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Report of the technical review of the second biennial report of Monaco

According to decision 2/CP.17, developed country Parties are requested to submit their second biennial reports by 1 January 2016, that is, two years after the due date for submission of a full national communication. This report presents the results of the technical review of the second biennial report of Monaco, 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”.

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I. Introduction and summary

A. Introduction

1. This report covers the centralized technical review of the second biennial report (BR2)¹ of Monaco. The review was organized 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 IV: UNFCCC guidelines for the technical review of biennial reports from Parties included in Annex I to the Convention” (annex to decision 13/CP.20). In accordance with the same decision, a draft version of this report was communicated to the Government of Monaco.

2. The review took place from 30 May to 4 June 2016 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Ms. Diana Barba (Colombia), Mr. Viorel Nelu Bellmondo Blujdea (Romania), Mr. Luis Caceres Silva (Ecuador), Ms. Hoy Yen Chan (Malaysia), Mr. Amnat Chidthaisong (Thailand), Ms. Balgis Elasha Osman (Sudan), Mr. Sabin Guendehou (Benin), Ms. Lisa Hanle (United States of America), Ms. Elsa Hatanaka (Japan), Mr. Harry Vreuls (Netherlands) and Mr. Jongikhaya Witi (South Africa). Mr. Guendehou and Mr. Vreuls were the lead reviewers. The review was coordinated by Mr. Bernd Hackmann, Ms. Sylvie Marchand and Ms. Kyoko Miwa (UNFCCC secretariat).

B. Summary

3. The expert review team (ERT) conducted a technical review of the information reported in the BR2 of Monaco in accordance with the “UNFCCC biennial reporting guidelines for developed country Parties” (hereinafter referred to as the UNFCCC reporting guidelines on BRs). During the review, Monaco provided additional relevant information on the following: greenhouse gas (GHG) emissions, the quantified economy-wide emission reduction target and GHG emission projections.

1. Timeliness

4. The BR2 was submitted on 13 May 2016, after the deadline of 1 January 2016 mandated by decision 2/CP.17. The common tabular format (CTF) tables were also submitted on 13 May 2016. Monaco informed the secretariat about its difficulties with submitting its BR2 and CTF tables on 6 January 2016. The ERT noted with concern the delay in the submission of the BR2 and CTF tables. The ERT recommends that Monaco improve the timeliness of its reporting by submitting its next biennial report (BR) on time.

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

5. Issues and gaps related to the reported information identified by the ERT are presented in table 1 below. The information reported by Monaco in its BR2 is partially in adherence with the UNFCCC reporting guidelines on BRs as per decision 2/CP.17.

¹ The biennial report submission comprises the text of the report and the common tabular format (CTF) tables. Both the text and the CTF tables are subject to the technical review.

Table 1

Summary of completeness and transparency issues related to mandatory reported information in the second biennial report of Monaco

| <i>Chapter of the biennial report</i> | <i>Completeness</i> | <i>Transparency</i> | <i>Paragraphs with recommendations</i> |
|--|---------------------|-----------------------|--|
| Greenhouse gas emissions and trends | Mostly complete | Transparent | 7 |
| Assumptions, conditions and methodologies related to the attainment of the quantified economy-wide emission reduction target | Complete | Partially transparent | 14, 15, 16 |
| Progress in achievement of targets | Partially complete | Mostly transparent | 20, 21, 22, 31, 35, 36, 41 |
| Provision of support to developing country Parties ^a | NA | NA | NA |

Note: A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in chapter III.

Abbreviation: NA = not applicable.

^a Monaco is not a Party included in Annex II to the Convention and is therefore not obliged to adopt measures and fulfil obligations as defined in Article 4, paragraphs 3, 4 and 5, of the Convention.

II. Technical review of the reported information

A. All greenhouse gas emissions and removals related to the quantified economy-wide emission reduction target

6. Monaco has provided a summary of information on GHG emission trends for the period 1990–2013 in its BR2 and CTF tables 1(a)–(d). The BR2 makes reference to the national inventory arrangements, which are explained in more detail in the national inventory report included in Monaco’s 2014 annual inventory submission, but does not provide summary information on those arrangements other than stating that Monaco’s national inventory system complies with Article 5, paragraph 1, of the Kyoto Protocol. The national inventory arrangements were established in accordance with the reporting requirements related to national inventory arrangements contained in the “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories” (hereinafter referred to as the UNFCCC Annex I inventory reporting guidelines) that are required by paragraph 3 of the UNFCCC reporting guidelines on BRs. Further, Monaco reported that there have been no changes in the national inventory arrangements since its first biennial report (BR1) and its sixth national communication (NC6).

7. During the review, in response to a question raised by the ERT, Monaco indicated that its national inventory arrangements would be described in detail in its 2015 annual inventory submission, which had not been submitted at the time of the review (June 2016). In order to ensure completeness of reporting, the ERT recommends that Monaco include in its next BR summary information on its national inventory arrangements.

8. The ERT noted inconsistencies between the emission trends reported in CTF table 1 and the information in its most recent, 2014 annual inventory submission. In response to a question raised by the ERT during the review, Monaco explained that the data provided in its CTF table 1 are consistent with its 2015 annual inventory submission, which had not

been submitted at the time of the review. The ERT encourages Monaco to ensure consistency in the information reported in the next submission with that reported in the most recent annual inventory submission.

9. As Monaco included information on historical emissions that is not consistent with the latest inventory submission, Monaco's 2014 annual inventory submission, version 3.1, has been used as the basis for discussion in chapter II.A of this review report in order to reflect the most recent inventory submission available.

10. Total GHG emissions² excluding emissions and removals from land use, land-use change and forestry (LULUCF) decreased by 14.7 per cent between 1990 and 2012 and total GHG emissions including net emissions and removals from LULUCF also decreased by 14.7 per cent over the same period because the contribution from LULUCF removals was so small. The decrease in the total GHG emissions can be attributed mainly to carbon dioxide (CO₂) emissions, which decreased by 21.1 per cent (excluding LULUCF) between 1990 and 2012. Over the same period, emissions of methane (CH₄) decreased by 58.4 per cent, while emissions of nitrous oxide (N₂O) increased by 65.0 per cent. Emissions of perfluorocarbons (PFCs) peaked in 2006 and decreased to zero in 2010. Other combined fluorinated gases, such as hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF₆), increased by 92.4 per cent over the period 1990–2012. Monaco explained in its BR2 that HFC emissions have shown a strong increase as a result of the use of HFCs in domestic refrigeration as well as in commercial and automobile air conditioning. In its BR2 Monaco stated that the energy sector is responsible for most of the emissions in the principality.

11. The ERT noted that, during the period 1990–2012, Monaco's gross domestic product (GDP) per capita increased by 24.6 per cent, while GHG emissions per GDP and GHG emissions per capita decreased by 46.1 and 32.9 per cent, respectively. Table 2 below illustrates the emission trends by sector and some of the economic indicators relevant to GHG emissions for Monaco.

Table 2

Greenhouse gas emissions by sector and some indicators relevant to greenhouse gas emissions for Monaco for the period 1990–2012

| Sector | GHG emissions (kt CO ₂ eq) | | | | | Change (%) | | Share by sector (%) | |
|---|---------------------------------------|--------|--------|--------|--------|------------|-----------|---------------------|------|
| | 1990 | 2000 | 2010 | 2011 | 2012 | 1990–2012 | 2011–2012 | 1990 | 2012 |
| 1. Energy | 108.31 | 116.08 | 84.61 | 81.45 | 85.53 | -21.0 | 5.0 | 98.9 | 91.5 |
| A1. Energy industries | 28.22 | 42.69 | 25.63 | 27.80 | 28.15 | -0.2 | 1.3 | 25.8 | 30.1 |
| A2. Manufacturing industries and construction | NA, NO | NA, NO | NA, NO | NA, NO | NA, NO | - | - | - | - |
| A3. Transport | 33.37 | 36.76 | 26.15 | 26.61 | 29.12 | -12.7 | 9.5 | 30.5 | 31.2 |
| A4.–A5. Other | 45.42 | 36.34 | 32.62 | 26.84 | 28.05 | -38.2 | 4.5 | 41.5 | 30.0 |
| B. Fugitive emissions from fuels | 1.30 | 0.28 | 0.21 | 0.20 | 0.20 | -84.3 | -0.2 | 1.2 | 0.2 |
| C. CO ₂ transport and storage | 0.47 | 4.92 | 6.42 | 7.15 | 6.56 | 1 308.6 | -8.3 | 0.4 | 7.0 |

² In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of carbon dioxide equivalent excluding land use, land-use change and forestry, unless otherwise specified. Values in this paragraph are calculated based on the 2014 inventory submission, version 3.1.

| Sector | GHG emissions (kt CO ₂ eq) | | | | | Change (%) | | Share by sector (%) | |
|--|---------------------------------------|---------------|--------------|--------------|--------------|--------------|------------|---------------------|--------------|
| | 1990 | 2000 | 2010 | 2011 | 2012 | 1990–2012 | 2011–2012 | 1990 | 2012 |
| 2. IPPU | 0.03 | 0.06 | 0.07 | 0.08 | 0.09 | 206.8 | 23.5 | 0.0 | 0.1 |
| 3. Agriculture | NA, NO | NA, NO | NA, NO | NA, NO | NA, NO | – | – | – | – |
| 4. LULUCF | –0.01 | –0.01 | –0.02 | –0.02 | –0.02 | 66.6 | 2.7 | NA | NA |
| 5. Waste | 0.75 | 1.18 | 1.25 | 1.14 | 1.29 | 71.4 | 13.2 | 0.7 | 1.4 |
| Total GHG emissions without LULUCF | 109.56 | 122.23 | 92.35 | 89.82 | 93.47 | –14.7 | 4.1 | 100.0 | 100.0 |
| Total GHG emissions with LULUCF | 109.55 | 122.22 | 92.33 | 89.80 | 93.45 | –14.7 | 4.1 | NA | NA |
| <i>Indicators</i> | | | | | | | | | |
| GDP per capita (thousands 2011 USD using PPP) | 106.90 | 120.69 | 124.32 | 125.08 | 132.63 | 24.6 | 0.4 | – | – |
| GHG emissions without LULUCF per capita (t CO ₂ eq) | 3.72 | 3.81 | 3.20 | 2.51 | 2.42 | –32.9 | 3.5 | – | – |
| GHG emissions without LULUCF per GDP unit (kg CO ₂ eq per 2011 USD using PPP) | 0.03 | 0.03 | 0.03 | 0.02 | 0.02 | –46.1 | 3.0 | – | – |

Sources: (1) GHG emission data: Monaco's 2014 annual inventory submission, version 3.1; (2) GDP and population data: United Nations Department of Economic and Social Affairs, Population Division. See <<http://unstats.un.org/unsd/snaama/selbasicFast.asp>>.

Note: The ratios per capita and per GDP unit as well as the changes in emissions and the shares by sector are calculated relative to total GHG emissions without LULUCF using the exact (not rounded) values, and may therefore differ from the ratio calculated with the rounded numbers provided in the table.

Abbreviations: GDP = gross domestic product, GHG = greenhouse gas, IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry, NA = not applicable, NO = not occurring, PPP = purchasing power parity.

B. Assumptions, conditions and methodologies related to the attainment of the quantified economy-wide emission reduction target

12. In its BR2 and CTF tables 2(a)–(f), Monaco reported a description of its target, including associated conditions and assumptions. CTF tables 2(a)–(f) contain the required information in relation to the description of the Party's emission reduction target, such as base year, gases and sectors covered, and global warming potential (GWP) values used. Further information on the target and the assumptions, conditions and methodologies related to the target is provided in chapter 2 of the BR2.

13. For Monaco, the Convention entered into force on 21 March 1994. Under the Convention, Monaco made a commitment to reduce its GHG emissions by 30 per cent by 2020 below the 1990 level. This target includes all GHGs included in the UNFCCC Annex I inventory reporting guidelines, namely CO₂, CH₄, N₂O, HFCs, PFCs, SF₆ and nitrogen trifluoride (NF₃). The base year for CO₂, CH₄ and N₂O is 1990, the base year for HFCs, PFCs and SF₆ is 1995 and the base year for NF₃ is 2000. The target also includes all Intergovernmental Panel on Climate Change (IPCC) sources and sectors included in the annual GHG inventory. The GWP values used are those from the IPCC Fourth Assessment

Report (AR4). Emissions and removals from the LULUCF sector are not included in the target. Monaco reported that it does not plan but retains the option to make use of market-based mechanisms to achieve its target (see para. 30 below). In absolute terms, this means that under the Convention, Monaco has to reduce emissions from 109.56 kt carbon dioxide equivalent (CO₂ eq) (in the base year) to 76.69 kt CO₂ eq by 2020.

14. The ERT noted that Monaco reported in its BR2 and CTF table 2(a) the base year and the emission reduction target for 2020. However, the Party reported in this table two different numbers for the target (22 per cent from the base year and 30 per cent from 1990). During the review, Monaco clarified that the emission reduction target under the Convention is 30 per cent from 1990, and that the 22 per cent value relates to the quantified emission limitation or reduction commitment under the second commitment period of the Kyoto Protocol (2013–2020). In order to improve the transparency of the description of the quantified economy-wide emission reduction target, the ERT recommends that Monaco include in the BR and CTF tables of its next submission the information related to its target under the Convention, as contained in document FCCC/SB/2011/INF.1/Rev.1 or further revisions to that document.

15. Monaco reported in its BR2 and CTF table 2(b) that all sectors, including the LULUCF sector, are covered by the target. However, the Party reported in CTF table 2(d) that the LULUCF sector is excluded from the target. During the review, Monaco clarified that the LULUCF sector is excluded from the target as communicated in document FCCC/SB/2011/INF.1/Rev.1 as well as in Monaco's further clarifications to its target. In order to improve the transparency of the description of the quantified economy-wide emission reduction target, the ERT recommends that Monaco clearly state in the appropriate CTF table of its next submission that the LULUCF sector is excluded from its target for 2020, as communicated in document FCCC/SB/2011/INF.1/Rev.1 or any updates to that document.

16. Furthermore, Monaco reported in CTF table 2(b) that the base year for NF₃ is 1995, but the Party informed the ERT during the review that the base year for this gas is in fact 2000. In order to improve transparency in the reporting of the target, the ERT recommends that Monaco indicate clearly in its next submission that the base year for NF₃ is 2000.

C. Progress made towards the achievement of the quantified economy-wide emission reduction target

17. This chapter provides information on the review of the reporting by Monaco on the progress made in reducing emissions in relation to the target, mitigation actions taken to achieve its target, and the use of units from market-based mechanisms and LULUCF.

1. Mitigation actions and their effects

18. In its BR2 and CTF table 3, Monaco reported on its progress in the achievement of its target and the mitigation actions implemented and planned since its NC6/BR1 to achieve its target. Monaco has provided information on mitigation actions introduced to achieve its target. The BR2 includes information on mitigation actions organized by sector (energy, industrial processes and product use, and waste) and by gas (CO₂, CH₄, N₂O, HFCs, PFCs, SF₆ and NF₃). The majority of the mitigation actions are in the energy sector, with emphasis on transportation and the use of renewable energy. The ERT noted, however, that the BR2 does not provide any textual description of mitigation actions or any references to the description of such actions beyond the information provided in CTF table 3 and table 3 of the BR2.

19. The ERT noted that Monaco reports impacts for some of its key policies and measures (PaMs) in CTF table 3; however, not all impacts of the reported mitigation

actions in CTF table 3 are quantified, and an explanation as to why quantification is missing for most impacts of PaMs is not provided. In response to a question raised by the ERT during the review about this matter, Monaco explained that it encounters difficulties in making an annual assessment of the impacts for various reasons, including cross-cutting effects of individual policies. The Party indicated that its commitment to achieving its 2030 target communicated in its intended nationally determined contribution should lead to more resources being allocated to reporting measures, including for estimating the reductions in GHG emissions in specific sectors and for specific PaMs. Further, Monaco informed the ERT that more accurate information on PaMs, and if possible on their impacts, should be available for its next submission.

20. The ERT notes that the impacts of some types of measures, such as national legislation and policies and cross-sectoral initiatives, are indeed difficult to quantify. The ERT also considers that in certain cases the method of reporting aggregated impact assessments for measures that are grouped around a common area, sector or subsector may be appropriate, provided that such an approach is duly justified. Nevertheless, the ERT considers that transparency is needed to avoid double counting of the impacts of some measures in different groups, as well as to avoid any omissions. Therefore, with a view to improving the completeness of Monaco's reporting and to enabling the Party to estimate the progress of its mitigation actions towards achieving its target, the ERT recommends that Monaco provide in its next submission estimates of the impacts of all individual mitigation actions or explain why it is unable to do so.

21. The BR2 and CTF table 3 do not include the information required by the UNFCCC reporting guidelines on BRs on the implementing entity or entities for its PaMs. During the review, Monaco informed the ERT that various departments from the Ministry of Public Works, Environment and Urban Development are involved in the implementation of PaMs. To enhance the completeness of its reporting, the ERT recommends that Monaco provide in its next submission information on the implementing entity or entities for its PaMs.

22. In its BR2, Monaco also does not provide information on changes in its domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress made towards its target. In response to a question raised by the ERT during the review, Monaco explained that there have been no changes in its domestic institutional arrangements since the BR1/NC6. To enhance the transparency of its reporting, the ERT recommends that Monaco provide in its next submission the required information on its domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress made towards its target, including a clear indication of whether or not any changes have occurred.

23. The BR2 does not include the information required by the UNFCCC reporting guidelines on BRs on the assessment of the economic and social consequences of response measures. In response to a question raised by the ERT during the review, Monaco informed the ERT that its response measures probably have no negative economic or social consequences. However, no assessment has been made in this regard. The ERT encourages Monaco to provide in its next submission, to the extent possible, detailed information on the assessment of the economic and social consequences of its response measures.

24. The BR2 also does not include the information required by the UNFCCC reporting guidelines on BRs on the domestic arrangements established for the process of self-assessment of compliance with emission reductions required by science, and on the progress made in the establishment of national rules for taking action against non-

compliance with emission reduction targets. The ERT encourages Monaco to provide this information in its next submission.

25. The key overarching cross-sectoral policy reported in the BR2 is Monaco’s Climate Energy Plan, which was implemented in 2013. The Climate Energy Plan sets the framework and direction for future climate policy and is aimed at putting Monaco on the path towards reaching its emission reduction target for 2020. However, the ERT noted that the impacts of this policy have not been quantified. Of the PaMs with quantified impacts provided in CTF table 3, the mitigation effect of the optimization of the amount of incinerated waste is the most significant. This mitigation action will contribute 12.00 kt CO₂ eq by 2020 of the total quantified emission reductions of 20.55 kt CO₂ eq from the implemented PaMs reported in the BR2. Other policies that will deliver significant emission reductions are development of urban heating and cooling systems in buildings, revision of the principality’s waste management plan and improvement of the principality’s waste-to-energy power plant.

26. The BR2 highlights the mitigation actions that are under development, such as Monaco’s Environmental Code, improvement of the principality’s waste-to-energy power plant, revision of the principality’s waste management plan and development of urban heating and cooling systems in buildings. Among the mitigation actions that provide a foundation for additional actions the Environmental Code is critical for Monaco to attain its 2020 emission reduction target.

27. Table 3 below provides a concise summary of the key mitigation actions and estimates of their mitigation effects reported by Monaco to achieve its target.

Table 3
Summary of information on mitigation actions and their impacts reported by Monaco

| <i>Sector affected</i> | <i>List of key mitigation actions</i> | <i>Estimate of mitigation impact by 2020 (kt CO₂ eq)</i> |
|--|--|---|
| Policy framework and cross-sectoral measures | Environmental Code | NE |
| | Climate and Energy Plan – European Energy Awards | NE |
| Energy, including: | | |
| Transport | Improvement in intercity travel through improvement of Monaco’s rail service | NE |
| | Promotion of the use of bicycles and electric bicycles | NE |
| | National aviation-related measures | NE |
| | Increase the number of electric and hybrid vehicles | NE |
| Renewable energy | Increase the share of local renewable energy in electricity consumption | NE |
| | Optimization of the amount of incinerated waste (waste to energy) | 12 |
| | Improvement of the waste-to-energy power plant | 1.5 |

| <i>Sector affected</i> | <i>List of key mitigation actions</i> | <i>Estimate of mitigation impact by 2020 (kt CO₂ eq)</i> |
|------------------------|---|---|
| Energy efficiency | Subsidy for installation of solar thermal systems | NE |
| | Development of urban heating and cooling systems in buildings | 4.31 |
| | Energy performance of buildings | 0.24 |
| IPPU | Reduction in emissions of fluorinated gases | NE |
| Waste | Revision of the waste management plan | 2.0 |
| | Ban single-use plastic bags | 0.5 |
| | Optimization of wastewater treatment | NE |

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

Abbreviations: IPPU = industrial processes and product use, NE = not estimated.

2. Estimates of emission reductions and removals and the use of units from the market-based mechanisms and land use, land-use change and forestry

28. Monaco reported in its CTF table 4 on its progress made towards the achievement of the quantified economy-wide emission reduction target.

29. For 2013, Monaco reported in CTF table 4 annual total GHG emissions excluding LULUCF of 90.20 kt CO₂ eq, or 17.7 per cent below the 1990 level. For 2012, in its 2014 annual inventory submission, version 3.1, Monaco reported total GHG emissions excluding LULUCF of 93.50 kt CO₂ eq, or 14.7 per cent below the 1990 level.

30. On its use of units from LULUCF activities, Monaco reported in CTF table 4 and in the description of its target that its target excludes emissions and removals from the LULUCF sector. Monaco reported that it does not plan but retains the option to use units from market-based mechanisms. It reported in CTF table 4 and in the description of its target (see para. 13 above) that thus far it had not used any units from market-based mechanisms towards the achievement of its 2020 target. Table 4 below illustrates Monaco's total GHG emissions, the contribution of LULUCF and the use of units from market-based mechanisms to achieve its target.

31. The ERT noted that Monaco erroneously reported in CTF table 4 a contribution from the LULUCF sector as well as the notation key "NO" (not occurring) for the contribution of units from market-based mechanisms under the Convention and from other market-based mechanisms. During the review and in a footnote to CTF table 4, Monaco clarified that the information relating to the contribution from the LULUCF sector was for information purposes and not to indicate that LULUCF contributes to Monaco's target, and that the notation key "NO" was an intention to explain that Monaco had as yet used neither market-based mechanisms under the Convention nor other market-based mechanisms in order to reach its targets. To enhance the transparency of its reporting, the ERT recommends that Monaco provide in its next submission correct information on the use of units from market-based mechanisms and LULUCF as part of the reporting on the progress made towards the achievement of its target.

Table 4
Summary of information on the use of units from market-based mechanisms and land use, land-use change and forestry as part of the reporting on the progress made by Monaco towards the achievement of its target

| <i>Year</i> | <i>Emissions excluding LULUCF (kt CO₂ eq)^a</i> | <i>Contribution from LULUCF (kt CO₂ eq)^b</i> | <i>Emissions including contribution from LULUCF (kt CO₂ eq)</i> | <i>Use of units from market-based mechanisms (kt CO₂ eq)^c</i> |
|-------------|--|--|--|---|
| 1990 | 109.6 | NA | NA | 0 |
| 2010 | 92.3 | NA | NA | 0 |
| 2011 | 89.8 | NA | NA | 0 |
| 2012 | 93.5 | NA | NA | 0 |

Sources: Monaco's second biennial report and common tabular format tables 1, 4, 4(a)I, 4(a)II and 4(b).

Abbreviations: LULUCF = land use, land-use change and forestry, NA = not applicable.

^a Greenhouse gas emission data: Monaco's 2014 annual inventory submission, version 3.1.

^b Monaco's target does not include emissions and removals from LULUCF.

^c Monaco reported that it retains the option to make use of market-based mechanisms to achieve its target.

32. To assess the progress towards the achievement of the 2020 target, the ERT noted that Monaco's emission reduction target under the Convention is 30 per cent below the 1990 level (see para. 13 above). As discussed in chapter II.B above, in 2012 Monaco's annual total GHG emissions excluding LULUCF were 14.7 per cent (93.50 kt CO₂ eq) below the base year level.

33. The ERT noted that Monaco is making progress towards its emission reduction target by implementing mitigation actions that are delivering some emission reductions. Despite this progress, the ERT noted that the Party will face challenges in achieving its target if additional PaMs are not implemented and/or if units from market-based mechanisms are not used.

3. Projections

34. Monaco reported in its BR2 and CTF table 6(a) updated projections for 2020 and 2030 relative to actual inventory data for 2013³ under the 'with measures' (WEM) scenario. Projections are presented on a sectoral basis, using the same sectoral categories as used in the section on mitigation actions. Projections are also provided in an aggregated format for each sector as well as for a Party total, using GWP values from the IPCC AR4. The ERT noted that Monaco provided only a small amount of information related to the preparation of its projections in addition to CTF tables 5 and 6(a).

35. The BR2 and CTF table 6(a) do not include the information required by the UNFCCC reporting guidelines on BRs on projections on a gas-by-gas basis. During the review, the Party clarified that calculation tools and reporting systems are being developed in order to calculate projections on a gas-by-gas basis. To enhance the completeness of its reporting, the ERT recommends that Monaco include in its next submission projections on a gas-by-gas basis.

³ In response to a question raised by the ERT during the review, Monaco explained that the data provided in its CTF table 6(a) are consistent with its 2015 annual inventory submission, which had not been submitted at the time of the review.

36. The BR2 and CTF table 6(a) do not include the information required by the UNFCCC reporting guidelines on BRs on emission projections related to fuel sold to ships and aircraft engaged in international transport. To enhance the completeness of its reporting, the ERT recommends that Monaco provide this information in its next submission.

37. Monaco provided information in the text of the BR2 and in CTF table 5 on the changes since the submission of its NC6/BR1 in the assumptions, methodologies, models and approaches used and on the key variables and assumptions used in the preparation of the projection scenarios (see paras. 39–43 below).

Overview of projection scenarios

38. The WEM scenario reported by Monaco includes implemented and adopted PaMs. Monaco did not report in its BR2 ‘with additional measures’ (WAM) or ‘without measures’ (WOM) scenarios. The ERT noted that Monaco reported a WOM scenario in its NC6. To improve the transparency of its projections, the ERT encourages Monaco to include in its next submission both WAM and WOM scenarios.

Methodology and changes since the previous submission

39. The methodology used in the BR2 is identical to that used for the preparation of the emission projections in Monaco’s 2014 annual inventory submission. During the review week, Monaco informed the ERT that the only change in methodology that had occurred since the NC6/BR1 was the use of the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*.

40. To prepare its projections, Monaco relied on population growth projections, which were reported in CTF table 5, as a key underlying assumption, as well as on activity data used to calculate emissions, based on surveys or direct measurement. For PaMs that have mitigation effects but are not directly quantifiable (e.g. mobility policies), projections were prepared by estimating activity data based on the actual emission trends and changes therein, and by estimating key factors that may affect the projected emission trend (e.g. population changes, changing vehicle fleet evolution in the principality). The projections have been updated on the basis of the most recent economic developments known at the time of the reporting on projections.

41. The ERT noted that Monaco did not report any information on factors and activities that are relevant to understanding its emission trends in the context of preparing its projections. To enhance the completeness of its reporting, the ERT recommends that Monaco include in its next submission information on factors and activities relevant to understanding its emission trends in each sector.

42. The ERT also noted that Monaco did not report on any key underlying assumptions other than population change that are relevant in the preparation of its projections. The ERT encourages Monaco to report in its next submission information on key underlying assumptions and values of variables such as GDP growth, tax levels and international fuel prices relevant in the preparation of its projections.

43. Sensitivity analyses were not reported for any of the underlying assumptions. The ERT encourages Monaco to report on a sensitivity analysis related to its projections in its next submission.

Results of projections

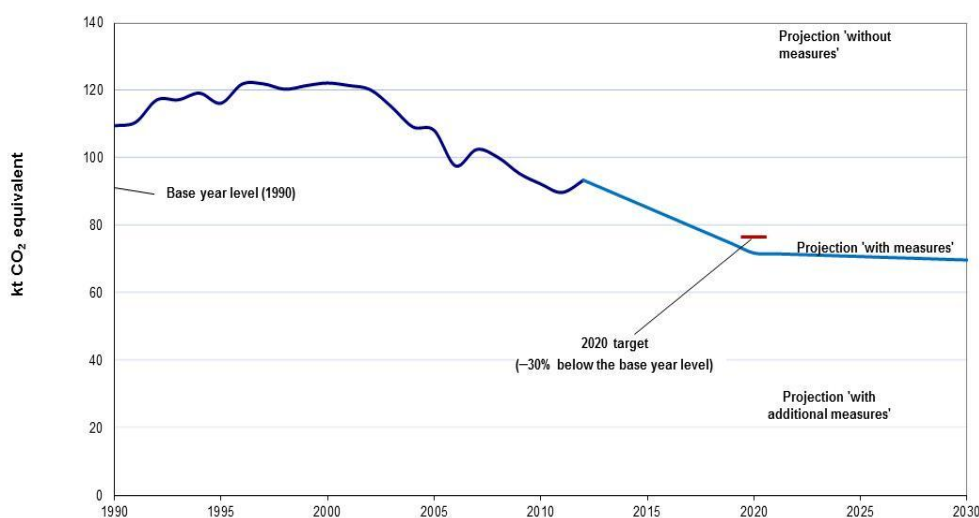
44. Monaco's total GHG emissions excluding LULUCF in 2020 and 2030 are projected to be 71.88 and 69.82 kt CO₂ eq, respectively, under the WEM scenario, which is a decrease of 34.4 and 36.3 per cent, respectively, below the 1990 level.

45. The 2020 projections suggest that Monaco can be expected to achieve its 2020 target under the Convention (see para. 13 above). However, the ERT noted that it had difficulties in understanding the preparation of Monaco's projections because of some missing information in Monaco's BR2 (see paras. 34–43 above).

46. According to the projections reported for 2020 under the WEM scenario, the most significant emission reductions are expected to occur in the energy and transport sectors, amounting to projected reductions of 62.00 kt CO₂ eq (63.5 per cent) and 8.85 kt CO₂ eq (26.8 per cent), respectively, between 1990 and 2020. The pattern of projected emissions reported for 2030 under the same scenario remains the same.

47. The projected emission levels under the different scenarios and Monaco's quantified economy-wide emission reduction target are presented in the figure below.

Greenhouse gas emission projections by Monaco



Sources: (1) Data for the years 1990–2012: Monaco's 2014 annual inventory submission, version 3.1; total greenhouse gas emissions excluding land use, land-use change and forestry; (2) Data for the years 2013–2030: Monaco's second biennial report; total greenhouse emissions excluding land use, land-use change and forestry.

D. Provision of financial, technological and capacity-building support to developing country Parties

48. Monaco is not a Party included in Annex II to the Convention and is therefore not obliged to adopt measures and fulfil obligations as defined in Article 4, paragraphs 3, 4 and 5, of the Convention. However, as reported in its BR2, Monaco provided information on its provision of support to developing country Parties. The ERT commends Monaco for reporting this information and suggests that it continue to do so in future BRs.

1. Finance

49. In its BR2 and CTF tables 7, 7(a) and 7(b), Monaco reported information on the provision of financial support required under the Convention, including on financial support provided, committed and pledged, allocation channels and annual contributions. The summary information was reported for 2013 and 2014.

50. Monaco reported on its climate-specific public financial support provided in 2013 and 2014, totalling EUR 75,000 in 2013 and EUR 152,000 in 2014. During the reporting period, Monaco placed a particular focus on Kiribati, Mongolia and Samoa, for which it allocated EUR 167,000.

51. The BR2 includes information on the financial support provided through multilateral channels and bilateral channels in 2013 and 2014. More specifically, Monaco contributed through multilateral channels, as reported in its BR2 and in CTF table 7(a), EUR 30,000 in each year, 2013 and 2014. The BR2 and CTF table 7(b) also include information on the total financial support provided through bilateral channels (EUR 34,000 and EUR 122,000 in 2013 and 2014, respectively).

52. The CTF tables provide information on the types of support provided. In terms of the focus of public financial support, as reported in CTF table 7 for 2013 and 2014, the shares of total public financial support allocated for adaptation projects corresponding to these channels were 100 per cent in both years.

2. Capacity-building

53. In its BR2 and CTF table 9, Monaco supplied information on a number of individual capacity-building measures and activities carried out during the reporting period.

54. Monaco reported that it supported climate-related capacity development activities relating to adaptation in small island developing states and in the Latin American and Caribbean region.

III. Conclusions

55. The ERT conducted a technical review of the information reported in the BR2 and CTF tables of Monaco in accordance with the UNFCCC reporting guidelines on BRs. The ERT concludes that the reported information is partially in adherence with the UNFCCC reporting guidelines on BRs and provides an overview on: emissions and removals related to the Party's quantified economy-wide emission reduction target; assumptions, conditions and methodologies related to the attainment of the target; and progress made by Monaco in achieving its target.

56. Monaco's total GHG emissions excluding LULUCF related to its quantified economy-wide emission reduction target were estimated to be 14.7 per cent below its 1990 level, and total GHG emissions including LULUCF were also 14.7 per cent below its 1990 level for 2012.⁴ The emission decrease was driven by emission reductions in the energy sector.

57. Under the Convention, Monaco committed itself to achieving a quantified economy-wide emission reduction target of 30 per cent below the 1990 level by 2020. This target covers the following GHGs: CO₂, CH₄, N₂O, HFCs, PFCs, SF₆ and NF₃, expressed using

⁴ As Monaco included information on historical emissions that is not consistent with the latest inventory submission, Monaco's 2014 annual inventory submission, version 3.1, has been used as the basis for this review report in order to reflect the most recent data submitted under the Convention.

GWP values from the IPCC AR4, and covers all sources and sectors included in the annual GHG inventory. Emissions and removals from the LULUCF sector are not included in the target and Monaco reported that it does not plan but retains the option to make use of market-based mechanisms to achieve its target. In absolute terms, this means that under the Convention, Monaco has to reduce emissions from 109.56 kt CO₂ eq (in the base year) to 76.69 kt CO₂ eq by 2020.

58. Monaco's main policy framework relating to energy and climate change is its Climate Energy Plan. Key legislation supporting Monaco's climate change goals includes its Environmental Code. The mitigation actions with the most significant mitigation impact are optimization of the amount of incinerated waste, development of urban heating and cooling systems in buildings, revision of the principality's waste management plan and improvement of the principality's waste-to-energy power plant.

59. For 2013, Monaco reported in CTF table 4 annual total GHG emissions excluding LULUCF at 90.20 kt CO₂ eq, or 17.7 per cent below the 1990 level. In its 2014 annual inventory submission, version 3.1, Monaco reported total GHG emissions excluding LULUCF of 93.50 kt CO₂ eq for 2012, or 14.7 per cent below the 1990 level. Monaco reported that its target excludes emissions and removals from the LULUCF sector and that it does not plan but retains the option to use units from market-based mechanisms.

60. The GHG emission projections provided by Monaco in its BR2 include those for the WEM scenario. Under this scenario, emissions are projected to be 34.4 per cent below the 1990 level in 2020. On the basis of the reported information, the ERT concluded that Monaco expects to meet its 2020 target, under the WEM scenario.

61. The ERT noted that Monaco is making progress towards its emission reduction target by implementing mitigation actions that deliver some emission reductions. On the basis of the results of the projections for 2020 under the WEM scenario, the ERT noted that Monaco may achieve its emission reduction target by 2020. Despite this progress, the ERT noted that the Party will face challenges in achieving its target if additional PaMs are not implemented and/or units from market-based mechanisms are not used.

62. In the course of the review, the ERT formulated the following recommendations for Monaco to improve its adherence to the UNFCCC reporting guidelines on BRs in its next BR:⁵

- (a) Improve the completeness of its reporting by:
 - (i) Providing information on its national inventory arrangements (see para. 7 above);
 - (ii) Estimating the impacts of individual PaMs (see para. 20 above);
 - (iii) Providing information on the implementing entity or entities for its PaMs (see para. 21 above);
 - (iv) Presenting projections on a gas-by-gas basis (see para. 35 above);
 - (v) Providing information on emission projections related to fuel sold to ships and aircraft engaged in international transport (see para. 36 above);
 - (vi) Providing information on factors and activities that are relevant to understanding its emission trends in the context of preparing its projections (see para. 41 above);
- (b) Improve the transparency of its reporting by:

⁵ The recommendations are given in full in the relevant chapters of this report.

- (i) Providing more detailed information related to its target under the Convention, as contained in document FCCC/SB/2011/INF.1/Rev.1 or further revisions to that document (see para. 14 above);
 - (ii) Providing transparent information on the role of the LULUCF sector in its 2020 target under the Convention (see para. 15 above);
 - (iii) Providing transparent information on the base year for NF_3 (see para. 16 above);
 - (iv) Providing more detailed information on its domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress made towards its target (see para. 22 above);
 - (v) Providing more detailed information on the use of units from market-based mechanisms and LULUCF as part of the reporting on the progress made towards the achievement of its target (see para. 31 above);
- (c) Improve the timeliness of its reporting by submitting its next BR on time (see para. 4 above).

Annex

Documents and information used during the review

A. Reference documents

“UNFCCC biennial reporting guidelines for developed country Parties”. Annex I to decision 2/CP.17. Available at
<<http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf#page=4>>.

“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 I to decision 24/CP.19. Available at
<<http://unfccc.int/resource/docs/2013/cop19/eng/10a03.pdf#page=2>>.

“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 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>>.

FCCC/ARR/2014/MCO. Report on the individual review of the annual submission of Monaco submitted in 2014. Available at
<<http://unfccc.int/resource/docs/2015/arr/mco.pdf>>.

FCCC/IDR.6/MCO. Report of the technical review of the sixth national communication of Monaco. Available at <<http://unfccc.int/resource/docs/2015/idr/mco06r01.pdf>>.

FCCC/TRR.1/MCO. Report of the technical review of the first biennial report of Monaco. Available at <<http://unfccc.int/resource/docs/2015/trr/mco01.pdf>>.

2014 greenhouse gas inventory submission of Monaco. Available at
<http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/8108.php>.

Sixth national communication of Monaco. Available at
<http://unfccc.int/files/national_reports/annex_i_natcom/submitted_natcom/application/pdf/mco_nc6_br1_french_revised.pdf>.

First biennial report of Monaco. Available at
<http://unfccc.int/files/national_reports/annex_i_natcom/submitted_natcom/application/pdf/mco_nc6_br1_french_revised.pdf>.

Common tabular format tables of the first biennial report of Monaco. Available at
<http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/mco_2014_v1.0.pdf>.

Second biennial report of Monaco. Available at
<http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/mco-br2-2016-v1.0.pdf>.

Common tabular format tables of the second biennial report of Monaco. Available at http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/mco_2016_v1.0_formatted.pdf.

B. Additional information used during the review

Responses to questions during the review were received from Mr. Jérémie Carles (Direction de l'Environnement).
