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Framework Convention on Climate Change

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Technical analysis of the first biennial update report of Morocco submitted on 7 May 2016

Summary report by the team of technical experts

Summary

According to decision 2/CP.17, paragraph 41(a), Parties not included in Annex I to the Convention (non-Annex I Parties), consistent with their capabilities and the level of support provided for reporting, were to submit their first biennial update report (BUR) by December 2014. The least developed country Parties and small island developing States may submit BURs at their discretion. Further, according to paragraph 58(a) of the same decision, the first round of international consultation and analysis (ICA) will be conducted for non-Annex I Parties commencing within six months of the submission of the Party's first BUR. The process of ICA consists of two steps: the technical analysis of the submitted BUR, followed by a workshop for the facilitative sharing of views under the Subsidiary Body for Implementation. This summary report presents the results of the technical analysis of the first BUR of Morocco conducted by a team of technical experts in accordance with the modalities and procedures contained in the annex to decision 20/CP.19.





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I. Introduction and process overview

A. Introduction

1. According to decision 2/CP.17, paragraph 41(a), Parties not included in Annex I to the Convention (non-Annex I Parties), consistent with their capabilities and the level of support provided for reporting, were to submit their first biennial update report (BUR) by December 2014. The least developed country Parties and small island developing States may submit BURs at their discretion. Further, according to paragraph 58(a) of the same decision, the first round of international consultation and analysis (ICA) will be conducted for non-Annex I Parties, commencing within six months of the submission of the Party's first BUR. The process of ICA consists of two steps: the technical analysis of the submitted BUR, resulting in a summary report for each BUR analysed, followed by a workshop for the facilitative sharing of views under the Subsidiary Body for Implementation.

2. This summary report presents the results of the technical analysis of the first BUR of Morocco undertaken by a team of technical experts (TTE) in accordance with the provisions on the composition, modalities and procedures of the TTE under ICA contained in the annex to decision 20/CP.19.

B. Process overview

3. Morocco submitted its first BUR on 7 May 2016, in conjunction with its third national communication (NC3). Morocco did not provide an explanation for the delay of its submission.

4. The technical analysis of the BUR took place from 19 to 23 September 2016 in Bonn, Germany, and was undertaken by the following TTE, drawn from the UNFCCC roster of experts on the basis of the criteria defined in decision 20/CP.19, annex, paragraphs 2–6: Mr. Pierre Brender (France), Ms. Madeleine Diouf Sarr (former member of the Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention (CGE) from Senegal), Ms. Patricia Grobben (CGE member from Belgium), Mr. Agustín José Inthamoussu (Uruguay), Mr. Kakhaberi Mdivani (Georgia), Ms. Emily Ojoo-Massawa (former CGE member from Kenya) and Ms. Jeonghyun Emily Park (Republic of Korea). Ms. Grobben and Ms. Ojoo-Massawa were the co-leads. The technical analysis was coordinated by Ms. Verónica Colerio, Ms. Karen Ortega and Ms. Xuehong Wang (secretariat).

5. During the technical analysis, in addition to the written exchange, through the secretariat, to provide technical clarifications on the information reported in the BUR the TTE and Morocco engaged in consultation via e-mail on the identification of capacitybuilding needs for the preparation of BURs and participation in the ICA process. Following the technical analysis of the BUR, the TTE prepared and shared a draft summary report with Morocco on 15 December 2016 for its review and comment. Morocco, in turn, provided its feedback on the draft summary report on 7 February 2017.

6. The TTE responded to and incorporated the Party's comments referred to in paragraph 5 above and finalized the summary report in consultation with Morocco on 2 March 2017.

II. Technical analysis of the information reported in the biennial update report

A. Scope of the technical analysis

7. The scope of the technical analysis is outlined in decision 20/CP.19, annex, paragraph 15, according to which the technical analysis aims to, without engaging in a discussion on the appropriateness of the actions, increase the transparency of mitigation actions and their effects, and shall entail the following:

(a) The identification of the extent to which the elements of information listed in paragraph 3(a) of the ICA modalities and guidelines (decision 2/CP.17, annex IV) have been included in the BUR of the Party concerned (see chapter II.B below);

(b) A technical analysis of the information reported in the BUR, specified in the "UNFCCC biennial update reporting guidelines for Parties not included in Annex I to the Convention" (hereinafter referred to as the UNFCCC reporting guidelines on BURs) contained in annex III to decision 2/CP.17, and any additional technical information provided by the Party concerned (see chapter II.C below);

(c) The identification, in consultation with the Party concerned, of capacitybuilding needs related to the facilitation of reporting in accordance with the UNFCCC reporting guidelines on BURs and to participation in ICA in accordance with the ICA modalities and guidelines, taking into account Article 4, paragraph 3, of the Convention (see chapter II.D below).

8. The remainder of this chapter presents the results of each of the three parts of the technical analysis of Morocco's BUR outlined in paragraph 7 above.

B. Overview of the elements of information reported

9. The elements of information referred to in paragraph 7(a) above include: the national greenhouse gas (GHG) inventory report; information on mitigation actions, including a description of such actions, an analysis of their impacts and the associated methodologies and assumptions, and the progress made in their implementation; information on domestic measurement, reporting and verification (MRV); and information on support received.

10. Further, according to decision 20/CP.19, annex, paragraph 15(a), in undertaking the technical analysis of the submitted BUR, the TTE is to identify the extent to which the elements of information listed in paragraph 9 above have been included in the BUR of the Party concerned. The results of that analysis are presented in tables 1, 2 and 3 below.

11. Morocco submitted its first BUR in conjunction with its NC3. During the technical analysis the Party informed the TTE that the information reported in the BUR is a summary of the relevant chapters of the NC3 and that the NC3 provides additional information that may clarify the information provided in the BUR. Morocco therefore invited the TTE to analyse the additional information provided in the NC3.

1. National greenhouse gas inventory

12. The parts of the UNFCCC reporting guidelines on BURs on reporting information on GHG emissions by sources and removals by sinks in BURs are contained in decision 2/CP.17, paragraph 41(g), and paragraphs 3–10 of the UNFCCC reporting guidelines on BURs. Further, as per paragraph 3 of those guidelines, non-Annex I Parties are to submit

updates of their national GHG inventories in accordance with paragraphs 8–24 of the "Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention" contained in the annex to decision 17/CP.8. The scope of such updates should be consistent with the non-Annex I Party's capacity and time constraints and the availability of its data, as well as the level of support provided by developed country Parties for biennial update reporting.

13. Table 1 presents the results of the identification of the extent to which the elements of information on GHGs are included in the first BUR of Morocco in accordance with the relevant parts of the UNFCCC reporting guidelines on BURs.

Table	1
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Identification of the extent to which the elements of information on greenhouse gases
are included in the first biennial update report of Morocco

Decision	Provision of the reporting guidelines	Yes/ Partly/No/NA	Comments on the extent of the information provided
Decision 2/CP.17, paragraph 41(g)	The first BUR shall cover, at a minimum, the inventory for the calendar year no more than four years prior to the date of the submission, or more recent years if information is available	Yes	The BUR includes information on the inventory up to the year 2012
Decision 2/CP.17, annex III, paragraph 4	Non-Annex I Parties should use the methodologies established by the latest UNFCCC guidelines for the preparation of national communications from non-Annex I Parties approved by the COP or those determined by any future decision of the COP on this matter	Yes	Morocco used the Revised 1996 IPCC Guidelines
Decision 2/CP.17, annex III, paragraph 5	The updates of the sections on the national inventories of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol should contain updated data on activity levels based on the best information available using the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF; any change to the emission factor may be made in the subsequent full national communication	No	The BUR does not contain information on activity levels
Decision 2/CP.17, annex III, paragraph 9	The inventory section of the BUR should consist of a national inventory report as a summary or as an update of the information contained in decision 17/CP.8, annex, chapter III (National greenhouse gas inventories), including:		
	(a) Table 1 (National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors)	Partly	The emissions of GHG precursors are not presented with a disaggregation by sector in the BUR. Memo items are not presented in the summary tables in the BUR (see para. 29 below)

Decision	Provision of the reporting guidelines	Yes/ Partly/No/NA	Comments on the extent of the information provided	
	(b) Table 2 (National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF ₆)	No	During the technical analysis, Morocco explained that these emissions were not taken into account in its NC3, but that they will be taken into account in future inventory submissions	
Decision 2/CP.17, annex III, paragraph 6	Non-Annex I Parties are encouraged to include, as appropriate and to the extent that capacities permit, in the inventory section of the BUR:			
	(a) Tables included in annex 3A.2 to chapter 3 of the IPCC good practice guidance for LULUCF	No	See paragraph 34 below	
	(b) The sectoral report tables annexed to the Revised 1996 IPCC Guidelines	No	See paragraph 34 below	
Decision 2/CP.17, annex III, paragraph 7	Each non-Annex I Party is encouraged to provide a consistent time series back to the years reported in the previous national communications	Yes		
Decision 2/CP.17, annex III, paragraph 8	Non-Annex I Parties that have previously reported on their national GHG inventories contained in their national communications are encouraged to submit summary information tables of inventories for previous submission years (e.g. for 1994 and 2000)	Yes	Results are presented in total kt CO_2 eq for all sectors, without disaggregation by gas, in table 16 of the BUR	
Decision 2/CP.17, annex III, paragraph 10	Additional or supporting information, including sector-specific information, may be supplied in a technical annex	NA	During the technical analysis, Morocco shared with the TTE the inventory report used in the development of its NC3, which provides sector-specific information	
Decision 17/CP.8, annex, paragraph 13	Non-Annex I Parties are encouraged to describe procedures and arrangements undertaken to collect and archive data for the preparation of national GHG inventories, as well as efforts to make this a continuous process, including information on the role of the institutions involved	Yes	Morocco explained that it had tried to establish a national inventory system previously and that it is again establishing a national inventory system in order to make the preparation of national GHG inventories a continuous process	
Decision 17/CP.8, annex, paragraph 14	Each non-Annex I Party shall, as appropriate and to the extent possible, provide in its national inventory, on a gas-by-gas basis and in units of mass, estimates of anthropogenic emissions of the following gases by sources			

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e technical Aorocco that these were not taken nt in its NC3, ey will be account in entory ns
presented this n in a section in the) and that these were not n the national
ions were
aph 37 below

Decision	Provision of the reporting guidelines	Yes/ Partly/No/NA	Comments on the extent of the information provided
	not controlled by the Montreal Protocol, including a brief explanation of the sources of emission factors and activity data. If non- Annex I Parties estimate anthropogenic emissions and removals from country- specific sources and/or sinks that are not part of the Revised 1996 IPCC Guidelines, they should explicitly describe the source and/or sink categories, methodologies, emission factors and activity data used in their estimation of emissions, as appropriate. Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building:		
	(a) Information on methodologies used in the estimation of anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol	Partly	The BUR mentions that tier 1 methods were used "in most cases", without providing details on the methods used (see para. 32 below)
	(b) Explanation of the sources of emission factors	Yes	Tier 1 methods were used for all sectors (see para. 32 below)
	(c) Explanation of the sources of activity data	Partly	The Party mentions only that the tier 1 method used can be applied to easily available national and international statistics, but the source were not cited individually (see paras. 32 and 33 below)
	(d) If non-Annex I Parties estimate anthropogenic emissions and removals from country-specific sources and/or sinks that are not part of the Revised 1996 IPCC Guidelines, they should explicitly describe:	NA	Morocco did not mentio any source or sink that i not part of the Revised 1996 IPCC Guidelines
	(i) Source and/or sink categories		
	(ii) Methodologies		
	(iii) Emission factors		
	(iv) Activity data		
	(e) Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building	No	Morocco included information on support i has been receiving for capacity-building activities, without elaborating on the data that would be further improved through

that would be further improved through additional capacitybuilding. During the technical analysis,

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Decision	Provision of the reporting guidelines	Yes/ Partly/No/NA	Comments on the extent of the information provided	
			Morocco clarified that capacity-building must focus on the production and transmission of data, particularly in the non- cement industrial sector (e.g. by conducting sectoral surveys and increasing the involvement of industrial federations, etc.)	
Decision 17/CP.8, annex, paragraph 22	Each non-Annex I Party is encouraged to use tables 1 and 2 of the guidelines annexed to decision 17/CP.8 in reporting its national GHG inventory, taking into account the provisions established in paragraphs 14 to 17 of the same decision. In preparing those tables, Parties should strive to present information which is as complete as possible. Where numerical data are not provided, Parties should use the notation keys as indicated	·	Morocco did not include all the rows of table 1 (e.g. among sources in the industrial processes and product use sector). It is unclear for the missing rows whether the emissions were not estimated or not occurring (see para. 29 below)	
Decision 7/CP.8, annex, paragraph 24	Non-Annex I Parties are encouraged to provide information on the level of uncertainty associated with inventory data and their underlying assumptions, and to describe the methodologies used, if any, for estimating these uncertainties:			
	(a) Level of uncertainty associated with inventory data	No	See paragraph 36 below	
	(b) Underlying assumptions	No	See paragraph 36 below	
	(c) Methodologies used, if any, for estimating these uncertainties	No	See paragraph 36 below	

Abbreviations: BUR = biennial update report, COP = Conference of the Parties, GHG = greenhouse gas, GWP = global warming potential, IPCC = Intergovernmental Panel on Climate Change, IPCC good practice guidance = *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, IPCC good practice guidance for LULUCF = *Good Practice Guidance for Land Use, Land-Use Change and Forestry*, NA = not applicable, NC3 = third national communication, NMVOC = non-methane volatile organic compound, Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, TTE = team of technical experts.

2. Mitigation actions and their effects

14. The parts of the UNFCCC reporting guidelines on BURs on the reporting of information on mitigation actions in BURs are contained in decision 2/CP.17, annex III, paragraphs 11–13.

15. Morocco reported on mitigation actions in its first BUR. The main body of the report lists all the mitigation actions, while annex 1 of the report provides the elements of information on each individual mitigation action in tabular format. Morocco's BUR also includes a detailed description, in tabular format, of actions related to nationally appropriate mitigation actions (NAMAs). Finally, Morocco describes in its BUR two nation-wide

mitigation programmes, one related to energy-efficient housing and the other to the agriculture sector (fisheries).

16. Table 2 presents the results of the identification of the extent to which the elements of information on mitigation actions are included in the first BUR of Morocco in accordance with the relevant parts of the UNFCCC reporting guidelines on BURs.

Table 2

Identification of the extent to which the elements of information on mitigation actions are included in the first biennial update report of Morocco

Decision	Provi	sion of t	he reporting guidelines	Yes/ Partly/No	Comments on the extent of the information provided
Decision 2/CP.17, annex III, paragraph 11	informitig mitig anth remo	rmatior gate cli ropoge ovals b	x I Parties should provide n, in a tabular format, on actions to mate change, by addressing nic emissions by sources and y sinks of all greenhouse gases not by the Montreal Protocol	Yes	
Decision 2/CP.17, annex III, paragraph 12	mitig those FCC cour	gation a e listed C/AW atry Par	itigation action or groups of actions including, as appropriate, in document GLCA/2011/INF.1, developing rties shall provide the following to the extent possible:		
	the a	n, incluction, o	e and description of the mitigation uding information on the nature of coverage (i.e. sectors and gases), e goals and progress indicators	Yes	
	(b)	Inform (i)	mation on: Methodologies	Partly	A general description has been provided for energy-related mitigation actions; however, no information is provided for actions in non-energy sectors (see para. 45 below). For nationally appropriate mitigation actions (NAMAs), scenarios were used for the projections but the Party did not specify the models or methodologies used to develop these scenarios (see para. 47 below)
	(c)	(i)	Assumptions mation on: Objectives of the action	Yes Yes Yes	
		(ii) achie	Steps taken or envisaged to eve that action	105	
	(d)	Inform (i)	mation on: Progress of implementation of the	Yes	

Decision	Provision of the reporting guidelines	Yes/ Partly/No	Comments on the extent of the information provided
	mitigation actions (ii) Progress of implementation of the underlying steps taken or envisaged	Yes	
	 (iii) Results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions, to the extent possible 	Yes	The information was presented for the actions under implementation
	(e) Information on international market mechanisms	Yes	See paragraph 54 below
Decision 2/CP.17, annex III, paragraph 13	Parties should provide information on the description of domestic measurement, reporting and verification arrangements	Partly	The biennial update report contains a section on measurement, reporting and verification (MRV). It provides detailed information on the proposed MRV system for each of the five NAMAs. However, there is no discussion of the overall MRV system for the other mitigation actions and programmes and on which steps the country intends to take to set up such a system (see paras. 55 and 56 below)

3. Finance, technology and capacity-building needs and support received

17. The parts of the UNFCCC reporting guidelines on BURs on the reporting of information on finance, technology and capacity-building needs and support received in BURs are contained in decision 2/CP.17, annex III, paragraphs 14–16.

18. Table 3 presents the results of the identification of the extent to which the elements of information on finance, technology and capacity-building needs and support received are included in the BUR of Morocco in accordance with the relevant parts of the UNFCCC reporting guidelines on BURs.

Table 3

Identification of the extent to which the elements of information on finance, technology and capacity-building needs and support received are included in the first biennial update report of Morocco

Decision	Provision of the reporting requirements	Yes/ Partly/No	Comments on the extent of the information provided
Decision 2/CP.17, annex III, paragraph 14	Non-Annex I Parties should provide updated information on constraints and gaps, and related financial, technical and capacity- building needs:		
	(a) Constraints and gaps	No	See paragraph 58 below

Decision	Provision of the reporting requirements	Yes/ Partly/No	Comments on the extent of the information provided	
	(b) Related financial, technical and capacity-building needs	Partly	No information on technical needs was provided in the biennial update report (BUR) (see para. 59 below)	
Decision 2/CP.17, annex III, paragraph 15	Non-Annex I Parties should provide updated information on financial resources, technology transfer, capacity-building and technical support received from the Global Environment Facility, Annex II Parties and other developed country Parties, the Green Climate Fund and multilateral institutions for activities relating to climate change, including for the preparation of the current biennial update report	Partly	No information on technology transfer, capacity-building and technical support received was provided in the BUR (see para. 60 below)	
Decision 2/CP.17, annex III, paragraph 16	With regard to the development and transfer of technology, non-Annex I Parties should provide information on:			
	(a) Technology needs, which must be nationally determined	No		
	(b) Technology support received	No		

C. Technical analysis of the information reported

19. The technical analysis referred to in paragraph 7(b) above aims to increase the transparency of mitigation actions and their effects, without engaging in discussion on the appropriateness of those actions. Accordingly, the technical analysis focused on the transparency of the information reported in the BUR.

20. For information reported on national GHG inventories, the technical analysis also focused on the consistency of the methods used for preparing those inventories with the appropriate methods developed by the Intergovernmental Panel on Climate Change (IPCC) and referred to in the UNFCCC reporting guidelines on BURs.

21. The results of the technical analysis are presented in the remainder of this chapter.

1. Information on national circumstances and institutional arrangements relevant to the preparation of national communications on a continuous basis

22. As per the scope defined in paragraph 2 of the UNFCCC reporting guidelines on BURs, the BUR should provide an update to the information contained in the most recently submitted national communication, including, among other things, information on national circumstances and institutional arrangements relevant to the preparation of national communications on a continuous basis. For their national communications, non-Annex I Parties report on their national circumstances following the reporting guidance contained in decision 17/CP.8, annex, paragraphs 3–5.

23. In accordance with decision 17/CP.8, annex, paragraph 3, Morocco, in its BUR, reported the following information on its national circumstances:

(a) Morocco's **territory** extends over $710,850 \text{ km}^2$ with a relief from sea level to more than 2,000 m. The country has diverse climatic zones ranging from temperate to

desert and tropical. Administratively, the country is organized in 12 regions and the country promotes a decentralization policy;

(b) The 2014 census counted a **population** of nearly 34 million people. The average population growth rate between 2004 and 2014 was 1.25 per cent. More than 60 per cent of the population lives in urban areas and this is expected to increase in the future;

(c) Morocco's **economy** grew by 4.3 per cent over the period 2008–2013. The tertiary sector contributed 54.9 per cent in the gross domestic product (GDP), whereas the secondary and primary sectors contributed 29.6 and 15.5 per cent, respectively. The tertiary and secondary sectors account for 87 per cent of employment;

(d) Morocco is highly dependent on fuel imports: 94.6 per cent of its primary **energy** needs are met by imported fuels. Primary energy demand is increasing by 5.3 per cent on average per year, including a 6.6 per cent increase per year since 2002 for electricity demand. Installed capacity in 2014 was 7,592 megawatts (MW) and is expected to reach 20,192 MW in 2025. All urban areas are connected to the grid and rural grid connection rate is 98 per cent.

24. As encouraged in decision 17/CP.8, annex, paragraph 4, Morocco provided maps showing the different geographical and climate zones in its territory, as well as a map showing the administrative regions.

25. Morocco transparently described in its BUR the institutional arrangements relevant to the preparation of its NC3 and first BUR. The description covers key aspects of the institutional arrangements, such as: roles, responsibilities and composition of the overall coordinating entity; and involvement and roles of other institutions and experts. Morocco's institutional arrangements with respect to climate governance favour participation and action by all relevant actors and stakeholders, and allow for evaluation and implementation of international agreements. The Ministry of Energy, Mines, Water and Environment is in charge of the coordination of climate governance. The information provided does not demonstrate that these arrangements have a permanent character so as to ensure reporting on a continuous basis; for example, the arrangements in place for developing the NC3 have not led so far to the development of an MRV system for mitigation projects. During the technical analysis, Morocco stated that an MRV system would certainly be one of the objectives of the fourth national communication (NC4). The Party also clarified that it has set up a system that allows the development of the national GHG inventory on a continuous basis (see para. 28 below).

2. National greenhouse gas emissions by sources and removals by sinks

26. As indicated in table 1 above, Morocco reported information on its GHG inventory in its BUR, partially in accordance with paragraphs 3–10 of the UNFCCC reporting guidelines on BURs and paragraphs 8–24 of the "Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention" contained in the annex to decision 17/CP.8.

27. Morocco reported in its BUR information on its national GHG inventories using the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the Revised 1996 IPCC Guidelines) and the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*.

28. The national GHG inventories for the first and second national communications of Morocco were prepared by independent entities, hence the data used are not traceable (see para. 31 below), and internal capacity of the Party was not built. Morocco is working on new institutional arrangements for GHG inventories, which include: a national committee for GHG inventories presided over by the Ministry of Energy, Mines, Water and

Environment that will validate the methodologies used for the preparation of inventories as well as the results; a GHG inventory unit within the Ministry of Energy, Mines, Water and Environment that will coordinate work on the inventories; and sectoral units for data collection and calculation of emission estimates from the energy, agriculture and forestry sectors.

29. Morocco provided in its BUR tables the national emissions of carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) (table 2) and GHG precursors (table 3) by sector for 2012 and also included an updated key category analysis (table 14) identifying significant emissions sources in 2012. However, the TTE noted that table 2 of the BUR does not correspond to the reporting format of table 1 contained in the annex to decision 17/CP.8. For example, some sources, such as "solvent and other product use" were not included in table 2 of the BUR and, rather than using notation keys, the Party had omitted the corresponding rows. In addition, the memo items (international bunkers, CO_2 emissions from biomass) and GHG precursors were not reported in table 2 of the BUR and were presented in the text (section 2.D) and in a separate table (table 3), but with less detail than that required by table 1 contained in the annex to decision 17/CP.8. During the technical analysis, Morocco provided a completed table 1, as contained in the annex to decision 17/CP.8. The TTE considers that the transparency of reporting in the BUR would be enhanced by following the format of table 1 contained in the annex to decision 17/CP.8and by using notation keys where appropriate.

30. The total net emissions for 2012, reported by Morocco in its BUR, are 100,547.4 kt carbon dioxide equivalent (CO₂ eq) including land use, land-use change and forestry (LULUCF), which represents a twofold increase in emissions since 1994 (47,937.0 kt CO₂ eq). The net GHG emissions reported in 2012 include 66,538.7 kt CO₂, 783.4 kt CH₄ and 56.6 kt N₂O.

31. Morocco also provided time series of sectoral emissions (table 16 of the BUR) covering the years 1994, 2000, 2004, 2005, 2006, 2008, 2010 and 2012 and corresponding average annual growth rates (table 17 of the BUR). Morocco mentioned in the BUR that the data used to elaborate the inventories in its first and second national communications could not be archived, as both communications were developed by independent entities. During the technical analysis, Morocco further clarified that the emissions and sinks for the years 1994, 2000 and 2004 reported in table 16 of the BUR are derived from the results presented in Morocco's first and second national communications, after adjustment of the global warming potential in order to obtain the order of magnitude of the trends in emissions and removals for all years. However, the TTE was unable to assess the comparability of the methodologies used in previous national communications and in the NC3.

32. In its BUR, Morocco mentioned that the tier 1 approach from the Revised 1996 IPCC Guidelines was applied "in most cases" for estimating emissions, without providing any details on the methodologies used. During the technical analysis, Morocco clarified that the tier 1 approach was applied in all cases, and shared with the TTE an inventory report that included further explanations of the methodology and emission factors used, including details on sources for which physical activity data had to be derived from activity data expressed in monetary terms only (e.g. for lime production). The TTE notes that publishing such additional information regarding the methodologies used in the BUR or as a technical annex would further improve the transparency of the reporting.

33. Activity data from which the emissions were estimated were also not reported within the BUR, but the inventory report shared by Morocco during the technical analysis (see para. 32 above) includes such information (i.e. energy consumption by sector, industrial productions, livestock herds, and so on). The TTE notes that including such information in the BUR or as a technical annex would further improve the transparency of the reporting.

34. The BUR includes sections dedicated to each sector, and these include summary descriptions of the main sources by sectors; however, the TTE noted that the BUR does not include the report tables annexed to the Revised 1996 IPCC Guidelines and the table included in annex 3A.2 to chapter 3 of the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry* (hereinafter referred to as the IPCC good practice guidance for LULUCF). The TTE notes that the transparency of the reporting could be further enhanced by the provision of such information.

35. Many tables of emissions by gas in the BUR (tables 6, 8, 10 and 12) are not consistent with information reported elsewhere in the BUR. During the technical analysis, Morocco clarified that the errors of reporting in those tables occurred during the finalization of the layout of the document. The corrected versions of those tables were shared by Morocco with the TTE and are consistent with other reported information in the BUR. The TTE notes that the accuracy of the report could be enhanced through the reinforcement of the quality assurance/quality control procedures applied to check the consistency of the reported information during the last stage before publication of the report.

36. The TTE noted that the BUR does not include an uncertainty analysis of the GHG inventory. During the technical analysis, Morocco explained that the uncertainty analysis is part of the national inventory report prepared as an interim report for the NC3. The TTE notes that including information on the analysis of uncertainties that was performed, including underlying assumptions, as encouraged by the UNFCCC reporting guidelines on BURs, would further improve the transparency of the reporting.

37. In 2012, the energy sector was the most significant source of emissions, with a share of 56.5 per cent of the total net emissions including LULUCF. This is the highest share of the energy sector over the years reported (since 1994) although its share has always been above 50 per cent. This analysis is based on figures estimated using the sectoral approach. For 2012, the emissions estimated using this approach were 6.5 per cent higher than the emissions estimated using the reference approach. According to the BUR, this difference can be explained by differences in: the energy content of the energy used, the emission factors used and the quantity of fuel entering the energy balance. During the technical analysis, Morocco shared with the TTE the inventory report used in the development of its NC3, which further clarified that the discrepancy between the two approaches for 2012 is to be attributed to uncertainties in the sectoral data.

38. In the **industrial processes** sector, which has a share of 9.9 per cent in the total emissions in 2012, cement production represented nearly all GHG emissions in 1994 and continued to be the subsector with the highest contribution, with a share of almost 80 per cent of the emissions in the industrial processes sector in 2012.

39. Emissions related to **solvent use** were not included in the BUR (see para. 29 above). During the technical analysis, Morocco explained that it would need capacity-building support to estimate emissions from solvent use in its inventories.

40. The **waste** sector, which in 2012 represented 7.9 per cent of the total emissions, includes emissions from solid waste disposal: these emissions represent 82.8 per cent of emissions in the sector. The TTE noted that emissions of several subsectors were not included in the BUR (industrial wastewater treatment, sludge treatment and incineration of waste). During the technical analysis, Morocco explained that it would need capacity-building support to estimate emissions from those subsectors in its inventories.

41. The **agriculture** sector represented 21.3 per cent of the total emissions of Morocco in 2012. Emissions from the agriculture sector accounted for the largest share of N_2O emissions (92.6 per cent of total N_2O emissions in 2012) and the second largest share of CH_4 emissions (32.6 per cent of total CH_4 emissions in 2012). Emissions were reported for enteric fermentation, manure management and rice cultivation in 2012, amounting to 23.6,

17.0 and 0.2 per cent of total agriculture emissions, respectively. Agricultural soils accounted for 59.1 per cent of agriculture emissions. Morocco reported that savannah burning is not practised in Morocco and that statistics are not available for the burning of agricultural residues. Information on the sources of emission factors and activity data used to estimate manure management emissions has not been included in the BUR. The TTE noted that transparency would be enhanced by reporting this information in the BUR.

42. The **LULUCF** sector represented 4.4 per cent of the total emissions of Morocco in 2012. Emissions from forest burning, arboricultural burning and the clearing of forests are estimated in an aggregated manner, but activity data are not provided in the BUR. Disaggregated data on removals of CO_2 from natural forest, arboriculture and reforestation are provided, without further information on activity data. For the conversion of forest and grasslands, CO_2 and N_2O emissions are reported in an aggregated format, but no information is provided on the methodologies used. Removals and emissions from abandoned lands and other managed lands are reported as having no impact on the net emissions. The TTE noted that the transparency of the reported information within the BUR would be further enhanced by providing in the BUR information on methodologies and activity data used for the LULUCF sector.

3. Mitigation actions and their effects, including associated methodologies and assumptions

43. As indicated in table 2 above, Morocco reported in its BUR information on mitigation actions and their effects, to the extent possible, mostly in accordance with paragraphs 11–13 of the UNFCCC reporting guidelines on BURs, information on mitigation actions and their effects, to the extent possible.

44. Morocco submitted its BUR in conjunction with its NC3. The mitigation actions reported in the BUR are also included in the NC3 but their time horizon was adapted to 2030 for reporting in the BUR, because the time horizon used in the NC3 is 2040. The NC3 contains more detailed information on the projected evolution of relevant parameters such as the evolution of urban and rural populations and the average annual growth of GDP until 2040. Morocco has developed a National Strategy for Sustainable Development that sets the broad orientation and the strategic framework for sectoral policies. Morocco also developed a green investment plan ("Plan d'Investissment Vert") aimed at engaging the private sector in the fight against climate change. The plan covers seven sectors in which projects are identified that can mobilize international and private finance.

45. The energy sector was responsible for 56.5 per cent of Morocco's emissions in 2012 and this is expected to increase to 58.4 per cent in 2030. The reduction potential of the group of energy-related mitigation actions is estimated using the Long-range Energy Alternatives Planning system (LEAP) and amounts to an accumulated 49,940 kt CO_2 eq annually by 2030. The GHG reduction potential of mitigation actions in the non-energy sectors, as reported in the BUR, amounts to an accumulated 19,460 kt CO_2 eq annually by 2030. Morocco does not specify in its BUR to which year these emission reduction potentials refer; however, during the technical analysis Morocco clarified that it refers to the sum of annual averages for each project from the date it starts until 2030. Morocco does not specify which methodology was used to estimate the GHG reduction effect of the nonenergy-related emissions in its BUR; however, during the technical analysis Morocco clarified that the LEAP model was also used for non-energy sectors. The TTE considers that the transparency of the information reported could be enhanced by clearly indicating to which year the estimated emission reductions refer and by providing details on the methodology used to estimate the GHG reduction effect of mitigation actions in the nonenergy sectors.

46. Morocco also formulated five priority **NAMAs**, of which three relate to the energy sector (solar pumps, solar photovoltaic (PV) systems, energy efficiency and renewable energy production in residential buildings ("NAMA habitat")), one is in the waste sector and the other is in the agriculture sector. Morocco considers these NAMAs as an alternative way to realize part of the reduction potential in the sectors concerned. However, it is not clear in the BUR how the implementation of these NAMAs will, in practice, relate to the mitigation actions reported in tables 18 and 19 of the BUR (see paras. 50–53 below). During the technical analysis, Morocco clarified that some mitigation measures included in tables 18 and 19 of the BUR were combined to form a NAMA. NAMA habitat, for instance, includes the measures related to energy efficiency in residential buildings, energy-efficient lighting, solar water heaters and so on. The TTE is of the view that the transparency of the report could be enhanced by including this information in the BUR.

47. For assessing the GHG reduction effect of the NAMAs, Morocco made use of GHG projections under two scenarios: a "business as usual" scenario, which is based on current practices and policies; and a "policy" scenario, which includes the policies and measures envisaged under the NAMAs. However, Morocco did not specify which methodology was used for the calculation of these projections and whether it applied the same assumptions in these scenarios as those applied for the scenarios used for estimating the impacts of the mitigation actions described below. During the technical analysis, Morocco clarified which models were used to make these projections (e.g. for the NAMA in agriculture it used the EX-ACT software from the Food and Agriculture Organization of the United Nations). The TTE considers that the transparency of the BUR could be improved by including this information in the description of the NAMAs.

48. As well as the mitigation actions included in tables 18 and 19 of the BUR and the five NAMAs, Morocco describes two additional mitigation programmes, the first related to energy efficiency in buildings and the second related to the green development of the agriculture sector. For both programmes, GHG reduction effects have been estimated using specific models; however, the TTE noted that the relationship between these two measures and the measures presented in tables 18 and 19 of the BUR was not clear. During the technical analysis, Morocco clarified that this section was meant to provide additional information to relevant actions included in tables 18 and 19 of the BUR, hence the two additional mitigation programmes are subsets of the overall mitigation actions presented in tables 18 and 19. The TTE considers that the transparency of the reported information could be enhanced by indicating how these two actions relate to the relevant measures included in tables 18 and 19 of the BUR.

49. Morocco prioritizes those mitigation actions that reduce GHG emissions while also contributing to addressing its economic and social development challenges. Mitigation actions in both the energy and the non-energy sectors have such a focus. In the description of its mitigation actions, including the five NAMAs, Morocco specifies the nature of the action, the sectors and gases covered, the quantitative goals, the assumptions used in the baseline and reduction scenarios, the steps taken and the estimation of the budget needed for implementation. All the NAMAs are still being prepared for the implementation phase. The description of the NAMAs includes a detailed list of progress indicators. Morocco further reported on the status of the projects and provided, during the technical analysis, further clarification to the TTE on the meaning of the different statuses (ongoing, under preparation and project idea). The TTE is of the view that the transparency of the reporting could be enhanced by including this explanation in the BUR.

50. The key mitigation action in the **energy production** sector is a new energy strategy aiming to increase the share of renewable energy in Morocco's energy mix by constructing additional renewable capacity to reach 52 per cent of the total installed capacity in 2030. The potential of solar and wind energy is highest, but Morocco also has some hydropower

potential. At the time of writing the BUR, 2.38 MW capacity has been installed and several projects are ongoing (project decided and under implementation) while others are still under preparation (project decided but not yet under implementation). The strategy includes financial mechanisms to stimulate private-sector engagement and facilitate public–private partnerships. Global investment needs are estimated to be USD 15 billion of which USD 9 billion will be needed for the realization of large solar parks. Morocco is also preparing to extend its installed capacity of combined cycle power plants from 836 to 4,750 MW by 2030. Finally, the country is studying the use of biomass in the industry and tertiary sectors. The TTE noted inconsistencies in the BUR between the overall GHG emission reductions reported in the text and in the graphs and with those reported for individual measures. The TTE is of the view that the transparency of the information reported could be enhanced by implementing cross-verification of the reported information.

51. Key mitigation actions on the **energy consumption** side include the implementation of energy efficiency programmes for the residential and tertiary building sector, for industry, excluding large energy consumers, and for public lighting. The following measures are under preparation: energy-efficient lighting and refrigerators; and the increased use of natural gas for power generation. Project ideas include the installation of 1,000 MW end-user PV panels (low tension), and Morocco is implementing a "green city" pilot in a newly built city of 150,000 inhabitants, which it intends to replicate in other cities (for a total population of one million people).

52. Morocco reports several mitigation actions in the **transport** sector. The main ongoing mitigation actions are: the replacement of large taxis by smaller and more fuelefficient cars; the modernization of the fleet of state-owned cars by the use of electric cars; and the extension of existing tramways. Morocco reports several project ideas for additional mitigation actions in this sector of which the following have the largest estimated emission reduction effect: fiscal incentives for the procurement of cleaner cars; the development of new tramways; and speed limits on motorways.

53. With respect to emissions from the **industrial processes and product use** sector, Morocco reports two ongoing mitigation actions: valorization of fly ash and recycling of plastics. Key mitigation actions being implemented in the **agriculture** and the **forestry** sectors include the planting of olive and fruit trees. Mitigation actions that are being implemented in the **waste** sector are valorization of landfill gas and valorization of biogas from wastewater.

54. At the time of writing the BUR, Morocco had 37 **clean development mechanism** (CDM) projects or programmes of activities on renewable energy, on biomass energy and in the waste sector. The BUR provides a general overview but it is not clear in the BUR how many of these CDM projects are being implemented and generating emission reductions. During the technical analysis, Morocco provided additional information on CDM projects that have issued certified emission reductions and projects for which the certification process is ongoing. The TTE is of the view that the transparency of the information reported could be enhanced by providing this information and by including an indication of how Morocco treated the (potential) emission reductions of these projects in the general estimation of the effects of GHG emission reductions on the relevant mitigation actions reported.

55. Morocco recognizes the need to establish a domestic MRV system that will allow the monitoring and evaluation, on a continuous basis, of mitigation actions implemented in different sectors (see para. 25 above). In the past, monitoring and evaluation was focused on progress with respect to sectoral goals such as energy supply, waste management and reforestation, but this will now have to be completed with an assessment of GHG impact of these measures. During the technical analysis the Party clarified that the arrangements in place for developing the NC3 have not led so far to the development of an MRV system for mitigation projects but that this will certainly be one of the objectives of the NC4.

56. Morocco describes in detail the MRV system proposed for each of the five NAMAs; however, there is no discussion in the BUR on the overall MRV system for the other mitigation actions and programmes and on which steps the country intends to take to set up such a system. The systems for NAMAs include the identification of relevant progress indicators and actors responsible for coordination and implementation. The monitoring will include the follow-up of sustainable development co-benefits. These systems will be further elaborated during the implementation of the NAMAs. The NAMAs are intended to be supported internationally and verification is therefore proposed to be done by a third party.

4. Constraints and gaps, and related technology, financial, technical and capacitybuilding needs, including a description of support needed and received

57. As indicated in table 3 above, Morocco reported in its BUR information on finance, technology and capacity-building needs and support received, partially in accordance with paragraphs 14–16 of the UNFCCC reporting guidelines on BURs.

58. Morocco did not report on constraints and gaps in its BUR; however, it provided a clear overview by sector of the financial resources needed for the implementation of the mitigation actions it has identified. The BUR also provides a list of general capacity-building needs. During the technical analysis, Morocco clarified that its constraints and gaps and the related needs were identified and reported in a separate report to the NC3 which was, however, not published owing to its size (see the annex, section B). The TTE is of the view that the transparency of the reported information could be enhanced by providing information on the constraints and gaps and by making reference to the additional report. The TTE also considers that reporting on constraints and gaps in accordance with decision 2/CP.17, annex III, paragraph 14, with a focus on challenges encountered during the preparation of the BUR, was an important opportunity for Morocco to highlight its capacity-building needs in specific areas.

59. The TTE noted that Morocco did not report on technology needs although the country finalized its technology needs assessment and its technology action plan in 2012. During the technical analysis, Morocco clarified that its technology needs are reported in a separate report to the NC3 (see the annex, section B) and that the needs related to adaptation actions are included in the NC3. Morocco further stated that it needs to enhance the capacity for assessing and reporting on technology needs. The TTE is of the view that the transparency of the reported information could be enhanced by including a reference to this information in the BUR.

60. Morocco provides in the BUR an overview of the most important and significant financial support received; however, it did not provide information on technology transfer, capacity-building and technical support received. The largest share of financial support is allocated to mitigation projects (94.6 per cent). Most of the financial support received is in the form of concessional loans. Morocco considers that it needs further capacity to access funds from the Green Climate Fund. Furthermore, Morocco provides details on the national resources used for climate change policies.

5. Domestic measurement, reporting and verification

61. As indicated in table 2 above, Morocco reported in its BUR information on the description of domestic MRV arrangements in the context of its mitigation actions (see paras. 55 and 56 above), in accordance with paragraph 13 of the UNFCCC reporting guidelines on BURs.

D. Identification of capacity-building needs

62. In consultation with Morocco, the TTE identified the following capacity-building needs related to the facilitation of the preparation of subsequent BURs and participation in ICA:

(a) Enhancing the technical capacity of and coordination among the institutions involved in preparing the BURs (relevant ministries, research institutes and universities) to ensure the development of national communications, BURs and national GHG inventories on a continuous basis;

(b) Improving the transparency of reporting by including in future BURs: methodologies used for emission estimates for key categories and relevant activity data; and reporting tables using the tables provided in the Revised 1996 IPCC Guidelines and the table included in annex 3A.2 to chapter 3 of the IPCC good practice guidance for LULUCF;

(c) Improving the completeness of the GHG inventory by:

(i) Collecting activity data and estimating emissions of fluorinated gases in order to develop an inventory for these gases, using a tier 1 method as a first step;

(ii) Collecting activity data and developing methodologies to estimate emissions from industrial wastewater treatment and sludge treatment;

(iii) Collecting activity data and developing methodologies to estimate the emissions associated with the field burning of residues;

(iv) Collecting activity data and estimating emissions from the use of solvents;

(v) Focusing on the production and transmission of data, particularly in the noncement industrial sector (e.g. by conducting sectoral surveys and increasing the involvement of industrial federations, etc.);

(d) Developing country-specific emission factors and identifying more activity data sources for key categories in order to increase the accuracy of reporting by using higher-tier methods in the estimation of GHG emissions;

(e) Collecting accurate and consistent data on mitigation projects of various departments and partners, noting that Morocco could benefit from further capacity-building related to the assessment of constraints and gaps and from linking capacity-building to specific needs;

(f) Assessing and reporting on technology needs.

63. The TTE notes that, in addition to those identified during the technical analysis, Morocco reported the following capacity-building needs in its BUR:

(a) Strengthening of the legal and institutional framework;

- (b) Translation of climate change policies to the regional level;
- (c) Outreach, empowerment and capacity-building of actors;
- (d) Promotion of research, innovation and technology transfer;
- (e) Accessing climate finance;
- (f) Monitoring and evaluation.

III. Conclusions

64. The TTE concludes that:

(a) Part of the elements of information listed in paragraph 3(a) of the ICA modalities and guidelines have been included in the first BUR of Morocco;

(b) Morocco reported on its national circumstances in its BUR in accordance with decision 17/CP.8, annex, paragraph 3. Morocco briefly describes its geography, climate and economic structure, and its challenges related to energy production and consumption. This description provides a clear context for its policies in relation to climate change. Morocco had institutional arrangements in place for the development of the national communication and the BUR. It has developed a permanent national system for GHG inventories and projects to establish the institutional arrangements that should allow for reporting on the effect of mitigation actions on a continuous basis (see paras. 22–25 above);

(c) Morocco reported information on its GHG inventory in its BUR, partially in accordance with paragraphs 3–10 of the UNFCCC reporting guidelines on BURs and paragraphs 8–24 of the "Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention" contained in the annex to decision 17/CP.8. Morocco's GHG inventory is reported by sector but there are opportunities to further enhance the transparency of the reporting through additional information on the methodologies and activity data used. The completeness of the inventory could be enhanced through the estimation of emissions from the sources that could not yet be evaluated (e.g. use of solvents) (see paras. 26–42 above);

(d) Morocco reported in its BUR, mostly in accordance with paragraphs 11–13 of the UNFCCC reporting guidelines on BURs, information on mitigation actions and their effects, to the extent possible. The transparency of the information provided could have been enhanced by describing the linkages between the different sets of mitigation actions, NAMAs and national programmes, by providing information on the methodologies used for estimating non-energy-related mitigation actions, by clearly indicating the status of the reported measures and the steps envisaged for making them happen and by clearly indicating the year to which the estimated GHG reductions refer. Morocco recognizes the need for a domestic MRV system but does not elaborate on the institutional arrangements for setting up such a system. However, the BUR describes in detail the proposed MRV systems for the five NAMAs (see paras. 43–56 above);

(e) Morocco reported in its BUR, partially in accordance with paragraphs 14–16 of the UNFCCC reporting guidelines on BURs, information on finance, technology and capacity-building needs and support received. Morocco provides a well-structured overview of the financial needs and the financial support received, but it did not report on constraints and gaps nor on its technical and technology needs and support received. Further, the capacity-building needs reported are general in nature (see paras. 57–60 above).

65. The TTE, in consultation with Morocco, identified six capacity-building needs (see para. 62 above) related to the facilitation of reporting in accordance with the UNFCCC reporting guidelines on BURs and to participation in ICA in accordance with the ICA modalities and guidelines, taking into account Article 4, paragraph 3, of the Convention.

Annex

Documents and information used during the technical analysis

A. Reference documents

"Composition, modalities and procedures of the team of technical experts for undertaking the technical analysis of biennial update reports from Parties not included in Annex I to the Convention". Annex to decision 20/CP.19. Available at http://unfccc.int/resource/docs/2013/cop19/eng/10a02.pdf#page=12>.

"Modalities and guidelines for international consultation and analysis". Annex IV to decision 2/CP.17. Available at http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf>.

"UNFCCC biennial update reporting guidelines for Parties not included in Annex I to the Convention". Annex III to decision 2/CP.17. Available at http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf>.

"Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention". Annex to decision 17/CP.8. Available at ">http://unfccc.int/resource/docs/r

First biennial update report of Morocco. Available at http://unfccc.int/8722.php>.

First, second and third national communications of Morocco. Available at http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php.

B. Additional information provided by the Party

The following document¹ was provided by the Party during the technical analysis:

Ministère délégué auprès du Ministère de l'Energie, des Mines, de l'Eau et de l'Environnement chargé de l'Environnement. "Rapport global du volet atténuation de la troisième communication nationale à la Convention Cadre des Nations Unies sur les Changements Climatiques". *Octobre 2015*. Available at http://www.4c.ma/mediatheque/docutheque/rapport-global-du-volet-attenuation-de-la-troisieme-communication-nationale>.

¹ Reproduced as received from the Party.