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

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

Note by the secretariat

The report of the technical review of the seventh national communication of Croatia was published on 19 November 2018. For purposes of rule 10, paragraph 2, of the rules of procedure of the Compliance Committee (annex to decision 4/CMP.2, as amended by decisions 4/CMP.4 and 8/CMP.9), the report is considered received by the secretariat on the same date. This report, FCCC/IDR.7/HRV, contained in the annex to this note, is being forwarded to the Compliance Committee in accordance with section VI, paragraph 3, of the annex to decision 27/CMP.1.

United Nations

FCCC/IDR.7/HRV

Framework Convention on Climate Change

Distr.: General
19 November 2018

English only

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

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 Croatia, 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".

GE.18-19775(E)

1819775

Contents

Abbreviations and acronyms

AEA	annual emission allocation
Annex II Party	Party included in Annex II to the Convention
BR	biennial report
CH_4	methane
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
CRF	common reporting format
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
GCOS	Global Climate Observing System
GDP	gross domestic product
GEOSS	Global Earth Observation System of Systems
GHG	greenhouse gas
HFC	hydrofluorocarbon
ICAO	International Civil Aviation Organization
IMO	International Maritime Organization
IPCC	Intergovernmental Panel on Climate Change
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
NA	not applicable
NC	national communication
NE	not estimated
NF_3	nitrogen trifluoride
NGO	non-governmental organization
NIR	national inventory report
NO	not occurring
non-ETS sectors	sectors not covered by the EU ETS
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 centralized technical review of the NC7 of Croatia. 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 Croatia, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

3. The review was conducted from 21 to 26 May 2018 in Bonn by the following team of nominated experts from the UNFCCC roster of experts: Ms. Amrita Narayan Achanta (India), Ms. Damla Dogan (Turkey), Mr. Christopher John Dore (United Kingdom of Great Britain and Northern Ireland), Mr. Sangay Dorji (Bhutan), Mr. A. Ricardo J. Esparta (Brazil), Mr. Sandro Federici (San Marino), Mr. Ross Alexander Hunter (United Kingdom), Mr. Naoki Matsuo (Japan), Ms. Roisin Moriarty (Ireland), Mr. Rostislav Neveceral (Czechia), Ms. Agnieszka Maria Patoka-Janowska (Poland) and Ms. Verica Taseska Gjorgievska (the former Yugoslav Republic of Macedonia). Mr. Dorji, Mr. Federici, Mr. Matsuo and Ms. Patoka-Janowska were the lead reviewers. The review was coordinated by Ms. Sevdalina Todorova, Mr. Davor Vesligaj and Ms. Marion Vieweg (UNFCCC secretariat).

B. Summary

4. The ERT conducted a technical review of the information reported in the NC7 of Croatia 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 2 May 2018, after the deadline of 1 January 2018 mandated by decision 9/CP.16.

6. Croatia informed the secretariat on 22 November 2017 about its difficulties with making a timely submission in accordance with decision 13/CP.20 and decision 22/CMP.1. The ERT noted with great concern the delay in the submission, and further noted that the submission of the NC6 was also after the submission deadline mandated by decision 9/CP.16. The ERT reiterates the recommendation made in the previous review report that Croatia make its next submission on time. As the submission was not made within six weeks after the due date (by 15 February 2018), the delay was brought to the attention of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol and the Compliance Committee and made public.

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

Issues and gaps identified by the ERT related to the reported information are presented in table 1. The information reported by Croatia 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, the Party had submitted its instrument of acceptance of the Doha Amendment; however, the amendment had not yet entered into force. The implementation of the provisions of the Doha Amendment is therefore considered in this report in the context of decision 1/CMP.8, paragraph 6, pending the entry into force of the amendment.

Table 1

Assessment of completeness and transparency of mandatory information reported by Croatia 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	Partially complete	Transparent	Issues 1 and 2 in table 7
National circumstances	Mostly complete	Transparent	Issue 1 in table 4	National registry	Mostly complete	Transparent	Issue 1 in table 8
GHG inventory	Complete	Transparent		Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Complete	Mostly transparent	Issue 1 in table 18
PaMs	Complete	Mostly transparent	Issue 4 in table 11	PaMs in accordance with Article 2	Mostly complete	Transparent	Issue 6 in table 11
Projections and the total effect of PaMs	Mostly complete	Transparent	Issues 3 and 5 in table 15 and issue 1 in table 17	Domestic and regional programmes and/or arrangements and procedures	Mostly complete	Mostly transparent	Issues 1 and 2 in table 9
Vulnerability assessment, climate change impacts and adaptation measures	Mostly complete	Mostly transparent	Issues 1 and 2 in table 20	Information under Article 10[a]	NA	NA	
Financial resources and transfer of technology[b]	NA	NA	NA	Financial resources[c]	NA	NA	
Research and systematic observation	Mostly complete	Transparent	Issues 1 and 2 in table 21	Minimization of adverse impacts in accordance with Article 3, paragraph 14	Mostly complete	Transparent	Issue 5 in table 11
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.

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

[b] Croatia is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3, 4 and 5, of the Convention.

[c] Croatia is not an Annex II Party, and is therefore not obliged to provide information on financial resources under Article 11 of the Kyoto Protocol, including on "new and additional" resources.

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

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

Supplementary information	*Reference to the section of NC7*
National registry	3.4
National system	3.3
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	5.2.6
PaMs in accordance with Article 2	4.2
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	4.1
Information under Article 10	3.4.1, 4.1, 4.2, 7.2, 8, 9
Financial resources[a]	NA
Minimization of adverse impacts in accordance with Article 3, paragraph 14	Reported in the NIR of the Party's 2018 annual submission

[a] Reporting on financial resources under the Kyoto Protocol is relevant to Annex II Parties. As Croatia is not an Annex II Party, it does not have an obligation to provide information on financial resources under Article 11 of the Kyoto Protocol, including on "new and additional" resources.

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

9. The ERT noted that during the period 1990–2016 Croatia's population decreased by 12.7 per cent and GHG emissions per GDP unit and GHG emissions per capita decreased by 30.9 and 12.7 per cent, respectively. Croatia reported in its NC7 that future trends are expected to be heavily influenced by the economic performance of the EU and levels of tourism. Table 3 illustrates the national circumstances of Croatia by providing some indicators relevant to emissions and removals.

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

Indicator	*1990*	*2000*	*2010*	*2015*	*2016*	*Change (%) 1990–2016*	*Change (%) 2015–2016*
GDP per capita (thousands 2011 USD using purchasing power parity)	17.04	15.75	20.12	20.76	21.53	26.3	3.7
GHG emissions without LULUCF per capita (t CO_2 eq)	6.67	5.84	6.33	5.75	5.82	–12.7	1.2
GHG emissions without LULUCF per GDP unit (kg CO_2 eq per 2011 USD using purchasing power parity)	0.39	0.37	0.31	0.28	0.27	–30.9	–2.4

Sources: (1) GHG emission data: Croatia'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

10. The ERT assessed the information reported in the NC7 of Croatia and identified issues relating to completeness, transparency 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 Croatia

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: recommendation	Croatia did not include in the NC7 information that explained how the changes in the national circumstances affect GHG emissions and removals over time. During the review, in response to a question raised by the ERT, Croatia provided some information on the main reasons for the changes in emissions, including the war, which led to GHG emission reductions in the period from 1991 to 1994, the subsequent recovery of the economy and the global economic crisis, which led to a decrease in GHG emissions in the period from 2008 to 2014. The Party also outlined that there was limited information available on how the changes in national circumstances impact on GHG emissions (e.g. the extent to which emissions from energy and industry change with GDP). The ERT recommends that Croatia improve the completeness of its reporting on national circumstances by including in its next submission information that explains how the changes in the national circumstances affect GHG emissions and removals over time.

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

11. Croatia provided a summary of information on GHG emission trends for the period 1990–2015 in its NC7. This summary information is consistent with the 2017 national GHG inventory submission. Summary tables, including trend tables for emissions (in kt CO_2 eq), are provided in the NC7. During the review, the ERT took note of the recently submitted

2018 annual submission in which the GHG emissions for 2016 were presented. The data from the 2018 annual submission were used for this section of the report, and a comparison with the inventory data provided in the NC7 and 2017 annual submission is presented in paragraph 19 below.

12. Total GHG emissions[2] excluding emissions and removals from LULUCF decreased by 23.8 per cent between 1990 and 2016, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 23.4 per cent over the same period. Table 5 illustrates the emission trends by sector and by gas for Croatia.

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

	GHG emissions (kt CO_2 eq)					*Change (%)*		*Share (%)*	
	1990	*2000*	*2010*	*2015*	*2016*	*1990–2016*	*2015–2016*	*1990*	*2016*
Sector									
1. Energy	21 831.84	18 350.77	19 903.93	16 728.04	17 074.45	–21.8	–2.0	68.5	70.3
A1. Energy industries	7 094.31	5 839.41	5 951.08	4 795.41	4 917.32	–30.7	–2.5	22.2	20.2
A2. Manufacturing industries and construction	5 529.04	3 115.63	3 030.11	2 232.02	2 215.33	–59.9	0.8	17.3	9.1
A3. Transport	3 881.11	4 499.39	5 952.34	5 951.83	6 173.38	59.1	–3.6	12.2	25.4
A4. and A5. Other	4 217.93	3 865.11	4 024.35	3 219.51	3 276.83	–22.3	–1.7	13.2	13.5
B. Fugitive emissions from fuels	1 109.45	1 031.23	946.04	529.27	491.60	–55.7	7.7	3.5	2.0
C. CO_2 transport and storage	NO	NO	NO	NO	NO	NO	NO	NO	NO
2. IPPU	4 680.65	3 154.12	3 356.61	2 769.73	2 460.19	–47.4	12.6	14.7	10.1
3. Agriculture	4 398.33	3 131.40	3 029.76	2 875.27	2 931.82	–33.3	–1.9	13.8	12.1
4. LULUCF	–6 644.18	–7 441.87	–7 149.98	–4 833.87	–4 965.18	–25.3	–2.6	NA	NA
5. Waste	983.41	1 194.86	1 695.42	1 815.65	1 838.58	87.0	–1.2	3.1	7.6
6. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO
Gas [a]									
CO_2	23 441.97	19 815.74	21 245.08	17 996.57	18 221.47	–22.3	–1.2	73.5	75.0
CH_4	4 354.49	3 377.01	3 972.75	3 949.20	3 950.92	–9.3	0.0	13.7	16.3
N_2O	2 847.09	2 478.87	2 380.02	1 817.77	1 706.58	–40.1	6.5	8.9	7.0
HFCs	NO	147.90	378.87	419.90	419.67	NO	–0.1	NO	1.7
PFCs	1 240.24	NO	0.03	0.03	NO	NO	NO	3.9	NO
SF_6	10.45	11.62	8.95	5.22	6.39	–38.8	–18.4	0.0	0.0
NF_3	NO	NO	NO	NO	NO	NO, NA	NO, NA	NO, NA	NO, NA
Total GHG emissions without LULUCF	**31 894.24**	**25 831.14**	**27 985.72**	**24 188.69**	**24 305.03**	**–23.8**	**–0.5**	**100**	**100**
Total GHG emissions with LULUCF	**25 250.05**	**18 389.28**	**20 835.74**	**19 354.81**	**19 339.85**	**–23.4**	**0.1**	**NA**	**NA**

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

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

13. The overall decrease in total emissions from 1990 to 2016 was driven by a combination of factors. Emissions decreased between 1990 and 1994 as a result of the war in Croatia and the consequent decline in economic activity and energy consumption during

[2] In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of CO_2 eq excluding LULUCF, unless otherwise specified. Values in this paragraph are calculated based on the 2018 annual submission, version 1.

that time. The increase between 1997 and 2007 was mainly caused by the revival of economic activities in the energy, IPPU and waste sectors. The global economic downturn in 2008 led to a significant slowdown of economic activity and a decrease in industrial production, a consequent decrease in fuel consumption and a decrease in industrial processes for the period afterwards. Emissions increased again between 2015 and 2016 which is mainly the result of economic growth accompanied by a larger fraction of goods and services being exported, and a small share of the increase in GHG emissions was driven by the increase in activity in the energy sector.

14. Between 1990 and 2016, GHG emissions from the energy sector decreased by 21.8 per cent (4,757.39 kt CO_2 eq) owing mainly to fuel combustion in transport, energy industries, small stationary energy sources including commercial/institutional, residential and agriculture/forestry/fishing. The trend in GHG emissions from transport showed a notable increase (59.1 per cent or 2,292.27 kt CO_2 eq) resulting from fuel combustion in road transport and a notable decrease in energy use in manufacturing industries and construction (59.9 per cent or 3,313.71 kt CO_2 eq) as a result of the closure of iron, aluminium and ferroalloys production and improvements in abatement technologies for N_2O emissions.

15. Between 1990 and 2016, GHG emissions from IPPU decreased by 47.4 per cent (2,220.46 kt CO_2 eq) owing mainly to the increases and decreases in industrial activity associated with economic fluctuations. (To a certain extent this is also true of the other sectors.) Cessation of processes related to iron, aluminium and ferroalloy production reduced emissions prior to 2004 and the application of abatement technology to nitric acid production to reduce emissions of N_2O from chemical processes in 2013 have been key drivers in the overall decrease of GHG emissions from this sector. Between 1990 and 2016, GHG emissions from the agriculture sector decreased by 33.3 per cent (1,466.52 kt CO_2 eq), owing mainly to a decrease in CH_4 emissions from enteric fermentation associated with livestock farming which is closely linked to the decrease in the number of dairy cattle. The overall decrease is offset by an increase in N_2O emissions from urea application.

16. In 2016 the LULUCF sector in Croatia was a net sink of 4,965.18 kt CO_2 eq; between 1990 and 2016 GHG removals decreased by 1,679.00 kt CO_2 eq. The trend was mainly driven by changes in the category classification of land within the LULUCF sector, as a result of the application of the prescribed IPCC methodology. Between 1990 and 2016, GHG emissions from the waste sector increased by 87.0 per cent (855.16 kt CO_2 eq) owing mainly to emissions from solid waste disposal and wastewater treatment and discharge. This was partly offset by decreases in domestic wastewater as a result of population decline and industrial wastewater as a result of the economic downturn in 2008.

17. The main drivers of CO_2 emissions are energy industries, including fuel combustion for electricity generation, heat production and energy used in refineries; transport, from fuel combustion in road transport; and industrial processes, from the production of cement, ammonia and lime. The main drivers of CH_4 emissions are fugitive emissions that result from the production, processing, transportation and activities related to fuel use in the energy sector; enteric fermentation and manure management in the agriculture sector; and solid waste disposal sites in the waste sector. The main drivers of N_2O emissions are agricultural activities, nitric acid production and emissions from the production of fossil fuels and emissions from waste management. The main driver of HFC emissions is their continued use as refrigerants in cooling systems.

18. The summary information provided on GHG emissions in the NC7 was consistent with the information reported in the 2017 annual submission, which was available at the time of the preparation of the NC7. The ERT notes that there have been numerous recalculations in the 2018 annual submission, so numbers are not fully comparable; the ERT notes that these recalculations have been documented in the 2018 annual submission.

(b) Assessment of adherence to the reporting guidelines

19. The ERT assessed the information reported in the NC7 of Croatia and identified an issue relating to transparency and adherence to the UNFCCC reporting guidelines on NCs. The finding is described in table 6.

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

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 present the GHG emission and removals trends for 1990–2015 (NC7, p.40); however Croatia did not describe the factors underlying the trend in emissions from LULUCF. During the review the Party provided additional information substantiating the emission trends in the LULUCF sector from 1990 to 2015. The Party explained that it applied the prescribed IPCC methodology for the estimation of removals in the LULUCF sector. Changes in estimated emissions/removals from LULUCF stem mainly from two categories: (1) changes of lands do not occur; and (2) on lands that are converted to/from another land use category. The main reason for observed changes in GHG emissions is the change in area for different categories. Detailed information on methods applied to determine land categories and emission/removal factors used for the estimation in each pool and each type of LULUCF category can be found in Croatia's NIR 2017 (pp.302–392). The ERT encourages Croatia to provide information describing the main factors underlying emission trends in the LULUCF sector in its next NC.
2	Reporting requirement specified in paragraph 10 Issue type: transparency Assessment: encouragement	The ERT noted that Croatia has provided detailed information on its national circumstances, including disaggregated indicators, in its NC7. However, there were numerous typographical errors in the chapter (and in others, including chapters 3 and 5), and sections of text that were not clear in their presentation of information, resulting in a lack of transparency. For example, chapter 2.10 presents information on housing and construction, but the distinction between the existing number of houses (or other property types) in a given year or the number of houses constructed within a given year is not fully transparent; chapter 2.14 explains the presence of "mines" in Croatia, where the term "land mines" would be more appropriate. The ERT also noted inconsistencies between the data reported in the NC7 for "non-dairy cattle" (table 2-15 Livestock numbers) and the numbers for non-dairy cattle reported in the NIR 2017 and CRF tables. During the review, Croatia confirmed that there were errors in NC7 table 2-15. The ERT encourages Croatia to improve the clarity of information provided, and ensure the consistency and transparency of reporting between the NC and information reported in the NIR and the CRF tables.

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

20. Croatia 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 general information on the institutional arrangements and the processes for collecting data and compiling the inventory. Not all elements mandated by paragraph 30 of the annex to decision 15/CMP.1 are included; for example, no information is provided on contact details for the national entity, emission factor selection, key source identification, recalculations or the quality assurance/quality control plan. The ERT took note of the review of the changes to the national system reflected in the report on the individual review of the 2016 annual submission of Croatia and the changes reported in the 2018 annual submission.

(b) Assessment of adherence to the reporting guidelines

21. The ERT assessed the information reported in the NC7 of Croatia and identified issues relating to completeness. The findings are described in table 7.

Table 7
Findings on the national system for the estimation of anthropogenic emissions by sources and removals by sinks from the review of the seventh national communication of Croatia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation*
1	Reporting requirement specified in paragraph 30 Issue type: completeness Assessment: recommendation	The Party reported only a description of the roles and responsibilities of various agencies in response to the information required by the annex to decision 15/CMP.1. During the review the Party provided additional information, elaborating on how the Party is preforming the general and specific functions for national systems. The ERT reiterates the recommendation made in the previous review report (FCCC/IDR.6/HRV para. 19) that the Party provide in its next NC additional information describing how the national system is performing the general and specific functions as defined in paragraph 30 of the annex to decision 15/CMP.1.
2	Reporting requirement specified in paragraph 31 Issue type: completeness Assessment: recommendation	The Party did not provide an explanation on which functions of the national system were not performed or were only partially performed, and did not provide information on actions planned and taken to perform these functions in the future. During the review the Party provided additional information, elaborating on the missing elements, namely that functions which were not performed are documented in the annual improvement plan, which defines objectives related to the improvement of NCs and provides a feasible timeline for their accomplishment. The ERT welcomes the efforts made by the Party and recommends that, in the next NC, the Party provide an explanation of which functions of the national system were not performed or were only partially performed, and provide information on actions planned and taken to perform these functions in the future.

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

4. National registry

(a) Technical assessment of the reported information

22. In the NC7 Croatia provided information on how its national registry performs the functions in accordance with the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and complies with the requirements of the technical standards for data exchange between registry systems. The ERT took note of the review of the changes to the national registry reflected in the report on the individual review of the 2016 annual submission of Croatia, as well as the information provided in the 2017 and 2018 annual submissions of the Party.

(b) Assessment of adherence to the reporting guidelines

23. The ERT assessed the information reported in the NC7 of Croatia and identified an issue relating to completeness. The finding is described in table 8.

Table 8
Findings on the national registry from the review of the seventh national communication of Croatia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation*
1	Reporting requirement specified in paragraph 32 Issue type: completeness Assessment: recommendation	The ERT noted that the information on the national registry in the NC7 (contained in chapter 3.4.2, and annex I, chapter 1.4.2) did not include the internet address of the interface to its national registry, as required by the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1, paragraph 11. During the review, in response to a question raised by the ERT, Croatia provided the internet address for the national registry (https://ets-registry.webgate.ec.europa.eu/euregistry/HR/index.xhtml). The ERT recommends that in the next NC Croatia complement the description of its national registry by including the internet address of the national registry.

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

B. Information on policies and measures and institutional arrangements

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

(a) Technical assessment of the reported information

24. For the second commitment period of the Kyoto Protocol, from 2013 to 2020, Croatia committed to contributing to the joint EU effort to reduce GHG emissions by 20 per cent below the base-year level. Croatia plans to meet its emission reduction commitments through domestic measures only. In addition to EU-wide PaMs Croatia has developed, with the support of the United Nations Development Programme, a framework for the development of the Low-Carbon Development Strategy of the Republic of Croatia for the period up to 2050, and has a draft strategy for 2030, which has yet to be adopted.

25. Implementation of the Kyoto Protocol by Croatia is underpinned by the Air Protection Act (OG 130/11, 47/14, 61/17), for the monitoring and evaluation of the implementation and planning of PaMs for mitigation and adaptation to climate change. The overall responsibility for climate change policymaking lies with the Ministry of Environment and Energy, and a number of national institutions are involved in the implementation of the policy. The Croatian Agency for the Environment and Nature is responsible for organizing the preparation of the GHG inventory, and the Commission for Inter-sectoral Coordination of Policies and Measures for Mitigation and Adaptation to Climate Change was established (OG 9/18) for the monitoring and evaluation of the implementation and planning of PaMs.

26. During the review, Croatia informed the ERT that it has legislative arrangements and administrative procedures in place to make information publicly accessible, such as public consultation on strategy documents used, for example, during the drafting of the Low-Carbon Development Strategy.

27. Croatia has national legislative arrangements and administrative procedures in place that seek to ensure that the implementation of activities under Article 3, paragraph 3, forest management under Article 3, paragraph 4, and any elected activities under Article 3, paragraph 4, of the Kyoto Protocol also contributes to the conservation of biodiversity and the sustainable use of natural resources, although these are not specifically presented in the NC (see table 9 below). Deforestation in Croatia is strictly controlled by the national Law on Forests, and afforestation is part of forest management plans/programmes. Furthermore, 36 per cent of the land cover in Croatia is under the EU NATURA 2000 regime.[3] All of these contribute to the conservation of biodiversity and the sustainable use of natural resources in Croatia.

[3] http://ec.europa.eu/environment/nature/natura2000/index_en.htm.

(b) Assessment of adherence to the reporting guidelines

28. The ERT assessed the information reported in the NC7 of Croatia and identified issues relating to completeness and transparency. The findings are described in table 9.

Table 9
Findings on domestic and regional programmes and/or legislative arrangements and procedures related to the Kyoto Protocol from the review of the seventh national communication of Croatia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation*
1	Reporting requirement specified in paragraph 37 Issue type: completeness Assessment: recommendation	The ERT noted that although Croatia reports some information on legislative, enforcement and administrative procedures in the NC7, the information on how this information was made publicly accessible was not included. In response to a question raised by the ERT during the review Croatia provided extensive information on legislative, enforcement and administrative procedures pertaining to the Kyoto Protocol. The Party explained that all information is made publicly accessible in the National Gazette or via the websites of relevant ministries. Also, new documents go through a public consultation process. The ERT recommends that Croatia include in the next NC text that explains how information on the legislative, enforcement and administrative procedures pertaining to the Kyoto Protocol is made publicly accessible.
2	Reporting requirement specified in paragraph 38 Issue type: transparency Assessment: recommendation	The ERT noted that, although some information on biodiversity is included in relation to LULUCF in Croatia's NC7, the information provided does not transparently present the legislative arrangements and administrative procedures associated with ensuring conservation of biodiversity and the sustainable use of natural resources in the context of activities related to Article 3, paragraphs 3 and 4, of the Kyoto Protocol. The ERT also noted that this issue was raised during the previous review (FCCC/IDR.6/HRV, para. 28). In response to a question raised by the ERT during the review, Croatia provided additional information on the legislation that underpins forest management in Croatia, although the ERT noted that this included little information explicitly on biodiversity. The ERT reiterates the recommendation made in the previous review report that Croatia include in its next NC text that specifically explains how the legislative arrangements and administrative procedures seek to ensure that the implementation of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol also contribute to the conservation of biodiversity and the sustainable use of natural resources.

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

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

(a) Technical assessment of the reported information

29. Croatia provided information on its package of PaMs implemented, adopted and planned, by sector and by gas, in order to fulfil its commitments under the Convention and its Kyoto Protocol. Croatia 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.

30. Croatia provided information on a set of PaMs similar to those previously reported with some exceptions. Energy and agriculture are the sectors where most of the differences occur. Croatia did not provide information on changes 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. During the review the Party provided information about its domestic

institutional arrangements; however, it did not provide information about the changes since the previous NC.

31. Croatia gave priority to implementing the PaMs that make the most significant contribution to its emission reduction efforts. Croatia did not provide information on how it believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals in accordance with the objective of the Convention. Croatia did not report on how it periodically updates its PaMs to reduce greater levels of emissions but did report on the PaMs that have been discontinued since the previous submission.

32. Most PaMs are implemented at the national level, often based on EU legislation. No measures implemented at the local level were reported.

33. The key overarching related cross-sectoral policy in the EU is the 2020 climate and energy package, adopted in 2009, which includes the revised EU ETS and the ESD. The package is supplemented by renewable energy and energy efficiency legislation and legislative proposals on the 2020 targets for CO_2 emissions from cars and vans, the carbon capture and storage directive, and the general programmes for environmental conservation, namely the 7th Environment Action Programme and the clean air policy package.

34. In operation since 2005, the EU ETS is a cap-and-trade system that covers all significant energy-intensive installations (mainly large point emissions sources such as power plants and industrial facilities) that produce 40–45 per cent of the GHG emissions of the EU. It is expected that the EU ETS will guarantee that the 2020 target (a 21 per cent emission reduction below the 2005 level) will be achieved for sectors under the scheme. The third phase of the EU ETS started in 2013 and the system now includes aircraft operations (since 2012) as well as N_2O emissions from chemical industries, PFC emissions from aluminium production and CO_2 emissions from industrial processes (since 2013).

35. 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 includes binding annual targets for each member State for 2013–2020. The ESD target for Croatia is to limit emission growth to 11 per cent above the 2005 level by 2020. In 2015, 66.3 per cent of emissions were from non-ETS (ESD) sectors.

36. Croatia introduced national-level policies to achieve its targets under the ESD and domestic emission reduction targets. The key policies reported are the EU ETS, the programme for energy renovation of the apartment buildings, feed-in tariffs and a premium system for the support of the use of renewable energy sources in electricity generation and for efficient cogeneration, financial incentives for the purchase of plug-in hybrid and electric vehicles, regulations related to the handling of substances that deplete the ozone layer and F-gases, and measures to prevent the generation and reduce the amount of municipal waste. The mitigation effect of feed-in tariffs and the premium system for the support of the use of renewable energy sources in electricity generation and for efficient cogeneration is the most significant (524.00 and 1,573.00 kt CO_2 eq in 2020 and 2030 respectively). Other policies that have delivered significant emission reductions are financial incentives for the purchase of plug-in hybrid and electric vehicles (221.00 and 662.00 kt CO_2 eq in 2020 and 2030), regulations on the handling of substances that deplete the ozone layer and F-gases (242.00 and 268.00 kt CO_2 eq in 2020 and 2030), and preventing the generation and reducing the amount of municipal waste (405.00 and 1,283.00 kt CO_2 eq in 2020 and 2030).

37. Croatia has also included information on planned PaMs such as change in the diet of cattle and pigs and animal feed quality (17.80 kt CO_2 eq in 2030), improvement of mineral fertilizer application methods (68,70 kt CO_2 eq in 2030) and the planned introduction of an Energy Efficiency Obligation Scheme (mitigation effect is not estimated). Among the mitigation actions that provide a foundation for significant additional actions, the following actions are critical for Croatia to attain its 2020 emission reduction target: improvement of mineral fertilizer application methods; prevention of leaching of nutrients (hydromeliorative interventions) and systems of protection against natural disasters; and change in the diet of

cattle and pigs and animal feed quality. Table 10 provides a summary of the reported information on the PaMs of Croatia.

Table 10
Summary of information on policies and measures reported by Croatia

Sector	*Key PaMs*	*Estimate of mitigation impact by 2020 (kt CO_2 eq)*	*Estimate of mitigation impact by 2030 (kt CO_2 eq)*
Policy framework and cross-sectoral measures	EU ETS	NE	NE
Energy			
Transport	Financial incentives for the purchase of plug-in hybrid and electric vehicles	221.00	662.00
Renewable energy	Increase of the use of renewable energy sources and energy efficiency in industry sector	98.00	293.00
	Feed-in tariffs and premium system for the support of the use of renewable energy sources in electricity generation and for efficient cogeneration	524.00	1 573.00
Energy efficiency	Programme for energy renovation of apartment buildings	254.00	763.00
IPPU	Handling of substances that deplete the ozone layer and F-gases	242.00	268.00
Agriculture	Improvement of mineral fertilizer application methods	NE	69.00
LULUCF		NE	NE
Waste	Preventing the generation and reducing the amount of municipal waste	405.00	1 283.00

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.

38. The Croatian Agency for the Environment and Nature is responsible for updating the "Report on the implementation of policies and measures to reducing emissions of greenhouse gases" and the "Report on projections of greenhouse gas emissions" according to Regulation (EU) No 525/2013. In accordance with the Croatian Air Protection Act (OG 130/11, 47/14, 61/17) the Commission for Inter-sectoral Coordination of Policies and Measures for Mitigation and Adaptation to Climate Change is responsible for the monitoring, evaluation and implementation of PaMs for mitigation and adaptation to climate change. Commission members, appointed by the Government, include representatives of relevant governmental bodies and NGOs.

(b) Policies and measures in the energy sector

39. **Energy supply**. The basic document in the energy sector is the Energy Strategy. The main measure for GHG reduction in the energy supply sector (for combustion in power plants above 20 MW) is the EU ETS. The goal for facilities included in the EU ETS is quantified in such a way that, from 2013, the total number of AEAs decreases linearly at an annual rate of 1.74 per cent. Another important measure is the CO_2 emission tax, which imposes a tax to all non-ETS stationary sources emitting more than 30 t CO_2 per year. The reconstruction and renovation of the heating and steam network, which is financed through the Operational Programme Competitiveness and Cohesion of the European structural and investment funds, has the goal of preventing high losses of energy during the transport of heat.

40. **Renewable energy sources**. The National Action Plan for Renewable Energy Sources was prepared by the Ministry of Economy in 2013 and sets objectives and policy supporting renewable energy. The share of renewables in final energy consumption shall increase to 20

per cent in 2020, including increases to 35 per cent in electricity generation, 10 per cent in transport and 20 per cent in heating and cooling energy. To achieve this, the Act on Renewable Energy Sources and Efficient Cogeneration was adopted in 2015; it modifies the existing system of feed-in tariffs and introduces the premium system. The measure on feed-in tariffs and the premium system for the support of the use of renewable energy sources in electricity generation and for efficient cogeneration is expected to decrease GHG emissions by 524.00 kt CO_2 eq in 2020 and by 1,573.00 kt CO_2 eq in 2030.

41. **Energy efficiency**. Regarding energy efficiency, Croatia refers to the 4th National Energy Efficiency Action Plan for the Period 2017–2019 under the EU energy services directive (2006/32/EC). The Program for the Energy Efficiency in Public Lighting intends to reduce energy consumption by 30 GWh per year. The Croatian Bank for Reconstruction and Development provides loan programmes for projects in environmental protection, energy efficiency and renewable energy. There is also a wide range of measures, including energy audits in industry, the promotion of equipment for measuring energy consumption and billing, the labelling of household appliances and the eco-design of energy-using products. Further important measures for increasing energy efficiency are included in residential and commercial sectors.

42. **Residential and commercial sectors**. A number of programmes related to energy efficiency target households and commercial organizations. The Long-Term Strategy for the National Building Stock Renovation Investment is a strategic document regarding investments in the renovation of buildings. Currently in Croatia there are many programmes in the residential and commercial sectors supporting the renovation of buildings and energy saving; for example, the National Plan for the Increase of the Number of Nearly-Zero Energy Buildings, the programme for energy renovation of apartment buildings and the programme for the increase of energy efficiency and use of renewable energy sources in commercial non-residential buildings.

43. **Transport sector**. There are currently many measures focusing on reducing the use of fossil fuels in transportation. The most effective are expected to be the financial incentives for the purchase of plug-in hybrid and electric vehicles with a high emission saving potential (221.00 kt CO_2 eq in 2020). The aim of the measure is to increase the share of electric and hybrid vehicles. Croatia also introduced a system of taxes and fees to divert from fossil-fuelled cars towards more environmentally friendly transportation (e.g. public transport or hybrid vehicles). Also, development of infrastructure for alternative fuels, support of biofuels and promotion of intelligent transport systems are important measures in the transport sector.

44. The NC7 does not include information on steps the Party has taken to promote and/or implement any decisions by ICAO and IMO in order to limit or reduce emissions of GHGs not controlled by the Montreal Protocol from aviation and marine bunker fuels (see issue 6 in table 11).

45. **Industrial sector**. The Industrial Strategy of the Republic of Croatia 2014–2020 defines objectives of industrial development and key indicators of Croatian industry in the period 2014–2020. The EU ETS is the main PaM for mineral oil refining and the production of pig iron and steel, cement clinker, lime, glass, ceramic products, paper and nitric acid. There are also PaMs for energy audits, energy services for the implementation of energy-efficiency projects, use of refuse-derived fuel in the cement industry and funds for environmental, energy-efficiency and renewable-energy projects.

(c) Policies and measures in other sectors

46. **Industrial processes**. Croatia reported PaMs targeted to reduce F-gases in industrial processes, namely a ban and reduction of the consumption of ozone-depleting substances and F-gases; technical and organizational measures for collecting, recycling and recovering ozone-depleting substances and F-gases; and preventive measures for uncontrolled leaking of F-gases.

47. **Agriculture**. The implementation of measures in the agriculture sector is predominantly reflected in the reduction of CH_4 and N_2O emissions. Most of the PaMs are planned and one measure is adopted with implementation expected to start in 2018 or 2020. The most effective measure is the improvement of mineral fertilizer application methods,

with an estimated mitigation effect of 68.70 kt CO_2 eq in 2030. A reduction in the amount of fertilizer used and slower release of nitrogen will reduce N_2O emissions. Other PaMs include improving animal waste management, reduction of leaching and run-off (hydromeliorative interventions) and the introduction of new cultivars.

48. **LULUCF**. Croatia has prepared the Action Plan for LULUCF under decision 529/2013/EU and has delivered the first report on the implementation of measures under this plan. Croatia also reported an ongoing cost–benefit analysis of reforestation on new areas to justify the introduction of possible incentive measures. Additionally, Croatia is making efforts to improve its reporting on the LULUCF sector. Currently there are no PaMs in place to promote concrete actions for reducing emissions or increasing carbon storage in the LULUCF sector.

49. **Waste management**. Croatia reported five PaMs related to waste management. Preventing the generation and reducing the amount of municipal waste is the measure with the highest mitigation effect (405.00 kt CO_2 eq in 2020). This PaM supports cleaner production, incentives, regulations and investment in up-to-date technologies. Further measures include increasing the separating and recycling of municipal waste, CH_4 flaring on landfills and reducing the disposal of biodegradable waste on landfills.

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

50. In the NC7 Croatia did not report 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.

51. However, information on how Croatia strives to implement its commitments under Article 3, paragraph 14, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties was reported in the 2018 annual submission.

52. During the review, Croatia informed the ERT that it strives to implement its commitments under the Kyoto Protocol in a way which minimizes adverse impacts on developing countries through the continuing liberalization of the energy market, which is in line with EU policies and directives. There have been no significant market distortions identified. Consumption taxes for electricity and fossil fuels have been harmonized recently. The subsidies associated with the use of environmentally unsound and unsafe technologies have been removed.

(e) Assessment of adherence to the reporting guidelines

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

Table 11
Findings on policies and measures, including those in accordance with Article 2 of the Kyoto Protocol from the review of the seventh national communication of Croatia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement[a] specified in paragraph 16	The ERT noted that Croatia did not provide information on policies and practices which encourage activities that lead to greater levels of anthropogenic GHG emissions.
	Issue type: completeness	During the review, Croatia explained that it has a policy supporting growth of GDP and birth rate, which are key drivers for energy consumption and anthropogenic GHG emissions.
	Assessment: encouragement	The ERT encourages the Party to include in its next NC the information on policies and practices which encourage activities that lead to greater levels of anthropogenic GHG emissions.

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
2	Reporting requirement[a] specified in paragraph 21 Issue type: completeness Assessment: encouragement	Croatia provided the information on institutional arrangements for the monitoring of the GHG mitigation policy. However, the ERT noted that the NC7 does not include information on how the progress of PaMs to mitigate GHG emissions is monitored and evaluated. During the review the Party informed the ERT that inventories and projections show that Croatia is on track to meet its target under the ESD. The draft of the Low-Carbon Development Strategy has set the indicative sectoral targets until 2030, and these should be used as milestones for the sectoral strategies and their achievement should also show the progress with the PaMs to mitigate GHG emissions. The ERT encourages the Party to provide in its next NC information on how the progress with PaMs to mitigate GHG emissions is monitored and evaluated over time.
3	Reporting requirement[a] specified in paragraph 23 Issue type: completeness Assessment: encouragement	The ERT noted that Croatia did not provide the information on a quantitative estimate of the impacts of PaMs, on estimation methods and on how a policy or measure interacts with other PaMs at the national level. During the review the Party referred to the BR3 (CTF table 3) and informed the ERT that not all mitigation effects are estimated because some measures do not have a direct GHG mitigation impact. There are also PaMs that are similar to other PaMs and their reduction effect is included in those other PaMs; for example, the programme for energy renovation of apartment buildings includes GHG emission reduction potential for renovation of all types of buildings. The mitigation effects of the individual PaMs were estimated within the development of the technical basis for the Low-Carbon Development Strategy. The information on how PaMs interact with other measures, especially in other sectors, can be found in the draft Low-Carbon Development Strategy, which has gone through public consultation, but has not yet been adopted. The ERT encourages the Party to provide in the next NC information on mitigation impacts of PaMs and on estimation methods. If the information is included in the CTF tables of the BR, the Party can refer to those tables. Further, the ERT encourages the Party to provide the information on how the individual PaMs interact with other PaMs to prevent the over- or underestimation of mitigation effects of particular PaMs.
4	Reporting requirement[a] specified in paragraph 25 Issue type: transparency Assessment: recommendation	The Party did not report in its NC7 how it believes PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals. During the review, Croatia provided references to chapter 5 in the NC7 where, for example, figure 5-6 shows the effect of PaMs for the WEM and WAM scenarios. The ERT reiterates the recommendation made in the previous review report that Croatia provide in its next NC (in the chapter on PaMs) explicit information on how the Party believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals.
5	Reporting requirement[b] specified in paragraph 36 Issue type: completeness Assessment: recommendation	The ERT noted that Croatia did not provide information in its NC7 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, effects on international trade, and social, environmental and economic impacts on other Parties. During the review the Party provided further information, namely that the assessment of economic and social consequences of response measures is included in the BR3. For example, an impact assessment system for new policy initiatives has been established to examine legislative proposals before adoption. The assessment addresses all significant economic, social and environmental impacts. The ERT reiterates the recommendation made in the previous review report that, in the next NC, the Party provide information on how it strives to implement PaMs in such a way as to minimize adverse effects on other Parties. The Party can also provide in the respective chapter a reference to another chapter or document where this information is included.

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
6	Reporting requirement[b] specified in paragraph 35 Issue type: completeness Assessment: recommendation	The ERT noted that the NC7 did not include the information required in pursuit of Article 2, paragraph 2, of the Kyoto Protocol on the steps it has taken to promote any decisions by ICAO and IMO in order to reduce GHG emissions from aviation and marine bunker fuels. During the review, Croatia mentioned that Croatian aviation was included under the EU ETS in 2014. It also referred to the development of infrastructure for the use of liquefied natural gas in maritime transport and other measures at the EU level regarding ICAO and IMO, which Croatia will apply. The ERT reiterates the recommendation made in the previous review report that the Party report on the steps it has taken to promote and implement any decisions by ICAO and IMO.

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

54. Croatia reported updated projections for 2020 and 2030 relative to actual inventory data for 2014 under the WEM scenario. The WEM scenario reported by Croatia includes implemented and adopted PaMs until 2020.

55. In addition to the WEM scenario, Croatia reported the WAM and WOM scenarios. The WAM scenario includes planned PaMs, while the WOM scenario excludes all PaMs implemented, adopted or planned after 2014. Croatia provided a definition of its scenarios. For the energy sector the WEM scenario does not include the installation of additional renewables capacity after 2020 (as documented in the National Action Plan for Renewable Energy Resources by 2020) and energy efficiency improvements are in line with existing measures as documented in the 4th National Energy Efficiency Action Plan for the Period 2017–2019, whereas the WAM scenario includes emission reductions that result from continued support to energy efficiency after 2020 and further development of its renewable energy policy after 2020. In relation to transport, the WEM scenario includes a stagnation in the use of rail and inland waterways, while the WAM scenario includes emission reductions from moving 7 per cent of transport of passengers and goods to rail between 2020 and 2030 compared with the WEM scenario.

56. For industrial processes, the WEM scenario assumes that there will be no installation of additional capacity in this sector, and the WAM scenario further includes the application of cost-effective measures to reduced GHG emissions associated with the production of cement, glass, nitric acid and the reduction of emissions of volatile organic compounds, controlled substances and F-gases. In relation to waste, under the WEM scenario it is assumed that there will be a continuous increase of waste as a result of higher living standards, while under the WAM scenario this waste will be reduced. The definitions provided by Croatia indicate that the scenarios were prepared according to the UNFCCC reporting guidelines on NCs.

57. 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 2015–2035. 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 IPCC.

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

59. Emission projections related to fuel sold to ships and aircraft engaged in international transport were not reported separately and were not included in the totals. Croatia reported on factors and activities affecting emissions for each sector.

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

60. The methodology used for the preparation of the projections is different from that used for the NC6. Croatia reported supporting information further explaining the methodologies and the changes made since the NC6. The ERT noted that, during the review, Croatia provided information on how the changes in the methodology provide greater detail and a significant improvement to the modelling of the synergies and cross-sectoral effects of the measures for the projections.

61. To prepare its projections, Croatia relied on the following key underlying assumptions: population trends, economic development indicators and energy prices. These variables and assumptions were reported in CTF table 5. The assumptions were updated on the basis of information provided by the European Commission and the data are consistent with the EU Reference Scenario.[4] The Party also provided the document "Report on projections of greenhouse gas emissions". The expected long-term annual average GDP growth in the NC6 was estimated at 3.5 per cent. In the NC7 GDP growth was assumed to be around 1.7 per cent, based on the EU Reference Scenario.

62. Each sector is estimated using a different model. The energy sector, including energy industries and transport, is modelled using the Long-range Energy Alternatives Planning system (LEAP) which is used to track energy consumption. The industrial sector is modelled using the Industrial Processes Model, which is an Excel-based engineering simulation model. Agriculture is modelled by following the bottom-up reference-based approach from the IPCC guidelines. Waste is modelled using an Excel-based engineering simulation model.

63. Croatia provided information in CTF table 5, on assumptions, methodologies, models and approaches used and on the key variables and assumptions used in the preparation of the projection scenarios. The ERT notes that Croatia provided information to explain the changes and supporting documentation on sensitivity analyses, both in the NC7 and during the review.

64. Qualitative sensitivity analyses were provided during the review for a number of important assumptions, such as population trends, economic growth, the influence of temperature on heating and cooling trends, the impact of changes in weather on renewable electricity generation, hydrology and electricity imports. These analyses included detailed information on the assumptions including information on a range of GDP growth scenarios. GDP growth is assumed to increase by 2050 by a long-term annual average of 1.7 per cent across all scenarios based on the EU Reference Scenario. In the optimistic scenario, where economic growth is expected to be 2.2 per cent, emissions are expected to be 7.1 per cent higher in 2030 and 18.1 per cent higher in 2050. The pessimistic growth scenario sees an increase in GDP growth of less than 1 per cent by 2050, which results in emissions being lower than for the average scenario. However, as economic growth is low there may be an issue in financing the transition, and finding additional funding for the implementation of measures might be difficult.

(c) Results of projections

65. The projected emission levels under different scenarios and information on the Kyoto Protocol targets and the quantified economy-wide emission reduction target are presented in table 12 and the figure below.

[4] See https://ec.europa.eu/energy/en/data-analysis/energy-modelling.

Table 12
Summary of greenhouse gas emission projections for Croatia

	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]	31 204.63	NA	0.2
Quantified emission limitation or reduction commitment under the Kyoto Protocol (2013–2020)[c]	20 283.89	NA	NA
Quantified economy-wide emission reduction target under the Convention[d]	NA	NA	NA
Inventory data 1990[e]	31 153.70	–0.2	NA
Inventory data 2015[e]	23 502.14	–24.7	–24.6
WOM projections for 2020[f]	25 635.96	–17.8	–17.7
WEM projections for 2020[f]	23 976.59	–23.2	–23.0
WAM projections for 2020[f]	22 429.66	–28.1	–28.0
WOM projections for 2030[f]	29 706.72	–4.8	–4.6
WEM projections for 2030[f]	24 677.30	–20.9	–20.8
WAM projections for 2030[f]	19 582.72	–37.2	–37.1

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

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

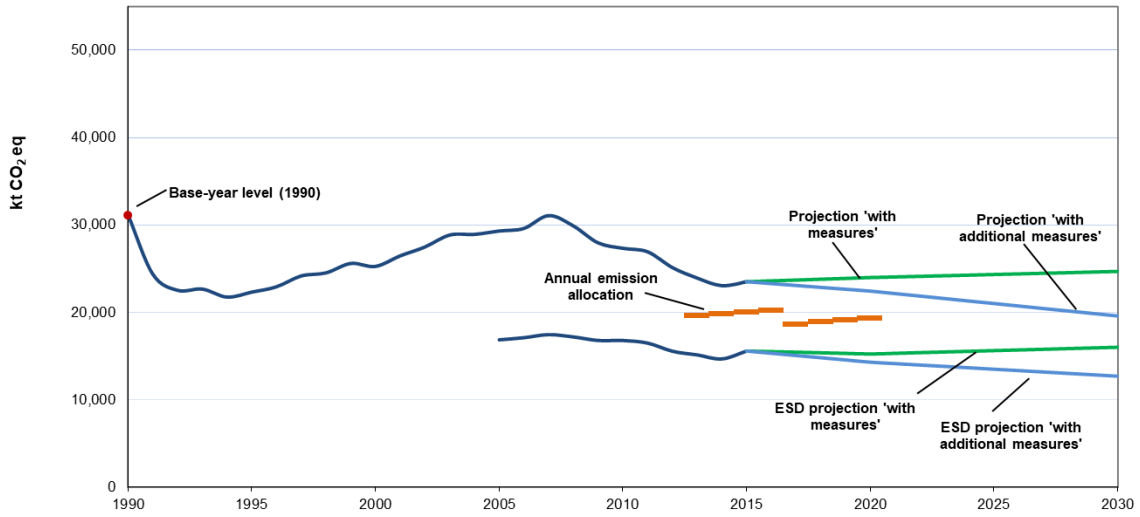
[c] The Kyoto Protocol target for the second commitment period (2013–2020) is a joint target of the EU and its 28 member States and Iceland. The target is to reduce emissions by 20 per cent compared with the base-year (1990) level by 2020. The ESD target for Croatia is to limit emission growth to 11 per cent above the 2005 level by 2020. 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 8 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 Croatia's BR3 CTF table 6.

[f] From Croatia's BR3 CTF table 6.

Greenhouse gas emission projections reported by Croatia



Sources: (1) data for the years 1990–2015: Croatia's CTF table 1; total GHG emissions excluding LULUCF; (2) data for the years 2015–2030: Croatia's CTF table 6; total GHG emissions excluding LULUCF; (3) European Environment Agency ESD review data (2005–2015); data for ESD projections provided by Croatia during the review; (4) EU transaction log.

66. Croatia's total GHG emissions excluding LULUCF in 2020 and 2030 are projected to be 23,976.59 and 24,677.30 kt CO_2 eq, respectively, under the WEM scenario, which represents a decrease of 23.0 and 20.8 per cent, respectively, below the 1990 level. Under the WAM scenario, emissions in 2020 and 2030 are projected to be 22,429.66 and 19,582.72 kt CO_2 eq, respectively, which represents a decrease of 28.0 and 37.1 per cent below the 1990 level. The 2020 projections suggest that Croatia will continue contributing to the achievement of the EU target under the Convention.

67. Croatia's target for non-ETS sectors is to limit its total emission growth to 11 per cent above the 2005 level by 2020 (see para. 36 above). Croatia's AEAs, which correspond to its national emission target for non-ETS sectors, change linearly from 19,613.81 kt CO_2 eq in 2013 to 19,317.94 kt CO_2 eq for 2020. According to the projections under the WEM scenario, emissions from non-ETS sectors are estimated to reach 15,228.00 kt CO_2 eq by 2020. Under the WAM scenario, Croatia's emissions from non-ETS sectors in 2020 are projected to be 14,290.00 kt CO_2 eq. The projected level of emissions under the WEM and WAM scenarios are 21.2 and 26.0 per cent, respectively, below the AEAs for 2020. The ERT noted that this suggests that Croatia expects to meet its target under the WEM scenario.

68. Croatia presented the WEM and WAM scenarios by sector for 2020 and 2030, as summarized in table 13.

Table 13
Summary of greenhouse gas emission projections for Croatia presented by sector

	GHG emissions and removals (kt CO_2 eq)					*Change (%)*			
	1990	*2020*		*2030*		*1990–2020*		*1990–2030*	
Sector		*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*
Energy (not including transport)	17 950.74	11 169.34	10 846.61	10 966.89	8 839.77	–37.8	–39.6	–38.9	–50.8
Transport	3 881.11	5 421.69	5 421.06	5 594.87	4 827.37	39.7	39.7	44.2	24.4
Industry/industrial processes	4 628.76	3 008.86	2 447.39	3 146.54	2 546.63	–35.0	–47.1	–32.0	–45.0
Agriculture	4 039.08	2 523.06	2 266.09	2 712.66	2 395.22	–37.5	–43.9	–32.8	–40.7
LULUCF	–6 589.43	–3 098.18	NA	–2 375.06	NA	–53.0	NA	–64.0	NA
Waste	654.01	1 853.64	1 448.50	2 256.33	973.73	183.4	121.5	245.0	48.9
Other (specify)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total GHG emissions without LULUCF	**31 153.70**	**23 976.59**	**22 429.66**	**24 677.30**	**19 582.72**	**–23.0**	**–28.0**	**–20.8**	**–37.1**

Source: Croatia's BR3 CTF table 6.

69. According to the projections reported for 2020 under the WEM scenario, the most significant emission reductions are expected to occur in the energy and industry/industrial processes sectors, amounting to projected reductions of 6,781.40 kt CO_2 eq (37.8 per cent) and 1,619.90 kt CO_2 eq (35.0 per cent) between 1990 and 2020, respectively. In both the transport and waste sectors emission increases are expected. In the case of transport, projected emission increases amount to 1,540.58 kt CO_2 eq (39.7 per cent) between 1990 and 2020. In the case of waste, emission increases amount to 1,199.63 kt CO_2 eq (183.4 per cent) between 1990 and 2020. The pattern of projected emissions reported for 2030 under the same scenario remains largely the same.

70. According to the projections reported for 2030 under the WEM scenario, the most significant emission reductions are expected to occur in the energy and industry/industrial processes sectors, amounting to projected reductions of 6,983.85 kt CO_2 eq (38.9 per cent) and 1,482.22 kt CO_2 eq (32.0 per cent) between 1990 and 2030, respectively. These changes are largely as a result of energy efficiency measures and an increase in renewable electricity

(in the energy sector) as well as the closure of iron, steel and ferroalloy production, the application of abatement measures and the assumption that no additional capacity will be added in the industry/industrial processes sectors between 1990 and 2030.

71. Under the WAM scenario, the patterns of emission reductions by 2020 presented by sector and by gas are largely the same.

72. Croatia presented the WEM and WAM scenarios by gas for 2020 and 2030, as summarized in table 20.

73. For 2020 the most significant reductions are projected for CO_2 and PFC emissions: 5,452.59 kt CO_2 eq (23.3 per cent) and 1,240.24 kt CO_2 eq (100.0 per cent) between 1990 and 2020, respectively.

74. For 2030 the most significant reductions are projected for CO_2 and PFC emissions: 5,399.58 kt CO_2 eq (23.1 per cent) and 1,240.24 kt CO_2 eq (100.0 per cent) between 1990 and 2030, respectively. However, CH_4 shows an increase above 1990 levels under the WEM scenario, of 504.10 kt CO_2 eq (13.5 per cent) between 1990 and 2030. Apart from increases in CH_4 under the WEM scenario there is no difference in the projection trends for both time frames.

75. According to the WAM scenario, the patterns of emission reductions for 2020 presented by gas remain largely the same. Significant changes in the projections and variations in important variables since the NC6 are as follows: (1) the methodologies used for the projections were significantly improved and allowed for more detailed modelling of the synergies and cross-sectoral effects of measures; (2) the data presented in the NC7 are mainly derived from the draft Low-Carbon Development Strategy of Croatia until 2030 with a view to 2050, while the main basis for the previous projections was the Energy Strategy; (3) bringing key parameters in line with the EU Reference Scenario 2016; and (4) changes in the expected average long-term annual GDP growth, which was around 3.5 per cent in the NC6 whereas it is expected to be around 1.7 per cent based on the input date from the EU Reference Scenario. The projections take key assumptions from the EU Reference Scenario into account.

Table 14
Summary of greenhouse gas emission projections for Croatia presented by gas

	GHG emissions and removals (kt CO_2 eq)					*Change (%)*			
	1990	*2020*		*2030*		*1990–2020*		*1990–2030*	
Gas		*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*
CO_2	23 390.08	17 937.49	17 431.88	17 990.50	14 989.61	–23.3	–25.5	–23.1	–35.9
CH_4	3 744.19	3 713.71	3 045.55	4 248.29	2 546.88	–0.8	–18.7	13.5	–32.0
N_2O	2 768.74	1 854.90	1 723.96	1 920.50	1 796.49	–33.0	–37.7	–30.6	–35.1
HFCs	NO	463.90	221.68	511.15	242.88	NO	NO	NO	NO
PFCs	1 240.24	0.00	0.00	0.00	0.00	–100.0	–100.0	–100.0	–100.0
SF_6	10.45	6.59	6.59	6.86	6.86	–36.9	–36.9	–34.4	–34.4
NF_3	NO	NO	NO	NO	NO	NO	NO	NO	NO
Total GHG emissions without LULUCF	**31 153.70**	**23 976.59**	**22 429.66**	**24 677.30**	**19 582.72**	**–15.0**	**–28.0**	**–9.2**	**–37.1**

Source: Croatia's BR3 CTF table 6.

(d) Assessment of adherence to the reporting guidelines

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

Table 15
Findings on greenhouse gas emission projections reported in the seventh national communication of Croatia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement[a] specified in paragraph 30 Issue type: completeness Assessment: encouragement	The Party did not report any information on sensitivity analyses for any of the projections in its NC7. During the review the Party provided additional information by the Croatian Agency for the Environment and Nature that describes the sensitivity analyses for the projections under the WEM and WAM scenarios (chapter 5, "Report on projections of greenhouse gas emissions"). The ERT welcomes the efforts made by the Party and reiterates the encouragement made in the previous review report (FCCC/IDR.6/HRV, para. 65) that the Party include sensitivity analyses for projections in its next NC.
2	Reporting requirement[a] specified in paragraph 32 Issue type: completeness Assessment: encouragement	The NC7 includes projection estimates for the year 2015 in tables 5-1, 5-2 and 5-3, even though inventory data for the year 2015 were available at the time of preparation of the report. Paragraph 32 of the UNFCCC reporting guidelines on NCs states that the starting point should generally be the latest year for which inventory data are available in the NC. During the review the Party clarified that the starting point of the projections is 2014 and therefore the 2015 values are projections. The Party also explained that the modelling of projections was carried out in 2016 when the latest available inventory data were for the year 2014. The ERT welcomes the efforts made by the Party and encourages the Party to provide in its next NC information describing projection estimates that use the latest available inventory data.
3	Reporting requirement[a] specified in paragraph 34 Issue: completeness Assessment: recommendation	In the NC7 the Party did not report projections on other (cross-cutting) PaMs even though it presented projections for all other sectors (energy, transport, industrial processes, waste management, agriculture and LULUCF) in line with the sectors presented in the PaMs chapter, where 'Other (cross-cutting) policies and measures' are presented in a separate chapter. During the review the Party provided additional information clarifying that cross-cutting PaMs, which affect more than one sector, are included in the projections, namely MCC-4, MCC-5 and MCC-7. The ERT welcomes the efforts made the Party and recommends that in its next NC the Party provide information, to the extent possible, using the same sectoral categories used in the PaMs section, including describing the other (cross-cutting) PaMs, or provide a duly substantiated explanation of why this is not possible due to the national circumstances.
4	Reporting requirement[a] specified in paragraph 35 Issue type: completeness Assessment: encouragement	The Party did not report information on projections for indirect GHGs such as carbon monoxide, nitrogen oxides and non-methane volatile organic compounds or sulfur oxides. During the review the Party provided additional information describing the national programme for the reduction of emissions of air pollutants, which had not been adopted at the time of the review owing to delays associated with changes in government and delays in the adoption of planning documents, particularly the draft Low-Carbon Development Strategy of the Republic of Croatia until 2030 with a view to 2050, which should be adopted by the end of 2018. The ERT welcomes the efforts made by the Party and encourages the Party to provide information describing projections for indirect GHGs in its next NC.
5	Reporting requirement[a] specified in paragraph 36 Issue type: completeness	In the NC7 the Party did not provide information on emission projections related to fuel sold to ships and aircraft engaged in international transport separately and not included in the totals. During the review the Party clarified that the emissions from the bunker fuels are not included in the totals and stated that it was not yet in a position to provide this

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
	Assessment: recommendation	information but was willing to develop projections of the fuel sold to ships and aircraft engaged in international travel for future NCs. The ERT reiterates the recommendation made in the previous review report that the Party provide information in its next NC describing the emission projections related to fuel sold to ships and aircraft engaged in international transport, to the extent possible, separately and not included in the totals.
6	Reporting requirement[a] specified in paragraph 37 Issue type: completeness Assessment: encouragement	The Party did not provide annual data for actual emissions for the years 1990–2015 (or latest year available) in the NC. The ERT noted that these data should be presented together, in a tabular format by sector and by gas, with projections on a quantitative basis for the years for 2020 and 2030. During the review the Party stated that projections were available in a five-year time step in accordance with paragraph 37 of the UNFCCC reporting guidelines on NCs. The Party also stated that the annual data for actual emissions were provided in CTF table 1 and in its NIR (no year given). The ERT notes that the NIR is not referenced as a source of this information, that the CTF tables are part of the BR not part of the NC and that projections are not required on an annual basis. The ERT encourages the Party to provide annual data for actual emissions for the years 1990–2015 (or latest year available) and present them together with projections in a tabular format, by sector and by gas, in its next NC or reference the document where the information can be found.
7	Reporting requirement[a] specified in paragraph 38 Issue type: transparency Assessment: encouragement	The NC7 includes a diagram of overall projections under the WOM, WEM and WAM scenarios, but it does not provide additional diagrams for each sector as was provided in previous submissions. During the review the Party provided additional diagrams for projections under the WOM, WEM and WAM scenarios for each of the sectors. The ERT welcomes the efforts made by the Party and encourages the Party to provide additional diagrams of projection estimates in its next NC.
8	Reporting requirement[a] specified in paragraph 43 Issue type: transparency Assessment: encouragement	The Party did not report the description of each model or approach used, as required by the UNFCCC reporting guidelines on NCs, particularly in relation to paragraph 43(d) to provide a summary of the strengths and weaknesses of the model approach used and paragraph 43(e) to provide an explanation of how the model or approach used accounts for any overlap of synergies that may exist between different PaMs. The ERT noted that it could also be useful to provide more information on paragraph 43(a)–(c), namely an explanation of which gases and/or sectors the model or approach was used for; a description of the type of model or approach used and its characteristics (e.g. top-down, bottom-up and accounting models or expert judgment); and a description of the original purpose of the model or approach and what it was designed for and, if applicable, how it has been modified for climate change purposes. During the review the Party provided complete and comprehensive additional information describing all the elements required by paragraph 43(a)–(e) of the UNFCCC reporting guidelines on NCs. The ERT welcomes the efforts made by the Party and encourages the Party to provide in its next NC the descriptions of each model or approach used, in line with the requirements of paragraph 43(a)–(e) of the UNFCCC reporting guidelines NCs.
9	Reporting requirement[a] specified in paragraph 44 Issue type: completeness Assessment: encouragement	The Party did not report references for the description of each model or approach used in relation to the information reported under paragraph 43 of the UNFCCC reporting guidelines on NCs. During the review the Party provided the necessary references, which are included in the annex to this report. The ERT welcomes the efforts made by the Party and encourages the Party to provide in its next NC the references for the descriptions of each model or approach used in relation to paragraph 43 of the UNFCCC reporting guidelines on NCs.

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
10	Reporting requirement[a] specified in paragraph 45 Issue type: transparency Assessment: encouragement	The Party did not report information on the main differences in the assumptions and methods employed, and results between projections in the current NC and those in earlier NCs. During the review the Party provided additional information describing the main differences compared with the projections provided in the NC6. The ERT welcomes the efforts made by the Party and reiterates the encouragement made in the previous review report (FCCC/IDR.6/HRV, para. 63) that the Party provide in its next NC information describing the main differences in the assumptions and methods employed, and results between projections in the current NC and those in earlier NCs.
11	Reporting requirement[a] specified in paragraph 46 Issue type: completeness Assessment: encouragement	The Party did not report qualitative or quantitative information related to the sensitivity of projections to underlying assumptions. During the review the Party provided complete and comprehensive additional information by the Croatian Agency for the Environment and Nature that describes the sensitivity analyses for the projections under the WEM and WAM scenarios (chapter 5, "Report on projections of greenhouse gas emissions"). The ERT welcomes the efforts made by the Party and encourages the Party to provide in its next NC qualitative and quantitative information related to the sensitivity of projections to underlying assumptions.

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.

2. Assessment of the total effect of policies and measures

(a) Technical assessment of the reported information

77. In the NC7 Croatia presented the estimated and expected total effect of implemented and adopted PaMs and an estimate of the total effect of its PaMs, in accordance with the WEM scenario, compared with a situation without such PaMs. Information is presented in terms of GHG emissions avoided or sequestered, by gas (on a CO_2 eq basis), in 2015, 2020, 2025, 2030 and 2035. The ERT notes that the Party supplied this information during the review. It also presented relevant information on factors and activities for each sector for 1990–2030.

78. Croatia reported that the total estimated effect of its adopted and implemented PaMs is 1,659 kt CO_2 eq in 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 transport and industrial processes sectors. Table 16 provides an overview of the total effect of PaMs as reported by Croatia.

Table 16
Projected effects of Croatia's planned, 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 planned measures (kt CO_2 eq)*	*Effect of implemented and adopted measures (kt CO_2 eq)*	*Effect of planned measures (kt CO_2 eq)*
Energy (without transport)	805.19	322.73	3 428.50	2 127.12
Transport	628.25	0.63	1 097.22	767.50
Industrial processes	148.34	561.47	309.98	599.91
Agriculture	0.00	256.97	0.00	317.44
Land-use change and forestry	3 098.18	NA	NA	NA
Waste management	77.57	405.14	193.72	1 282.60
Total GHG emissions without LULUCF	**1 659.35**	**1 546.94**	**5 029.42**	**5 094.57**

Source: Croatia's NC7 and BR3.

Note: The total effect of implemented and adopted PaMs is defined as the difference between the WOM and the WEM scenario; the total effect of planned PaMs is defined as the difference between the WEM and the WAM scenario.

(b) Assessment of adherence to the reporting guidelines

79. The ERT assessed the information reported in the NC7 of Croatia and identified an issue relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on NCs. The finding is described in table 17.

Table 17
Findings on the assessment of the total effect of policies and measures from the review of the seventh national communication of Croatia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement[a] specified in paragraph 40	The Party did not report an estimate of GHG emissions avoided, by gas, based on the total effect of PaMs for projections under the WEM scenario compared with a situation without such PaMs.
	Issue type: completeness	During the review the Party provided a table showing an estimate of GHG emissions avoided, by gas (on a CO_2 eq basis), based on the total effect of PaMs for projections under the WEM scenario compared with a situation without such PaMs (i.e. the WOM scenario) for the years 2015–2035 in five-year time steps.
	Assessment: recommendation	The ERT welcomes the efforts made by the Party and recommends that the Party, while presenting the total effect of its PaMs, provide in its next NC an estimate of GHG emissions avoided, by gas (on a CO_2 eq basis), based on the total effect of PaMs for the projections under the WEM scenario compared with a situation without such PaMs.

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

80. In the NC7 Croatia provided information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action, although it did not elaborate on supplementarity as such. The ERT noted that Croatia does not plan to use the market-based mechanisms to meet its Kyoto Protocol target.

(b) Assessment of adherence to the reporting guidelines

81. The ERT assessed the information reported in the NC7 of Croatia and identified an issue relating to transparency. The finding is described in table 18.

Table 18
Findings on supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol from the review of the seventh national communication of Croatia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation*
1	Reporting requirement specified in paragraph 33 Issue type: transparency Assessment: recommendation	The ERT noted that the content of the NC7 (chapter 5.2.6 Impact of the use of clean development mechanism, joint implementation and emission trading as an additional measure for the GHG emission reduction) is transparent and complete in explaining that only domestic measures have been used so far. However, the ERT noted that table III.2 "Summary of Reporting Supplementary Information Under Article 7, Paragraph 2 of the Kyoto Protocol" incorrectly refers to chapter 5.2.7 rather than chapter 5.2.6. The ERT recommends that Croatia provide accurate information on how its use of the mechanisms is supplemental to domestic action by providing a correct cross-reference in its next NC.

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

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

82. Croatia is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3, 4 and 5, of the Convention. However, Croatia reported that the Law on Air Protection stipulates the use of revenues from GHG emissions auctioning, including the financing of mitigation measures for climate change and adaptation in other countries; and Croatia also mentions that the use of these revenues is planned based on the adopted plan for the use of financial resources obtained from the sale of auctioning revenues in the Republic of Croatia by 2020. The ERT commends Croatia for reporting this information and suggests that it continue to do so in future NCs, including reporting on progress on the adoption of the plans to use revenues from GHG emissions auctioning to support mitigation and adaptation programmes in other countries.

E. Vulnerability assessment, climate change impacts and adaptation measures

1. Technical assessment of the reported information

83. In its NC7 Croatia provided the required information on the expected impacts of climate change in the country; and the adaptation policies covering regional, sectoral and cross-sectoral vulnerabilities and considerations.

84. Croatia provided in its NC 7 a description of climate change vulnerabilities and impacts, further research requirements and adaptation measures. Impetus has been given to addressing adaptation matters with the adoption of the "Draft Climate Change Adaptation Strategy in the Republic of Croatia for the period to 2040 with a view to 2070" (known as the White Book) and "Report on estimated impacts and vulnerabilities to climate change for each sector" which provided further direction to government agencies on enhancing preparedness for climate change.

85. The NC7 provided information on the list of possible adaptation actions and during the review Croatia provided additional information on the formulation of the document "Development of bilateral assistance program for third countries in the field of climate change for the period from 2018 to 2020" and its formal expected adoption towards the end

of 2018. The main focus of this is reported to be on projects supporting other countries based on a government-to-government bilateral cooperation model, with activities ranging from awareness-raising campaigns and capacity-building, to consultations for strategic and regulatory framework development to pilot projects. Adaptation to climate change is one of the topics covered by a programme mainly aimed at capacity-building and education regarding best/good practice for climate change adaptation and vulnerability assessment as well as at supporting the development of strategies, action plans and programmes to increase the resilience of all sectors to climate change.

86. The ERT noted that in its NC7 Croatia did not report updated information on vulnerability and adaptation in the agriculture and forestry sectors compared with the information provided in the NC6. During the review, Croatia clarified that it has already applied some responses (e.g. irrigation of agricultural land, provision of an incentivizing legal framework for the use of renewable energy sources with the aim of diversifying sources). Croatia further informed the ERT that certain capacity-building and awareness-raising activities, which represent an integral part of some responses, have also been implemented (e.g. through EU-funded projects) as well as preparation of national and subnational strategies/plans/programmes tackling adaptation to climate change.

Table 19
Summary of information on vulnerability and adaptation to climate change reported by Croatia

Vulnerable area	*Examples/comments/adaptation measures reported*
Agriculture and food security	*Vulnerability*: Change in the duration/length of the vegetative period of agricultural crops and lower yields; higher demand for irrigation water owing to frequent droughts; more frequent flooding and stagnation of surface water, which will reduce or completely destroy yields. *Adaptation*: Strengthening the capacity to understand and implement climate change mitigation measures; increasing the absorption capacity of soil for water on agricultural land; conservation-oriented soil treatment; breeding of species and breeds resistant to climate change; irrigation of agricultural land; construction of water accumulations; Application of anti-erosion measures.
Biodiversity and natural ecosystems	*Vulnerability*: Damage to and extinction of populations owing to climatic extremes (e.g. long-lasting droughts, excessive short-term precipitation, stormy winds, excessive sunlight); reduction and disappearance of freshwater species of the Adriatic basin owing to the salinization of coastal habitats caused by sea level rise; sea species spreading to the north and the appearance of thermophilic (tropical) alien invasive marine species owing to rising sea temperatures. *Adaptation*: Strengthening awareness of the importance of natural ecosystem services; defining habitats and species most vulnerable to climate change consequences; defining the zero state and establishing monitoring for the most vulnerable habitats and biodiversity; preserving habitats and species susceptible to climate change; reducing anthropogenic impacts on natural ecosystems, primarily via sustainable development measures; strengthening the capacity of research institutions and responsible authorities to manage natural ecosystems and biodiversity; providing an economically stimulating regulatory environment for the implementation of planned projects (e.g. tax reliefs, funds withdrawal platform, investment aid).
Spatial planning and coastal zones	*Vulnerability*: Flooding in settlements owing to extreme sea levels as a result of extreme weather conditions and a general rise of the mean sea level (high vulnerability); the occurrence of heat islands in settlements owing to the influence of extreme temperatures, in particular the increase of hot days and days with temperatures above 35 °C (medium vulnerability); flooding in settlements as a consequence of the higher incidence and intensity of extreme weather conditions that characterize large amounts of precipitation in the short term (medium vulnerability). *Adaptation*: Establishing green infrastructure in larger urban areas; strengthening the resilience of coastal water-communal infrastructure against the possible impacts of climate change; strengthening the protection of natural water and maritime systems, particularly protected areas, from the adverse impacts of climate change.
Tourism	*Vulnerability*: High temperatures, increased solar irradiance, frequency of extreme weather events, and so on; changes in the attractiveness of the coastal areas and inland areas of the Republic of Croatia; damage to and/or reduced functionality of various infrastructure systems (e.g. water supply, drainage, beach infrastructure, horticulture); deterioration of the status of ecosystems important for tourism and biodiversity. *Adaptation*: Harmonizing tourism activities with projected climate change; strengthening the competences related to adaptation to climate change of all people directly related to the tourism sector; including climate change adaptation measures in all segments of sustainable Croatian tourism and

Vulnerable area	*Examples/comments/adaptation measures reported*
	revitalizing the tourist offer in the entire territory of the Republic of Croatia and fully exploiting potential.
Fisheries	*Vulnerability*: Migration of cold water species to the northern Adriatic Sea or to the deeper sea owing to rising sea temperatures; increase in the number of alien species and the influence on domestic species because of rising sea temperatures; decrease of primary production with consequences on the number of pelagic fish caused by changes in water circulation owing to thermohaline causes; weaker growth and higher mortality of shellfish owing to increased sea acidity. *Adaptation*: Strengthening the capacity for predicting the future status of bio resources; developing techniques and tools for exploiting alien species; strengthening research capacities in the field of selective breeding, feeding of fish and breeding in recirculation systems; increasing the resilience of aquaculture to reduced flow of water through selective breeding, change in physicochemical parameters of water and occurrence and spread of diseases; mitigating the negative impacts of climate change by applying integrated forms of aquaculture.
Forests	*Vulnerability*: Increased incidence of forest fires including the occurrence of fires in the continental part of Croatia owing to increased temperature and decreased precipitation; decreased productivity of some forest ecosystems; migration of harmful organisms; Moving of phenological phases of forest tree species; damage to forest ecosystems owing to the frequency of extreme weather events; reduced value of certain generally beneficial functions of forests. *Adaptation*: Establishing cross-sector monitoring of forest ecosystem status; identifying species and provenance of forest trees that are genetically best adapted to the influence of climate change and are of economic significance; capacity-building for participants in the forest sector; strengthening the fire protection capacity.
Human health	*Vulnerability*: Increased mortality of the population; changes in the epidemiology of chronic non-infectious and acute infectious diseases; reduced quality of outdoor and indoor air; more frequent and longer periods of unavailability of safe (health safe and compliant) water for human consumption. *Adaptation*: Strengthening the competence of the health system related to climate change impacts on health; determining the sectoral priorities of climate change related activities; extending the monitoring system of health and environmental indicators related to climate change and risk assessment.
Energy	*Vulnerability*: Decrease in the production of electricity in hydropower plants owing to reduced precipitation by up to 10 per cent in all seasons except winter; increase in the consumption of electricity for cooling purposes; decrease in the production of electric and thermal energy in thermal power plants owing to insufficient cooling of the plants because of flow reduction; damage to power plants and infrastructure because of extreme weather events – ice breaking and floods. *Adaptation*: Strengthening the capacity for climate hazards impact assessments, risk prevention, readiness measures and response to extreme events; increasing the resilience and flexibility of the existing power system to the impacts of extreme and climate hazards and expected climate change; increasing the transmission and distribution grid's resilience to the impacts of extreme and climate hazards and expected climate change; increasing the security of electricity supply in the summer; providing an incentivizing legal framework for the use of renewable energy sources with the aim of diversifying sources and increasing decentralized production of electricity and thermal energy.
Water resources	*Vulnerability*: Increased frequency and duration of dry periods and frequency and intensity of flood situations; thinning of the Adriatic Sea's thermohaline circulation, which may significantly affect a variety of abiotic and biotic processes and changes; increased evapotranspiration, reduction of surface and underground run-off and, consequently, even more pronounced reduction in water resources. *Adaptation*: Strengthening the research and management capacities to assess the occurrence and risk of adverse impacts of climate change and adaptation of freshwater and marine water systems; construction, reconstruction and upgrading of existing systems for protection against the harmful effects of water, water use systems (e.g. multipurpose systems, water supply, energy and irrigation) and water protection in new (future) climatic conditions; strengthening the resilience of coastal water/communal infrastructure against the possible impacts of climate change; applying an integrated approach to water resources and systems management and intensifying of cross-sectoral observations and activities.

2. Assessment of adherence to the reporting guidelines

87. The ERT assessed the information reported in the NC7 of Croatia and identified issues relating to completeness, transparency. The findings are described in table 20.

Table 20
Findings on vulnerability assessment, climate change impacts and adaptation measures from the review of the seventh national communication of Croatia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 49 Issue type: completeness Assessment: recommendation	Croatia did not provide information on actions taken to cooperate with other countries in preparing for adaptation to the impacts of climate change, as specified in Article 4, paragraph 1(e), of the Convention. During the review, Croatia informed the ERT that the draft document "Development of bilateral assistance program for third countries in the field of climate change for the period from 2018 to 2020" has already been prepared and is expected to be adopted by the end of 2018. The Party further informed the ERT that adaptation to climate change is one of the topics covered by a programme mainly aimed at capacity-building and education regarding best/good practice for climate change adaptation and vulnerability assessment as well as at supporting the development of strategies, action plans and programmes to increase the resilience of all sectors to climate change. The ERT notes the additional information provided by Croatia during the review and recommends that Croatia provide that information and updates thereof in its next NC.
2	Reporting requirement specified in paragraph 49 Issue type: transparency Assessment: recommendation	The ERT noted that in its NC7 Croatia reported an outline of the actions taken to implement possible adaptation measures without elaborating on their status of implementation and results. During the review, Croatia provided additional information on the implementation status of some strategies and projects. The Party clarified that some responses are already implemented, such as the formulation of national and subnational strategies, some capacity-building and awareness activities and irrigation of agricultural land, while others are still being planned. To improve the transparency of the reporting on adaptation actions, the ERT recommends that in its next NC Croatia report an outline of the actions taken to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation, and include information on the status of implementation of adaptation measures as provided to the ERT during the review.
3	Reporting requirement specified in paragraph 49 Issue type: transparency Assessment: encouragement	Parties are encouraged to use the IPCC *Technical Guidelines for Assessing Climate Change and Impacts and Adaptations* and the United Nations Environment Programme *Handbook on Methods for Climate Change Impacts Assessment and Adaptation Strategies*. The ERT noted that the NC7 did not contain any information as to whether these guidelines were used. The ERT encourages Croatia to use the IPCC *Technical Guidelines for Assessing Climate Change Impacts and Adaptations* and the United Nations Environment Programme *Handbook on Methods for Climate Change Impacts Assessment and Adaptation Strategies* and provide information in the next NC on the implementation of the adaptation responses.

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

88. Croatia provided information on its institutional arrangements and funding relating to research and systematic observation and both domestic and international activities, including contributions to GCOS, World Weather Watch/Global Observing System, the Baseline Surface Radiation Network, the World Meteorological Organization and GEOSS. Croatia did not provide information on the identification of opportunities for and barriers to free and open international exchange of data and information and on action taken to overcome such barriers.

89. Croatia has implemented and planned a wide array of projects relating to climate studies and research, with one of the primary goals being to prepare the basis for action and future climate change policy. In this regard, Croatia conducted research projects through "Viticulture and climate change in Croatia" (known as VITCLIC, financed by the Croatian Science Foundation), a pan-European framework for strengthening the resilience of critical infrastructure to climate change (the EU-CIRCLE project, financed by the EU Horizon 2020 programme) and the Climate Change Adaptation Strategy (financed by EU Transition Facility).

90. In terms of activities related to systematic observation, Croatia reported on national plans, programmes and support for ground- and space-based climate observing systems, including satellite and non-satellite climate observation. Croatia did not provide information on challenges related to the maintenance of a consistent and comprehensive observation system.

91. Croatia provided a summary of its domestic and international actions relating to GCOS activities. Croatia's contribution to GCOS includes 158 GCOS surface network stations for air temperature, 366 for precipitation, 40 World Weather Watch stations, 40 Baseline Surface Radiation Network stations, 300 hydrological stations, 40 snow-cover stations, 10 sea level stations, one GCOS Upper-Air Network radio-sounding station and five Global Atmosphere Watch stations. There are plans to modernize the Party's meteorological observation networks. The project "Modernization of Meteorological and Hydrological Observation Networks" has been recognized as a priority by the Ministry of Environment and Energy and the Meteorological and Hydrological Service under the EU project "Modernization of National Meteorological Measurements Network in Croatia" with 85 per cent financing from the EU project and 15 per cent from the Republic of Croatia.

92. Croatia did not provide information in its NC7 on actions taken to support capacity-building and the establishment and maintenance of observation systems and related data and monitoring systems in developing countries. During the review Croatia clarified that funds for financing projects in other countries are planned.

2. Assessment of adherence to the reporting guidelines

93. The ERT assessed the information reported in the NC7 of Croatia and identified issues relating to completeness and transparency. The findings are described in table 21.

Table 21
Findings on research and systematic observation from the review of the seventh national communication of Croatia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 57 Issue type: completeness	In its NC7, Croatia provided information on research, systematic observation and data archiving pursuant to Article 4, paragraph 1(g), of the Convention. However, the ERT noted that Croatia did not provide information on actions taken to promote and cooperate in full, open and prompt exchange of relevant scientific, technological, technical, socioeconomic and legal information related to the climate system and climate change, and to the economic and social consequences of various response strategies relating to research and systematic observation.
	Assessment: recommendation	To improve completeness, the ERT recommends that in its next NC Croatia report on actions taken to promote and cooperate in full, open and prompt exchange of relevant scientific, technological, technical, socioeconomic and legal information related to the climate system and climate change, and to the economic and social consequences of various response strategies relating to research and systematic observation.
2	Reporting requirement specified in paragraph 58 Issue type: completeness	In its NC7, Croatia provided information on domestic and international research and systematic observation activities. However, information was not reported on actions taken to support related capacity-building activities in developing countries. During the review, Croatia clarified that it is planning funds for financing projects in other countries, through the adopted plan for the use of financial resources obtained from the sale of auctioning revenues in the Republic of Croatia by 2020 (OG 19/18).

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
	Assessment: recommendation	The ERT recommends that in the next NC Croatia include information on capacity-building support provided to developing countries in relation to research and systematic observation.
3	Reporting requirement specified in paragraph 61 Issue type: transparency Assessment: encouragement	In its NC7, Croatia provided information on its institutional arrangements relating to research and systematic observation and both domestic and international activities, including contributions to GCOS. The ERT noted that, under the general policy chapter of the NC7, Croatia described the institutional arrangements and roles of different agencies in climate research and systematic observations instead of providing information on policy. During the review Croatia informed the ERT that it has adopted a programme for the support of research and development activities in the field of climate change for the period from 2015 to 2016, with funds planned in the amount of 17 million Croatian kuna, which is the first in a series of planned funding programmes for research and development in the area of climate change from auctioning of emission allowances in accordance with the "Plan for the use of auctioning revenues in the Republic of Croatia for the period 2014–2016". The Party further explained that systematic observation of essential variables, priorities and funding is prescribed by national legislative, mostly by the Law on Meteorological and Hydrological Services and the Air Protection Act. In order to improve transparency, the ERT encourages Croatia to include the information on actions relating to research and systematic observation in its next NC, particularly in terms of general policy on funding research and prioritizing research and systematic observations, as was provided to the ERT during the review.

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

94. In the NC7 Croatia provided information on its actions relating to education, training and public awareness at the domestic and international level. The Party provided information on the general policy on education, training and public awareness, primary, secondary and higher education, public information campaigns, training programmes, education materials, resource or information centres, the involvement of the public and NGOs and its participation in international activities.

95. In the NC7 Croatia reported that education on climate change does not exist as a separate theme in the national curriculum, but components of climate change education are pursued through environmental education, sustainable development courses and in concise form in some core subjects. Croatia also provided information on projects such as the Global Education and Observing for the Environment programme and South-Eastern Mediterranean Sea Project, the Eco School project, the national programme 'Young Nature's Keepers', which provide a thematic and content framework for environmental education activities, enable networking of schools with similar interests and provide mutual support and exchange of experiences.

96. Croatia reported on the coverage of sustainable development and climate change at the tertiary education level (universities, polytechnics, scientific research institutes and other institutions) in the field of natural, technical, biomedical, biotechnical, social and human sciences, within compulsory or elective courses in graduate and postgraduate studies.

97. The NC7 describes education and research activities on climate change through the activities of projects such as the publication of the "Framework for the Long-term Strategy of Low-Carbon Development of the Republic of Croatia for the period up to 2050", the "State of the Environment Report for Republic of Croatia" and carrying out various surveys and awareness-raising activities.

98. Croatia further describes the role of professional institutions and communities in climate education through information sharing, discussions and public consultations as well as activities of the non-governmental organizations such as Zelena akcija (Green Action – Friends of the Earth Croatia), Society for Sustainable Development Design and others.

2. Assessment of adherence to the reporting guidelines

99. The ERT assessed the information reported in the NC7 of Croatia and identified an issue relating to completeness. The finding is described in table 22.

Table 22
Findings on education, training and public awareness from the review of the seventh national communication of Croatia

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 65 Issue type: completeness Assessment: encouragement	Croatia did not provide information in the NC7 on the involvement of the public in the preparation and domestic review of the NC. To improve completeness in its reporting, the ERT encourages Croatia to include in its next NC information on the involvement of the public in the preparation and 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

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

101. The information provided in the NC7 includes most 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 Croatia in its 2018 annual submission.

102. Croatia's total GHG emissions excluding LULUCF covered by its quantified economy-wide emission reduction target were estimated to be 23.8 per cent below its 1990 level, whereas total GHG emissions including LULUCF were 23.4 per cent below its 1990 level in 2016. Emissions were driven mainly by national circumstances, economic forces (decreases and increases depending on fluctuations in the economy) and the continued reliance on fossil fuels for primary energy supply. Those factors outweighed improvements in the efficiency of energy supply and improvements in the abatement of emissions in industrial processes.

103. Croatia's main policy framework relating to energy and climate change is the EU ETS and the EU 2020 climate and energy package. Key legislation supporting Croatia's climate change goals comprises the Air Protection Act, the Law on Energy Efficiency, and ordinances on energy management and the eco-design of energy-using products. The mitigation actions with the most significant mitigation impact are the feed-in tariffs and the premium system for the support of the use of renewable energy sources in electricity generation and for efficient cogeneration; financial incentives for the purchase of plug-in hybrid and electric vehicles; regulations on the handling of substances that deplete the ozone layer and F-gases; and preventing the generation and reducing the amount of municipal waste.

104. The GHG emission projections provided by Croatia include those under the WOM, WEM and WAM scenarios. In the three scenarios, emissions are projected to be 17.7, 23.0 and 28.0 per cent below the 1990 level in 2020, respectively.

105. According to the projections under the WEM scenario, emissions from non-ETS sectors are estimated to reach 15,228.00 kt CO_2 eq by 2020. Under the WAM scenario, Croatia's emissions from non-ETS sectors in 2020 are projected to be 14,290.00 kt CO_2 eq. The ERT concludes that Croatia expects to meet its 2020 target for non-ETS sectors under the WEM scenario.

106. Under the Convention, Croatia committed to contributing to the achievement of the joint EU economy-wide emission reduction target of 20 per cent below the 1990 level by 2020. Croatia does not have a national quantified economy-wide emission reduction target. Emissions that fall under the EU ETS sector contribute to the EU-wide EU ETS target of reducing emissions by 21 per cent below the 2005 level by 2020. For the non- ETS sector (excluding LULUCF), the ESD sets a positive limit for Croatia, which is to limit growth to 11 per cent above the 2005 level by 2020, and projections suggest that this target will be met.

107. 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, although it did not elaborate on supplementarity as such. Croatia is not planning to make use of the Kyoto Protocol mechanisms to meet its Kyoto Protocol target.

108. In its NC7 Croatia provided the required information on the expected impacts of climate change in the country and adaptation options. Vulnerability to climate change is high in a number of sectors, particularly those related to water resources, marine ecosystems, impacts on infrastructure and related negative impacts on tourism, which is an important economic sector in the country. Adaptation to climate change is one of the topics covered by a programme mainly aimed at capacity-building and education regarding best/good practice for climate change adaptation and vulnerability assessment as well as at supporting the development of strategies, action plans and programmes to increase the resilience of all sectors to climate change.

109. In its NC7 Croatia provided information on its actions relating to research and systematic observation and addressed both domestic and international activities, including with regards to GEOSS and GCOS, through its provision of meteorological and atmospheric observations for networks such as the GCOS surface network and Global Atmosphere Watch. Croatia conducted research projects through "Viticulture and climate change in Croatia", a pan-European framework for strengthening the resilience of critical infrastructure to climate change (the EU-CIRCLE project) and the Climate Change Adaptation Strategy. There are plans to modernize the Party's meteorological observation networks as part of the project "Modernization of Meteorological and Hydrological Observation Networks".

110. In the NC7 Croatia provided information on its actions relating to education, training and public awareness at both the domestic and international level. Education on climate change does not exist as a separate theme in the national curriculum, but components of climate change education are pursued through environmental education, sustainable development courses and in concise form in some core subjects. Croatia also provided information on projects such as the Global Education and Observing for the Environment programme and South-Eastern Mediterranean Sea Project, the Eco School project, the national programme 'Young Nature's Keepers', which provide a thematic and content framework for environmental education activities. The Party provided detailed information on training and public awareness and the roles and involvement of the public organizations and NGOs in framing climate change policy and awareness-raising.

111. In the course of the review, the ERT formulated the following recommendations for Croatia to improve its adherence to the UNFCCC reporting guidelines on NCs and its reporting of supplementary information under the Kyoto Protocol:[5]

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

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

(i) Providing information that explains how the changes in the national circumstances affect GHG emissions and removals over time (see issue 1, table 4);

(ii) Providing additional information describing how the national system is performing the general and specific functions as defined in paragraph 30 of the annex to decision 15/CMP.1 (see issue 1, table 7);

(iii) Providing an explanation of which functions of the national system were not performed or were only partially performed, and providing information on actions planned and taken to perform these functions in the future (see issue 2, table 7);

(iv) Complementing the description of its national registry by including the internet address of the national registry (see issue 1, table 8);

(v) Reporting how information on the legislative, enforcement and administrative procedures pertaining to the Kyoto Protocol is made publicly accessible (see issue 1, table 9);

(vi) Providing information on how it strives to implement PaMs in such a way as to minimize adverse effects on other Parties (see issue 5, table 11);

(vii) Providing information on the steps it has taken to promote and implement any decisions by ICAO and IMO (see issue 6, table 11);

(viii) Providing information, to the extent possible, using the same sectoral categories used in the PaMs section, including describing the other (cross-cutting) PaMs, or provide a duly substantiated explanation of why this is not possible due to the national circumstances (see issue 3, table 15);

(ix) Providing the emission projections related to fuel sold to ships and aircraft engaged in international transport, to the extent possible, separately (see issue 5, table 15);

(x) Presenting the total effect of its PaMs by providing an estimate of GHG emissions avoided, by gas (on a CO_2 eq basis), based on the total effect of PaMs for the projections under the WEM scenario compared with a situation without such PaMs (see issue 1, table 17);

(xi) Providing information on actions taken to cooperate with other countries in preparing for adaptation to the impacts of climate change (see issue 1, table 20);

(xii) Providing information on actions taken to promote and cooperate in full, open and prompt exchange of relevant scientific, technological, technical, socioeconomic and legal information related to the climate system and climate change, and to the economic and social consequences of various response strategies relating to research and systematic observation (see issue 1, table 21);

(xiii) Providing information on capacity-building support provided to developing countries in relation to research and systematic observation (see issue 2, table 21);

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

(i) Reporting how the legislative arrangements and administrative procedures seek to ensure that the implementation of activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol also contribute to the conservation of biodiversity and the sustainable use of natural resources (see issue 2, table 9);

(ii) Providing information on how the Party believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals (see issue 4, table 11);

(iii) Provide accurate information on how its use of the mechanisms is supplemental to domestic action by correctly cross-referencing where relevant information can be found (see issue 1, table 18);

(iv) Elaborating an outline of the actions taken to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation, and include information on the status of implementation (see issue 2, table 20);

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

IV. Questions of implementation

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

Annex

Documents and information used during the review

A. Reference documents

2017 GHG inventory submission of Croatia. Available at https://unfccc.int/process/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/submissions/national-inventory-submissions-2017.

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

BR3 of Croatia. Available at https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/national-communications-and-biennial-reports-annex-i-parties/third-biennial-reports-annex-i.

BR3 CTF tables of Croatia. Available at https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/national-communications-and-biennial-reports-annex-i-parties/third-biennial-reports-annex-i.

"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 Croatia. Available at https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/national-communications-and-biennial-reports-annex-i-parties/seventh-national-communications-annex-i.

Report on the individual review of the annual submission of Croatia submitted in 2016. FCCC/ARR/2016/HRV. Available at https://unfccc.int/process/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories/greenhouse-gas-inventory-review-reports-2016.

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 Croatia. FCCC/IRR/2016/HRV. Available at https://unfccc.int/resource/docs/2017/irr/hrv.pdf.

Report on the technical review of the sixth national communication of Croatia. FCCC/IDR.6/HRV. Available at https://unfccc.int/process/transparency-and-reporting/reporting-and-review-under-the-convention/national-communications-and-biennial-reports--annex-i-parties/international-assessment-and-review/review-reports.

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 Ms. Jasenka Nećak, (Ministry of Environment and Energy), including additional material. The following documents[1] were provided by Croatia:

Air Protection Act: Official Gazette 130/11, 47/14.

Boza-Kiss, B., Bertoldi, P., Economidou, M. 2017. *Energy Service Companies in the EU*. Available at http://publications.jrc.ec.europa.eu/repository/bitstream/JRC106624/kjna28716enn.pdf.

CBS. 2017 *Statistical Yearbook of the Republic of Croatia*. Available at https://www.dzs.hr/default_e.htm.

Croatian Agency for the Environment and Nature. 2017. *Report on implementation of policies and measures that reduce greenhouse gas emissions by sources or enhance removals by sinks*. Available at http://www.haop.hr/sites/default/files/uploads/dokumenti/012_klima/dostava_podataka/Izvjesca/PaM_2017.pdf.

Croatian Agency for the Environment and Nature. 2017. *Report on projections of greenhouse gas emissions*. Available at http://www.haop.hr/sites/default/files/uploads/dokumenti/012_klima/dostava_podataka/Izvjesca/RoP_2017.pdf.

Croatian Bureau of Statistics: *2017 Statistical Yearbook of the Republic of Croatia*. Available at https://www.dzs.hr/default_e.htm.

Information and examples on advanced implementation models in public lighting. Available at http://www.streetlight-epc.eu/fileadmin/redakteure/Streetlight-EPC/Project_outputs/WP2/Advanced_LED-EPC_models.pdf and https://www.eceee.org/library/conference_proceedings/eceee_Summer_Studies/2017/3-local-action/financing-models-for-energy-efficient-street-lighting/2017/3-355-17_Novikova.pdf/.

Information on the steps taken for the reduction of emissions from the aviation in the EU and ICAO. Available at https://ec.europa.eu/clima/policies/transport/aviation_en.

Information on the EU actions for reduction of GHG emission from the shipping sector. Available at https://ec.europa.eu/clima/policies/transport/shipping_en.

IPCC. 2006. *Guidelines for National Greenhouse Gas Inventories – Agriculture sector*. Available at http://www.ipcc-nggip.iges.or.jp/public/2006gl/.

IPCC. 2006. *Guidelines for National Greenhouse Gas Inventories - LULUCF sector*. Available at http://www.ipcc-nggip.iges.or.jp/public/gl/invs6c.html.

Irsag, B., Pukšec, T., Duić, N., *Long term energy demand projection and potential for energy savings of Croatian tourism–catering trade sector*, Energy, Volume 48, Issue 1, December 2012, Pages 398–405

EnergyPLAN. Available at http://www.energyplan.eu/getstarted/.

EnergyManagement Information System - EMIS. Description. Available at https://www.isge.hr/cc/hr/login/EMIS.PDF.

[1] Reproduced as received from the Party.

EnergyManagement Information System - EMIS. Link to system. Available at https://www.isge.hr/login.xhtml.

Ordinance of the Government of Croatia. 2009. *Energy Strategy OG 130/09*

EU Reference Scenario. Available at https://ec.europa.eu/energy/en/data-analysis/energy-modelling.

Forest Law. Available at https://www.ecolex.org/details/legislation/forest-law-lex-faoc071624/.

Law on the System of Strategic Planning and Management of the Development of the Republic of Croatia (OG 123/17). Available at http://www.hrvatska2030.hr/plan-izrade/.

LEAP software model description. Available at https://www.energycommunity.org/default.asp?action=introduction.

Ministry of Environment and Energy. 2017. *Draft Low-Carbon Development Strategy of Croatia until 2030 with a view to 2050*. Available at http://www.mzoip.hr/hr/klima/strategije-planovi-i-programi.html.

Ministry for Protection of the Environment and Energy. 2017. *Forth National Energy Efficiency Action Plan for the Period from 2017 to 2019*. Available at https://ec.europa.eu/energy/sites/ener/files/hr_neeap_2017_en.pdf

Ministry of Construction and Physical Planning. *Plans for the energy renovation of public buildings*. Available at http://www.mgipu.hr/default.aspx?id=15086.

National Registry, public website. Available at http://www.haop.hr/hr/tematska-podrucja/zrak-klima-tlo/klimatske-promjene (in Croatian); https://ets-registry.webgate.ec.europa.eu/euregistry/HR/index.xhtml (in Croatian and English).

Pukšec, T., Vad Mathiesen B., Duić, N. 2013. *Potentials for energy savings and long term energy demand of Croatian households sector*, Applied Energy, Volume 101, January 2013, Pages 15–25.

Pukšec, T., Krajačić, G., Lulić, Z., Vad Mathiesen B., Duić, N. 2013. *Forecasting long-term energy demand of Croatian transport sector*, Energy, Volume 57, 1 August 2013, Pages 169–176.