



**Framework Convention on  
Climate Change**

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**Report of the in-depth review of the fifth national  
communication of Monaco**

Parties included in Annex I to the Convention are requested, in accordance with decision 10/CP.13, to submit a fifth national communication to the secretariat by 1 January 2010. In accordance with decision 8/CMP.3, Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol shall include in their fifth national communications supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. In accordance with decision 15/CMP.1, these Parties shall start reporting the information under Article 7, paragraph 1, of the Kyoto Protocol with the inventory submission due under the Convention for the first year of the commitment period. This includes supplementary information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol. This report presents the results of the in-depth review of the fifth national communication of Monaco conducted by an expert review team in accordance with the relevant provisions of the Convention and Article 8 of the Kyoto Protocol.

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## I. Introduction and summary

### A. Introduction

1. For Monaco, the Convention entered into force on 21 March 1994 and the Kyoto Protocol on 28 May 2006. Under the Kyoto Protocol, Monaco committed itself to reducing its greenhouse gas (GHG) emissions by 8 per cent compared with the base year level<sup>1</sup> during the first commitment period from 2008 to 2012.

2. This report covers the centralized in-depth review (IDR) of the fifth national communication (NC5) of Monaco, coordinated by the UNFCCC secretariat, in accordance with the guidelines for review under Article 8 of the Kyoto Protocol (decision 22/CMP.1). The review took place from 9 to 14 May 2011 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Mr. Jorge Alvarez Lam (Peru), Mr. Kennedy Amankwa (Ghana), Mr. Eric De Brabanter (Luxembourg), Ms. Violeta Hristova Hristova (Bulgaria), Ms. Tuğba İçmeli (Turkey), Mr. Seungdo Kim (Republic of Korea), Ms. Sara Moarif (France) and Mr. Nguyen Mong Cuong (Viet Nam). Mr. Alvarez Lam and Mr. De Brabanter were the lead reviewers. The review was coordinated by Ms. Inkar Kadyrzhanova and Ms. Barbara Muik (UNFCCC secretariat).

3. During the IDR, the expert review team (ERT) examined each section of the NC5. The ERT also evaluated the supplementary information provided by Monaco as a part of the NC5 in accordance with Article 7, paragraph 2, of the Kyoto Protocol. In addition, the ERT reviewed the information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol, which was provided by Monaco in its 2011 annual submission under Article 7, paragraph 1, of the Kyoto Protocol.

4. In accordance with decision 22/CMP.1, a draft version of this report was communicated to the Government of Monaco, which provided comments that were considered and incorporated, as appropriate, in this final version of the report.

### B. Summary

5. The ERT noted that Monaco's NC5 complies broadly with the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications" (hereinafter referred to as the UNFCCC reporting guidelines). As required by decision 15/CMP.1, most of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol<sup>2</sup> is provided in the NC5. Monaco considered a few recommendations provided in the report of the centralized in-depth review of the fourth national communication (NC4) of Monaco.<sup>3</sup> The ERT commended Monaco for the effort that it made to improve its reporting.

6. The supplementary information on the minimization of adverse impacts referred to in paragraph 3 above was insufficiently complete and mostly transparent and was provided on time.

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<sup>1</sup> "Base year" refers to the base year under the Kyoto Protocol, which is 1990 for carbon dioxide, methane and nitrous oxide and 1995 for perfluorocarbons, hydrofluorocarbons and sulphur hexafluoride. The base year emissions include emissions from sectors/source categories listed in Annex A to the Kyoto Protocol.

<sup>2</sup> Decision 15/CMP.1, annex, chapter II.

<sup>3</sup> FCCC/IDR.4/MCO.

## 1. Completeness

7. The NC5 covers all sections required by the UNFCCC reporting guidelines, and most of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol, except for information on: how Monaco strives to implement policies and measures (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, especially developing country Parties; the identification of steps taken to promote and/or implement any decisions by the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) in order to limit or to reduce GHG emissions not included in the Montreal Protocol from aviation and marine bunker fuels; and domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures, established pursuant to the implementation of the Kyoto Protocol (see paras. 15, 49 and 55 below).

8. The NC5 does not include some information required by the UNFCCC reporting guidelines on national systems (see para. 18 below); national circumstances (see para. 13 below); PaMs (see para. 25 below); projections and total effect of PaMs (see paras. 57 and 67 below); and vulnerability and adaptation (see para. 71 below). During the review, Monaco provided the ERT with information on the missing mandatory reporting elements. The ERT recommends that Monaco enhance the completeness of its reporting by including the missing reporting elements in its next national communication.

## 2. Transparency

9. The ERT acknowledged that Monaco's NC5, including supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol, is broadly transparent. The NC5 is structured following the outline contained in the annex to the UNFCCC reporting guidelines and supplementary information submitted under Article 7, paragraph 2, of the Kyoto Protocol is identifiable. In the course of the review, the ERT formulated a number of recommendations that could help Monaco to further increase the transparency of its reporting with regard to national circumstances (see para. 14 below); projections and total effects of PaMs (see para. 61 below); financial resources and technology transfer (see para. 75 below); and information on supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17, of the Kyoto Protocol (see para. 70 below).

## 3. Timeliness

10. The NC5 was submitted on 25 March 2011, well after the deadline of 1 January 2010 mandated by decision 10/CP.13. Monaco did not inform the secretariat about its difficulties with timeliness of its national communication submission in accordance with decision 22/CMP.1, paragraph 139. As the national communication was not submitted within six weeks of the due date, i.e. by 15 February 2010, the delay was brought to the attention of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP) and the Compliance Committee, and was made public. The ERT noted with great concern the delay in the submission of the NC5.

11. In response to a question raised by the ERT during the review, Monaco provided information on its existing domestic administrative and institutional arrangements for preparation of the national communication. The ERT concluded that the information provided during the review week was not sufficiently complete and transparent. In response to the list of potential problems and further questions raised by the ERT during the review, Monaco provided the ERT with a detailed proposal on the new domestic administrative procedures and institutional arrangements that have been put in place in order to ensure timely submission of its next national communication. The ERT reviewed information

provided by Monaco and concluded that the potential problem is resolved. However, the ERT urges Monaco to fully implement the new administrative procedures and institutional arrangements and report, in its next national communication, on the outcome of the proposed changes and on implementation of the work plan on preparation of the sixth national communication for the period 2012–2013. The ERT recommends that Monaco submit its sixth national communication on time.

## **II. Technical assessment of the reviewed elements**

### **A. National circumstances relevant to greenhouse gas emissions and removals, including legislative arrangements and administrative procedures**

12. In its NC5, Monaco has provided a description of its national circumstances. The NC5 also referred to the description of a national system provided in the national inventory report (NIR) of the 2011 annual submission of Monaco submitted in March 2011.<sup>4</sup> Further technical assessment of the institutional and legislative arrangements for coordination and implementation of PaMs is provided in chapter II.B.I of this report.

#### **1. National circumstances**

13. In its NC5, Monaco has provided a description of its national circumstances and information on government structure, population, geography, climate, economy and relevant sectors. However, the ERT noted that Monaco did not explicitly provide information on the following reporting elements required by the UNFCCC reporting guidelines: how these national circumstances affect GHG emissions and removals in Monaco and how changes in national circumstances affect GHG emissions and removals over time. Although, the ERT noted that this information is included in the NC5, but it is not sufficiently transparent. However, during the review, Monaco provided additional information on the major driving factors affecting GHG emissions and removals. The ERT reiterates the recommendation made in the previous review report that Monaco provide more transparent and complete information on its national circumstances in its next national communication.

14. The ERT noted that the main drivers of emission trends in Monaco include the restructuring of primary energy use and fuel switching in heating systems used in the residential sector, increasing modal shift from private vehicles to public transport in passenger transportation and the use of renewable energy sources (RES) in the transport sector. The ERT encourages Monaco to identify the relationship between the drivers of emission trends and GHG emissions and removals and report transparently on this relationship in its next national communication.

15. Monaco is a constitutional monarchy with the Prince as the Head of State. The executive branch consists of six Ministers of State headed by the Council of Government. The Directorate on Environment (DE) of the Ministry of Public Works, Environment and Urban Development has the overall responsibility for climate change policymaking; whereas a number of national institutions are involved in policy implementation. Monaco adopted an ambitious national target of 30 per cent emission reduction by 2020 compared with the 1990 level of emissions. This target is reflected in the Climate Energy Plan of

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<sup>4</sup> Available at [http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/5888.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/5888.php).

Monaco. Monaco has not reported on any national and regional programmes, legislative arrangements or enforcement and administrative procedures, established pursuant to the implementation of the Kyoto Protocol. Table 1 illustrates the national circumstances of the country by providing some indicators relevant to GHG emissions and removals.

Table 1

**Indicators relevant to greenhouse gas emissions and removals for Monaco**

	1990	1995	2000	2005	2009	Change 1990– 2000 (%)	Change 2000– 2009 (%)	Change <sup>a</sup> 1990– 2009 (%)
Population <sup>b</sup>	29 972	30 996	32 020	33 044	35 382	6.8	10.5	18.1
GDP (EUR billion) <sup>a</sup>	NE	NE	NE	3.4	4.0	NA	NA	NA
TPES (MWh)	NA	NA	NA	NA	NA	NA	NA	NA
GDP per capita (EUR 1 000) <sup>a,b</sup>	NE	NE	NE	49.9	54.5	NA	NA	NA
TPES per capita (MWh) <sup>b</sup>	NE	NE	NE	NE	NE	NA	NA	NA
GHG emissions without LULUCF (Gg CO <sub>2</sub> eq)	107.9	115.5	119.7	104.3	90.9	10.9	–24.0	–15.7
GHG emissions with LULUCF <sup>c</sup> (Gg CO <sub>2</sub> eq)	107.9	115.5	119.7	104.3	90.9	10.9	–24.0	–15.8
CO <sub>2</sub> emissions per capita (Mg) <sup>b</sup>	3.5	3.6	3.5	3.0	2.4	0.2	–31.5	–31.4
CO <sub>2</sub> emissions per GDP unit (Gg CO <sub>2</sub> eq per EUR million) <sup>a</sup>	NA	NA	NA	28.7	21.3	NA	NA	NA
GHG emissions per capita (Mg CO <sub>2</sub> eq) <sup>b</sup>	3.6	3.7	3.7	3.2	2.6	3.8	–31.2	–28.6
GHG emissions per GDP unit (Gg CO <sub>2</sub> eq per EUR million)	NA	NA	NA	30.3	22.7	NA	NA	NA

*Data sources:* (1) Monaco's 2011 GHG inventory submission; (2) Population, GDP and TPES data: Monaco, 2009.

*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.

*Abbreviations:* GDP = gross domestic product, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry, NA = not applicable, NE = not estimated, TPES = total primary energy supply.

<sup>a</sup> Monaco's GDP has been estimated since 2005.

<sup>b</sup> In this table, population equals resident population and those who are presently employed in the State.

<sup>c</sup> GHG emissions without and with LULUCF are almost the same due to the very small amount of emissions/removals from the LULUCF sector.

16. In its NC5, Monaco has provided a summary of information on GHG emission trends for the period 1990–2007 based on the 2009 annual GHG inventory submission. Summary tables, including trend tables for emissions in carbon dioxide equivalent (CO<sub>2</sub> eq) (given in the common reporting format), are also provided in an annex to the NC5. During

the review, the ERT assessed the recently submitted 2011 annual submission and reflected the findings in this report.

Table 2  
Greenhouse gas emissions by sector in Monaco, 1990–2009

Sector	GHG emissions (Gg CO <sub>2</sub> eq)						Change (%)		Shares <sup>a</sup> by sector (%)	
	1990	1995	2000	2005	2008	2009	1990–2009	2008–2009	1990	2009
	1. Energy	107.02	114.24	115.81	101.20	92.51	87.60	–18.2	–5.3	99.2
A1. Energy industries	28.22	36.11	42.69	29.95	28.69	26.50	–6.1	–7.6	26.1	29.1
A2. Manufacturing industries and construction	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA	NA	NA	NA
A3. Transport	33.37	41.19	36.76	34.06	32.87	30.02	–10.0	–8.7	30.9	33.0
A4.–A5. Other	45.42	36.92	36.34	37.17	30.94	31.06	–31.6	0.4	42.1	34.2
B. Fugitive emissions	0.01	0.01	0.01	0.01	0.01	0.01	25.3	–5.7	0.01	0.01
2. Industrial processes	0.16	0.10	2.69	1.91	1.95	2.12	1 217.1	8.3	0.1	2.3
3. Solvent and other product use	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
4. Agriculture	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA	NA	NA	NA
5. LULUCF	–0.01	–0.01	–0.01	–0.01	–0.02	–0.02	97.6	59.3	–0.01	–0.03
6. Waste	0.75	1.12	1.18	1.17	1.11	1.23	62.5	10.5	0.7	1.3
7. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
<b>GHG total with LULUCF</b>	<b>107.92</b>	<b>115.45</b>	<b>119.67</b>	<b>104.27</b>	<b>95.56</b>	<b>90.91</b>	<b>–15.8</b>	<b>–4.9</b>	<b>NA</b>	<b>NA</b>
<b>GHG total without LULUCF</b>	<b>107.94</b>	<b>115.46</b>	<b>119.68</b>	<b>104.28</b>	<b>95.57</b>	<b>90.94</b>	<b>–15.7</b>	<b>–4.8</b>	<b>100.0</b>	<b>100.0</b>

*Note:* The changes in emissions and the shares by sector are calculated using the exact (not rounded) values and may therefore differ from values calculated with the rounded numbers provided in the table.

*Abbreviations:* NA= not applicable, NE = not estimated, NO = not occurring, GHG = greenhouse gas, LULUCF = land use, land-use change and forestry.

<sup>a</sup> The shares of sectors are calculated relative to GHG emissions without LULUCF; for the LULUCF sector, the negative values indicate the share of GHG emissions that was offset by GHG removals through LULUCF.

17. Total GHG emissions, excluding emissions and removals from land use, land-use change and forestry (LULUCF), decreased by 15.7 per cent between 1990 and 2009, while total GHG emissions, including net emissions or removals from LULUCF, decreased by 15.8 per cent. This decrease corresponds to a decrease in CO<sub>2</sub> emissions from the energy sector. Emissions of CO<sub>2</sub> decreased by 18.2 per cent during the period 1990–2009 and their share decreased from 97.6 per cent of total GHG emissions in 1990 to 93.8 per cent in 2009. Emissions of methane (CH<sub>4</sub>) decreased by 12.8 per cent, while emissions of nitrous oxide (N<sub>2</sub>O) increased by 66.4 per cent during the reported period. Emissions of fluorinated gases (F-gases) accounted for 2.3 per cent of total GHG emissions in 2009. In 2009, the energy sector dominated total GHG emissions with the share of 96.3 per cent. Analysis of

drivers for GHG emission trends in each sector is provided in chapter II.B of this report. Table 2 provides an overview of GHG emissions by sector from 1990 to 2009.

## **2. National system**

18. In accordance with decision 15/CMP.1, Monaco has provided in its NC5 a description of how its national system is performing the general and specific functions defined in the guidelines for national systems under Article 5, paragraph 1 (decision 19/CMP.1). The description includes most of the elements as required in decision 15/CMP.1, except for a description of the process and results of key category identification. Monaco also provided a reference to the 2009 annual submission, which contains a more detailed description of the national system. The ERT recommends that Monaco include, in its next national communication, a complete description of how it is performing the general and specific functions defined in the guidelines for national systems under Article 5, paragraph 1.

19. The ERT noted that Monaco provided information on a change to its national system in its 2010 annual submission. In its NIR 2010, Monaco has reported that, in 2009, DE extended its agreement with the French Centre for Intersectoral Studies on Air Pollution on preparation of the GHG emission inventory. The ERT noted that Monaco has no forests on its territory; hence there are no activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol and this is why Monaco has not provided a description of administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, and elected activities under Article 3, paragraph 4, of the Kyoto Protocol, also contribute to the conservation of biodiversity and the sustainable use of natural resources.

20. The ERT took note of the recommendations of the report of the individual review of the 2010 annual submission of Monaco (2010 annual review report (ARR)). The ERT reiterates the recommendations made in the 2010 ARR that Monaco include additional information on selection of methodologies, emission factors, sources of activity data and procedures for quality control and quality assurance used in the GHG emission inventory. The ERT concluded that the national system continued to perform its required functions as set out in decision 19/CMP.1.

## **3. National registry**

21. In its NC5, Monaco has provided information on the national registry, including a description on how its national registry performs the functions defined in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and how it complies with the requirements of the technical standard for data exchange between registry systems.

22. The ERT took note of the conclusion of the standard independent assessment report (SIAR) that, although the national registry does not yet have a live connection to the international transaction log, it continues to fulfil the requirements related to its reporting of information on and accounting of Kyoto Protocol units, its transaction procedures, its conformance to the technical standards, and its security, data safeguard and disaster recovery measures. In addition, the SIAR identified that the national registry has not fulfilled the requirements regarding the public availability of information in accordance with section II.E of the annex to decision 13/CMP.1. Monaco indicated that, once the national registry is online, the information will be made publicly available and will be accessible via the user interface.

23. The ERT took note of the 2010 ARR and its finding on the national registry. The ERT concluded that the national registry continues to perform its required functions as set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1, and continues to



adhere to the technical standards for data exchange between registry systems in accordance with decisions 16/CP.10 and 12/CMP.1.

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

24. As required by the UNFCCC reporting guidelines, Monaco has provided in its NC5 information on its package of PaMs implemented, adopted and planned in order to fulfil its commitments under the Convention and its Kyoto Protocol. Each sector has its own textual description of the principal PaMs, though Monaco reported on the PaMs in the energy and waste sectors only. The NC5 contains a similar set of PaMs to those in the NC4, with some additional measures and an indication that some PaMs planned in the NC4 have now been developed and implemented. In its NC5, Monaco has reported that all PaMs reported in its NC4 were still in place. However, during the review, Monaco provided additional information to the ERT clearly indicating which PaMs were in place or finished, how they had been maintained, phased out or strengthened since the NC4.

25. The ERT noted that Monaco did not provide the following reporting elements required by the UNFCCC reporting guidelines: summary tables on PaMs by sector; and information on how Monaco believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals, consistent with the objective of the Convention. In addition, the reporting on individual PaMs lacked some information or was insufficiently transparent in presenting the following information: name, principal objective and effect of PaMs; GHG affected; type of PaM; implementation status; and implementing entity.

26. During the review, Monaco provided additional information to the ERT on the PaMs, including a summary table and the quantified effects of certain PaMs. The ERT noted that Monaco provided information on the impact of its PaMs on the longer-term emission trends in preparation of its emission projections under the 'with measures' scenario. The ERT strongly recommends that Monaco enhance the completeness and transparency of its reporting on PaMs by providing a summary table on PaMs, all required information on individual PaMs and information on how Monaco believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals in its next national communication. The ERT further encourages Monaco to report in more detail, in its next national communication, on the mitigation effects of PaMs, focusing on the PaMs that are expected to modify longer-term emission trends.

27. The ERT noted that some of the recommendations made in the previous review report were taken into consideration when improving the reporting in the NC5, including providing a separate section on the effects of PaMs, though this section does not transparently describe the effect of PaMs. The ERT noted that in the NC5 some information on PaMs was included in the sections on national circumstances and on projections and not in the section on PaMs. To improve the transparency of its reporting, the ERT recommends that Monaco report information on PaMs in the section on PaMs in its next national communication. During the review, Monaco also provided information on the starting dates of all PaMs. The ERT strongly encourages Monaco to provide more transparent information on the implementation period of PaMs and on changes to or continuity of the previously reported PaMs in its next national communication.

28. The key framework climate policy is the Climate Energy Plan (adopted in 2009), which sets targets aligned with those of European Union (EU) member States. In the Climate Energy Plan, Monaco adopted an ambitious national target of a 30 per cent emission reduction by 2020 compared with the 1990 level of emissions. In addition,

Monaco has adopted the electricity-related targets included in a regional Eco-Energy Plan for Provence–Alps–Cote d’Azur (PACA) designed to manage regional electricity consumption (see para. 40 below).

29. Most of emission reductions in Monaco came as the result of PaMs implemented in the residential, transport and waste sectors. According to the NC5, fuel switching in the heating systems in the residential buildings sector has been a key policy behind the 9 per cent emission reduction observed in Monaco during the period 1990–2007 (see para. 44 below). In its NC5, Monaco has provided information on PaMs at national and regional levels.

30. In its NC5, Monaco did not report on national arrangements put in place to assess the impact of PaMs. During the review, Monaco informed the ERT that impact assessment indicators to evaluate progress and achievement of goals will be identified during the preparation of the sustainable development strategy. The ERT encourages Monaco to report, in its next national communication, on progress in development of these indicators and other arrangements and mechanisms established to assess the impact of PaMs. During the review, Monaco informed the ERT that monitoring of the PaMs is based on the regular review of information such as monthly reports on waste incineration and treatment and data collected on fuel sales in the transport, residential and commercial sectors.

31. The ERT noted that reporting on the mitigation effect of PaMs was not sufficiently transparent, for example of such PaMs as the use of seawater heat pumps or import of waste used for incineration. However, during the review, Monaco provided clarifying information to the ERT. The ERT encourages Monaco to report, in its next national communication, on the drivers of emission reduction and the links between these drivers and the relevant PaMs. Table 3 provides a summary of the reported information on the PaMs of Monaco.

Table 3  
**Summary of information on policies and measures**

<i>Major policies and measures</i>	<i>Examples/comments</i>
<i>Policy framework and cross-sectoral measures</i>	
Climate Energy Plan (2009)	The Plan regulates energy demand, energy efficiency, the use of RES and reduction of GHG emissions. It set Monaco’s 2020 targets: emission reduction by 30 per cent below the 1990 level of emissions; energy saving by 20 per cent through energy efficiency improvements; and increasing the share of RES to 20 per cent of gross final energy consumption.
<i>Policies and measures by sector</i>	
<i>Energy</i>	
Eco-Energy Plan of the Provence–Alps–Cote d’Azur region (2011)	The Plan aims at strengthening the electricity transmission network and sets the targets to reduce energy consumption and produce RES-based electricity.
Demand side electricity management in public buildings (2006); High environmental quality buildings (2007)	The measures set the provisions for energy audits and investments in energy efficiency improvements in public and state-owned buildings and establish a standard for public buildings with high environmental quality.
Regulations and incentives for households (2003)	The regulations include a ban on the use of light fuel oil for heating in new residential buildings (mitigation effect by 2003: 0.62 Gg CO <sub>2</sub> eq per year; and after 2003: 1.86 Gg CO <sub>2</sub> eq per year) and subsidies for installation of solar heating systems to replace conventional systems.
Agreement with the electricity and natural gas distributor	The agreement regulates the SMEG’s obligations related to monitoring of energy use and sustainable energy consumption; provision of energy management services;

<i>Major policies and measures</i>	<i>Examples/comments</i>
SMEG	deployment of smart metering systems; purchasing the RES-based electricity; and activities on awareness-raising on energy efficiency and energy saving.
Energy recovery from waste incineration	The measure is linked to upgrading the waste incineration plant in line with the EU directive and regulations on waste incineration.
<i>Transport</i>	
Urban Transport Plan (2001)	The plan encourages a modal shift from private to public transport through various measures, such as revised parking policies, park-and-ride system, reduced fares and traffic management. Starting from 2007, the use of public transport was promoted through improved access and attractive transport ticket fares.
Use of electric vehicles	The use of electric vehicles is promoted through a subsidy scheme for purchase of electric and hybrid vehicles and regulations on procurement of electric vehicles by the public service administration.
<i>Waste</i>	
Waste collection and recycling	The practice of waste separation and recycling resulted in the recovery of 2 000 tonnes of paper, glass and other recyclable packaging.

*Abbreviations:* EU = European Union, GHG = greenhouse gas, RES = renewable energy sources, SMEG = Société Monegasque de l'Electricité et du Gaz.

## 1. Policy framework and cross-sectoral measures

32. The main governmental body responsible for implementing domestic PaMs in the area of climate change mitigation is DE. It is also in charge of supporting cooperation activities with the French region of PACA. Other bodies involved in implementation of PaMs include the Directorate of Forward Studies, Urban Planning and Mobility, responsible for transport sector, public buildings and public works services; Société Monégasque de l'Electricité et du Gaz (SMEG), the electricity and gas distributor; and Société Monégasque d'Assainissement, the waste collection and treatment company. The Department for External Relations is responsible for international cooperation on climate policy, involvement in clean development mechanism (CDM) projects, capacity-building, technology transfer and financial support as well as purchasing of certified emission reductions (CERs).

33. As part of its Climate Energy Plan, Monaco has adopted national targets for 2020, such as: decreasing total GHG emissions by 30 per cent compared with the 1990 level of emissions; improving energy efficiency by 20 per cent; and increasing the share of RES to 20 per cent of gross final energy consumption. In addition, Monaco has introduced long-term national targets to reduce total GHG emissions by 80 per cent by 2050 compared with the 1990 level of emissions and to achieve carbon neutrality, i.e. to reach net zero level of total GHG emissions. Monaco's commitment to carbon neutrality is linked to its plan to offset the emissions exceeding the target level by purchasing carbon credits, preferably through the Kyoto Protocol mechanisms. Priority will be given to the purchase of carbon credits generated through emission reduction projects that will benefit the economic and social development of the populations most affected by global warming<sup>5</sup> (see para. 69 below).

34. Though not an EU member State, Monaco is located within the EU and is a very small open economy. It is therefore guided and indirectly impacted by the EU regulations and directives, for example, EU directives on biofuel blending rates in transport fuel and on energy performance standards for electrical appliances and equipment. Monaco's targets on

<sup>5</sup> Source: United Nations Environment Programme Climate Neutral Network: <<http://www.unep.org/climateneutral/Default.aspx?tabid=707>>.

emission reduction, promotion of RES and energy efficiency are also broadly in line with those of the EU member States.

## 2. Policies and measures in the energy sector

35. Between 1990 and 2009, emissions from the energy sector decreased by 18.2 per cent (19.42 Gg CO<sub>2</sub> eq), while their share in total GHG emissions decreased from 99.2 per cent to 96.3 per cent. The decrease in emissions was mainly driven by fuel switching from light fuel oil to natural gas used for heating in the residential sector, particularly since 2003, when the ban on the use of light fuel oil for heating in new buildings was introduced.

36. **Energy supply.** As it lacks domestic fossil fuel energy sources, Monaco imports all fossil fuels and most of its electricity from France. Domestic electricity production is limited to energy recovered at the waste incineration plant, which produces approximately 200,000 MWh of electricity annually, and electricity produced by seawater heat pumps, which produced 180,000 MWh of electricity in 2009.

37. Emissions from energy industries decreased by 6.1 per cent during the period 1990–2009, including by 37.9 per cent during the period 2000–2009 (16.19 Gg CO<sub>2</sub> eq), due to a significant decrease of imported waste. According to the NC5, in 2008, 50,955 tonnes of waste was incinerated. The waste incineration plant uses domestic waste and waste imported from the neighbouring areas in France. According to its NC5, since 2001, Monaco has reduced the waste import, as a result of an administrative decision limiting the waste imports to 15,000 tonnes per year. This was done following an environmental assessment and the adoption of the emission reduction targets. In 2006, the waste incineration plant underwent an extensive technological upgrade in order to comply with the EU standards on waste incineration, installed improved incineration boilers and modified smokestack treatment systems. In addition, in 2008, Monaco's wastewater treatment plant was upgraded to improve its capacity for filtering wastewater sewage sludge and transporting it to a waste incineration facility.

38. **Renewable energy sources.** In order to increase the share of RES, Monaco promotes the replacement of fossil fuel-fired boilers by solar panels used for heating in residential buildings. Since 2008, homeowners can receive a subsidy covering 30 per cent of the installation costs of a solar panel.

39. Monaco introduced a target to reach the share of 10 per cent biofuels in transport fuels by 2020. It expects to reach the target. Firstly, due to the fact that it imports all fuel products from the neighbouring EU member States that are required to reach the same target under EU directive on promotion of the use of biofuels. Secondly, according to the NC5, the average share of biofuels in 2008 was 8 per cent already. It therefore appears that Monaco will reach its target on biofuels by 2020.

40. As part of the Eco-Energy Plan of the PACA region, Monaco cooperates with its neighbouring countries to ensure energy security and stability of electricity supply in the region. Monaco has a target to reach the 15 per cent share of electricity from RES by 2020. In addition, Monaco has adopted a national target to reach the share of 20 per cent RES in gross final energy consumption by 2020. Both of these targets are expected to be met through electricity production by seawater heat pumps. The ERT noted that achieving these targets may not represent a challenge for Monaco given the current share of electricity produced by seawater heat pumps (see para. 36 above). The use of seawater heat pumps began in the early 1960s without active government policies or support. During the review, Monaco informed the ERT that it launched a research programme on assessing the potential for installation of additional capacity of seawater heat pumps and optimization and upgrade of existing pumps. Another measure aimed at the promotion of the RES is the agreement

between the government and SMEG, whereby SMEG is required to purchase RES-based electricity.

41. **Energy efficiency.** Most of the PaMs aimed at promotion of energy efficiency target the public sector and state-owned buildings. Since 2006, Monaco has established regulatory schemes on energy audits followed by investment support in order to achieve energy savings in public buildings. In 2008, the savings from a pilot project under the scheme amounted to 45 per cent of gas consumption, 14 per cent of electricity consumption and 34 per cent of energy saved compared with the 2005 levels of consumption.

42. In addition, since 2007, all new public buildings have been required to meet high environmental quality standards, which include higher energy performance requirements. Energy demand management is a key pillar of the Climate Energy Plan that set the target to improve energy efficiency by 20 per cent by 2020 compared with the 2005 level. Within the regional Eco-Energy Plan, Monaco has adopted the target of reducing energy consumption by 15 per cent by 2013 and by 20 per cent by 2020.

43. **Residential and commercial sectors.** The emission trend from fuel combustion showed a notable decrease in energy use in the residential and commercial sectors during the period 1990–2009. Between 1990 and 2008, emissions from fuel combustion for heating decreased by 48 per cent, with a significant decrease observed after 2003.

44. Residential buildings constitute a major part of the building stock in Monaco. The PaMs in the residential sector target a reduction in the use of light fuel oil and encourage the use of solar energy. In 2003 Monaco introduced a ban on using light fuel oil for heating in new residential buildings; this policy stimulated fuel switching from light fuel oil to other fuels and had positive effects on emission reduction. Monaco explained that this ban has been particularly effective due to a high rate of building renewal. SMEG has established a fund to finance measures aimed at energy demand management and promotion of the use of RES in the residential sector, among others.

45. **Industrial sector.** Monaco's industrial sector is relatively diverse, but not energy intensive and is characterized by a number of smaller-sized facilities. Monaco has not reported on any PaMs targeting emissions from the industrial sector.

46. **Transport sector.** Emissions from the transport sector have decreased by 10.0 per cent (3.35 Gg CO<sub>2</sub> eq) and their share in total GHG emissions has increased from 30.9 per cent to 33.0 per cent during the period 1990–2009. This decreasing emission trend is driven mainly by greater use of public transportation and increasing biofuel blending rates. In addition, this trend shows that Monaco has been successful in implementing its PaMs in the transport sector.

47. Monaco has developed a comprehensive Urban Transport Plan to better manage GHG emissions and other pollutants through ensuring an easily accessible public transportation system and a means to shift between different transport modes. Attractive ticket fares and a highly developed network of buses have been put in place since 2007. New trains were purchased to increase the number of daily train rides. In addition, Monaco has implemented pricing policies for parking to encourage reduced car use and increased car sharing. Monaco is still examining the options for a park-and-ride system that has been reported in its NC4. The PaMs specifically targeting the transport sector have led to an increase in the use of public transportation, by 33.8 per cent for rail and by 25.6 per cent for public buses during the period 2000–2007.

48. In 2009, Monaco put in place subsidies for the purchase of electric and hybrid vehicles. For example, a subsidy of up to EUR 9,000 is provided for the purchase of electric vehicles and up to EUR 3,000 for full hybrid vehicles. In 2009, electric and hybrid vehicles constituted 0.6 per cent and 1.2 per cent of the total vehicle fleet, respectively.

49. Emissions from fuel combustion for certain transport modes are not included in Monaco's total GHG emissions; for example, emissions from the use of diester, a French-made biofuel that is purchased in France and used by public buses commuting between France and Monaco, or emissions from a majority of journeys taken by sea and helicopter that are classified as international. One of the PaMs reported by Monaco under the international transport category is a 10-minute time limit set for engine idling on helicopter towers. The ERT noted that Monaco has not reported on the identification of steps taken to promote and/or implement any decisions by ICAO and IMO in order to limit or to reduce GHG emissions not included in the Montreal Protocol from aviation and marine bunker fuels (see para. 84 below).

50. The ERT noted that, in its NC5, Monaco has provided limited information on PaMs targeting energy use in the sectors other than the residential and public sectors, and on PaMs aimed at the promotion of the use of RES. The ERT encouraged Monaco to provide more detailed information on these PaMs, their mitigation effects and the status of their implementation.

### **3. Policies and measures in other sectors**

51. Between 1990 and 2009, GHG emissions from industrial processes and waste increased by over 1,217.1 per cent (1.96 Gg CO<sub>2</sub> eq) and 62.5 per cent (0.48 Gg CO<sub>2</sub> eq), respectively. Emissions included in the industrial processes sector are largely emissions of F-gases that occur in the use of refrigeration and cooling systems in vehicles and buildings. Such emissions still only account for 1.3 per cent of Monaco's total GHG emissions in 2009. Monaco does not have PaMs specifically targeting these emissions.

52. Monaco does not have any PaMs in the forestry and agriculture sectors, as the emissions from these sectors are insignificant and it does not have economic activities in these sectors. Monaco also does not have any PaMs addressing emissions from the solvent and other product use sector and these emissions are reported as not estimated.

53. **Waste management.** Emissions from the waste sector have increased by 62.5 per cent (0.48 Gg CO<sub>2</sub> eq) during the period 1990–2009, primarily due to incineration of sludge without energy recovery, which began in 1991. There is no waste disposal on landfills and all industrial and domestic waste is incinerated at the waste incineration plant.

54. Since 2008, Monaco has strengthened waste separation and recycling and this resulted in the increase of glass separation by 78 per cent and paper separation by 330 per cent in comparison with 2007. Monaco reported that 2,000 tonnes of paper, glass and other recyclable materials were recovered in 2008. Monaco estimates that the reduced amount of waste resulted from the improved practices of waste collection, separation and recycling.

### **4. Minimization of adverse effects in accordance with Article 2, paragraph 3, of the Kyoto Protocol**

55. In its NC5, Monaco has not reported information on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts, on other Parties, especially developing country Parties. However, Monaco provided information on how it strives to implement its commitments under Article 3, paragraph 1, of the Kyoto Protocol in such a way as to minimize adverse social, environmental and economic impacts on the developing country Parties, in its 2011 annual submission. The assessment of this information is presented in chapter II.B of this report. The ERT recommends that Monaco improve the completeness of its reporting by providing information, in its next national communication, on how it strives

to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize any adverse effects.

## **C. Projections and the total effect of policies and measures, and supplementarity relating to the Kyoto Protocol mechanisms**

### **1. Projections overview, methodology and key assumptions**

56. In its NC5, Monaco has reported three scenarios of total GHG emissions, namely ‘pessimistic’, ‘baseline’ and ‘optimistic’ scenarios, but only for one year that is 2020. The reported scenarios are presented by sector, covering two reported sectors only, and by GHGs for the following: CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, perfluorocarbons, hydrofluorocarbons and sulphur hexafluoride, reported in CO<sub>2</sub> eq. The scenarios do not include emission projections related to fuel sold to ships and aircraft engaged in international transport.

57. The ERT noted that, in its NC5, Monaco has reported the projections not in full accordance with the UNFCCC reporting guidelines, as it has not reported the ‘without measures’ projection that covers the baseline level of emissions without the effect of the PaMs; the ‘with measures’ projection that encompasses currently implemented and adopted PaMs, and the ‘with additional measures’ projection that encompasses currently planned PaMs. The ERT assumed that the scenarios reported for the year 2020 correspond to three emission projections, namely the ‘pessimistic’ scenario corresponds to the ‘without measures’ projection; the ‘baseline’ scenario corresponds to the ‘with measures’ projection; and the ‘optimistic’ scenario corresponds to the ‘with additional measures’ projection.

58. The reported scenarios have been developed within the framework of Monaco’s national target to reduce its total GHG emissions by 30 per cent by 2020 compared with the 1990 level of emissions. The reported three scenarios are built upon the assumptions relating to the use of light oil fuel for heating in residential buildings, waste incineration and road fuel sales; and the estimates of total GHG emissions.

59. The assumptions used in the ‘baseline’ scenario are as follows: light oil fuel used for heating in residential buildings will be entirely replaced by natural gas; the waste incineration plant will work at its full capacity; road fuel sales will remain stable; and biofuels blending rate will rise up to 10 per cent. In the ‘optimistic’ scenario, the assumptions are that: light oil fuel used for heating in residential buildings will be completely replaced by natural gas (50 per cent) and by electricity and/or RES (50 per cent); the waste incineration plant will work at the capacity of 2007; and road fuel sales will remain stable. In the ‘pessimistic’ scenario, the assumptions are that: the fuel switching in heating to less carbon-emitting sources will not occur; the waste incineration plant will work at its full capacity but without sludge incineration; and road fuel sales will remain stable. In the three scenarios, Monaco also included an assumption that the level of F-gas emissions will remain at the same level of emissions as was in 2007 up to 2020.

60. Moreover, the ERT noted that the emissions reported in the tables on scenarios in the NC5 for 2007 do not match the emissions reported in the 2011 annual submission. The ERT concluded that the emission data are based on an earlier inventory submission, although the NC5 was submitted in March 2011, i.e. almost at the same time as the 2011 annual submission. The ERT noted that according to the UNFCCC reporting requirements, Monaco must report the latest summary information on inventory available at the time of submission of the national communication.

61. The ERT acknowledges the difficulty of reporting emission projections for a very small country, which comprises an urban area. However, the ERT recommends that Monaco report the emission projections for the period up to 2020 in line with the UNFCCC

reporting guidelines and use the latest GHG inventory data as a reference. In addition, the ERT encourages Monaco to report the scenarios in line with the PaMs reported in the NC5 and to distinguish the relevant PaMs as implemented, adopted or planned.

62. The ERT took note of the justification supporting the assumptions used for the scenarios reported by Monaco in the NC5 and provided during the review. However, in order to improve the transparency of its reporting, the ERT strongly recommends that, in its next national communication, Monaco report on the methodology used to project its emission trend up to 2020 and provide a more transparent explanation of the assumptions used and the PaMs included in the scenarios. The ERT encourages Monaco to improve the consistency of its reporting in the sections on PaMs and on projections, and to include, in its next national communication, information on assumptions and driving factors affecting projected emission trends that was provided to the ERT during the review. The ERT noted that, in its NC5, Monaco has not reported on the sensitivity analysis of its scenarios. The ERT encourages Monaco to report on the sensitivity analysis in its next national communication.

## 2. Results of projections

63. Monaco committed itself to reducing its GHG emissions by 8 per cent compared with the base year level during the first commitment period of the Kyoto Protocol. This means that it has to limit its total GHG emissions to 99.04 Gg CO<sub>2</sub> eq per year on average during the period 2008–2012.

64. The ERT noted that according to the 2011 annual submission total GHG emissions, excluding LULUCF, in 2009 were 90.94 Gg CO<sub>2</sub> eq or 15.5 per cent below the base year level. Monaco seems to be on track to meet its Kyoto Protocol target by domestic PaMs only. Nevertheless, the ERT noted that, in a very small state and economy such as Monaco, total GHG emissions could change dramatically from one year to the next,<sup>6</sup> even though since 2000 emissions have showed a clear downward trend. The ERT encourages Monaco to produce the emission scenarios to track the achievement of the Kyoto Protocol target.

65. In addition to its Kyoto Protocol target, Monaco committed itself to reduce its total GHG emissions by 30 per cent by 2020 compared with the 1990 level and to reach ‘carbon neutrality’, i.e. to have net zero GHG emissions, by 2050 at the latest. According to the 2011 annual submission, a 30 per cent emission reduction would mean limiting total GHG emissions, excluding LULUCF, to 75.56 Gg CO<sub>2</sub> eq per year by 2020. Under the three scenarios reported in the NC5, Monaco does not seem to be in position to reach this medium-term emission reduction target by domestic PaMs only, as total GHG emissions in 2020 are expected to reach 86.16 Gg CO<sub>2</sub> eq and 117.69 Gg CO<sub>2</sub> eq under the ‘optimistic’ and ‘pessimistic’ scenarios, respectively. In its NC5, Monaco did not report on how it expects to reach this 2020 target. The ERT noted that in order to meet its 2020 emission reduction target, Monaco needs to put in place additional PaMs and complement them by the use of the Kyoto Protocol mechanisms. The summary of emission scenarios are presented in table 4 and the graph provided below.

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<sup>6</sup> For example, in 2006 the waste incineration plant was closed for a long period due to upgrading of the smoke purification system and this closure resulted in a decrease in total GHG emissions.



Table 4

**Summary of greenhouse gas emission projections for Monaco<sup>a</sup>**

	GHG emissions (Gg CO <sub>2</sub> eq per year)	Changes in relation to base year level (%)	Changes in relation to 1990 level (%)
Inventory data 1990 <sup>b</sup>	107.94	0.3	NA
Inventory data 2009 <sup>b</sup>	90.94	-15.5	-15.7
Kyoto Protocol base year <sup>c</sup>	107.66	NA	0.3
Kyoto Protocol target <sup>c</sup>	99.04	-8.0	-8.3
'Without measures' projections for 2020 = 'pessimistic' scenario <sup>d</sup>	117.69	9.3	9.0
'With measures' projections for 2020 = 'baseline' scenario <sup>d</sup>	106.33	-1.2	-1.5
'With additional measures' projections for 2020 = 'optimistic' scenario <sup>d</sup>	86.16	-20.0	-20.2

<sup>a</sup> Scenarios reported in the NC5 are proxies for the 'without measures', 'with measures' and 'with additional measures' projections.

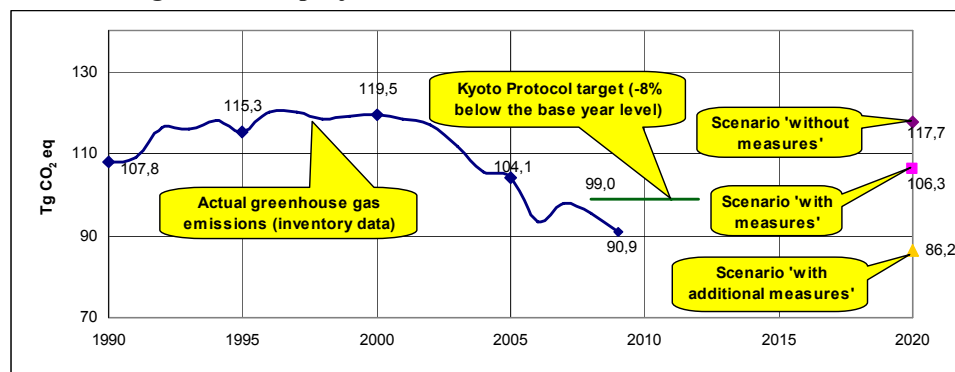
*Data sources:*

<sup>b</sup> Monaco's 2011 GHG inventory submission; the emissions are without land use, land-use change and forestry.

<sup>c</sup> FCCC/IRR/2007/MCO.

<sup>d</sup> Monaco's NC5.

*Abbreviations:* GHG = greenhouse gas, NA = not applicable, NC5 = fifth national communication.

**Greenhouse gas emission projections**

*Sources:* (1) Data for the years 1990–2009: Monaco's 2011 greenhouse gas inventory submission; the emissions are without land use, land-use change and forestry; (2) Data for the year 2020: Monaco's fifth national communication.

**3. Total effect of policies and measures**

66. In its NC5, Monaco has reported a rough estimate of the estimated and expected total effect of implemented and adopted PaMs that was equal to 9 per cent emission reduction in 2007 compared with the 1990 level. The ERT noted that this emission reduction seems to correspond to 10 Gg CO<sub>2</sub> eq that is the actual emission reduction for the period 1990–2007 as reported in the 2011 annual submission. During the review, Monaco provided the ERT with information that justified this emission reduction as mainly being

the effect of PaMs that, directly or indirectly, limited GHG emissions. The ERT took note of the difficulties experienced by Monaco in estimating the total effect of PaMs.

67. However, the ERT recommends that Monaco report the total effect of the PaMs implemented and adopted, in accordance with the 'with measures' scenario, compared with a situation without such PaMs, in terms of GHG emissions avoided or sequestered, by gas (on a CO<sub>2</sub> eq basis), and include the information provided during the review in its next national communication. The ERT encourages Monaco to report the total effect of planned PaMs and provide a corresponding 'with additional measures' scenario in its next national communication.

#### **4. Supplementary relating to mechanisms pursuant to Articles 6, 12 and 17, of the Kyoto Protocol**

68. In its NC5, Monaco has provided some 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 report on the supplementarity as such. Monaco reported that the use of CERs would compensate for the potential excess of total GHG emissions over its Kyoto Protocol target up to a maximum of 5 per cent of its assigned amount. This amount corresponds to emissions to be offset by the CERs that are planned to be purchased by 2012 (see para. 69 below). In case the current downward emission trend lasts until the end of the first commitment period (2008–2012), Monaco could overachieve its Kyoto Protocol target by using the CERs.

69. In its NC5, Monaco has reported on a contract with Tunisia for purchasing of 25,000 CERs (equal to 25 Gg CO<sub>2</sub> eq in total) that will be acquired by Monaco by the end of 2012. The funding allocated for this transaction has not been specified in the NC5. The ERT noted that the amount of CERs would be equal to 27.5 per cent of the total GHG emissions, excluding LULUCF (90.94 Gg CO<sub>2</sub> eq), in 2009, according to the 2011 annual submission. The ERT further noted that even if Monaco is required to use the CERs to offset its emissions exceeding the Kyoto Protocol target, a comparison between the use of CERs per year during the first commitment period (5 Gg CO<sub>2</sub> eq) and the total effect of PaMs (10 Gg CO<sub>2</sub> eq) demonstrates that domestic efforts constitute a significant part of emission reduction and, thus, the supplementarity principle is met.

70. To enhance the transparency of reporting, the ERT encourages Monaco to provide more detailed information on supplementarity relating to the Kyoto Protocol mechanisms as well as on the type of projects and transactions with the selling countries in its next national communication.

#### **D. Vulnerability assessment, climate change impacts and adaptation measures**

71. In its NC5, Monaco did not report on climate change vulnerability assessment, climate change impacts and adaptation measures. During the review, Monaco provided the following explanation for not reporting on these issues: the Party has not yet conducted an assessment of its vulnerability to climate change and the impacts of climate change on its environment and economy, and it has not yet carried out a study on climate change adaptation measures.

72. The ERT is nevertheless of the view that it is very important for Monaco to conduct an assessment of vulnerability to climate change, identify potential impacts of climate change, formulate adaptation strategies and report on them in its next national communication. The ERT suggests that Monaco cooperate with the neighbouring regions of France on vulnerability assessment, elaboration of adaptation measures and formulation of

an adaptation strategy. The ERT therefore recommends that Monaco initiate studies on the expected impacts of climate change, conduct a vulnerability assessment, define adaptation action taken to implement Article 4, paragraph 1(b) and (e), with regard to adaptation and report on this in its next national communication.

## **E. Financial resources and transfer of technology, including information under Articles 10 and 11, of the Kyoto Protocol**

### **1. Provision of financial resources, including ‘new and additional’ resources and resources under Article 11 of the Kyoto Protocol**

73. The ERT noted that Monaco is not included in Annex II to the Convention. However, Monaco has provided information on the assistance provided to developing country Parties to indicate the actions being taken in line with Article 4, paragraphs 3, 4 and 5, of the Convention and Article 11 of the Kyoto Protocol. Monaco provided assistance to developing country Parties in the areas of education, training, conservation and management of natural resources.

74. Monaco has reported on the increasing flow of financial resources being given to developing country Parties, mainly French-speaking countries in Africa and countries in the Mediterranean region. These financial resources increased by 180 per cent, from EUR 2.5 million in 2005 to EUR 7 million in 2008. In 2009, over 53 per cent of Monaco’s overseas development assistance (ODA) was allocated to least developed countries through the framework of bilateral cooperation.

75. Though Monaco has reported, in its NC5, on the allocation of financial resources through ODA and CDM, the ERT noted that a definition of ‘new and additional’ financial resources was not reported transparently, and information on allocation of the ‘new and additional’ financial resources was not reported. The ERT, however, commends Monaco for reporting on this area and encourages it to enhance the completeness of its reporting by expanding the information on the ‘new and additional’ financial resources provided to developing country Parties in its next national communication. The ERT also encourages Monaco to complete tables 3, 4 and 5 of the UNFCCC reporting guidelines.

76. Monaco did not provide information on its financial contribution to the Global Environment Facility, as it is not a member of the facility and therefore does not provide it with financial resources. Monaco indicated that due to the priorities of its ODA policy, it allocated financial resources in the climate change area for bilateral rather than multilateral cooperation. However, during the review, Monaco informed the ERT that in 2010 it allocated EUR 10,000 to the Adaptation Fund. Table 5 summarizes the information on financial resources.

Table 5  
**Summary of information on financial resources for 2005 and 2008**

<i>Channel of financial resources</i>	<i>Years of disbursement</i>	
	<i>2005</i>	<i>2008</i>
Official development assistance (EUR)	2 500 000	7 500 000
Clean development mechanism under the Kyoto Protocol (EUR)		300 000 over 3 years

## **2. Activities related to transfer of technology, including information under Article 10, of the Kyoto Protocol**

77. In its NC5, Monaco has reported on technology transfer activities relating to Article 10(c) of the Kyoto protocol and Article 4, paragraph 5, of the Convention. Monaco has reported that the technology in the form of boreholes with hand pumps and water systems powered by solar energy was provided to schools and health centres in rural areas of developing country Parties. Monaco has also reported in the NC5 that it provided an air pollution control/surveillance system to Morocco and a seismic risk/tsunami surveillance system to Tunisia. Furthermore, Monaco has reported on the assistance it provided to developing countries especially in the area of adaptation to climate change, namely access to safe water and sanitation, biodiversity conservation, reforestation and prevention of desertification.

78. Monaco has also reported that a committee on public-private partnership was created within Monaco's Economic Development Chamber with the mission of matching the interest of companies and the priorities of the Department of International Cooperation. However, the ERT noted that Monaco did not indicate clearly which of these technology transfer activities were undertaken by the public or private sectors. It was also observed by the ERT that though Monaco reported on some success stories in Lebanon and Mali, it did not complete table 6 on the description of selected projects or programmes that promote practical steps to facilitate and/or finance the transfer of, or access to environmentally sound technologies, as required by the UNFCCC reporting guidelines.

79. The ERT commends Monaco for information provided and encourages it, in order to increase the transparency of reporting, to include information on the roles of the public and private sectors in technology transfer and to complete table 6, to the fullest extent possible, in its next national communication.

## **F. Research and systematic observation**

80. In its NC5, Monaco has provided limited information on its actions relating to the research and systematic observation activities carried out in fulfilment of its requirements under Article 4, paragraph 1(g), of the Kyoto Protocol. The NC5 of Monaco reported that the Monaco Research Centre only conducts research on the physiology of tropical and Mediterranean coral species that are sensitive to climate change and that DE conducts systematic observation of the following meteorological parameters: air temperature, rainfall, sunshine and humidity, and periodically measures sea surface temperatures.

81. During the review, Monaco informed the ERT that it is not involved in systematic observation and research at the international level and does not support related research and capacity-building in developing countries due to budget constraints. The ERT therefore recommends that Monaco take steps to participate in the Global Climate Observing System (GCOS) and international activities relating to research and systematic observation. The ERT encourages Monaco to expand its oceanographic observations to study the rise in sea levels as this is one of the areas most vulnerable to climate change.

## **G. Education, training and public awareness**

82. In its NC5, Monaco has provided information on its actions relating to education, training and public awareness. Environmental awareness raising is integrated in the public administration system and school curricula. Brochures and stamps that highlight environmental issues and contribute to public awareness raising have been produced for the general public. Monaco has also supported education, training and awareness raising in

developing countries, in particular Tunisia, through projects on the promotion of renewable energy and energy efficiency and capacity-building on climate change issues. The ERT commends Monaco for its efforts taken in the areas of environmental education, public awareness raising and climate change initiatives in developing countries.

## H. Evaluation of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

83. Monaco has provided most of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol in its NC5. The supplementary information is placed in different sections of the NC5. Table 6 provides an overview of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol as well as references to the NC5 chapters in which this information is provided.

84. However, the ERT noted that Monaco has not reported the following elements of the supplementary information required under Article 7, paragraph 2, of the Kyoto Protocol: how Monaco 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, especially developing country Parties; the identification of steps taken to promote and/or implement any decisions by ICAO and IMO in order to limit or to reduce GHG emissions not included in the Montreal Protocol from aviation and marine bunker fuels; and domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures, established pursuant to the implementation of the Kyoto Protocol. Even though in its NC5 Monaco has not reported explicitly on programmes, legislative arrangements and procedures, established pursuant to the implementation of the Kyoto Protocol, such programmes and arrangements exist, as referred to in section II.B of this report. During the review, Monaco provided the ERT with information on the missing mandatory reporting elements. The ERT recommends that Monaco include these reporting elements in its next national communication. The technical assessment of information reported under Article 7, paragraph 2, is contained in the relevant sections of this report.

Table 6

### Overview of supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

<i>Supplementary information</i>	<i>Reference</i>
National registry	Chapter III.E, pages 40–44
National system	Chapter III.D, pages 36–40
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17, of the Kyoto Protocol	Chapter IV.B.5, page 57; Chapter V.B, pages 58 and 64
Policies and measures in accordance with Article 2, of the Kyoto Protocol	Chapter IV, pages 45–58
Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures	Not reported separately, but included in Chapter IV
Information under Article 10, of the Kyoto Protocol	Chapter VII.B, page 68
Financial resources	Chapter VII.C, pages 68–69

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

85. Monaco reported the information requested in section H. Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the annex to decision 15/CMP.1 as part of its 2011 annual submission. The ERT noted that Monaco did not report this information in its 2010 annual submission, and therefore no information was available on any changes that have occurred since the previous annual submission. Monaco has not reported, however, how it gives priority to the actions taken, in implementing its commitments under Article 3, paragraph 14, of the Kyoto Protocol. The ERT considers the reported information to be insufficiently complete and mostly transparent. The ERT recommends that Monaco continue exploring the impacts and reporting on the adverse impacts of the response measures and on how it gives priority to the actions taken to minimize adverse impacts.

86. The NIR 2011 presented an initiative of Monaco aiming to minimize adverse impacts, involving the bilateral agreement with Tunisia to invest in CDM projects in the energy sector as well as to strengthen the capacity of a designated national authority of Tunisia to further promote CDM projects. Monaco has also reported that in order to minimize adverse impacts, it supplies photovoltaic systems to the projects financed by its ODA that provide technology for infrastructure development in remote areas without access to electricity grids.

## **III. Conclusions and recommendations**

87. The ERT concludes that the NC5 generally provides a good overview of the national climate change policy of Monaco. The information provided in the NC5 includes most mandatory information required by the UNFCCC reporting guidelines, except for information on a description of the process and results of key category identification; how the national circumstances and the changes in national circumstances affect GHG emissions and removals; summary tables on PaMs by sector; the emission projections up to 2020 under the 'with measures' scenario; the total effect of PaMs; the expected impacts of climate change and an outline of action taken with regard to adaptation. During the review, the Party provided information on the missing mandatory reporting elements.

88. The NC5 also includes most elements of the supplementary information under Article 7 of the Kyoto Protocol, except for information on how Monaco strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize any adverse effects, including the adverse effects of climate change, effects on international trade, and social, environmental and economic impacts on other Parties, especially developing country Parties; the identification of steps taken to promote and/or implement any decisions by ICAO and IMO in order to limit or to reduce GHG emissions not included in the Montreal Protocol from aviation and marine bunker fuels; and domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures, established pursuant to the implementation of the Kyoto Protocol. During the review, the Party provided information on the missing mandatory reporting elements.

89. Monaco's total GHG emissions for 2009 were estimated to be 15.7 per cent below its 1990 level, excluding LULUCF, and 15.8 per cent below that, including LULUCF. Emission reductions were driven by fuel switching from light fuel oil to natural gas used in heating systems in the residential sector and a modal shift from private to public transport in passenger transportation.

90. In its NC5, Monaco has reported three scenarios of total GHG emissions, namely the 'baseline', 'pessimistic' and 'optimistic' scenarios, but only for one year that is 2020. Under all three reported scenarios, Monaco does not currently appear to be on track to meet its medium-term target of a 30 per cent emission reduction by 2020 in comparison with the 1990 level of emissions. Monaco seems to be on track to meet its Kyoto Protocol target (8 per cent emission reduction) for the first commitment period, as in 2009 total GHG emissions were 15.5 per cent below the base year level according to the 2011 annual submission.

91. The NC5 contains information on how its use of the mechanisms under Articles 6, 12 and 17 of the Kyoto Protocol is supplemental to domestic action, although Monaco did not elaborate on supplementarity as such. Monaco reported that the use of CERs would compensate for the potential excess of total GHG emissions over its Kyoto Protocol target up to a maximum of 5 per cent of its assigned amount. This amount corresponds to emissions to be offset by the CERs that are planned to be purchased by Monaco by 2012.

92. Monaco has reported that its key climate change strategy document is the Climate Energy Plan adopted in 2009. The most effective PaM is fuel switching from light oil fuel to natural gas used for heating in the residential sector. Monaco has also successfully implemented PaMs to control emissions from the transport sector by increasing the area covered by public transportation services. Monaco has introduced stricter energy efficiency standards for new public buildings. In the waste sector, Monaco introduced waste separation and recycling practices.

93. Monaco has reported on financial resources and technology transfer to developing countries, even though it is not included in Annex II to the Convention. The ERT noted that Monaco is providing increasing financial resources to developing countries through its ODA channels and that it plans to provide financial resources through the CDM.

94. Monaco did not report on assessment of climate change vulnerability, impacts and adaptation measures, because it has not yet conducted any studies in these areas. However, during the review, Monaco indicated that it is willing to gather the necessary information and report on these areas in its next national communication.

95. The ERT noted that Monaco provided very limited information on research and systematic observation activities carried out in pursuance of Article 4, paragraph 1(g). Monaco has reported that research is conducted on the physiology of tropical and Mediterranean coral species that are sensitive to climate change. Monaco undertakes systematic observation of meteorological parameters namely, air temperature, rainfall, sunshine, humidity and sea surface temperatures. Monaco does not participate in systematic observation and research at the international level. It also does not support research and capacity-building in systematic observation in developing countries due to budget constraints.

96. The ERT concluded that Monaco's national system continues to perform its required functions as set out in decision 19/CMP.1; that the national registry continues to perform the functions set out in decision 13/CMP.1 and decision 5/CMP.1; and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant CMP decisions. The ERT noted that updates to the database and applications, implemented security measures and changes to the national registry software are documented on a regular basis by nominated responsible persons.

97. 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 provided by the Party in its 2011 annual submission under Article 7, paragraph 1, of the Kyoto Protocol is insufficiently complete and mostly transparent. Therefore, the ERT encourages Monaco to further enhance its reporting on Article 3,

paragraph 14, including by indicating the prioritization of the action taken in implementing its commitments under Article 3.

98. In the course of the review, the ERT formulated several recommendations relating to the completeness and transparency of Monaco's reporting under the Convention and its Kyoto Protocol. The key recommendations<sup>7</sup> are that Monaco:

(a) Improve the completeness of its reporting by including in the next national communication the following information:

(i) A complete description of how its national system is performing the general and specific functions defined in the guidelines for national systems under Article 5, paragraph 1, including a description of the process and results of key category identification;

(ii) How national circumstances affect GHG emissions and removals and how the national circumstances and changes in national circumstances affect GHG emissions and removals over time;

(iii) Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures, established pursuant to the implementation of the Kyoto Protocol;

(iv) A summary table on PaMs and all required information on individual PaMs, as well as information on how Monaco believes its PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals;

(v) How Monaco 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, especially developing country Parties;

(vi) Information on steps taken to promote and/or implement any decisions of ICAO and IMO in order to limit or reduce GHG emissions not controlled by the Montreal Protocol from aviation and marine bunker fuels;

(vii) Emission projections up to 2020 under the 'with measures' scenario relative to actual inventory data;

(viii) Total effect of implemented and adopted PaMs, in accordance with the 'with measures' scenario, compared with a situation without such PaMs, in terms of GHG emissions avoided or sequestered, by gas (on a CO<sub>2</sub> eq basis);

(ix) Expected impacts of climate change and an outline of action taken to implement Article 4, paragraph 1(b) and (e), with regard to adaptation, including an assessment of vulnerability to climate change, identification of potential impacts on sectors and necessary adaptation measures;

(b) Improve the timeliness of reporting by delivering the next national communication by 1 January 2014 and reporting on the new administrative procedures and institutional arrangements, the outcomes of the proposed changes and implementation of the work plan on the preparation of the national communication for the period 2012–2013;

(c) Improve the transparency and completeness of reporting by including in the next annual submission further information on the following: the adverse impacts of response measures; and how Monaco gives priority to the actions taken to implement its commitments under Article 3, paragraph 14, of the Kyoto Protocol regarding the minimization of adverse impacts of response measures to climate change.

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



99. The ERT encourages Monaco to undertake a number of improvements regarding transparency and completeness of reporting; the most important of these are that the Party:

(a) Report the mitigation effects of PaMs, especially of those PaMs that are expected to modify longer-term emission trends;

(b) Report the methodology and assumptions used to project emission trends up to 2020, driving factors affecting projected emission trends, sensitivity analysis of emission projections and explanation on which PaMs are included in the projection scenarios;

(c) Report the 'without measures' and 'with additional measures' emission projections;

(d) Report more detailed information on supplementarity relating to the Kyoto Protocol mechanisms as well as on the type of projects and transactions with the selling countries;

(e) Report on the provision of financial resources to developing countries and a definition of the 'new and additional' financial resources, as well as on the role of the public and private sectors in the technology transfer activities;

(f) Report on activities supporting GCOS, data sharing and international activities relating to research and systematic observation.

#### **IV. Questions of implementation**

100. During the review the ERT assessed the NC5, including supplementary information provided under Article 7, paragraph 2, of the Kyoto Protocol and reviewed information on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol, with regard to timeliness, completeness and transparency. No question of implementation was raised by the ERT during the review.

## Annex

### Documents and information used during the review

#### A. Reference documents

“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 national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories”. 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”. Decision 15/CMP.1. Available at <<http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf#page=54>>.

“Guidelines for review under Article 8 of the Kyoto Protocol”. Decision 22/CMP.1. Available at <<http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=51>>.

FCCC/SBI/2011/INF.1. Compilation and synthesis of fifth national communications. Available at <<http://unfccc.int/resource/docs/2011/sbi/eng/inf01.pdf>>.

FCCC/SBI/2011/INF.1/Add.1. Compilation and synthesis of fifth national communications. Addendum. Policies, measures, and past and projected future greenhouse gas emission trends of Parties included in Annex I to the Convention. Available at <<http://unfccc.int/resource/docs/2011/sbi/eng/inf01a01.pdf>>.

FCCC/SBI/2011/INF.1/Add.2. Compilation and synthesis of fifth national communications. Addendum. Financial resources, technology transfer, vulnerability, adaptation and other issues relating to the implementation of the Convention by Parties included in Annex I to the Convention. Available at <<http://unfccc.int/resource/docs/2011/sbi/eng/inf01a02.pdf>>.

FCCC/SBI/2011/INF.2. Compilation and synthesis of supplementary information incorporated in fifth national communications submitted in accordance with Article 7, paragraph 2, of the Kyoto Protocol. Available at <<http://unfccc.int/resource/docs/2011/sbi/eng/inf02.pdf>>.

FCCC/ARR/2010/MCO. Report of the individual review of the annual submission of Monaco submitted in 2010. Available at <<http://unfccc.int/resource/docs/2010/arr/mco2.pdf>>.

FCCC/IRR/2007/MCO. Report of the review of the initial report of Monaco. Available at <<http://unfccc.int/resource/docs/2008/irr/mco.pdf>>.

FCCC/IDR.4/MCO. Report of the centralized in-depth review of the fourth national communication of Monaco. Available at <<http://unfccc.int/resource/docs/2008/idr/mco04.pdf>>.

Quatrième communication nationale de la Principauté de Monaco. Available at <<http://unfccc.int/resource/docs/natc/monnc4.pdf>>.

Cinquième communication nationale de la Principauté de Monaco. Available at <[http://unfccc.int/resource/docs/natc/mco\\_nc5.pdf](http://unfccc.int/resource/docs/natc/mco_nc5.pdf)>.

2011 GHG inventory submission of Monaco. Available at  
<[http://unfccc.int/national\\_reports/annex\\_i\\_ghg\\_inventories/national\\_inventories\\_submissions/items/5888.php](http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/5888.php)>.

United Nation Environment Programme Climate Neutral Network. Available at  
<<http://www.unep.org/CLIMATENEUTRAL/Default.aspx?tabid=707>>.

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

Responses to questions during the review were received from Mr. Bastien Nicaise (UNFCCC National Focal Point, Department for External Relations), including additional material on updated policies and measures, greenhouse gas projections, the national registry and recent climate policy developments in Monaco.

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