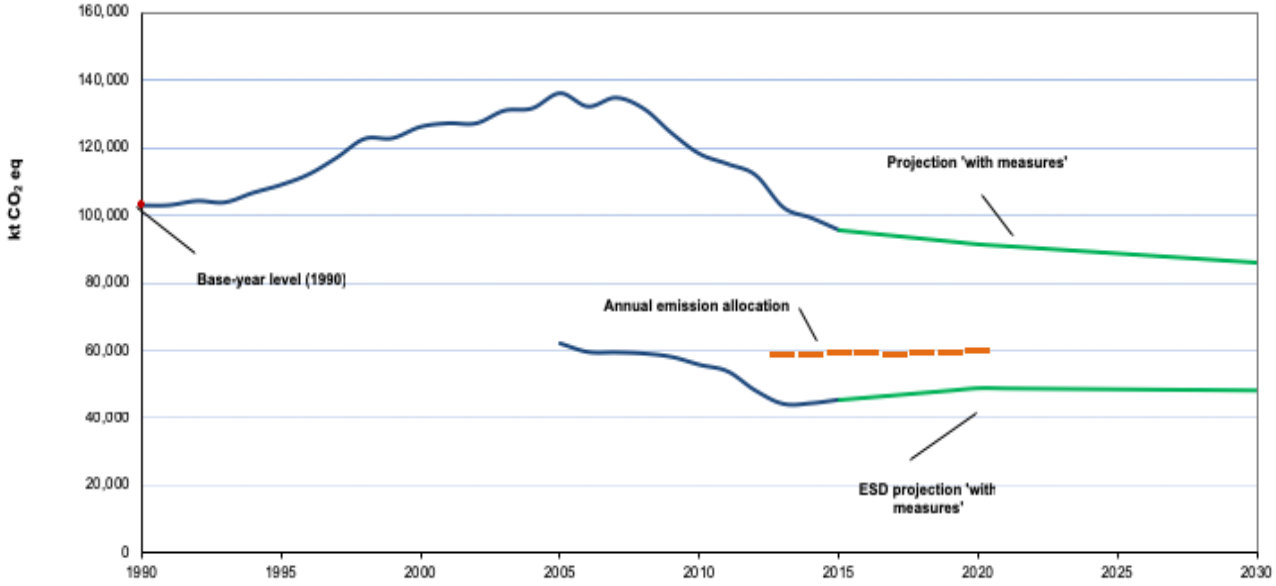
[c] The Kyoto Protocol target for the second commitment period (2013–2020) is a joint target of the EU and its 28 member States and Iceland. The target is to reduce emissions by 20 per cent compared with the base-year (1990) level by 2020. The target for non-ETS sectors is 4 per cent for Greece under the ESD. The value presented in this line is based on annex II to European Commission decision 2013/162/EU and as adjusted by Commission implementing decision 2013/634/EU that established the assigned amount for the EU member States, and divided by eight years to calculate the annual emission level.

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

[e] From Greece's BR3 CTF table 6.

[f] From Greece's NC7 and BR3.

Greenhouse gas emission projections reported by Greece



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

116. Greece's total GHG emissions excluding LULUCF in 2020 and 2030 are projected to be 11,565.91 and 17,044.71 kt CO_2 eq, respectively, under the WEM scenario, which represents a decrease of 11.2 and 16.5 per cent, respectively, below the 1990 level. The 2020 projections suggest that Greece will continue contributing to the achievement of the EU target under the Convention (see para. 32 above).

117. Greece's target for non-ETS sectors is to reduce its total emissions by 4 per cent below the 2005 level by 2020 (see para. 53 above). Greece's AEAs, which correspond to its national emission target for non-ETS sectors, change linearly from 58,955.03 kt CO_2 eq in 2013 to 60,049.19 kt CO_2 eq for 2020. According to the projections under the WEM scenario, emissions from non-ETS sectors are estimated to reach 48,926 kt CO_2 eq by 2020. This is 11,123 kt CO_2, or 18.5 per cent, below the AEA amount in 2020. The ERT noted that this suggests that Greece expects to meet its target under the WEM scenario. The ERT also noted that Greece has improved the transparency of its reporting by including information on its AEAs that facilitates the assessment of the progress made towards its ESD target.

118. Greece presented the WEM scenario by sector for 2020 and 2030, as summarized in table 10.

Table 10
Summary of greenhouse gas emission projections for Greece 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)	62 362.64	47 253.37	41 432.51	–24.2	–33.6
Transport	14 506.98	19 197.16	18 183.27	32.3	25.3
Industry/industrial processes	11 226.96	11 159.47	12 213.01	–0.6	8.8
Agriculture	10 120.79	9 172.28	9 640.08	–9.4	–4.7
LULUCF	–2 178.02	–1 714.10	–745.59	–21.3	–65.8
Waste	4 863.82	4 733.01	4 567.62	–2.7	–6.1
Other					
Total GHG emissions without LULUCF	**103 081.19**	**91 515.29**	**86 036.49**	**–9.6**	**–12.9**

Source: Greece's BR3 CTF table 6.

119. The Party did not provide information on factors and activities affecting emission trends for each sector in tabular format. This includes key PaMs and starting dates affecting sectoral trends, particularly in the non-energy sectors. During the review, Greece provided further information on the factors, activities and PaMs driving emission trends for each sector, including non-energy sectors.

120. According to the projections reported for 2020 under the WEM scenario, the most significant emission reductions are expected to occur in the energy sector, amounting to projected reductions of 15,109.27 kt CO_2 eq (24.2 per cent) between 1990 and 2020 and 20,930.13 kt CO_2 eq (33.6 per cent) between 1990 and 2030. The decrease is driven by assumptions regarding the renewable energy penetration rate, the implementation of energy efficiency measures, and continued trends away from lignite-powered electricity and towards natural gas.

121. The most significant emission increase is expected to occur in the transport sector, amounting to a 32.3 per cent increase between 1990 and 2020. This trend is driven by factors such as improved standards of living (over the full-time series), resulting in an increase in personal vehicle ownership.

122. Greece presented the WEM scenarios by gas for 2020 and 2030, as summarized in table 11.

Table 11
Summary of greenhouse gas emission projections for Greece presented by gas

	GHG emissions and removals (kt CO_2 eq)			*Change (%)*	
		2020	*2030*	*1990–2020*	*1990–2030*
Gas	*1990*	*WEM*	*WEM*	*WEM*	*WEM*
CO_2	83 375.36	70 657.40	65 417.81	–15.3	–21.5
CH_4	10 906.61	10 675.33	10 621.22	–2.1	–2.6
N_2O	7 423.22	5 104.45	5 346.88	–31.2	–28.0
HFCs	1 182.82	4 946.90	4 506.29	318.2	281.0
PFCs	190.26	126.09	138.97	–33.7	–27.0
SF_6	2.93	5.12	5.32	74.7	81.6
NF_3	NA, NO	NA, NO	NA, NO	–	–
Total GHG emissions without LULUCF	**103 081.20**	**91 515.29**	**86 036.49**	**–11.2**	**–16.5**

Source: Greece's BR3 CTF table 6.

123. For 2020, the most significant reductions compared with the 1990 level are projected for PFCs, N_2O and CO_2, at 33.7, 31.2 and 15.3 per cent, respectively. For 2030, the most significant reductions compared with the 1990 level are projected for N_2O, PFCs, and CO_2, at 28.0, 27.0 and 21.5 per cent, respectively. Both HFC and SF_6 emissions are projected to increase significantly compared with the 1990 level, but decrease compared with the 2015 level over the projection period. HFC emissions are projected to increase by 318.2 per cent by 2020 and 281.0 per cent by 2030 compared with the 1990 level, but the trend from 2015 is downward, with projected reductions of 2.5 per cent (2015–2020) and 11.2 per cent (2015–2030), owing to the implementation of the EU F-gas regulation.

(d) Assessment of adherence to the reporting guidelines

124. The ERT assessed the information reported in the NC7 of Greece and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 12.

Table 12
Findings on greenhouse gas emission projections reported in the seventh national communication of Greece

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement[a] specified in paragraph 28 Issue type: completeness Assessment: encouragement	The Party did not report a WAM or WOM scenario. Greece explained that it did not produce a WAM scenario because it expects to meet its 2020 target without further actions. However, the ERT notes that the Party is planning to implement additional measures under the 2030 climate and energy framework which will help Greece move towards fulfilling its longer-term commitments. The ERT encourages Greece to report WOM and WAM scenarios in its next NC.
2	Reporting requirement[a] specified in paragraph 46 Issue type: completeness Assessment: encouragement	The Party did not discuss the sensitivity of projections to underlying assumptions in either qualitative or quantitative terms in its NC7. During the review, Greece provided additional information regarding the sensitivity of projections to key assumptions, such as renewable energy penetration and energy efficiency directives. The ERT encourages Greece to discuss the sensitivity of projections to underlying assumptions, in particular those inherent in the final energy demand qualitatively and, where possible quantitatively, in its next NC.

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

[a] Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs.

2. Assessment of the total effect of policies and measures

(a) Technical assessment of the reported information

125. In the NC7 Greece presented the estimated and expected total effect of implemented and adopted PaMs. Greece also reported that those implemented and adopted PaMs were incorporated in the WEM scenario. During the review, Greece provided information on the approach it uses to calculate the individual and total effect of its PaMs. This approach consists of taking the difference between a WEM and a WOM scenario (hypothetical scenario) for each PaM in order to assess its effects. The total effect is then calculated by adding up the individual effects of implemented and adopted PaMs. Greece also stated it took into account the years during which PaMs were assumed to be implemented or not implemented when making its calculations.

126. Information is presented in terms of GHG emissions avoided or sequestered, by gas (on a CO_2 eq basis), in 2005, 2010, 2015, 2020, 2025 and 2030. Greece also presented relevant information on factors and activities for each sector for 1990–2030.

127. Greece reported that the total estimated effect of its adopted and implemented PaMs is 34,827 kt CO_2 eq for 2020. According to the information reported in the NC7, PaMs implemented in the energy sector will deliver the largest emission reductions, followed by PaMs implemented in the waste, transport, agriculture and industrial processes sectors. Table 13 provides an overview of the total effect of PaMs as reported by Greece.

Table 13
Projected effects of Greece's implemented and adopted policies and measures by 2020 and 2030

	2020	*2030*
Sector	*Effect of implemented and adopted measures (kt CO_2 eq)*	*Effect of implemented and adopted measures (kt CO_2 eq)*
Energy (without transport)	31 155	36 890
Transport	1 007	972
Industrial processes	460	2 300
Agriculture	905	1 250
Land-use change and forestry	NE	NE
Waste management	1 300	1 700
Total	**34 827**	**43 112**

Source: Greece's NC7.
Note: The total effect of implemented and adopted PaMs is defined as the sum of the estimated impacts of individual measures.

(b) Assessment of adherence to the reporting guidelines

128. The ERT assessed the information reported in the NC7 of Greece and identified issues relating to completeness and transparency. The findings are described in table 14.

Table 14
Findings on the assessment of the total effect of policies and measures from the review of the seventh national communication of Greece

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: encouragement	The Party reported the estimated and expected total effects of implemented and adopted PaMs. However, the total effect of planned PaMs was not reported in its NC7. The Party reported in section 5.2 of its NC7 that no planned policies had been reported because it expects to meet the national mitigation commitment (ESD target) without additional policies. However, the new 2030 EU energy and climate framework presented in the NC7 does contain planned PaMs. During the review, Greece confirmed that it did not provide any information on planned PaMs in its NC7 as these will not be necessary for achieving the ESD target. The ERT encourages Greece to present in its next NC the total effect of planned PaMs in accordance with its longer-term mitigation commitments.
2	Reporting requirement specified in paragraph 41 Issue type: transparency Assessment: encouragement	Parties may choose which approach to use to estimate the total effect of their PaMs. Greece presented in section 5.2 of its NC7 the aggregate effect of currently implemented and adopted PaMs in tabular format. This does not explain which approach Greece used to estimate the total effect of PaMs. During the review, Greece provided information on the approach used to calculate the individual and total effect of its PaMs (see para. 125 above). The ERT encourages Greece to clearly indicate which approach it used to estimate the total effect of its PaMs in its next NC.

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

129. Within the EU, supplementarity obligations under the Kyoto Protocol require that any international credit purchases by member States are in addition to emission abatement action taken domestically. Flexible mechanisms can be used by operators under the EU ETS and by governments to achieve their Kyoto targets.

130. Greece fulfilled its Kyoto Protocol target for the first commitment period. The target was met on the basis of domestic PaMs (including the EU ETS). Under the EU ETS the Party was allowed to use credits from the joint implementation and clean development mechanisms. In accordance with the principle of supplementarity of the Kyoto Protocol, for the purposes of compliance, Greece was allowed to use credits from these two mechanisms amounting to up to 9 per cent of its allocated allowances for 2008–2012. This figure was calculated according to the supplementarity principle.

131. For the second commitment period, the use of flexible mechanisms for the 2020 target is described in section A.I.3.2.2 and table A.I.3 of the NC7. Greece will not use credits from flexible mechanisms for its ESD target, although EU ETS operators may use international credits subject to quantitative and qualitative limits.

(b) Assessment of adherence to the reporting guidelines

132. The ERT assessed the information reported in the NC7 of Greece and recognized that the reporting is complete, transparent and adhering to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

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

133. Greece 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.

134. Greece indicated what “new and additional” financial resources it provided and clarified how it has determined such resources as being “new and additional”. Greece considers resources to be “new and additional” if they were committed after, and not included in, the previous NC.

135. Greece did not describe how its resources address the adaptation and mitigation needs of non-Annex I Parties. It did not describe how those resources assist non-Annex I Parties in mitigating and adapting 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. Greece did not provide information on the assistance it 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. Greece did not report whether it contributed to the Adaptation Fund. During the review, Greece explained that it had not contributed to the Adaptation Fund.

136. Greece reported that owing to the difficult fiscal circumstances it faces, its net bilateral and multilateral official development assistance disbursements have been falling since 2008, both in absolute terms and as a percentage of its gross national income, though the ERT noted that data for the latest reported year, 2016, showed an upward trend.

137. With regard to the most recent financial contributions aimed at enhancing the implementation of the Convention by developing countries, Greece reported that its climate finance was allocated to programmes such as the International Union for the Conservation of Nature. Table 15 includes some of the information reported by Greece on its provision of financial support.

Table 15
Summary of information on provision of financial support by Greece in 2015–2016
(Millions of United States dollars)

Allocation channel of public financial support	*Year of disbursement*	
	2015	*2016*
Official development assistance[a]	238.70	368.53
Climate-specific contributions through bilateral, regional and other channels	0.252	0.257

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

138. During the review, Greece highlighted the challenges it had faced in allocating climate-related funds. For example, some entities do not include the necessary information related to Rio markers when providing their data, which makes it difficult to categorize such support.

(b) Assessment of adherence to the reporting guidelines

139. The ERT assessed the information reported in the NC7 of Greece and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 16.

Table 16
Findings on financial resources, including under Article 11 of the Kyoto Protocol, from the review of the seventh national communication of Greece

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement[a] specified in paragraph 52 Issue type: transparency Assessment: recommendation	The Party did not provide in its NC7 clear and detailed information on the assistance it provided to developing country Parties that are particularly vulnerable to the adverse effects of climate change to help them meet the costs of adaptation to those adverse effects. During the review, Greece described the support it provided for adaptation activities (CTF table 7(b)), namely to the International Union for the Conservation of Nature, the Trust Fund for the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area, and the Ramsar Convention/MedWet Initiative targeting developing countries in the Middle East and North Africa and in Eastern Europe that are particularly vulnerable to the adverse effects of climate change. The ERT recommends that the Party clarify in its next submission how the assistance it provided to developing country Parties targets those that are particularly vulnerable to the adverse effects of climate change to help them meet the costs of adaptation.
2	Reporting requirement[a] specified in paragraph 53 Issue type: completeness Assessment: recommendation	The Party did not provide data for financial resources related to the implementation of the Convention provided to developing country Parties through bilateral and regional channels for 2013 and 2014. The ERT recommends that the Party provide complete data for financial resources related to the implementation of the Convention provided to developing country Parties through bilateral, regional and other multilateral channels in its next NC.

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
3	Reporting requirement[a] specified in paragraph 53 Issue type: completeness Assessment: encouragement	The Party did not provide in its submission a table 5 for bilateral and regional contributions as specified in the NC guidelines. The ERT encourages the Party to include table 5 in its next NC.
4	Reporting requirement[b] specified in paragraph 41 Issue type: completeness Assessment: recommendation	The Party did not provide information in its NC7 on how it took into account the need for adequacy and predictability in the flow of the provided resources. During the review, Greece explained that it does not currently provide information to developing countries on predicted financial flows as it would be difficult to do so accurately. The ERT recommends that the Party include information in its next NC on how it took into account the need for adequacy and predictability in the flow of the provided resources.

Note: Any reporting requirements not included in this table are considered to have been met in a complete and transparent manner and in adherence to the UNFCCC reporting guidelines on NCs.

[a] The paragraph number listed under the reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs.

[b] The paragraph number listed under the reporting requirement refers to the relevant paragraph of the reporting guidelines for supplementary information.

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

(a) Technical assessment of the reported information

140. Greece 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. Greece provided examples of support provided for the deployment and enhancement of the endogenous capacities and technologies of non-Annex I Parties.

141. The ERT took note of the information provided in CTF table 8 on recipient regions, target areas, measures and focus sectors of technology transfer programmes. Greece reported on the PROMITHEASnet Energy and Climate Change Policy Network, which provides a forum for scientific entities of the Black Sea Economic Cooperation region to interact, exchange views and cooperate on research issues related to climate change, energy and sustainable development.

142. The ERT noted that Greece reported on several technology transfer projects and programmes, such as SYN-ENERGY, which facilitates regional assessments of renewable energy sources and energy efficiency in several Eastern European non-Annex I Parties and the installation of solar power systems for household use in Sri Lanka.

143. Greece 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 the implementation of Article 10 of the Kyoto Protocol.

(b) Assessment of adherence to the reporting guidelines

144. The ERT assessed the information reported in the NC7 of Greece 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 technology development and transfer, including information under Article 10 of the Kyoto Protocol, from the review of the seventh national communication of Greece

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement[a] specified in paragraph 54 Issue type: completeness Assessment: encouragement	Greece did not specify how it encouraged private sector activities or how these activities could help meet the commitments of Parties under Article 4, paragraphs 3, 4 and 5, of the Convention. During the review, the Party confirmed that it does not yet have a system in place to track private financial flows and that, owing to the economic crisis, it is not actively encouraging private sector activities. However, Greece acknowledged the importance of mobilizing the private sector to provide finance for adaptation and mitigation activities in developing countries. The ERT reiterates the encouragement in the previous review report, for the Party to indicate in its next NC, where feasible, in what way it encouraged private sector activities, and how these activities help meet the commitments of Parties under Article 4, paragraphs 3, 4 and 5, of the Convention, in order to increase the completeness of its reporting.
2	Reporting requirement[a] specified in paragraph 55 Issue type: completeness Assessment: recommendation	The Party did not report its activities for financing access by developing countries to soft and hard environmentally sound technologies. The ERT recommends that the Party report its activities for financing access by developing countries to soft and hard environmentally sound technologies.
3	Reporting requirement[a] specified in paragraph 55 Issue type: completeness Assessment: recommendation	While the Party reported on several measures to promote and facilitate the transfer of technology, it did not provide information on success and failure stories. During the review, Greece highlighted the technology transfer aspects of some of its projects. The ERT recommends that Greece, where feasible, provide information in its next submission on success and failure stories related to technology development and transfer.

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.

E. Vulnerability assessment, climate change impacts and adaptation measures

1. Technical assessment of the reported information

145. Greece provided the required information in its NC7 on the expected impacts of climate change in the country; 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. Greece provided a description of climate change vulnerability and the impacts on coastal zones, the mainland and islands, and highlighted the adaptation response actions taken and planned at different levels of government. The vulnerable sectors identified in the report include agriculture and stock breeding, forestry, biodiversity and ecosystems, fisheries and aquaculture, water resources, coastal zones, tourism, energy, infrastructure and transport, health, the built environment, mining and quarrying, cultural heritage and insurance.

146. Law 4414/2016 established Greece's first National Climate Change Adaptation Strategy. This overarching policy document defines the goals, principles and priorities of adaptation and lists potential adaptation measures for all environmental and socioeconomic

sectors. It provides guidance that will later be downscaled and translated into regional adaptation action plans.

147. Adaptation matters were addressed with the adoption of the National Climate Change Adaptation Strategy, which provides further direction to government agencies on enhancing preparedness for climate change. This Strategy provides an initial five-year timeline for building the capacity to prioritize adaptation matters and implement initial actions. The first draft initiates the process of revising and updating existing information on the impacts of climate change. Table 18 summarizes the information on vulnerability and adaptation to climate change presented in the NC7 of Greece.

Table 18
Summary of information on vulnerability and adaptation to climate change reported by Greece

Vulnerable area	*Examples/comments/adaptation measures reported*
Agriculture and stock breeding	*Vulnerability*: Drought and desertification. *Adaptation*: The following adaptation measures are under way or have been carried out: participation in the project on the adaptation of agriculture in European regions at environmental risk under climate change; development of a national agricultural policy; implementation of EU regulations and directives; establishment of a cross-compliance system; establishment of the Greek National Action Plan for Combating Desertification; acquisition and dissemination of innovative knowledge; promotion of regional planning based on vulnerability levels and new data; establishment or improvement of existing monitoring systems; sustainable management of natural resources, changes in biological material and cultivation techniques; risk management of climate change disasters.
Forestry	*Vulnerability*: Reduced precipitation; increase in temperatures; increased risk of wildfires; rising sea levels. *Adaptation*: The following adaptation measures are under way or have been carried out: 2014–2020 Rural Development Programme; adaptation and implementation of the Forest Service; implementation of the AdaptFor project (adaptation of forest management to climate change in Greece); establishment of the Greek National Action Plan for Combating Desertification; acquisition and exploitation of innovative knowledge; sustainable management of natural resources; limitation of fires; production of usable water.
Biodiversity and ecosystems	*Vulnerability*: Direct impact on organisms; land-use change and habitat loss. *Adaptation*: The following adaptation measures are under way or have been carried out: Law 3937/2011 regarding the conservation of biodiversity; National Biodiversity Strategy 2014–2018; Natura 2000 initiative; increasing the amount of protected areas; participation in the Convention on International Trade in Endangered Species; development of 11 special environmental studies and management plans; protection of the Natura 2000 network by joining the Nationwide Network on Protected Areas (Law 3937/11).
Fisheries	*Vulnerability*: Rise in temperature and CO_2 dissolved in various water bodies; rising sea levels; changes in physico-chemical and biological properties of water bodies. *Adaptation*: The following adaptation measures are under way or have been carried out: operational programme on fisheries for Greece 2007–2013; building knowledge of the impact of climate change on fisheries; adaptation to the new situation regarding fisheries; sustainable management of marine biological resources; increasing understanding of natural ecological parameters; assessments of the economic impact of climate change; educational programmes on the impacts of climate change.
Aquaculture	*Vulnerability*: Rise in temperature and CO_2 dissolved in various water bodies; rising sea levels; changes in physico-chemical and biological properties of water bodies. *Adaptation*: The following adaptation measures are under way or have been carried out: study and recording of the impacts of climate change on currently used techniques in order to develop more resistant techniques and methods; shift of existing activities to less vulnerable sites.
Water resources	*Vulnerability*: Salinization of fresh water, decreased rainfall and higher evapotranspiration; higher pollutant load concentrations; faster degradation of deltaic regions; contamination or drainage of coastal wetlands; amplification of desertification, droughts. *Adaptation*: The following adaptation measures are under way or have been carried out: incorporation of the EU water framework directive (directive 2000/60/EC); creation of a geoportal to consolidate information; adoption of the 2009–2015 River Basin Management Plans; elaboration of the River Basin Management Plans for 2016–2021; implementation of the EU water framework (directive

Vulnerable area	*Examples/comments/adaptation measures reported*
	2000/60/EC) and marine strategy framework (directive 2008/56/EC) directives; establishment of the new Central Water Agency in 2006; participation in the MED POL programme; work on transboundary river basins in accordance with the EU water framework directive; construction of four major dams and reservoirs under the Acheloos River Diversion Project; pricing of municipal water services; implementation of the Greek National Action Plan for Combating Desertification and the project on Mediterranean Drought Preparedness and Mitigation Planning; transposition of the EU floods directive (directive 2007/60/EC); integration of the impacts of climate change into water planning and management; assessment of the impact of climate change on hydropower generation; educational programmes on the impacts of climate change on water resources.
Coastal zones	*Vulnerability*: Coastline erosion; rising sea levels; surges in storms. *Adaptation*: The following adaptation measures are under way or have been carried out: adoption of specific legislation on spatial planning (National Gazette 128/A/3.7.2008 and National Gazette 1138/B/11.2009); implementation of the EU marine strategy framework directive (directive 2008/56/EC); collaboration under the Mediterranean Action Plan to protect biodiversity and the marine and coastal environments.
Tourism	*Vulnerability*: High temperatures; extreme weather events; water shortages. *Adaptation*: The following adaptation measures are under way or have been carried out: strengthened assessments of tourism investments; activation of the Tourism Satellite Account and the Observatory of Tourism.
Energy	*Vulnerability*: Effects on hydropower; higher air temperatures reducing the efficiency of thermo-electrical units; extreme weather events. *Adaptation*: The following adaptation measures are under way or have been carried out: General Framework for Spatial Planning and Sustainable Development; main energy system infrastructure protection works; projects for the protection of coastal energy and island systems; expansion and protection of water resources; research and development.
Infrastructure and transport	*Vulnerability*: Increased extreme weather events; impacts on the reconstruction and repair of damage; need for maintenance of and alteration to system operations; temperature rises; increase in the frequency of heat waves. *Adaptation*: The following adaptation measures are under way or have been carried out: use of communication and information technologies; specific policies proposed by a sectoral study (Bank of Greece, 2011) to cope with the impacts of climate change on the transport system.
Health	*Vulnerability:* Extreme weather events, environmental changes and ecological disruptions; environmental degradation; economic problems. *Adaptation*: The following adaptation measures are under way or have been carried out: establishment of the National Action Plan for the Response of Environmental Hazards Threatening Health for 2008–2012 including special provisions dedicated to exploring climate change impacts on health; Health Map developed by the Ministry of Health, the Hellenic Centre for Disease Control and Prevention and the National School of Public Health; focus on communicable diseases directly linked to climate change by the Hellenic Centre for Disease Control and Prevention.
Built environment	*Vulnerability*: Rising sea levels; extreme weather events; drought; increased heat island effect. *Adaptation*: The following adaptation measures are under way or have been carried out: adaptation of urban planning to climate change and improvement to the thermal environment in cities by changing the microclimate of the built environment; reduction of the thermal and energy needs of buildings, bringing them closer to becoming zero-energy buildings.
Mining and quarrying	*Vulnerability*: Infrastructure disasters; reduction of available water resources owing to reduced rainfall and increased evaporation; loss of working days owing to extreme temperatures; increased irrigation needs. *Adaptation:* The following adaptation measures are under way or have been carried out: strengthening of the industry's climate change reporting; incorporation of climate change into the design, monitoring and operation of mining activities.
Cultural heritage	*Vulnerability:* Floods, earthquakes, fires, strong winds; long-term impacts of climatic conditions.

Vulnerable area	*Examples/comments/adaptation measures reported*
	Adaptation: The following adaptation measures are under way or have been carried out: risk management of climate change; incorporation of protection of cultural heritage and adaptive policies into wider national policies; professional training and public awareness.
Insurance sector	*Vulnerability*: Expected changes in the intensity and frequency of natural phenomena; economic losses due to extreme weather events. *Adaptation*: The following adaptation measures are being carried out: participation in the EU climate insurance scheme for member States as a component of the EU strategy on adaptation to climate change.

148. Greece participates in European Territorial Cooperation programmes covering the Mediterranean region. Greece provided a detailed description of international adaptation activities, including the LifeAdapt2Clima project, which aims to facilitate the development of adaptation strategies for agriculture by deploying an innovative decision-making support tool to simulate the impacts of climate change on crop production and the effectiveness of selected adaptation options. Additionally, Greece participates in the Mediterranean component of the EU Water for Life Initiative, a strategic partnership for the management of water resources, including water management planning and the development of sustainable water finance strategies. Greece also provided information on its bilateral cooperation on adaptation with developing countries, such as through the European Territorial Cooperation programmes.

2. Assessment of adherence to the reporting guidelines

149. The ERT assessed the information reported in the NC7 of Greece and identified an issue relating to transparency and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 19.

Table 19
Findings on vulnerability assessment, climate change impacts and adaptation measures from the review of the seventh national communication of Greece

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 49 Issue type: transparency Assessment: recommendation	Greece provided information on regional cooperation in chapter 6 of its NC7, but did not provide information on its cooperation on the development of integrated plans for water resources, agriculture and the protection and rehabilitation of areas, including with developing countries, particularly those in Africa, affected by drought and desertification, as well as flooding. However, this information was reported elsewhere in the NC7. The ERT noted that Article 4, paragraph 1(e), of the Convention states that Parties, taking into account their specific national and regional development priorities, objectives and circumstances, shall develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas, particularly in Africa, affected by drought and desertification, as well as floods; and, according to the UNFCCC guidelines on NCs, may refer, inter alia, to integrated plans for coastal zone management, water resources and agriculture. During the review, Greece provided summaries of its cooperation with developing country Parties in terms of adaptation and noted that this information was provided in chapter 7 of its NC7 and CTF tables 7(b), 8 and 9. The ERT recommends that Greece either include in chapter 6 of its next NC information or references to information on its cooperation on the development of integrated plans for water resources, agriculture and the protection and rehabilitation of areas, including with developing countries, particularly those in Africa, affected by drought and desertification, as well as floods, or clarify if such cooperation is beyond specific national and regional development priorities and objectives.

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

150. Greece provided information on its general policy and funding relating to research and systematic observation in both domestic and international activities, including contributions to the World Meteorological Organization and Global Climate Observing System. Greece did not provide information on the identification of opportunities for and barriers to free and open international exchange of data and information or actions taken to overcome such barriers.

151. Greece has implemented 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. Greek institutions conduct research on forest fires, water management, coastal zones, biodiversity and new energy technologies. The University of the Aegean and the Institute of Communication and Computer Systems model the economics of climate change, the Technical University of Crete conducts Earth system modelling to predict the climate, and the National Observatory of Athens studies local climate information in the Mediterranean region. A number of Greek institutions are also involved in Climate Change and Impact Research, a European Commission-funded project highlighting the impacts of and possible adaptation actions regarding climate change in the Mediterranean region. The LIFE Climate Change Mitigation project supports two projects that aim to develop new methodologies to provide policymakers with innovative tools for the quantification of carbon storage in permanent tree crops as well as the production of sustainable biofuel obtained through green floating filters, an innovative green technology.

152. In terms of activities related to systematic observation, Greece reported on national plans, programmes and support for ground- and space-based climate observing systems, including satellite and non-satellite climate observation. Greece did not report on challenges related to the maintenance of consistent and comprehensive observing systems. However, during the review Greece informed the ERT that it was facing such challenges, owing to a lack of personnel and financial resources. Greece reported on the main organizations responsible for atmospheric, oceanographic and terrestrial observing systems. The network of systematic observation of climatic parameters in Greece includes the Hellenic National Meteorological Service, the Greek Armed Forces, the Ministry of Rural Development and Food, the Ministry for the Environment, Physical Planning and Public Works, and a number of national research centres. Greece is also a full member of the European Space Agency and participates in the activities of Global Monitoring for Environment and Security programme. The Hellenic National Meteorological Service operates a network of 79 land surface and 3 upper air measurement stations, all registered to the World Meteorological Organization. The data times series covers 35–50 years.

153. The NC7 does not report on actions taken to support capacity-building and the establishment and maintenance of observing systems and related data and monitoring systems in developing countries.

2. Assessment of adherence to the reporting guidelines

154. The ERT assessed the information reported in the NC7 of Greece and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 20.

Table 20
Findings on research and systematic observation from the review of the seventh national communication of Greece

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 58	The Party included in its NC7 lists of the projects and programmes that support research and systematic observation in developing countries, but did not include information related to capacity-building.

	Issue type: completeness Assessment: recommendation	During the review, Greece noted that there are capacity-building activities under way, for example, a bilateral exchange programme, whereby scientists from Black Sea and Mediterranean countries visit Greek institutions to improve their knowledge on research and systematic observation. To enhance the completeness of the reporting, the ERT recommends that Greece include in its next NC specific information on capacity-building related to research and systematic observation for developing countries.
2	Reporting requirement specified in paragraph 62 Issue type: completeness Assessment: encouragement	The Party did not identify in its NC7 the opportunities for and barriers to the free international exchange of data and information or actions taken to overcome these barriers. During the review, Greece informed the ERT of the existence of such barriers, which were mostly related to financial constraints. The ERT encourages Greece to identify in its next NC the opportunities for and barriers to the free and open international exchange of data and information as well as actions taken to overcome these barriers.
3	Reporting requirement specified in paragraph 64 Issue type: completeness Assessment: encouragement	Greece did not provide summary information on the exchange and archiving of data regarding support for developing countries to establish and maintain observing systems, and related data-exchange and monitoring systems. During the review, Greece provided information on the difficulties related to maintaining data-exchange and monitoring systems owing to a lack of financial and human resources. To enhance the completeness of the reporting, the ERT reiterates the encouragement that Greece include in its next NC summary information on the exchange and archiving of data regarding support for developing countries to establish and maintain observing systems, and related data-exchange 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

155. In its NC7 Greece 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 and information centres; the involvement of the public and non-governmental organizations; and its participation in international activities. According to Law 1982/90, environmental education is part of the curricula of primary and secondary schools. The Ministry of Education, Research and Religious Affairs is responsible for environmental education, and under its direction the Education Institutes of Greece provide guidance on environmental education to teachers. Since 2013, environmental education has been linked to sustainable development. The Ministry of Education, Research and Religious Affairs has also developed e-learning tools to enhance the learning process. Other institutions involved in environmental education are MEEN, the Hellenic Parliament, the Ministry of Foreign Affairs, the Ministry of Transport and Communications, municipalities, universities and technical centres.

156. Environmental education centres are also involved in the implementation of educational programmes and activities. There are currently 52 environmental education centres operating in Greece, providing educational programmes to scholars, organizing training seminars for educators, producing educational materials, etc. Lifelong learning centres also provide education on renewable energy sources, energy savings and solar power systems. MEEN has made efforts to increase the number of public awareness activities at minimum cost. Additionally, the Mediterranean Education Initiative for Environment and Sustainability, funded by MEEN, has been approved. This initiative is an online network for

teachers involved in environmental education or sustainable development education, with programmes such as Water for the City, Rainwater Harvesting in the Greek islands, the Hydra project and some Horizon 2020 projects. A number of non-governmental organizations are also actively involved in environmental education, such as the Hellenic Society for the Protection of Nature, the Mediterranean SOS Network and Callisto. Greece has also hosted a number of summer schools related to climate change topics. In addition, the Centre for Renewable Energy Sources and Saving systematically undertakes educational and training activities directed at professionals and students of all ages.

2. Assessment of adherence to the reporting guidelines

157. The ERT assessed the information reported in the NC7 of Greece and identified an issue relating to completeness and adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table 21.

Table 21
Findings on education, training and public awareness from the review of the seventh national communication of Greece

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 65	The Party did not report on public participation during the preparation or the domestic review of its NC7.
	Issue type: completeness	During the review, non-governmental organization representatives confirmed that they had not been consulted during the preparation of the NC.
	Assessment: encouragement	The ERT encourages Greece to report on the extent of public participation in the preparation and/or domestic review of the NC.

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.

III. Conclusions and recommendations

158. The ERT conducted a technical review of the information reported in the NC7 of Greece 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 Greece.

159. The information provided in the NC7 includes all of the elements of the supplementary information under Article 7 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 Greece in its 2017 annual submission.

160. Greece's total GHG emissions excluding emissions and removals from LULUCF decreased by 11.1 per cent between 1990 and 2016, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 12.6 per cent over the same period. This reflects an increase in total GHG emissions (excluding LULUCF) of 32.2 per cent between 1990 and 2005, followed by a decrease in total emissions of 32.8 per cent between 2005 and 2016.

161. Emission increases between 1990 and 2005 were driven primarily by economic growth that led to increased energy demand and personal vehicle ownership. Between 1990 and 2016, GHG emissions from the energy sector decreased by 13.1 per cent, reflecting the impacts of the economic crisis, which began in 2009, as well as PaMs in the energy sector, such as the decommissioning or refurbishment of lignite-fired power plants, and the shift towards natural gas and renewable energy generating capacity. Those factors outweighed increasing emission trends in the transport sector, where emissions increased by 20.2 per cent between 1990 and 2016. A significant trend was also observed for HFC emissions, which increased by 417.1 per cent since 1990.

162. The key overarching cross-sectoral policy for Greece in the EU is the 2020 climate and energy package, adopted in 2009, which includes the revised EU ETS and the ESD. The package is supplemented by renewable energy and energy efficiency legislation and the carbon capture and storage directive. Legislative frameworks that support and set the targets for Greece's national policies for restricting GHG emissions include the EU 2030 climate and energy framework; aviation and marine bunker regulations (ICAO, IMO); financing mechanisms (Green Fund, LIFE, European Structural and Investment Funds, etc.); and fiscal measures (EU energy taxation directive (directive 2003/96/EC), which covers the taxation of energy products, car registration tax, road tax, etc). The Second National Climate Change Programme continues to be Greece's most important national supporting policy for addressing mitigation. Greece also introduced national-level policies to achieve its targets under the ESD and domestic emission reduction targets.

163. The key PaMs reported are the promotion of natural gas, improvements to the conventional power generation system, the promotion of renewable energy, the implementation of energy efficiency measures, road transport measures, the recovery of organic waste and biogas, reductions of emissions of F-gases and the implementation of the Common Agricultural Policy.

164. PaMs related to the energy sector had the most significant impact on GHG emission reductions, accounting for about 90 per cent of the total estimated impact of implemented and adopted PaMs. The mitigation effects of two PaMs in the energy sector (improvements to the conventional power generation system and the promotion of renewable energy for electricity generation) together represent about 75 per cent of the total estimated impact of implemented and adopted PaMs. The ERT acknowledged Greece's progress in reporting on PaMs, particularly its efforts to quantify the effects of most of the implemented and adopted PaMs.

165. Greece provided a WEM scenario until 2040. In the scenario, emissions are projected to be 11.2 per cent below the 1990 level in 2020. On the basis of the reported information, the ERT concludes that Greece will continue contributing to the achievement of the EU target under the Convention.

166. Greece's target for non-ETS sectors is to reduce its total non-ETS emissions by 4 per cent below the 2005 level by 2020. According to the projections under the WEM scenario, emissions from non-ETS sectors are estimated to reach 48,926 kt CO_2 eq by 2020, which is 11,123 kt CO_2, or 18.5 per cent, below the AEA amount in 2020. On the basis of the reported information, the ERT concludes that Greece expects to meet its target for non-ETS sectors.

167. The NC7 contains information on how the Party's use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action. Greece is not planning to make use of the Kyoto Protocol mechanisms to meet its Kyoto Protocol target.

168. Greece provided climate financing from its official development assistance allocations to non-Annex I Parties to help them implement the Convention. In 2015, Greece provided USD 0.252 million through bilateral, regional and other channels. In 2016, it provided USD 0.257 million through the same channels. The provided support was mainly allocated to nature conservation projects that included adaptation components. Greece reported on several technology transfer projects and programmes, such as SYN-ENERGY, which facilitates regional assessments of renewable energy sources and energy efficiency in several Eastern European non-Annex I Parties and the installation of solar power systems for household use in Sri Lanka. Greece described individual measures and activities related to capacity-building support, including the Horizon 2020 initiative, which focuses on reviews, monitoring and research, and the Mediterranean component of the EU Water for Life initiative, which focuses on providing assistance for national water planning activities.

169. Greece implemented its first National Climate Change Adaptation Strategy in 2016 and defined MEEN as the national competent authority for national adaptation policy. The National Climate Change Adaptation Strategy will be revised on a 10-year cycle. The Strategy requires Greece's 13 regional authorities to develop and implement regional adaptation action plans. Greece plans to establish a National Climate Change Adaptation Committee to act as the formal coordinating and advisory body for adaptation policy design

and implementation at the national level. Greece also plans to update the vulnerability assessment carried out by the Bank of Greece in 2011.

170. Greece provided information on its domestic and international activities related to research and systematic observation and global climate observing systems. In its NC7 Greece also provided information on the general funding policies for research and systematic observation.

171. Greece provided up-to-date information on domestic activities, policies and actions relating to education, training and public awareness. Greece additionally reported on its activities at the international level in terms of disseminating knowledge tools among its partner countries.

172. In the course of the review, the ERT formulated the following recommendations for Greece to improve its adherence to the UNFCCC reporting guidelines on NCs and its reporting of supplementary information under the Kyoto Protocol:[3]

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

(i) Providing complete data for financial resources related to the implementation of the Convention provided to developing country Parties through bilateral, regional and other multilateral channels (see issue 2 in table 16);

(ii) Including information on how it has taken into account the need for adequacy and predictability in the flow of resources provided to developing country Parties (see issue 4 in table 16);

(iii) Reporting its activities regarding financing access by developing countries to soft and hard environmentally sound technologies (see issue 2 in table 17);

(iv) Providing information, where feasible, on the success and failure stories related to technology development and transfer in its next submission (see issue 3 in table 17);

(v) Providing information on capacity-building related to systematic observations (see issue 1 in table 20);

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

(i) Providing a presentation of PaMs organized by sector and subdivided by gas affected (see issue 1 in table 8);

(ii) Clarifying, directly or via a reference, the steps it has taken to promote and/or implement any decisions by ICAO and IMO (see issue 7 in table 8);

(iii) Clarifying how the assistance provided to developing country Parties targets those that are particularly vulnerable to the adverse effects of climate change to help them meet the costs of adaptation to those adverse effects (see issue 1 in table 16);

(iv) Presenting in chapter 6 of its NC information on how it cooperates in the development of integrated plans for water resources, agriculture and the protection and rehabilitation of areas, including with developing countries, particularly those in Africa, or providing a reference in the NC to where such information is located (see issue 1 in table 19).

IV. Questions of implementation

173. During the review the ERT assessed the NC7, including the supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol, and the information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol, with regard to timeliness, completeness and transparency. No question of implementation was raised by the ERT during the review.

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

Annex

Documents and information used during the review

A. Reference documents

2017 GHG inventory submission of Greece. Available at https://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/grc-2017-nir-11apr17.zip.

2018 GHG inventory submission of Greece. Available at https://unfccc.int/sites/default/files/resource/grc-2018-nir-15apr18.zip.

Bank of Greece. 2011. "The environmental, economic and social impacts of climate change in Greece".

BR3 of Greece. Available at http://unfccc.int/files/national_reports/annex_i_natcom_/application/pdf/48032915_greece-nc7-br3-1-nc7_greece.pdf.

BR3 CTF tables of Greece. Available at http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/vnd.openxmlformats-officedocument.spreadsheetml.sheet/2573491_greece-br3-nc7-1-grc_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 Greece. Available at http://unfccc.int/files/national_reports/annex_i_natcom_/application/pdf/48032915_greece-nc7-br3-1-nc7_greece.pdf.

Report on the individual review of the annual submission of Greece submitted in 2016. FCCC/ARR/2016/GRC. Available at https://unfccc.int/sites/default/files/resource/docs/2017/arr/grc.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 Greece. FCCC/IRR/2016/GRC. Available at https://unfccc.int/resource/docs/2017/irr/grc.pdf.

Report of the technical review of the second biennial report of Greece. FCCC/TRR.2/GRC. Available at https://unfccc.int/sites/default/files/resource/docs/2016/trr/grc.pdf.

Report on the technical review of the sixth national communication of Greece. FCCC/IDR.6/GRC. Available at https://unfccc.int/sites/default/files/resource/docs/2015/idr/grc06.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.

B. Additional information provided by the Party

Responses to questions during the review were received from Mr. Dimitris Niavis (MEEN), including additional material. The following documents[1] were provided by Greece:

Hellenic Civil Aviation Authority, 2018, *ICAO Action Plan for International Aviation Greenhouse Gas Emissions Reduction*.

MEEN, 2016, *Third Progress Report on the Promotion and Use of Energy from Renewable Sources in Greece.*

MEEN, 2018, *Fourth Progress Report on the Promotion and Use of Energy from Renewable Sources in Greece.*

MEEN, 2016, *Annual Report on the Achievement of National Energy Efficiency Targets*.

Centre for Renewable Energy Sources, 2016, *National Energy Efficiency Action Plan*.

[1] Reproduced as received from the Party.