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Technical analysis of the first biennial update report of Ecuador submitted on 21 September 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 Ecuador 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) is to 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 Ecuador 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. Ecuador submitted its first BUR on 21 September 2016. Ecuador explained in its BUR that its BUR preparation process was initiated in November 2014 and required about 21 months to obtain a final version validated by all relevant stakeholders, including the building of capacities of the necessary technical teams.

4. The technical analysis of the BUR took place from 5 to 9 December 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: Ms. Zuelclady Maria Fernanda Araujo Gutierrez (Mexico), Mr. Manuel Estrada (Mexico), Ms. Rocio Lichte (member of the Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention (CGE) from Germany), Ms. Tahira Munir (Pakistan), Ms. Anne Nyatichi Omambia (member of the CGE from Kenya), Mr. José Manuel Ramírez García (Spain), Ms. Mayra Rocha (Brazil), Ms. María José Sanz Sánchez (Spain), Mr. Marius Taranu (Republic of Moldova) and Ms. Tian Wang (China). Ms. Lichte and Ms. Omambia were the co-leads. The technical analysis was coordinated by Ms. Karen Ortega (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 Ecuador engaged in consultation via video and teleconferencing on the identification of capacity-building 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 Ecuador on 3 March 2017 for its review and comment. Ecuador, in turn, provided its feedback on the draft summary report on 31 July 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 Ecuador on 23 August 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 capacity-building 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 Ecuador’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.

1. National greenhouse gas inventory

11. 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.

12. 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 Ecuador in accordance with the relevant parts of the UNFCCC reporting guidelines on BURs.

Table 1

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

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Yes/ Partly/No/NA</i>	<i>Comments on the extent of the information provided</i>
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	No	Ecuador submitted its BUR in September 2016, however, the GHG inventory reported is for the 2010
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	Ecuador used the Revised 1996 IPCC Guidelines, the 2000 IPCC good practice guidance and the 2003 IPCC good practice guidance for LULUCF. For some individual categories in the agriculture and LULUCF sectors, values from the 2006 IPCC Guidelines were applied
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	No activity levels (activity data) for the 2010 inventory were provided
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	Yes	

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Yes/ Partly/No/NA</i>	<i>Comments on the extent of the information provided</i>
	anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors)		
	(b) Table 2 (National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF6)	No	According to the BUR there is no production of SF6. Production of HFCs and PFCs is not mentioned. No information is provided on the consumption of HFCs, PFCs or SF6
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	Only final estimates are provided; the actual underlying activity data or values of the emission factors are not reported in the BUR
	(b) The sectoral report tables annexed to the Revised 1996 IPCC Guidelines	No	Only final estimates are provided; the actual underlying activity data or values of the emission factors are not reported in the BUR
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	No	The BUR does not contain time series data back to the years reported in the NC2, which were not updated in the BUR
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)	No	The BUR does not contain information on earlier inventory years reported in the NC2
Decision 2/CP.17, annex III, paragraph 10	Additional or supporting information, including sector-specific information, may be supplied in a technical annex	Partly	The annex submitted along with the BUR refers exclusively to REDD-plus. ⁴ No additional information or technical annexes have been provided for the sectors of the inventory
Decision 17/CP.8, annex, paragraph 13	Non-Annex I Parties are encouraged to describe procedures and arrangements undertaken to collect and archive	Yes	

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Yes/ Partly/No/NA</i>	<i>Comments on the extent of the information provided</i>
	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		
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 and removals by sinks:		
	(a) CO ₂	Yes	
	(b) CH ₄	Yes	
	(c) N ₂ O	Yes	
Decision 17/CP.8, annex, paragraph 15	Non-Annex I Parties are encouraged, as appropriate, to provide information on anthropogenic emissions by sources of HFCs, PFCs and SF ₆	No	According to the BUR there is no production of SF ₆ : and that of HFCs and PFCs, if any, is not mentioned in the BUR. No information is provided on the consumption of HFCs, PFCs or SF ₆
Decision 17/CP.8, annex, paragraph 19	Non-Annex I Parties should, to the extent possible, and if disaggregated data are available, report emissions from international aviation and marine bunker fuels separately in their inventories:		
	(a) International aviation	Yes	Only final emission estimates are provided; the BUR does not indicate the methodology used to calculate these emissions
	(b) Marine bunker fuels	Yes	Only final emission estimates are provided; the BUR does not indicate the methodology used to calculate these emissions
Decision 17/CP.8, annex, paragraph 16	Non-Annex I Parties are encouraged, as appropriate, to report on anthropogenic emission by sources of other GHGs, such as:		
	(a) CO	Yes	
	(b) NO _x	Yes	

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Yes/ Partly/No/NA</i>	<i>Comments on the extent of the information provided</i>
	(c) NMVOCs	Yes	
Decision 17/CP.8, annex, paragraph 17	Other gases not controlled by the Montreal Protocol, such as SO _x , included in the Revised 1996 IPCC Guidelines may be included at the discretion of the Parties	Yes	
Decision 17/CP.8, annex, paragraph 18	Non-Annex I Parties are encouraged, to the extent possible, and if disaggregated data are available, to estimate and report CO ₂ fuel combustion emissions using both the sectoral and the reference approach, and to explain any large differences between the two approaches	Partly	The difference between the two approaches was reported to be 3.4%. The reference approach itself and its results are not provided
Decision 17/CP.8, annex, paragraph 20	Non-Annex I Parties wishing to report on aggregated GHG emissions and removals expressed in CO ₂ equivalents should use the GWP provided by the IPCC in its Second Assessment Report based on the effects of GHGs over a 100-year time horizon	Yes	
Decision 17/CP.8, annex, paragraph 21	Non-Annex I Parties are encouraged to provide information on methodologies used in the estimation of anthropogenic emissions by sources and removals by sinks of GHGs 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:	Yes	Ecuador used the Revised 1996 IPCC Guidelines, the 2000 IPCC good practice guidance and the 2003 IPCC good practice guidance for LULUCF. For some individual categories in the agriculture and LULUCF sectors, values from the 2006 IPCC Guidelines were applied

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Yes/ Partly/No/NA</i>	<i>Comments on the extent of the information provided</i>
	(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	Yes	
	(b) Explanation of the sources of emission factors	Yes	
	(c) Explanation of the sources of activity data	Yes	
	(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:		
	(i) Source and/or sink categories	Partly	The LULUCF sector includes category 5F 'Other lands'; however, no explanation on the types or coverage of land is included under this category in the BUR. During the technical analysis, Ecuador clarified that 'Other lands' are areas with little or no vegetation. This category includes bare soil, rock, ice and all land areas that do not fall into any of the other five categories
	(ii) Methodologies	Yes	
	(iii) Emission factors	Yes	
	(iv) Activity data	Yes	
	(e) Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building	Partly	An improvement plan for the GHG inventory (general and for relevant categories under each IPCC sector) has been provided; however, the suggested improvements were not related to the need for capacity-building. As clarified by Ecuador during the technical analysis, there is a need to receive training for the implementation of the GHG inventory improvement plan
Decision 17/CP.8, annex,	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	Partly	Table 1 of the BUR provides complete information for all sectors. However, for some categories under the energy and

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Yes/ Partly/No/NA</i>	<i>Comments on the extent of the information provided</i>
paragraph 22	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		industrial processes sectors it is not clear whether the appropriate notation keys were used. Table 2 was not provided
Decision 17/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	Yes	The uncertainty is given for the inventory as a whole (with and without LULUCF), however, how the uncertainties in the various sectors were determined is not described
	(b) Underlying assumptions	No	The underlying assumptions are not provided in the BUR
	(c) Methodologies used, if any, for estimating these uncertainties	Yes	

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*, LULUCF = land use, land-use change and forestry, NA = not applicable, NC2 = second national communication, NMVOCs = non-methane volatile organic compounds, Revised 1996 IPCC Guidelines = *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, 2000 IPCC good practice guidance = *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, 2003 IPCC good practice guidance for LULUCF = *Good Practice Guidance for Land Use, Land-Use Change and Forestry*, 2006 IPCC Guidelines = *2006 IPCC Guidelines for National Greenhouse Gas Inventories*.

^a In decision 1/CP.16, paragraph 70, the Conference of the Parties encouraged developing country Parties to contribute to mitigation actions in the forest sector by undertaking the following activities: reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks.

2. Mitigation actions and their effects

13. 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.

14. Ecuador reported on mitigation actions in its first BUR. Some of the information on mitigation actions reported is provided in tabular format.

15. 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 Ecuador 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 Ecuador

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Yes/ Partly/No</i>	<i>Comments on the extent of the information provided</i>
Decision 2/CP.17, annex III, paragraph 11	Non-Annex I Parties should provide information, in a tabular format, on actions to mitigate climate change, by addressing anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol	Yes	
Decision 2/CP.17, annex III, paragraph 12	For each mitigation action or groups of mitigation actions including, as appropriate, those listed in document FCCC/AWGLCA/2011/INF.1, developing country Parties shall provide the following information to the extent possible: (a) Name and description of the mitigation action, including information on the nature of the action, coverage (i.e. sectors and gases), quantitative goals and progress indicators	Partly	In most cases this information is provided in tabular format; however, for national mitigation actions in the waste sector, limited information was provided (i.e. with regard to goals and progress of implementation) due to the fact that it was not available at the time of reporting as clarified by Ecuador during the technical analysis. For the group of mitigation actions reported as Programa Nacional Conjunto ONU-REDD Ecuador, the programmes and activities are described. Mitigation goals for REDD-plus implementation were under development at the time of BUR preparation. Those goals were made official in November 2016 in the REDD+ Action Plan
	(b) Information on:		

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Yes/ Partly/No</i>	<i>Comments on the extent of the information provided</i>
	(i) Methodologies	Partly	The methodology to estimate the emission reduction is not included for all mitigation actions reported in the BUR (e.g. for the waste sector). Ecuador provided further information on this matter during the technical analysis
	(ii) Assumptions	Yes	
	(c) Information on:		
	(i) Objectives of the action	Yes	
	(ii) Steps taken or envisaged to achieve that action	Yes	
	(d) Information on the progress of implementation of the mitigation actions and the underlying steps taken or envisaged, and the results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions, to the extent possible:		
	(i) Progress of implementation of the mitigation actions	Partly	For most of the actions, information about their implementation status has been provided, however, the implementation status is not specified for the project “Energía renovable para la generación de energía eléctrica – reelectrificación de las islas Galápagos con energía renovable”
	(ii) Progress of implementation of the underlying steps taken or envisaged	Partly	Annexes I–III of the BUR contain information on the implementation status of most measures described, however, the implementation status of measures in the waste sector was not specified
	(iii) Results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions, to the extent possible	Partly	For some of the activities under the energy sector (activities number 6 and 7) and the LULUCF sector (activity number 3), no information on the estimated reductions was provided. During the technical analysis, Ecuador provided further

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Yes/ Partly/No</i>	<i>Comments on the extent of the information provided</i>
			clarification as to why it did not estimate those reductions for the specified actions
	(e) Information on international market mechanisms	Yes	
Decision 2/CP.17, annex III, paragraph 13	Parties should provide information on the description of domestic measurement, reporting and verification arrangements	Yes	

Abbreviations: BUR = biennial update report, LULUCF = land use, land-use change and forestry.

^a In decision 1/CP.16, paragraph 70, the Conference of the Parties encouraged developing country Parties to contribute to mitigation actions in the forest sector by undertaking the following activities: reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks.

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

16. 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.

17. 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 Ecuador 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 Ecuador

<i>Decision</i>	<i>Provision of the reporting requirements</i>	<i>Yes/ Partly/No</i>	<i>Comments on the extent of the information provided</i>
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	Yes	
	(b) Related financial, technical and capacity-building needs	Yes	In the case of financial needs, these were reported, however, without providing a value for them
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,		

<i>Decision</i>	<i>Provision of the reporting requirements</i>	<i>Yes/ Partly/No</i>	<i>Comments on the extent of the information provided</i>
	including for the preparation of the current biennial update report:		
	(a) Information on financial resources	Yes	Financial resources received from the GEF and any other multilateral institutions have been reported, but not disaggregated by donor or by individual institutions
	(b) Information on technology transfer	No	The BUR does not include information on support received in the form of technology transfer
	(c) Information on capacity-building	Yes	Information on support received for capacity-building has been reported in the BUR, though mainly for the preparation of the GHG inventory, but not for mitigation actions
	(d) Information on 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	Yes	Information on technical support received has been reported for the preparation of the GHG inventory, but not for mitigation actions
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 technology needs, which must be nationally determined, and technology support received:		
	(a) Technology needs, which must be nationally determined	Yes	
	(b) Technology support received	No	

Abbreviations: BUR = biennial update report, GEF = Global Environment Facility, GHG = greenhouse gas.

C. Technical analysis of the information reported

18. 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.

19. 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.

20. 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

21. As per the scope defined in paragraph 2 of the UNFCCC reporting guidelines on BURs, the BURs 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.

22. In accordance with decision 17/CP.8, annex, paragraphs 3 and 4, Ecuador, in its BUR, reported the following information on its national circumstances: a description of its national and regional development priorities, objectives and circumstances, including information on features of its political, administrative and institutional profile, geography, environmental, climate, demographics, social development, and economy profile. Ecuador provided a summary table of social and population key indicators as well as tables and graphs to illustrate its national circumstances.

23. Ecuador is an Andean country, located in the western hemisphere in north-western South America, bordered by Colombia, Peru and the Pacific Ocean. The total territory of Ecuador is 256,370 km², which includes the mainland and the Galapagos Islands. There are four main regions: the coast, the highlands, the Amazon and the Galapagos Islands. Ecuador has great variety in its climate, from subtropical to rainforest; in terms of seasonal changes, Ecuador only has two seasons: the wet season from January to June and the dry season from July to December. Due to its different ecosystems, it is one of the most biodiverse countries in the world, including endemic species from the Galapagos Islands. Regarding population, Ecuador has one of the highest population growth rates in Latin America; in 2013, its population was 15.8 million, living mainly in urban areas (63.2 per cent of the total). Regarding the economy, in the first 10 years following dollarization in 2000, a 4.1 per cent annual growth was observed; however, between 2011 and 2013, there was a 6 per cent growth in gross domestic product (USD 67.293 million). By 2013, the main economic sectors were: industry (11.9 per cent), oil and mineral industry (10.1 per cent), agriculture (7.5 per cent) and services (28.5 per cent).

24. In terms of energy supply and demand, in 2013, Ecuador had a total primary energy supply of 218,599 kBEP, from oil (78 per cent), natural gas (8 per cent), hydropower (9 per cent) and biomass (5 per cent). The total secondary energy source in the same year was 70,179 kBEP, from electricity, diesel and liquefied petroleum gas. The electricity matrix was composed of thermal power plants (50 per cent), hydropower plants (46 per cent), 1 per cent being renewable energy plants and 3 per cent from the interconnection with Peru and Colombia. The total energy consumption of Ecuador in 2013 was distributed as follows: 56 per cent in the transport sector, 21 per cent in the industry sector, 14 per cent to households, 4 per cent for services, 2 per cent in the agriculture, mineral and construction industries and 3 per cent in other sectors.

25. Ecuador described in its BUR the institutional arrangements relevant to the preparation of its national communications and BURs on a continuous basis. The preparation of the BUR is based on the current regulatory and institutional framework, which considers three different levels: (1) the political level, represented by the Institutional Committee for Climate Change; (2) the technical-political level, assumed by the Directive

Committee of the Project (including the Ministry of Environment of Ecuador (MAE) and United Nations Development Programme) and with the collaboration of the Secretariat for Higher Education, Science, Technology and Innovation: (3) technical-operational level, led by MAE through the National Directorate for Climate Change Mitigation, and the Project Management Unit. The description covers key aspects of the institutional arrangements, such as: legal status and roles and responsibilities of the overall coordinating entity; and involvement and roles of other institutions and experts.

26. From the information provided in the BUR on institutional arrangements, it is not entirely clear how the continuity and permanence of the established arrangements would ensure the preparation of future BURs on a continuous basis. In response to additional clarifications during the technical analysis, Ecuador explained that the Undersecretary of Climate Change, through the third national communication (NC3) team and with the support of other projects such as those titled “Fortalecimiento de capacidades para la Mitigación del Cambio climático”, “Apoyo Especifico de ONU REDD” and “Fortalecimiento de la resiliencia de las comunidades ante los efectos adversos del cambio climático con énfasis en seguridad alimentaria” has been working on the design of an inter-institutional cooperation framework agreement for sharing climate change information. This framework will be the institutional platform used to support the sharing of data and information, supporting the implementation of the GHG inventory system (SINGEI), the national forest monitoring system (SNMB), among others linked to the national MRV system. The TTE noted that the transparency of future reporting on national circumstances, institutional arrangements and cross-cutting issues would be further enhanced by including a complete description of how these arrangements will be maintained in the future to ensure a sustainable reporting process.

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

27. As indicated in table 1 above, Ecuador reported information of the 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.

28. Ecuador submitted its BUR in 2016, and the GHG inventory reported is for the year 2010, more than four years prior to the date of submission. In the BUR and during the technical analysis week, Ecuador explained that significant efforts had been made to improve the inventory of 2010, and that the 2012 inventory will be provided as part of the third national communication which Ecuador expects to submit in the next few months and which was subject to a third-party review. The TTE commends Ecuador for the effort and improvements made in the 2010 inventory compared to those reported in the previous national communications.

29. GHG emissions and removals for the 2010 inventory were estimated using mainly tier 1 methodology of the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, applying in some cases also the *2000 Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* (hereinafter referred to as the 2000 IPCC good practice guidance). For the LULUCF sector, the methodology of the *2003 Good Practice Guidance for Land Use, Land-Use Change and Forestry* was used. For the agriculture and land use, land-use change and forestry (LULUCF) sectors, values from the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the 2006 IPCC Guidelines) were used for some individual categories. With regard to the methodologies used, information was reported transparently, as for each category and subcategory it was indicated which methodology and tier levels were used. Also, the source of activity data used was provided for each category. However, the actual values for the

activity data (AD) were not provided for any source category, nor did the BUR contain information on updated data on activity levels. Furthermore, there was no further information on the emission factors (EFs) used, such as references to the guidelines' equations, nor were other related parameters or assumptions considered to generate the estimates. During the technical analysis week, Ecuador explained that new institutional arrangements, initiatives and approaches have been implemented for the 2010 inventory and that for the LULUCF sector, updated activity data could already be generated due to those arrangements. In addition, Ecuador provided information on its plan to submit the NIR in 2017. Ecuador also provided additional information on the AD and EFs used in the calculations for the LULUCF inventory. Furthermore, Ecuador explained that a comparison with inventories submitted earlier was not made since at the time of submitting the BUR the country was in the process of upgrading its GHG inventories for inclusion in the third national communication. The TTE noted that the transparency of the reported emissions and removals in the BUR could be enhanced by providing detailed information on AD and EFs, as well as information on the extent to which estimates are based on updated activity data on activity levels compared to inventories provided in previous national communications.¹

30. Ecuador reported GHG emissions by category and by gas for carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O), in the form of summary tables and provided table 1 (National GHG inventory of anthropogenic emission by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol and GHG precursors).

31. Ecuador did not report emissions of hydrofluorocarbons (HFCs) perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆). As was explained during the technical analysis, emissions from these gases were not reported since HFCs, PFCs and SF₆ are being imported and no disaggregated official information on their consumption exists. Other source categories of the inventory were reported as "not occurring" (NO), for example fugitive emissions from solid fuels and emissions from chemical and metal industries. Also the use of solvents and other products were reported as "not estimated" (NE).

32. Total GHG emissions for 2010 as reported in the BUR amount to 80,504 Gg CO₂ eq, including emissions and removals from LULUCF. By sector, the shares of emissions are: energy, 44.5 per cent; LULUCF, 30 per cent; agriculture, 18 per cent; waste, 4.2 per cent; and industrial processes, 3.3 per cent.

33. The amount of GHG emission for 2010 for the energy sector amounted to 35,812.5 Gg CO₂ eq. The TTE noted that by providing information on the types of fuels used in the country, for example through the details of the reference approach, or explaining why some sources or types of fuels are considered as "not occurring", the calculation of the estimates for the sector would be improved.

34. Industrial processes emissions amounted to 2,658.8 Gg CO₂ eq with the only source category reported being "2.A Mineral Industry". During the technical analysis, Ecuador clarified that there is no production of iron, steel, copper, paper or glass in the country and that emissions from chemical and metal industries were not reported due to lack of activity data. The TTE noted that including emission estimates from those industries, as well as from solvent and other product use, and possible emissions from the consumption of HFCs, PFCs and SF₆, or clarifying the reasons as to why they are reported as "not occurring" or "not estimated", would further enhance the transparency of the inventory.

¹ During the technical analysis, Ecuador notified the TTE about the preparation of the "National Inventory Report 2010 (NIR)", which includes all details on the AD, EFs and assumptions used for the calculations in the inventory. The NIR was submitted to the secretariat in July 2017, after the technical analysis of the first BUR of Ecuador. The document is available at <<http://unfccc.int/8722.php>>.

35. For the agriculture sector, Ecuador reported GHG emissions of 14,516 Gg CO₂ eq, with N₂O from agricultural soils and CH₄ from enteric fermentation being identified as key categories and the most relevant emission sources in the sector. For these, Ecuador already used EFs from the 2006 IPCC Guidelines or the 2000 IPCC good practice guidance. The burning of savannahs is not considered given that this ecosystem does not exist in the country. The TTE noted that providing the actual AD (e.g. the number of livestock, amount of fertilizer used, etc.) in the BUR, even if at aggregate level, and providing references to the specific EFs applied would enhance the transparency of the estimates from the sector. During the technical analysis, Ecuador provided clarification on these matters. Additionally, as mentioned by Ecuador, this information is presented in the NIR, which was submitted in July 2017, after the technical analysis. The TTE commends Ecuador for its improvement plan referred to in the BUR according to which it will make efforts to develop country-specific EFs for cattle and to generate national data on synthetic fertilizer used.

36. Emissions from the LULUCF sector represent 30 per cent of the total inventory, which is attributed, for the most part, to conversion activities of forest lands to agricultural land (deforestation). Ecuador does not report emissions from biomass burning or other disturbances due to a lack of data. The TTE commends Ecuador for the improvements made and efforts being undertaken on the forest inventory and forest fire statistics, which is considered to be an improvement for the future. The TTE noted that providing information on the actual areas under each land category (in hectares) and an explanation of managed versus unmanaged land would enhance the understanding of the estimates of the sectors, especially for CO₂ removals from forests (forest lands remaining forest). Furthermore, estimating the emissions of CH₄ and N₂O resulting from activities in the LULUCF sector would enhance the preparation of the inventory. Ecuador also reported in the BUR estimates under “5F Other lands” without further explanation, and during the technical analysis clarified that ‘Other lands’ are areas with little or no vegetation, including bare soil, rock, ice and all land areas that do not fall into any of the other categories.

37. For the waste sector, Ecuador reported emissions of 3,345.4 Gg CO₂ eq, with CH₄ from solid waste disposal sites and CH₄ from wastewater handling as key categories. Emissions from waste incineration were reported as “NE”; furthermore, there was no information about methane recovery and flaring. During the technical analysis, Ecuador explained that emissions from incineration were not included due to a lack of activity data. The TTE noted that including information on estimates of emissions from waste incineration would further enhance the preparation of the inventory.

38. With regard to emission estimates for years other than 2010, the BUR does not provide inventories of earlier inventory years, such as those reported in the previous national communications (which included inventories for the years 1994, 2000 and 2006), nor does it provide information on time series or trends. Furthermore, no information is provided on how the inventory for 2010 reported in the BUR relates to the earlier inventories reported in the national communications. Ecuador clarified that a time series for the period 1994 to 2012 has been estimated based on the approaches in place for the 2010 inventory, which will be provided as part of the NC3.

39. Ecuador described in its BUR the institutional framework for the preparation of the 2010 GHG inventory. MAE is the governmental body responsible for climate change policies, and is also responsible for the Party’s GHG inventory, which has been prepared with the support of the United Nations Development Programme, which assisted Ecuador in designing its GHG inventory system (SINGEI). During the technical analysis, Ecuador clarified that after the delivery of the system, it has taken it over, but recognized that maintaining SINGEI with a technical team on a permanent basis will be a challenge and may depend on future cooperative funding.

40. Ecuador reported a key category analysis performed for the level of emissions, not for the trend. As explained by Ecuador during the technical analysis, the BUR includes only the 2010 inventory and no estimates for the other inventory years, as the inventories presented in the second national communication (NC2) were undergoing an updating process, and therefore the calculation of a trend-based key category analysis was not possible at the time of the BUR preparation. The BUR further provides information on quality assurance/quality control measures for all sectors. Ecuador also reported uncertainty estimates for the inventory as a whole using tier 1 from the 2000 IPCC good practice guidance. The TTE commends Ecuador for providing information according to the 2000 IPCC good practice guidance and noted that the transparency of reporting would be further enhanced by including a trend-based key category analysis and uncertainty estimates for each sector and/or categories.

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

41. As indicated in table 2 above, Ecuador 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. The TTE acknowledges that the information reported in the BUR is comprehensive, providing information on mitigation policies in the national context.

42. In the BUR, Ecuador frames its national mitigation planning and actions in the context of two main efforts, recognizing the rights of nature in its Constitution from 2008, and the Plan Nacional del Buen Vivir (PNBV) 2009-2013. The plan provides the strategic vision supporting the different policies, programmes and public projects, and also coordinates the responsibilities at different government levels. In 2012, the MAE designed and published the, Estrategia Nacional de Cambio Climático where the priority sectors, the strategic lines and the activities for adaptation and mitigation were established, according to short and medium term goals, following five specific objectives related to the overall reduction of GHGs.² The BUR reported on mitigation actions that were in the design or implementation phase during 2011–2013.

43. Ecuador reported four main groups of mitigation actions: (1) nationally appropriate mitigation actions (NAMAs) (in the energy sector); (2) other voluntary mitigation actions (in the energy, LULUCF, industry and waste sectors); (3) the clean development mechanism (with 31 projects); and (4) projects or programmes like the Programa Nacional Conjunto ONU-REDD Ecuador. Consistent with decision 2/CP.17, Ecuador provides the names, coverage (sector and gases) and progress indicators of the mitigation actions and provides the summary of this information in a tabular format. The BUR does not include information on or descriptions of the methodologies, baselines, emission factors or other assumptions for the mitigation actions nor in some cases (for some energy and LULUCF

² The five specific objectives of the Estrategia Nacional de Cambio Climático, mitigation strategic line are as follows: (1) identify and incorporate good practices to mitigate climate change in the agriculture sector, which would increase productivity and competitiveness; (2) implement measures that contribute to the integrity and connectivity of relevant ecosystems for carbon capture and storage, and manage the intervened ecosystems with capacity for carbon storage; (3) strengthen the implementation of measures to promote efficiency and energy sovereignty as well as the gradual change of the energy matrix, increasing the proportion of renewable energy sources; (4) promote the application of practices that allow for the reduction of GHG emissions in the processes related to the provision of services and the generation of goods, from their manufacture, distribution and consumption, to their final disposal; and (5) promote the transformation of the productive matrix, incorporating measures that contribute to the reduction of GHG emissions and the carbon footprint, the sustainable use of renewable natural resources and the responsible use of non-renewable natural resources.

actions) information about the estimated reductions. Ecuador provided additional information on methodologies, AD and assumptions during the technical analysis, including on why it was not possible to estimate the reductions of the actions in some cases. Ecuador indicated that detailed information will be included in its future BURs.

44. Ecuador reported extensive information on its three NAMAs all of which are in the energy sector with the aim of modifying the energy matrix, given the importance of this sector, which produces more than the 40 per cent of the country's emissions. One NAMA has been developed to enhance the use of the hydropower resources and two for the improvement of energy efficiency (in the oil sector and in households, respectively). As indicated in the BUR, the NAMAs have the potential to reduce 11.46 Mt CO₂ eq per year in total during the period 2016–2025. Up to 2013, only one NAMA (energy efficiency in the oil sector) has been implemented and has achieved a total reduction of 344,056 t CO₂ eq from 2011–2013. During the technical analysis, Ecuador clarified that all NAMAs were developed according to an exercise projecting the energy consumption using the Long-range Energy Alternatives Planning System programme and that key stakeholders from the sectors participated in the development of the 'business as usual' and mitigation scenarios were involved. The emission factors used are those from the IPCC database for fossil fuels. However, information on methodologies and assumptions is not clearly detailed. For some mitigation actions, it was not possible to estimate the emission reductions due to the lack of data. During the technical analysis, Ecuador recognized this as part of the improvements required in future reports.

45. The BUR also reports "Other voluntary mitigation actions", a group which categorizes various actions according to IPCC sectors. The actions in the energy sector address energy generation and energy efficiency and the two voluntary actions in the industry sector address energy efficiency in the foundry industry and the destruction of ozone-depleting substances in cement kilns.

46. For the LULUCF sector, Ecuador reported two activities on forest conservation and one on reforestation. For the activities in the Socio Bosque Program (PSB) and National System of Protected Areas, the methodology of the GHG inventory was used, specifically the one used for the subcategory "Forest land remaining forest land". The forest area under conservation from 2011 to 2013 was considered as AD and a national emission factor was used to calculate the mitigation potential of the proposed action. As reported in the BUR, the PSB and National System of Protected Areas activities had emission reductions of 18 Mt CO₂ eq and 54.65 Mt CO₂ eq, respectively for the period 2011-2013. In the BUR no information on baselines could be found, but information on the emission factors, activity data and the methodology of the estimations was provided during the technical analysis.

47. The Programa Nacional Conjunto ONU-REDD Ecuador programme focuses on the LULUCF sector and consists of non-goal-based actions on a voluntary basis, mostly mitigation project activities and some are implemented as policy measures. Ecuador reported in its BUR information on Ecuador's national REDD-plus³ strategy, forest reference emission level, and their national forest monitoring system and REDD-plus safeguard information system.

48. Regarding information on international market mechanisms, the BUR reported that until 2013, Ecuador had registered 31 clean development mechanism (CDM) projects, which refer to hydroelectric generation (48 per cent), methane capture (16 per cent),

³ In decision 1/CP.16, paragraph 70, the Conference of the Parties encouraged developing country Parties to contribute to mitigation actions in the forest sector by undertaking the following activities: reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks.

biomass (10 per cent), and wind energy (6 per cent), among others. During the period 2011–2013, 10 projects certified their emission reduction by a total of 1,063.694 t CO₂-eq.

49. As reported in the BUR, Ecuador is in the process of developing a domestic MRV system for mitigation actions. The Party reported that there are different platforms to generate data and information at different levels (national, regional and local). Since 2010, MAE has been working on the creation and operation of an environmental information database (Sistema Único de Información Ambiental), which aims to integrate all environmental data and generate different indicators.

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

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

51. Ecuador reported that important progress has been made at all levels relevant to addressing climate change (such as on inventory preparation, reporting, mitigation, etc.), considering the constraints identified in 2010 in its NC2. However, some of the gaps, barriers and needs that were identified in the NC2 still exist to a different degree. These are identified in the BUR in order to enhance the existing capacities, both technical and financial, in the respective institutions involved in the NC3/BUR preparation. During the technical analysis, Ecuador pointed out that these gaps, barriers and needs are not solely related to MAE, but also to the rest of the institutions identified as relevant for the development of national communications and BURs (other ministries, national agencies, etc.).

52. The TTE acknowledges the effort made by Ecuador to transparently report on constraints and gaps, and related financial, technical and capacity-building needs for the preparation of UNFCCC reports (national communications and BURs), the national GHG inventory, as well as those needs associated with the design and implementation of mitigation actions (CDM projects and NAMAs). During the technical analysis, the Party indicated that some key stakeholders involved in the preparation of previous national communication were consulted as part of the thematic working groups and interviews conducted in drafting the national communication. This allowed the MAE to identify constraints, gaps and needs, some of which were considered in the outcomes of the current NC3/BUR project. In addition, the Party developed a national consultancy oriented to an information-collecting process and analysis about constraints, gaps and needs on finance, technology and capacity-building in order to understand the situation for the NC3 and BUR and enhance climate change action in the future. Considering the availability of resources, such as time and finance, the scope of this work was focused on compiling and processing information (characterizations) already available from official sources. In general, the financial needs identified were not specified in monetary terms, as these may be challenging to report. After interaction with the Party, Ecuador clarified that at the moment it is not possible to obtain disaggregated data on specific donors and countries. To address this, Ecuador needs further support on capacity-building, technology and finance resources. The TTE noted that providing detailed information on the resources (staff, time, financial) and capacities needed would improve the transparency of future reporting.

53. Ecuador reported that financial resources are not sufficient for designing and implementing mitigation actions, considering the current high costs of various stages of the mitigation projects. In addition, the Party has identified methodological and technical constraints and gaps related to gathering information and capacity-building at the institutional (local and national) level.

54. Ecuador has also reported that financial resources do not cover all the needs and requirements of the country in order to prepare the UNFCCC reports. The Party indicated that neither appropriate MRV mechanisms nor specialized technical staff members are available yet to ensure the institutionalized process for future reports. The BUR does not provide further information on these specific financial needs related to the preparation of UNFCCC reports and the objectives of these financial resources; therefore, the TTE noted that including this information, in the BUR, would improve the transparency of future reports.

55. In relation to the GHG inventory, another constraint indicated in the BUR is the lack of appropriate and formal mechanisms at the national level which optimize the data and information exchange between institutions and stakeholders. Capacity-building and financial resources have also been identified by the Party as constraints and gaps, especially for the GHG inventory, for which there is a lack of experts and limited engagement of some of the relevant institutions. During the technical analysis, Ecuador highlighted the need for training on the implementation of the GHG inventory improvement plan.

56. In terms of technology needs and technology transfer, Ecuador reported in its BUR, its participation in the first round of technology needs assessment financed by the GEF in coordination with UNDP. In this regard, Ecuador prioritized those sectors that require the application of eco-friendly technology. Those sectors are: (1) agriculture, (2) water resources and (3) energy.

57. The TTE also acknowledges Ecuador's efforts to report on financial resources, capacity-building and technical support received (including information on technology needs, which must be nationally determined).

58. In its BUR, Ecuador reported updated information on support received from various sources in the period 2011–2013, both bilateral and multilateral donors, listing the source of the support, the support received (in United States dollars), the type of support (refundable or non-refundable), and the number of initiatives. The information was reported as aggregate value for each type of donor (i.e. bilateral, multilateral and public), but not for each individual donor. During the technical analysis, the Party clarified the institutions that provided support and categorized the financial support by sector (energy, hydropower, agriculture and food sovereignty, LULUCF, biodiversity and other sectors related to climate change in general), explaining the difficulties it currently faces in reporting the information by individual donor as this information is not entirely available. The Party further explained that it intends to work on the design and implementation of a web platform, which would allow for the better implementation of the finance MRV system. The TTE noted that reporting financial support received in a disaggregated way would increase the transparency of future reports. The Party stressed that receiving information from the donors about climate change financial support mobilized to the country would also aid the consolidation of a database and the accomplishment of its transparency objectives. The TTE noted that, for example, enhancing communication with the donors in this regard could facilitate the availability of this kind of information.

59. The Party has included in its BUR information related to the support received for the GHG inventory and the MRV system preparation. However, this first BUR did not provide information on the support received in relation to capacity-building and technology transfer for mitigation actions. The TTE noted that the transparency of reporting could be enhanced through further disaggregation of information on support received by area. The Party stressed that receiving information from the donors about climate change capacity-building and technology transfer support mobilized to the country would also aid the consolidation of a database and the accomplishment of its transparency objectives. The TTE noted that, for example, enhancing communication with the donors in this regard could facilitate the availability of this kind of information.

5. Domestic measurement, reporting and verification

60. As indicated in table 2 above, Ecuador reported in its BUR, in accordance with paragraph 13 of the UNFCCC reporting guidelines on BURs, information on the description of domestic measurement, reporting and verification arrangements.

61. Ecuador presented detailed and comprehensive information in chapter 4 of the BUR on the work undertaken in designing and establishing a domestic MRV system. Ecuador has been working extensively on MRV aspects and achieved important progress, mainly in the management of information on mitigation. The Party reported information on MRV arrangements at the national level, including on the methodology and entities involved in MRV, according to three main areas: (1) the GHG inventory system; (2) mitigation actions; and (3) the MRV for investment and financing related to climate change. A summary of the advances achieved regarding these aforementioned MRV arrangements is shown in table 1, chapter 4, of the BUR. At the same time, Ecuador stated that it is still working on ways to obtain data for MRV in a systematic manner. Ecuador is also working on programmes and projects to support the MRV related to REDD-plus.

62. Ecuador provided information on progress made in the design of MRV arrangements, clarifying the objective of the future domestic MRV arrangements by identifying the constraints, gaps and needs in its BUR. During the technical analysis, Ecuador clarified that it is in the process of identifying systems, establishing institutional arrangements and defining data collection and data management for MRV.

63. During the technical analysis, Ecuador clarified some aspects related to how institutional arrangements have been established to secure the preparation of BURs on a continuous basis. For example, the Secretary of Climate Change is working on the design of an Inter-Institutional Cooperation Framework Agreement for sharing climate change information. This will be the institutional arrangement to support the sharing of data and information efficiently, supporting the implementation of the SINGEI, SNMB, among others linked to the national MRV. The TTE acknowledges the efforts made by Ecuador on its MRV arrangements.

6. Any other information

64. Ecuador reported some information on adaptation, including information on progress made in the design of MRV arrangements. The Party considers developing a suitable monitoring process for vulnerabilities at the sectoral (water, agriculture, forestry, energy, infrastructure, etc.) level and at the regional level.

D. Identification of capacity-building needs

65. In consultation with Ecuador, in addition to the capacity-building needs identified in the BUR, 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 capacities for the preparation of the national GHG inventory, including through training on the use of the 2006 IPCC Guidelines, IPCC methodologies and tools, and the UNFCCC reporting guidelines on BURs for the preparation of GHG inventories;

(b) Enhancing the technical capacities for the collection of data and information in all sectors and improving the arrangements that help in the collection of data owned by external entities;

(c) Enhancing the reporting of chemical and metal industry data;

- (d) Enhancing the reporting of consistent time series back to the years reported in the national communications;
- (e) Enhancing the institutional arrangements to secure the preparation of the GHG inventory on a continuous basis;
- (f) Enhancing the identification/development and use of methodologies for estimating emission reductions and other relevant tools;
- (g) Enhancing the estimation of baselines and impacts and the identification and implementation of NAMAs;
- (h) Enhancing institutional arrangements for the design and implementation of a complete MRV system, which includes the component of finance, technology and capacity-building needs and support; and which allows assessing financial, technological and capacity-building needs and support received on a continuous basis as well as the monitoring and reporting of received resources and technology transfer.

III. Conclusions

66. The TTE concludes that:

(a) Most of the elements of information listed in paragraph 3(a) of the ICA modalities and guidelines have been included in the first BUR of Ecuador. Information was provided on most of the required elements. During the technical analysis, Ecuador provided additional information in response to the technical clarification questions raised by the TTE where information was not fully provided in the BUR;

(b) Overall, the BUR provides a transparent description of the institutional arrangements in place or planned, and improvements undertaken to ensure the sustainability of the BUR preparation process on a continuous basis. To that end, Ecuador intends to work in the design and implementation of a domestic MRV which will allow the Party to ensure the preparation process on a continuous basis. The Party has identified several constraints, gaps and needs, some of which are related to the design and the implementation of the aforementioned domestic MRV system, which have been prioritized in its BUR;

(c) Ecuador provided in its first BUR, submitted in 2016, a national GHG inventory for the year 2010, covering emissions and removals of CO₂, CH₄ and N₂O for all relevant sources and sinks, as well as the precursor gases. Estimates for fluorinated gases were not provided due to difficulties in obtaining the necessary data, as was clarified during the technical analysis. The inventory has been developed on the basis of the Revised 1996 IPCC Guidelines, though in some cases the 2000 IPCC good practice guidance and the *Good Practice Guidance for Land Use, Land-Use Change and Forestry* as well the specific EF values from the 2006 IPCC Guidelines were applied for individual key categories. Overall, the 2010 inventory constituted a major advancement compared to earlier inventories submitted as part of the national communications and will form the basis for developing inventories in the future and for undertaking recalculations for the historical time series, which was not provided as part of the first BUR;

(d) The TTE commends Ecuador for establishing an inventory system (SINGEI), including frameworks, tools, procedures and institutional arrangements that have helped to generate more reliable activity data than was generated the past. The TTE further commends Ecuador for clearly outlining source-specific planned improvements, which should further advance improvements to the national inventory in a continuous and systematic manner over time. Nevertheless, a number of needs for capacity-building were identified during the technical analysis. Addressing those needs through capacity-building

would support the country in its already ongoing efforts to further develop and maintain its new system within the existing institutions and national personnel, but also to implement methodological improvements (such as migrating to the 2006 IPCC Guidelines), gathering information on potential sources of emissions where it is scarce, providing historical time series, and enhancing the reporting on a sustained and long term basis;

(e) In accordance with decision 2/CP.17, annex III, paragraphs 11 and 13, Ecuador reported information on its mitigation actions in the first BUR, including on their coverage, quantitative goals, progress indicators and methodologies, and assumptions used in estimating their effects. The information reported in the BUR outlines the mitigations actions within four broad categories, namely: (1) NAMAs; (2) other voluntary mitigation actions, including in the energy, LULUCF, industry and waste sectors; (3) CDM projects; and (4) the Programa Nacional Conjunto ONU-REDD Ecuador programme. The efforts to date, which also recognize and identify improvements, have established a sound foundation and framework for further analysis, prioritization, implementation and assessment of mitigation actions in the future. Institutional arrangements to undertake MRV of mitigation actions are under development. Such arrangements for MRV could enable improvements in the reporting of information in BURs and national communications in the future;

(f) The TTE acknowledges the effort made by Ecuador to report on constraints and gaps, and related financial, technical and capacity-building needs as well as on financial resources, capacity-building and technical support received (including information on technology needs, which must be nationally determined) and considers the reporting mostly transparent. However, the BUR did not report information on technology support and technology transfer received.

67. The TTE, in consultation with Ecuador, identified eight⁴ capacity-building 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. Ecuador further identified the need to enhance the following as its priority capacity-building needs:

(a) The technical capacities for the preparation of the national GHG inventory, including through training on the use of the 2006 IPCC Guidelines, IPCC methodologies and tools, and the UNFCCC reporting guidelines on BURs for the preparation of GHG inventories;

(b) The technical capacities for the collection of data and information in all sectors and improving the arrangements that help in the collection of data owned by external entities;

(c) The reporting of chemical and metal industry data of the GHG inventory;

(d) The reporting of consistent time series data back to the years reported in the national communications;

(e) The institutional arrangements, including their design and implementation, to enhance the preparation of the GHG inventory on a continuous basis;

(f) The identification/development and use of methodologies for estimating emission reductions and other relevant tools;

(g) The estimation of baselines and impacts and the identification and implementation of NAMAs;

⁴ This refers to the number of capacity-building needs listed in chapter II.D.

(h) The institutional arrangements for the design and implementation of a complete MRV system, which includes the component of finance, technology and capacity-building needs and support, and which allows for assessing financial, technological and capacity-building needs and support received on a continuous basis as well as the monitoring and reporting of received resources and technology transfer.

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>>.

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