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Technical analysis of the second biennial update report of Ecuador submitted on 17 February 2023

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, consistently with their capabilities and the level of support provided for reporting, were to submit their first biennial update report by December 2014. Further, paragraph 41(f) of that decision states that Parties not included in Annex I to the Convention shall submit a biennial update report every two years, either as a summary of parts of their national communication in the year in which the national communication is submitted or as a stand-alone update report. As mandated, the least developed country Parties and small island developing States may submit biennial update reports at their discretion. This summary report presents the results of the technical analysis of the second biennial update report 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.

Abbreviations and acronyms

2006 IPCC Guidelines	*2006 IPCC Guidelines for National Greenhouse Gas Inventories*
2019 Refinement to the 2006 IPCC Guidelines	*2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories*
AD	activity data
AFOLU	agriculture, forestry and other land use
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BTR	biennial transparency report
BUR	biennial update report
CDM	clean development mechanism
CER	certified emission reduction
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
EEA	European Environment Agency
EF	emission factor
EMEP	Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe
ETF	enhanced transparency framework under the Paris Agreement
GEF	Global Environment Facility
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
HWP	harvested wood products
ICA	international consultation and analysis
IE	included elsewhere
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*
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
MRV	measurement, reporting and verification
N_2O	nitrous oxide
NA	not applicable
NAMA	nationally appropriate mitigation action
NC	national communication
NE	not estimated
NIR	national inventory report
NMVOC	non-methane volatile organic compound
NO	not occurring
non-Annex I Party	Party not included in Annex I to the Convention
NO_X	nitrogen oxides
PFC	perfluorocarbon
QA/QC	quality assurance/quality control
REDD+	reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable

	management of forests; and enhancement of forest carbon stocks (decision 1/CP.16, para. 70)
Revised 1996 IPCC Guidelines	*Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*
SF_6	sulfur hexafluoride
SO_2	sulfur dioxide
TTE	team of technical experts
UNFCCC guidelines for the preparation of NCs from non-Annex I Parties	"Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention"
UNFCCC reporting guidelines on BURs	"UNFCCC biennial update reporting guidelines for Parties not included in Annex I to the Convention"

I. Introduction and process overview

A. Introduction

1. The process of ICA consists of two steps: a technical analysis of the submitted BUR and a facilitative sharing of views under the Subsidiary Body for Implementation, resulting in a summary report and a record respectively.

2. According to decision 2/CP.17, paragraph 41(a), non-Annex I Parties, consistently with their capabilities and the level of support provided for reporting, were to submit their first BUR by December 2014. In addition, paragraph 41(f) of that decision states that non-Annex I Parties shall submit a BUR every two years, either as a summary of parts of their NC in the year in which the NC is submitted or as a stand-alone update report.

3. Further, according to paragraph 58(a) of the same decision, the first round of ICA is to commence for non-Annex I Parties within six months of the submission of the Parties' first BUR. The frequency of developing country Parties' participation in subsequent rounds of ICA, depending on their respective capabilities and national circumstances, and the special flexibility for small island developing States and the least developed country Parties, will be determined by the frequency of the submission of BURs.

4. Ecuador submitted its first BUR on 21 September 2016, which was analysed by a TTE in the first round of technical analysis of BURs from non-Annex I Parties, conducted from 5 to 9 December 2016. After the publication of its summary report, Ecuador participated in the fourth workshop for the facilitative sharing of views, convened in Bonn on 10 November 2017.

5. This summary report presents the results of the technical analysis of the second BUR of Ecuador, undertaken by a 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

6. In accordance with the mandate referred to in paragraph 2 above, Ecuador submitted its second BUR on 17 February 2023 together with its NC4 as a single document. The submission was made within six years and five months from the submission of the first BUR. During the technical analysis, the Party explained the reasons for submitting the BUR more than two years after the submission of the previous BUR, including the lack of institutional arrangements for preparing the GHG inventory and a delay in the allocation of funding from the GEF to support the preparation of the BUR, which was made approximately one year after the Party submitted its initial request for funding.

7. The technical analysis of Ecuador's BUR was conducted from 23 to 27 October 2023 in Panama City 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: Ahmad Wafiq Aboelnasr (Egypt), Ciniro Costa Junior (Brazil), Javier Fernandez (Democratic Republic of the Congo), Carlos Fuller (former member of the Consultative Group of Experts from Belize), Inge Jonckheere (Belgium), Priscilla Karijodrono (Suriname), Mwangi James Kinyanjui (Kenya), Maria Jose Lopez (Belgium), Marcela Itzel Olguin-Alvarez (Mexico), Virginia Sena Cianci (member of the Consultative Group of Experts from Uruguay) and Luis Alberto de la Torre (Peru). Maria Jose Lopez and Marcela Itzel Olguin-Alvarez were the co-leads. The technical analysis was coordinated by Verónica Colerio (secretariat).

8. During the technical analysis, in addition to the written exchange, in the virtual team room, to provide technical clarifications on the information reported in the BUR, the TTE and Ecuador engaged in consultation[1] on the identification of capacity-building needs for the preparation of BURs and participation in the ICA process. Following the technical analysis of Ecuador's second BUR, the TTE prepared and shared a draft summary report with Ecuador

[1] The consultation was conducted via videoconferencing.

on 13 August 2025 for its review and comment. Ecuador, in turn, provided its feedback on the draft summary report on 2 December 2025.

9. The TTE responded to and incorporated Ecuador's comments referred to in paragraph 8 above and finalized the summary report in consultation with the Party on 3 December 2025.

II. Technical analysis of the biennial update report

A. Scope of the technical analysis

10. 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 chap. II.B below);

(b) A technical analysis of the information reported in the BUR, specified in the UNFCCC reporting guidelines on BURs (decision 2/CP.17, annex III), and any additional technical information provided by the Party concerned (see chap. 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 chap. II.D below).

11. 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 10 above.

B. Extent of the information reported

12. The elements of information referred to in paragraph 10(a) above include the national 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 information on progress in their implementation; information on domestic MRV; and information on support needed and received.

13. 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 12 above have been included in the BUR of the Party concerned. The TTE considers that the reported information is mostly consistent with the UNFCCC reporting guidelines on BURs. Specific details on the extent of the information reported for each of the required elements are provided in the tables included in annex I.

14. The current TTE noted improvements in the reporting in Ecuador's second BUR compared with that in its previous BUR. Information on the GHG inventory, mitigation actions and their effects, and needs and support reported in the Party's second BUR demonstrates that it has taken into consideration the areas for enhancing the transparency of the extent of the information reported noted by the previous TTE in the summary report on the technical analysis of the Party's previous BUR.

C. Technical analysis of the information reported

15. The technical analysis referred to in paragraph 10(b) above aims to increase the transparency of information reported by the Parties on mitigation actions and their effects, without engaging in a discussion on the appropriateness of those actions. Accordingly, the focus of the technical analysis was on the transparency of the information reported in the BUR.

16. 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 IPCC and referred to in the UNFCCC reporting guidelines on BURs. Ecuador submitted an NIR as a stand-alone document and, further to consultations with the TTE, requested a more detailed analysis and documentation of the findings contained in the NIR to be undertaken using the agreed GHG inventory tool.

17. 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

18. 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 NC, including information on national circumstances and institutional arrangements relevant to the preparation of NCs on a continuous basis. In their NCs, non-Annex I Parties report on their national circumstances following the reporting guidance contained in decision 17/CP.8, annex, paragraphs 3–5, and they could report similar information in their BUR, which is an update of their most recently submitted NC.

19. In its second BUR, Ecuador provided an update on its national circumstances, including a description of national and regional development priorities, objectives and circumstances, including features of geography, climate and economy that might affect the Party's ability to deal with mitigating and adapting to climate change, as well as information regarding national circumstances and constraints on the specific needs and concerns arising from the adverse effects of climate change and/or the impact of the implementation of response measures, as referred to in Article 4, paragraph 8, and, as appropriate, Article 4, paragraphs 9–10, of the Convention.

20. In addition, Ecuador provided a summary of relevant information regarding its national circumstances in tabular and graphic format.

21. Ecuador transparently reported in its second BUR an update on its existing institutional arrangements relevant to the preparation of its NCs and BURs on a continuous basis. The arrangements were established through the Environmental Organic Code, which came into effect in 2018 and empowered the Ministry of Environment, Water and Ecological Transition, with the support of relevant government agencies, to prepare the national reports for submission to the UNFCCC. The description covers key aspects of the institutional arrangements, including the legal status and roles and responsibilities of the overall coordinating entity, the involvement and roles of other institutions and experts, mechanisms for information and data exchange, QA/QC procedures, and provisions for public consultation and other forms of stakeholder engagement. The TTE noted planned improvements to the information reported in the BUR, including building technical capacity for climate change reporting.

22. Under the leadership of the Undersecretariat for Climate Change of the Ministry of Environment, Water and Ecological Transition, the Project Management Unit, established through executive decree 59, is responsible for preparing the BUR. Since it was founded in 2009 through ministerial decree 104, the Undersecretariat has been the institution responsible for climate change reporting, including for gathering information from public and private entities and quality checking that information. The Project Execution Committee, comprised of staff from the United Nations Development Programme as the implementing agency for the preparation of the BUR; the National Planning Secretariat; and the Ministry of Environment, Water and Ecological Transition as Chair, ensures the delivery of a high-quality BUR. The Inter-institutional Climate Change Committee, established through executive decree 64, is responsible for evaluating and reviewing the BUR before it is submitted to the UNFCCC.

23. In paragraph 26 of the summary report on the technical analysis of Ecuador's first BUR, the previous TTE noted that the transparency of the reporting on institutional arrangements could be further enhanced by including a complete description of how those arrangements will be maintained in future to ensure a sustainable reporting process. The current TTE noted the improvements referred to in paragraph 21 above and commends the Party for enhancing the transparency of its reporting.

24. Ecuador reported in its second BUR an update on its domestic MRV arrangements. The description highlights institutional arrangements relevant to the preparation of its NCs and BURs, notably the Single Environmental Information System (established in 2010), which stores data on the state and conservation of the environment. Managed by the Ministry of Environment, Water and Ecological Transition, the platform receives information from entities participating in the National Decentralized Environmental Management System. Since 2018, the Single Environmental Information System has been expanded to include data from the Undersecretariats for Environmental Quality, Natural Heritage, Climate Change and Coastal Zones. Article 19 of the Environmental Organic Code requires all State-generated climate change information to be shared with the Single Environmental Information System, which is linked to other State platforms such as the National Information System. This link enables the integration of data on climate change management, including for the Zero Carbon Programme, REDD+ programme and national GHG inventory system. The Single Environmental Information System serves as the information platform for the national MRV system.

25. Ecuador is developing the National Climate Change Registry, which will incorporate the national MRV system and act as a central repository for climate change information. The first version of the Registry is being designed with support from the Initiative for Climate Action Transparency. The MRV arrangements are designed at the national level and cover four main areas: the BUR preparation process, the GHG inventory system, the preparation of NAMAs and the MRV of support needed and received. By building on existing systems, processes and infrastructure, the MRV system is intended to be cost-effective.

26. Ecuador reported in its BUR (section 1.5.2) information on its current initiatives for enhancing its institutional arrangements for compliance with requirements under the ETF. The initiatives relate to developing a robust MRV system in order to meet reporting requirements under the ETF and monitor progress in implementing the National Climate Change Strategy, National Climate Finance Strategy and nationally determined contribution. The TTE commends the Party for the clear and comprehensive reporting on its proactive approach to preparing for ETF implementation.

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

27. As indicated in table I.1, Ecuador reported information on its GHG inventory in its BUR mostly in accordance with paragraphs 3–10 of the UNFCCC reporting guidelines on BURs and paragraphs 8–24 of the UNFCCC guidelines for the preparation of NCs from non-Annex I Parties, contained in the annex to decision 17/CP.8.

28. Ecuador submitted its second BUR in 2023 and the GHG inventory reported is for specific years (1994, 2000, 2006, 2010, 2012, 2014, 2016 and 2018) within the period 1994–2018. The latest reported inventory year is more than four years prior to the date of submission of the Party's BUR. During the technical analysis, Ecuador clarified that the process of updating the emission estimates, and ultimately submitting the BUR, was delayed owing to a delay in the process of updating its forest reference emission level, which in turn hindered the finalization of the GHG inventory for land (category 3.B).

29. Ecuador submitted an NIR in conjunction with its second BUR. The relevant sections of the NIR were not referenced in the BUR but the document was made publicly available on the UNFCCC website.[2]

30. GHG emissions and removals covering the 1994–2018 inventories were estimated using mainly tier 1 methodology from the 2006 IPCC Guidelines, while tier 2 methodology was used for estimating CO_2 emissions from cement production (subcategory 2.A.1), CH_4 emissions from enteric fermentation for cattle (subcategory 3.A.1), CO_2 emissions from forest land remaining forest land (subcategory 3.B.1.a) and emissions from solid waste disposal (category 4.A). During the technical analysis, the Party clarified that it also estimated CO_2 emissions from land converted to cropland (subcategory 3.B.2.b) and land converted to grassland (subcategory 3.B.3.b) using tier 2 methodology, although the BUR states that tier 1 methodology was used.

31. The information reported on emissions and removals for some categories in the AFOLU sector was not consistent between the BUR and the NIR. For example, Ecuador

[2] https://unfccc.int/documents/626652.

referred to manure management as category 3.B in BUR table 5 (p.20) and as category 3.A.2 in NIR table 90 (p.201). During the technical analysis, the Party clarified that this discrepancy was due to a typographical error in the summary table of its BUR, where the Revised 1996 IPCC Guidelines were used. However, for reporting the more disaggregated information reported in its NIR, the Party used the 2006 IPCC Guidelines, as described in the textual part of its NC4 and second BUR. Similarly, the Party referred to the waste sector categories as 5.A–5.E in BUR table 5 (p.20) in accordance with the Revised 1996 IPCC Guidelines, but as 4.A–4.D in the sectoral chapters of the BUR in accordance with the 2006 IPCC Guidelines.

32. For some categories, the information reported in the BUR and NIR summary tables was not consistent with the more disaggregated information reported in the NIR tables. For example, in NIR summary table 7 (p.41), Ecuador reported CO and NO_X emissions from biomass burning (category 3.C) as "NO", but reported corresponding numerical data in NIR table 144 (p.318). During the technical analysis, Ecuador explained that these inconsistencies were due to typographical errors in the BUR and NIR summary tables.

33. Information on AD and EFs used and their sources was clearly reported in the BUR for most categories and subcategories. For the AD, Ecuador included a complete set of tables with disaggregated information for the whole time series in the sectoral chapters of the NIR and provided accompanying Excel spreadsheets. The EFs used were clearly reported in narrative format in the NIR and are consistent with those in the Excel spreadsheets provided as part of the NIR, as well as with the default EFs from the 2006 IPCC Guidelines.

34. Information on AD was reported for some subcategories under land (category 3.B) in the AFOLU sector (NIR table 148, p.326). During the technical analysis, the Party provided additional information in Excel spreadsheets, including the areas used for all land-use classes and transitions for mainland Ecuador and the islands that are considered part of its mainland territory. These areas represent 96.8 per cent of the country's total territory (25,721,532 ha). The Party explained that the remaining 3.2 per cent of its national territory, which was not included in the information provided, corresponds to the Galapagos Islands, where 97 per cent of the terrestrial area is designated for conservation and covered by xeric herbaceous and shrub vegetation.

35. Information on the Party's total GHG emissions by gas for 2018 is outlined in table 1 in Gg CO_2 eq. It shows an increase in emissions of 21.4 per cent including land and HWP since 1994 (95,868 Gg CO_2 eq) and an increase in emissions of 78.1 per cent excluding land and HWP since 1994 (33,159 Gg CO_2 eq).

Table 1
Greenhouse gas emissions by gas of Ecuador for 2018

Gas	*GHG emissions (Gg CO_2 eq) including land and HWP*[a]	*% change 1994–2018*	*GHG emissions (Gg CO_2 eq) excluding land and HWP*[a]	*% change 1994–2018*
CO_2	56 124.05	–29.2	39 871.42	140.9
CH_4	13 433.50	15.4	13 411.12	15.4
N_2O	5 769.33	15.5	5 761.48	15.5
HFCs	NE	NA	NE	NA
PFCs	NO	NA	NO	NA
SF_6	NE	NA	NE	NA
Other	NA	NA	NA	NA
Total	**75 326.88**	**21.4**	**59 044.02**	**78.1**

[a] 2006 IPCC Guidelines AFOLU category 3.B (land) and, if reported, 3.D (HWP (3.D.1) and other emissions (3.D.2)).

36. Information on other emissions was clearly reported for some subcategories, including 991.01 Gg NO_X, 4,196.27 Gg CO, 1,152.88 Gg NMVOCs and 925.18 Gg SO_2. During the technical analysis, Ecuador confirmed that other emissions were not estimated for all subcategories.

37. Information was not reported on HFCs and PFCs on a gas-by-gas basis in Ecuador's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that this information was not reported because disaggregated AD are unavailable for

reporting numerical values and that it did not consider using notation keys to comply with this requirement.

38. Ecuador applied notation keys in tables where numerical data were not provided. The use of notation keys was partly consistent with the UNFCCC guidelines for the preparation of NCs from non-Annex I Parties. In some cases, the Party did not use the appropriate notation key, reporting "NA" instead of "NO"; "NO" instead of NE"; and "NE" instead of "IE" or "NA". For example, in the energy sector, the Party reported AD for charcoal as "NA", while the correct notation key is "NE". In the IPPU sector, all subcategories under product uses as substitutes for ozone-depleting substances (category 2.F) were reported as "NO" in the sectoral chapter of the NIR; however, HFC and PFC emissions were reported as "NA" for the same category in NIR table 7 (p.41). In addition, HFCs should be reported as "NE", as emissions were not estimated. In the AFOLU sector, N_2O emissions from rice cultivation (subcategory 3.C.7) were reported as "NE" in BUR table 5 (p.19) instead of "NA", as only CH_4 emissions should be reported. During the technical analysis, the Party clarified that it will make efforts to enhance its understanding of the meaning of each notation key and to select the appropriate notation keys for future submissions.

39. Ecuador reported comparable information in its NIR addressing the tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF and the sectoral report tables annexed to the Revised 1996 IPCC Guidelines. For example, for all reported years, CO_2 emissions and removals from biomass carbon stock changes were reported for forest land (subcategory 3.B.1), while CO_2 emissions from the biomass and dead organic matter carbon pools were reported for land converted to cropland (subcategory 3.B.2.b) and land converted to grassland (subcategory 3.B.3.b). Information on non-CO_2 emissions from forest fires (subcategory 3.B.1.a forest land remaining forest land) was reported under emissions from biomass burning (subcategory 3.C.1).

40. The shares of emissions that different sectors contributed to the Party's total GHG emissions excluding land and HWP (category 3.B and, if reported, 3.D), as calculated by the TTE using information from the Excel spreadsheets submitted with Ecuador's NIR, in 2018 are reflected in table 2.

Table 2
Shares of greenhouse gas emissions by sector of Ecuador for 2018

Sector	*GHG emissions (Gg CO_2 eq)*	*% share*[a]	*% change 1994–2018*
Energy	38 400.00	65.0	140.0
IPPU	2 403.69	4.0	88.8
AFOLU	31 982.29	NA	–59.1
Livestock (category 3.A)	10 017.96	17.0	–1.9
Land (category 3.B)	16 252.62	NA	–74.1
Aggregate sources and non-CO_2 emissions sources on land (category 3.C)	5 711.71	9.7	10.9
HWP and other emissions (category 3.D)	NE	NA	NA
Waste	2 540.80	4.3	364.5

[a] Share of total without 2006 IPCC Guidelines AFOLU category 3.B (land) and, if reported, 3.D (HWP (3.D.1) and other emissions (3.D.2)).

41. Ecuador reported information on its use of GWP values consistent with those provided by the IPCC in its AR4 based on the effects over a 100-year time-horizon of GHGs.

42. For the energy sector, information was clearly reported on methodological tier levels, AD and their sources, and EFs. Tier 1 methodology was used for all categories and the main source of AD is the national energy balance. The transport sector accounts for the greatest share of total energy consumption in Ecuador, followed by the industry sector and households.

43. GHG emission estimates were reported in an aggregated manner for some energy sector categories and the reason for this was not clear to the TTE. For example, "IE" was reported extensively, including for subcategories 1.A.2.a–1.A.2.l under manufacturing

industries and construction and for vehicle types under road transportation (subcategory 1.A.3.b), and aggregated emission estimates were reported for the non-specified subcategory (1.A.5). During the technical analysis, the Party clarified that the Ministry of Energy and Mines was unable to attribute final energy consumption to specific sectors within the energy balance; the available raw data from the Ministry of Energy and Mines were not provided to the GHG inventory compilers; and the AD provided by the National Institute of Statistics and Censuses on road transport do not align with the IPCC subcategories or the required breakdown of AD.

44. The Party clearly reported the constraints that prevented it from accurately estimating fugitive emissions from fuels (category 1.B). During the technical analysis, the Party confirmed its need for capacity-building to enable use of the 2019 Refinement to the 2006 IPCC Guidelines for estimating emissions for this category.

45. For the IPPU sector, information was clearly reported on GHG emissions for the categories mineral industry (2.A), metal industry (2.C) and non-energy products from fuels and solvent use (2.D). Tier 1 methodology was used for all subcategories except for cement production, which is the only key category in the IPPU sector. For cement production, tier 2 methodology was used to estimate CO_2 emissions for the entire time series, except for 1994. The Party clearly reported in the NIR (p.156) that there are no data available to enable the use of tier 2 methodology for estimating emissions for 1994. Emissions for the categories chemical industry (2.B) and electronics industry (2.E) were reported as "NO" and appropriate notation keys were used for reporting the related subcategories. Information on methodological tier levels, AD and EFs used was clearly reported for all IPPU categories. In addition, emissions from lubricant use (2.D.1) and paraffin wax use (2.D.2) were clearly reported.

46. HFC and PFC emissions were reported as "NO", although the Party reported that these gases are imported for several uses. However, the Party clarified in its BUR that disaggregated data for HFCs and PFCs were not available, and it was therefore not possible to apply IPCC methodology to estimate and report emissions by gas. The Party reported SF_6 emissions from electrical equipment (subcategory 2.G.1) as "NO" and explained that this subcategory does not apply to Ecuador. Given that transmission and distribution of energy occurs in the country, it was not clear to the TTE whether the emissions do not occur or were not estimated by the Party owing to the lack of information and data. During the technical analysis, Ecuador clarified that interaction with the electricity sector was limited when the inventory was compiled but confirmed that the stakeholders in this sector were unsure about the types of insulator in use, which prevented the collection of the data needed to estimate the related emissions.

47. Information on NO_X, CO, NMVOC and SO_2 emissions for some sources in the IPPU sector for which default EFs are included in the *EMEP/EEA air pollutant emission inventory guidebook 2019*, the most up-to-date version at the time the BUR was under preparation, was not reported in Ecuador's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that it used the *EMEP/EEA air pollutant emission inventory guidebook 2016* and did not report those emissions owing to the lack of default EFs in that older version of the guidebook. The Party confirmed its need for capacity-building to enable use of the most recent version of the guidebook for estimating NO_X, CO, NMVOC and SO_2 emissions for all categories where they occur.

48. For 2006 IPCC Guidelines AFOLU categories 3.A and 3.C, CH_4 emissions from enteric fermentation (subcategory 3.A.1) and direct and indirect N_2O emissions from managed soils (subcategories 3.C.4 and 3.C.5 respectively) were identified as key categories and the most relevant emissions sources in the sector, accounting for 52.4, 30.7 and 10.2 per cent respectively of the total agriculture sector emissions for 2018 (see NIR "Improvement plan" annex, table 17, p.20). Ecuador used a combination of EFs from the 2006 IPCC Guidelines and country-specific EFs for estimating emissions for this sector. Information on AD and EFs and their sources for categories 3.A and 3.C (including country-specific information for some subcategories under category 3.A) was clearly reported in Ecuador's NIR.

49. Ecuador reported that it used tier 2 methodology from the 2006 IPCC Guidelines for estimating CH_4 emissions from enteric fermentation for dairy and non-dairy cattle. For the

remaining subcategories under categories 3.A and 3.C, the Party used tier 1 methodology only (see NIR table 90, p.201).

50. In its NIR ("Improvement plan" annex), Ecuador identified several actions that will enable it to improve future reporting for the agriculture sector, such as enhancing institutional arrangements between the Ministry of Agriculture and Livestock and the National Institute of Statistics and Censuses to open up access to and enable the harmonization of national databases containing information on fertilizers applied in the agriculture sector (e.g. the Agrocalidad database).

51. For land (category 3.B), Ecuador reported annual GHG emissions and removals for 1994, 2000, 2006, 2010, 2012, 2014, 2016 and 2018. Overall, the net removals from land fluctuated between a minimum of 16,252.62 Gg CO_2 eq in 2018 and a maximum of 62,681.61 Gg CO_2 eq in 1994. Except for forest land (subcategory 3.B.1), all land subcategories were reported as a net source of emissions throughout the time series. The sink capacity of forest land remaining forest land (subcategory 3.B.1.a) has steadily increased since 2000 owing to the progressive expansion of the area of forest land under legal protection orders and the gradual decrease in deforestation (conversion of forest land to other land uses). Information on AD and EFs and their sources for category 3.B was in general clearly reported in Ecuador's NIR.

52. CO_2 emissions from HWP were reported as "NE" in Ecuador's NIR (table 144, p.318) and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that CO_2 emissions from HWP were not estimated owing to a lack of national AD, and instant oxidation of the harvested biomass was therefore assumed for each year of the time series.

53. Ecuador reported the use of tier 2 methodology for calculating CO_2 emissions and removals for the subcategories under forest land (category 3.B.1) (NIR p.327). However, the TTE noted that IPCC default values were used (e.g. for forest land remaining forest land – native forests (subcategory 3.B.1.a)). In addition, Ecuador reported the use of tier 1 methodology for estimating CO_2 emissions for the subcategories under the categories cropland (3.B.2) and grassland (3.B.3) (e.g. land converted to cropland (3.B.2.b) and land converted to grassland (3.B.3.b)); however, the Party used country-specific EFs and tier 2 methodology from the 2006 IPCC Guidelines for the related AD. During the technical analysis, Ecuador clarified that a combination of tier 1 and tier 2 methodology was used for estimating emissions for categories 3.B.1, 3.B.2 and 3.B.3.

54. Information on CO_2 emissions and removals from the soil carbon pool under all land categories and subcategories was not reported in Ecuador's BUR. However, the Party indicated in its NIR that it is in the process of generating new and updating existing EFs that will enable the soil carbon pool to be accounted for once the Party's second national forest inventory has been completed.

55. Information on CH_4 and N_2O emissions associated with peat-forming areas under wetlands (subcategory 3.B.4) was not reported in Ecuador's BUR. According to the Party's definition of land-use categories for GHG inventory reporting, mountain peatlands present in high-altitude *páramo* ecosystems are classed as grassland. Therefore, only CO_2 emissions from land-use conversions were reported. During the technical analysis, the Party clarified that accurate mapping of the extent of mountain peatlands present in *páramos*, complex ecosystems found in high-altitude mountains (approximately 3,000 m above sea level), is not available, and nor are estimates of the associated non-CO_2 emissions from biomass burning, changes in the water table depth of peatlands, land-use conversions or grazing.

56. For the waste sector, information was clearly reported on AD, EFs and emissions from solid waste disposal (category 4.A), biological treatment of solid waste (category 4.B) and wastewater discharge and treatment (category 4.D). The Party used tier 1 methodology for all categories, except for solid waste disposal, the only key category in the sector, for which tier 2 methodology was used. Ecuador reported emissions from incineration and open burning of waste as "NE". However, the Party provided relevant clarification in its NIR on the factors that prevented it from estimating those emissions. The Party reported in the NIR that there are companies with environmental licences for incineration activities, but the lack of complete AD prevented it from estimating those emissions. During the technical analysis, the Party explained that the relevant information is not centralized within the Ministry of Environment, Water and Ecological Transition but reported to the various municipalities,

thereby creating a barrier to collecting the necessary data. The Party confirmed in its NIR the need for capacity-building for collecting accurate and reliable data for estimating emissions from incineration and open burning of waste from all stakeholders, including municipalities and the private sector.

57. Information on the AD used to estimate GHG emissions from biological treatment of solid waste (category 4.B) was not clearly reported in Ecuador's BUR. The Party reported in the NIR that AD for 1994–2012 and 2014–2018 were obtained from different data sources and it was not clear to the TTE whether the Party applied a method to ensure the consistency of the time series. Although it was clear to the TTE that the data for 2014–2018 include data for the Loja and Cuenca municipalities, it was not clear whether the information provided by those municipalities for 1994–2012 includes data on biological treatment of solid waste for all municipalities in the country. During the technical analysis, the Party clarified that the data reported for 1994–2012 were for the Loja and Cuenca municipalities only, since they were the only municipalities that managed solid waste using biological treatment.

58. The information reported in the NIR provides an update to the GHG inventories reported in the Party's NC3, which addresses anthropogenic emissions and removals for 1994–2012. The update was carried out for 1994–2018 using the methodologies contained in the 2006 IPCC Guidelines, thus generating a consistent 25-year time series. The Party reported that it recalculated emissions for all categories and sectors for 1994–2012 owing to the Party's transition from using the Revised 1996 IPCC Guidelines to using the 2006 IPCC Guidelines. In addition, the Party reported that recalculations were performed using more accurate AD and higher-tier methods for several categories, resulting in a decrease of estimated emissions for 2012 by 0.1 per cent. The GHG inventories for 1994–2018 reported in the NIR are consistent.

59. Ecuador described in its BUR the institutional framework for the preparation of its 2018 GHG inventory. The Party reported that the Ministry of Environment, Water and Ecological Transition is the governmental body responsible for its climate change policy and GHG inventory, which was prepared with the support of the GEF and the United Nations Development Programme, which assisted Ecuador in designing its GHG inventory system.

60. Information on GHG emissions for 1990, which is the first inventory year reported in the Party's NC1 and NC2, was not reported in the BUR. During the technical analysis, Ecuador clarified that information for some sectors was not available for 1990 owing to governmental changes that affected public sector institutions and the storage of data. Ecuador clarified that progress has been made in institutionalizing actions to improve the collection and storage of information, and in improving calculation methodologies for the preparation of the inventory.

61. Ecuador clearly reported that a key category analysis was performed for the level of and trend in emissions. However, the Party did not use the suggested aggregation level provided in the 2006 IPCC Guidelines (vol. 1, chap. 4, table 4.1). Although the national GHG inventory compilers are permitted to modify the suggested level of aggregation to reflect the country's circumstances, the key category analysis performed using the chosen aggregation level would not generate results that could help the Party to prioritize efforts to apply higher-tier methods for estimating GHG emissions. During the technical analysis, the Party clarified that disaggregated emission estimates are not available for all categories and it was therefore not possible to apply the suggested level of aggregation, and agreed that it needs capacity-building for collecting the data required to apply the suggested level of aggregation.

62. The BUR provides information on QA/QC measures for all sectors. Ecuador reported that all QC processes were conducted by the team of GHG inventory specialists working on the NC4 and second BUR with the support of working groups for each of the sectors and the technical team at the Ministry of Environment, Water and Ecological Transition. This process involved reviewing the GHG inventory results and incorporating suggestions for adjusting them. In addition, Ecuador reported that QA processes were undertaken by the Latin American Network on National Inventories of Greenhouse Gases as part of a third-party validation process. The TTE commends Ecuador for providing information on QA/QC procedures in accordance with the 2006 IPCC Guidelines, including improvement plans for each IPCC sector, and encourages the Party to provide in future submissions the results of the QA/QC procedures performed.

63. Ecuador reported information on CO_2 fuel combustion emissions using both the sectoral and the reference approach and presented information on fuel supply by energy commodity and year. The information reported indicates that the combustion emissions estimated under the sectoral approach (36,037.4 Gg CO_2 eq) are higher than the emissions estimated under the reference approach (35,682.6 Gg CO_2 eq). The difference between the estimates calculated using the two approaches was reported as less than 1 per cent. During the technical analysis, the Party clarified that the fuel supply data are incomplete, and that the energy balance was not aligned with the reference approach format outlined in the 2006 IPCC Guidelines and is missing important information such as final consumption of fuel by consumer category and imports of some fuels such as petroleum coke, as well as specific information on non-energy products. In the NIR, the Party identified future improvements in the information reported, such as more detailed energy balance data that are more closely aligned with the reference approach.

64. Estimates for the amount of non-energy use of fuels were not reported in the Party's NIR, despite the fact that the energy balance for 2018 contains data on non-energy use, and the information reported for 2018 in the NIR indicates double counting of non-energy use of fuels across the energy and IPPU sectors. During the technical analysis, the Party acknowledged that it is crucial to account for non-energy use of fuels in the energy balance in order to calculate the associated emissions using the reference approach, avoid double counting between the energy and IPPU sectors and estimate related GHG emissions in the IPPU sector.

65. The small difference between the sectoral and reference approaches and the negative apparent consumption for some fuels and some years of the time series indicate the need to improve the energy balance (e.g. the level of disaggregation and in terms of completeness and accuracy). During the technical analysis, the Party confirmed its need for capacity-building to improve the energy balance and the accuracy of the GHG emission estimates reported using the sectoral approach, as well as to develop, understand and improve its use of the reference approach.

66. Information was clearly reported on international aviation and marine bunker fuels.

67. Ecuador reported information on the uncertainty assessment (level) of its national GHG inventory. The uncertainty analysis was based on the tier 1 approach and covers all source categories and all direct GHGs. The results obtained, as reported in the BUR, reveal that the level uncertainty for emissions is 6.9 per cent excluding LULUCF.

68. Information on the uncertainty values for 1994 (the base year) used to estimate the trend uncertainty was not reported in Ecuador's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified this as an area where capacity-building is needed with a view to preparing for ETF implementation.

69. The TTE noted that the transparency of the information reported on GHG inventories could be further enhanced by addressing the areas noted in paragraphs 28, 30, 31, 32, 34, 37, 38, 43, 46, 47, 52, 53, 55, 56, 57, 60, 61, 65, 66 and 68 above, which could facilitate a better understanding of the information reported on GHG inventories.

70. In paragraphs 29, 33, 34, 35 and 40 of the summary report on the technical analysis of the Party's first BUR, the previous TTE noted areas where the transparency of the reporting on GHG inventories, in particular regarding the methodologies used, could be enhanced. The current TTE noted the improvements referred to in paragraphs 30, 33 and 45 above and commends the Party for enhancing the transparency of its reporting.

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

71. As indicated in table I.2, 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, to the extent possible.

72. The information reported provides a clear overview of the Party's mitigation actions and their effects. In its BUR, Ecuador reported information on its national context and framed its national mitigation planning and actions in the context of the National Climate Change Strategy, which was launched in 2012 by the Ministry of Environment, Water and Ecological Transition in line with the provisions of the Constitution of Ecuador and the National Well-

being Plan. The National Climate Change Strategy includes priority sectors, strategic objectives and adaptation and mitigation activities with short- and medium-term goals aligned with five objectives related to the overall reduction of GHG emissions. In 2021, an executive decree was adopted that prioritized the development and implementation of public policies and public, private and community initiatives through public–private partnerships that promote the transition to sustainable production and consumption systems, leading Ecuador towards net zero emissions by 2050. Most of the mitigation actions reported in the BUR were for 2016–2020.

73. Ecuador reported that climate change has been mainstreamed in and integrated into its development plans, including mitigation. Most of the mitigation actions are in the energy and LULUCF sectors.

74. In 2012, the Ministry of Environment, Water and Ecological Transition began implementing a project for strengthening capacity-building for climate change mitigation in Ecuador. Since the beginning of 2014, the focus of the project has been on gathering information on the potential for reducing GHG emissions in the energy sector. The document prepared, which contains technical information on the sectoral actions and measures promoted by the Government in 2010–2017, served as a key source of information for the very clear description of the energy sector and its mitigation actions reported in the BUR.

75. The Party reported a summary of its mitigation actions in tabular format in accordance with decision 2/CP.17, annex III, paragraph 11. The Party reported a summary of its sectoral mitigation actions in tabular format in accordance with decision 2/CP.17, annex III, paragraph 11. The Party also reported extensive information on its mitigation actions in narrative format.

76. Consistently with decision 2/CP.17, annex III, paragraph 12(a), Ecuador clearly reported the names of mitigation actions or groups of actions and coverage (sector and gases), but only partially reported progress indicators. For the energy and IPPU sectors in particular (specifically the actions related to sustainable cement industry, energy efficiency in industry and cleaner industrial production), a clear description of mitigation actions was provided in the BUR, as well as information on quantitative goals, including on mitigation potential.

77. Ecuador reported three main groups of mitigation actions: voluntary mitigation actions and initiatives (in the energy, IPPU, agriculture, LULUCF and waste sectors); NAMAs; and programmes such as the REDD+ Action Plan and the Forest National Strategy.

78. Ecuador reported on five NAMAs, four of which are in the energy sector, which continues to be the main contributor to the national GHG emissions. The proposed NAMA on energy efficiency in the public and residential sectors, which is aimed at promoting actions that enable the transition to the use of energy-efficient equipment, has the largest estimated emission reduction potential of the energy sector NAMAs (1,488.13 Gg CO_2 eq/year). In the livestock sector, the proposed NAMA on climate-smart livestock focuses on reducing GHG emissions from cattle ranching in the coastal and highlands regions of Ecuador through climate-smart livestock management practices, with an estimated total emission reduction potential of 52,787.88 Gg CO_2 eq over a five-year period. The proposed NAMA in the transport sector focuses on evaluating the implementation of technological, operational and logistical measures in the sector to improve energy efficiency and low-carbon mobility, with an estimated emission reduction potential of 2,782.64 Gg CO_2 eq/year.

79. For the energy sector, the Party described national mitigation goals of expanding electricity generation from renewable sources to 90 per cent of total electricity generation by 2035 and increasing fuel savings by optimizing electricity generation and energy efficiency. As set out in the Electricity Master Plan for 2016–2025 and the National Energy Efficiency Plan for 2016–2035, Ecuador has been promoting the diversification of the energy mix through the development of renewable energy sources such as hydroelectricity and the use of more efficient energy-related technologies. The highest estimated emission reduction potential is from the operationalization of 15 new hydroelectric power plants (2.2 Mt CO_2 eq/year between 2020 and 2035).

80. For the IPPU sector, Ecuador has been implementing voluntary mitigation actions since 2016 aimed at achieving cleaner production among the main emitting industries (cement, manufacturing, chemical, steel and food) in order to promote energy efficiency and the sustainable management of resources and raw materials. Ecuador reported that the

estimated emission reduction potential of actions aimed at improving energy efficiency and good waste management among small and medium-sized enterprises could be up to 1,642.99 t CO_2 eq/year.

81. For the LULUCF sector, Ecuador facilitated cooperation and collaboration with non-governmental organizations through the Ministry of Environment, Water and Ecological Transition to initiate the REDD+ readiness phase and developed a proposal for the Joint Forestry National Programme, which was submitted to the United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries. The readiness phase started at the end of 2011 and ended in June 2015. In 2016, following the submission of its REDD+ Action Plan "Forests to Live Well" 2016–2025 to the UNFCCC, Ecuador became the second country in the world to complete the REDD+ readiness phase. The REDD+ Action Plan defines the measures and actions that Ecuador is implementing until 2025 in order to reduce emissions from deforestation and forest degradation, as well as to achieve sustainable management and conservation of its natural resources.

82. After completing the REDD+ readiness phase, Ecuador signed its first agreement for a REDD+ results-based payment in 2018. This marks the beginning of the REDD+ results-based payments phase, in which Ecuador's efforts to reduce GHG emissions from the forestry sector are recognized. This phase is being implemented through the Party's REDD Early Movers Programme and REDD+ Results-based Payment Project.

83. Information on methodologies and assumptions for estimating the impact of mitigation actions for some sectors (i.e. IPPU, agriculture and waste) was only partially reported in Ecuador's BUR. Moreover, information on specific monitoring frameworks, indicators and impacts of mitigation actions was not reported for any sector in the Party's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that actions in the energy sector are well coordinated as a result of linkages with the Government's initiatives in this area, including through the use of centralized databases, while for other sectors Ecuador is working on developing a platform and register of actions and centralizing data at the national level, as indicated in the National Climate Change Strategy.

84. Ecuador provided information on its involvement in international market mechanisms. Ecuador documented 31 CDM projects approved by its designated national authority and 4 verified CDM projects under the UNFCCC CDM process. The statistics include information on the total projects, sectors covered and quantity of CERs issued for Ecuador. In 2011–2013, 17 projects were registered under the CDM, among which hydropower development is the most significant (accounting for 48.4 per cent of estimated emission reductions), followed by projects involving CH_4 capture and use (16.1 per cent of estimated emission reductions) and biomass power generation (9.7 per cent of estimated emission reductions). Of the 31 CDM projects registered up until 2013, 12 have issued CERs amounting to 2,403.87 Gg CO_2 eq. However, in terms of progress, the Party mentioned that the implementation of a CDM project on the Toachi-Pilatón hydroelectric power plant, with a mitigation potential of 605.22 Gg CO_2 eq/year, is under way and will require a total investment of USD 859 million. During the technical analysis, the Party clarified that no new projects have been initiated since 2016 owing to the fall in the price of CERs, which reduced interest among potential project proponents.

85. Ecuador reported information on its domestic MRV arrangements in accordance with decision 2/CP.17, annex III, paragraph 13. The information reported indicates that Ecuador is in the process of enhancing its domestic MRV system for mitigation, adaptation and climate finance. Ecuador reported that there have been major advances in the interconnection between information technology platforms related to REDD+ issues in the country, including the national GHG inventory system, the National Forest Monitoring System, the Safeguards Information System and the REDD+ Measures and Actions Management System. The Party indicated that the main purpose is to improve the exchange of information on REDD+ management in Ecuador. The Ministry of Environment, Water and Ecological Transition began institutionalizing the National Forest Monitoring System in 2013 and registering related information in the Single Environmental Information System within the Ministry's Directorate of Information, Monitoring and Evaluation.

86. Further, Ecuador reported consistently with the voluntary general guidelines for domestic MRV of domestically supported NAMAs, contained in the annex to decision 21/CP.19. Ecuador outlined the steps on a proposed pathway to establishing an enhanced MRV system, including establishing institutional arrangements, defining mitigation accounting standards, monitoring data-collection responsibilities, defining reporting obligations, and defining verification approaches and roles.

87. The TTE noted that the transparency of the information reported on mitigation actions could be further enhanced by addressing the areas noted in paragraphs 83–84 above, which could facilitate a better understanding of the information reported on mitigation actions.

88. In paragraphs 43–44 of the summary report on the technical analysis of Ecuador's first BUR, the previous TTE noted areas where the transparency of the reporting on NAMAs and methodologies for estimating the impacts of mitigation actions could be further enhanced. The current TTE noted the improvements referred to in paragraphs 75 and 78 above and commends the Party for enhancing the transparency of its reporting.

89. Ecuador reported in its BUR (p.7) information on its current initiatives for enhancing its existing MRV system for compliance with requirements under the ETF. Since 2015, Ecuador has been developing actions aimed at strengthening the transparency, accuracy and comparability of the information it reports related to climate change. Following Ecuador's signing of the Paris Agreement in 2016, the arrangements established under the ETF have been being implemented in the country, including the development of a robust MRV system for actions aimed at the efficient management of climate change reporting. The TTE commends the Party for the very clear and comprehensive reporting on its proactive approach to preparing for ETF implementation.

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

90. As indicated in table I.3, 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.

91. Ecuador reported information on constraints and gaps, and related financial, technical and capacity-building needs in accordance with decision 2/CP.17, annex III, paragraph 14. In its BUR, Ecuador identified issues of governance, a lack of coordination mechanisms, finance, and the insufficient management of knowledge and climate change research as constraints in the areas of mitigation, adaptation, means of implementation and the MRV system. Ecuador reported that its financial, technical and capacity-building needs are primarily in the areas of tracking the progress of implementation of its adaptation and mitigation actions and using the 2006 IPCC Guidelines for preparing its GHG inventory. This includes facilitating inter-institutional coordination with entities such as the Ministry of Foreign Affairs and Human Mobility and the Ministry of Economy and Finance, consolidating national climate change regulations and developing planning instruments. Ecuador reported that it requires USD 2,653.87 million for mitigation, USD 102.80 million for adaptation, USD 5.25 million for cross-cutting measures, USD 1.67 million to prepare its first and second BTRs and NC5, and USD 2.10 million to establish its National Climate Change Registry and MRV system.

92. Ecuador reported information on financial resources, technology transfer, capacity-building and technical support received in accordance with decision 2/CP.17, annex III, paragraph 15. In its BUR, Ecuador reported that it received approximately USD 0.07 million from the GEF for preparing its latest BUR. The information reported indicates that Ecuador received capacity-building and technical support from the United Nations Development Programme to facilitate its use of the 2006 IPCC Guidelines for preparing its GHG inventory. In 2016–2020, Ecuador received USD 2,406.64 million to implement adaptation and mitigation projects, including the Andes Adaptation to the Impact of Climate Change on Water Resources project and the Enhancing Resilience of Communities to the Adverse Effects of Climate Change on Food Security project. Moreover, 9.8 per cent of Ecuador's international funding during 2016–2020 came from United Nations entities and other international organizations.

93. Ecuador reported information on nationally determined technology needs with regard to the development and transfer of technology in accordance with decision 2/CP.17, annex

III, paragraph 16. In its BUR, Ecuador reported that the technology needs assessment was nationally determined.

94. Information on the national process to determine technology needs was not reported in Ecuador's BUR. However, the Party clarified in its BUR that it undertook the process in a cross-cutting manner by identifying technology needs when developing its nationally determined contribution, NAMAs, REDD+ strategy, GHG inventory and adaptation actions. In its BUR, the Party reported that it is planning to establish a technology working group to assist its public and private sector institutions in identifying the most appropriate adaptation and mitigation technologies.

95. Ecuador reported that it received funding from the Climate Technology Centre and Network for implementing two waste-to-energy projects. However, the BUR does not contain any information on technical assistance, capacity-building, transfer of technology or knowledge exchange facilitated by the Climate Technology Centre and Network, all of which are among its activities.

96. The TTE noted that the transparency of the information reported on needs and support received could be further enhanced by addressing the area noted in paragraph 95 above, which could facilitate a better understanding of the information reported on needs and support received.

97. In paragraphs 52, 54, 58 and 59 of the summary report on the technical analysis of Ecuador's first BUR, the previous TTE noted areas where the transparency of the reporting on constraints, gaps, needs and support needed and received could be further enhanced. The current TTE noted the improvements in paragraphs 92–94 above and commends the Party for enhancing the transparency of its reporting.

5. Any other information

98. Ecuador reported some information on adaptation actions that may lead to GHG emission reductions, without providing estimations of such reductions, including energy efficiency measures and promoting low-emission lifestyles in the Galapagos Islands. During the technical analysis, Ecuador clarified that no efforts have previously been made to quantify the mitigation effects of the adaptation measures because they were implemented via programmes developed with the intention of enhancing adaptive capacity. Ecuador is establishing a process for quantifying on an ongoing basis the emission impacts of such measures.

D. Identification of capacity-building needs

99. In consultation with Ecuador, the TTE identified the following needs for capacity-building that could facilitate the preparation of future submissions and participation in ICA:

(a) Establishing the necessary institutional arrangements to ensure timely submission of BTRs and NCs;

(b) Determining the composition and working methods of the planned technology working group;

(c) Strengthening institutional arrangements for QA/QC procedures for the GHG inventory;

(d) Using the 2019 Refinement to the 2006 IPCC Guidelines in order to improve transparency, accuracy, completeness, consistency and comparability of reporting when developing the GHG inventory and in preparation for implementation of the ETF;

(e) Reporting and using uncertainty analysis for national GHG emissions;

(f) Enhancing institutional arrangements in order to improve the estimation and understanding of GHG emissions in the energy sector, including by strengthening capacity to elaborate the energy balance;

(g) Enhancing institutional arrangements for compiling disaggregated data on HFCs and PFCs and data on SF_6 used in electrical equipment;

(h) Reporting and using the key category analysis for national GHG emissions;

(i) Reporting appropriate notation keys;

(j) Estimating NO_X, CO, NMVOC and SO_2 emissions;

(k) Elaborating a consistent time series for the GHG inventory;

(l) Elaborating national-level estimates of GHG removals from forest land remaining forest land;

(m) Enhancing the monitoring and reporting of GHG emissions (CO_2 and non-CO_2) from high-altitude *páramo* ecosystems;

(n) Reporting on mitigation actions, in particular updated information and quantitative goals and progress indicators, as well as on methodologies, assumptions and results achieved;

(o) Participating in the mechanism established by Article 6, paragraph 4, of the Paris Agreement.

100. The TTE noted that, in addition to those identified during the technical analysis, Ecuador reported the following capacity-building needs in its BUR, which include capacity-building needs for transitioning to and implementing the ETF:

(a) Preparing the GHG inventory and the NIR for the purpose of the BTR;

(b) Strengthening institutional, governance and human capacity to fulfil obligations under the Convention;

(c) Establishing a systematic and continuous approach to raising public awareness on climate change.

101. In paragraph 65 of the summary report on the technical analysis of Ecuador's first BUR, the previous TTE, in consultation with Ecuador, identified capacity-building needs. In its second BUR, Ecuador reflected that some of those capacity-building needs have either been or are being addressed, namely enhancing:

(a) Technical capacity for preparing the national GHG inventory, including through training on the use of the 2006 IPCC Guidelines (addressed);

(b) Technical capacity for collecting data and information for all sectors and improving the arrangements that support the collection of data owned by external entities (ongoing);

(c) The reporting of chemical and metal industry data (addressed);

(d) The reporting of a consistent time series back to the years reported in the previous NCs (ongoing).

III. Conclusions

102. The TTE conducted a technical analysis of the information reported in the second BUR of Ecuador in accordance with the UNFCCC reporting guidelines on BURs and concludes that the information reported is mostly consistent. It provides an overview of national circumstances and institutional arrangements relevant to the preparation of NCs on a continuous basis; the national inventory of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol, including an NIR; mitigation actions and their effects for the different sectors (energy, IPPU, agriculture, LULUCF and waste), including associated methodologies and assumptions for most of the actions; constraints and gaps, and related financial, technical and capacity-building needs, including a description of support needed and received; the level of support received to enable the preparation and submission of BURs; domestic MRV; and any other information relevant to the achievement of the objective of the Convention. During the technical analysis, additional information was provided by Ecuador on the mitigation actions reported. The TTE concluded that the information analysed is mostly transparent.

103. Ecuador reported an update on the institutional arrangements relevant to the preparation of its BURs. The arrangements were established through the Environmental Organic Code, which came into effect in 2018 and empowered the Ministry of Environment,

Water and Ecological Transition, with the support of relevant government agencies, to prepare the national reports for submission to the UNFCCC. The national MRV system is being finalized and will be integrated into the National Climate Change Registry. The Party has taken significant steps to establish institutional arrangements that enable sustainable preparation of its BURs, such as making organizational improvements and establishing knowledge-sharing procedures to facilitate sectoral information transfer.

104. In its second BUR, submitted in 2023, Ecuador reported information on its national GHG inventory for specific years (1994, 2000, 2006, 2010, 2012, 2014, 2016 and 2018) in the period 1994–2018. This included GHG emissions and removals of CO_2, CH_4 and N_2O for all relevant sources and sinks as well as the precursor gases for some categories. The inventory was developed on the basis of the 2006 IPCC Guidelines, and the Party mainly used tier 1 methodology, while applying tier 2 methodology for the categories cement production (2.A.1), CH_4 emissions from enteric fermentation for cattle (3.A.1), CO_2 emissions from forest land remaining forest land (3.B.1.a) and solid waste disposal (4.A). The total GHG emissions for 2018 were reported as 59,044.02 Gg CO_2 eq (excluding land and HWP) and 75,326.88 Gg CO_2 eq (including land and HWP). Thirteen key categories and main gases were identified, with CO_2 as the main gas, and forest land remaining forest land and transport as the two most significant categories. The NIR is generally transparent. However, Ecuador did not report GHG emission estimates for 1990, which were included in previous NCs, nor estimate HFC or SF_6 emissions from the IPPU sector or GHG emissions from incineration and open burning of waste.

105. Ecuador reported information on mitigation actions and their effects in both tabular and narrative format, and framed its national mitigation planning and actions in the context of its National Climate Change Strategy, which was launched in 2012. Ecuador reported three main groups of mitigation actions: voluntary mitigation actions and initiatives (in the energy, IPPU, agriculture, LULUCF and waste sectors); NAMAs; and programmes such as the REDD+ Action Plan and the Forest National Strategy. The mitigation actions focus mainly on the energy sector, and the respective emission reduction potential of those actions was reported. The Party partially reported the progress of implementation of its mitigation actions and the results achieved, including estimated outcomes. The highest estimated outcome was reported for the energy sector, with the operationalization of 15 new hydroelectric power plants having the greatest estimated emission reduction potential, of 2.2 Mt CO_2 eq/year between 2020 and 2035. The Party also reported information on its involvement in international market mechanisms and on MRV arrangements. Estimates of emission reductions and information on methodologies and assumptions were not fully provided owing to difficulties in obtaining the necessary data, as clarified by the Party both during the technical analysis and in the BUR. The TTE noted that Ecuador is working on developing the registry for mitigation actions, which will enable the actions to be monitored.

106. Ecuador reported information on key constraints, gaps and related needs, including inter-institutional coordination, consolidation of national climate change regulations and development of planning instruments. Information was reported on the technical, technology transfer and capacity-building support received, including through the implementation of numerous adaptation and mitigation projects valued at USD 2,406.64 million. The Party also reported that it received financial support of approximately USD 0.07 million from the GEF for preparing its latest BUR. The Party further reported information on the transfer of technology received, including through two mitigation projects funded by the Climate Technology Centre and Network. The information on technology needs reported in the BUR was not very detailed owing to the need to elaborate a national process for determining technology needs.

107. The current TTE noted improvements in the reporting in the Party's second BUR compared with that in its previous BUR. The information reported demonstrates that the Party has taken into consideration the areas for enhancing the transparency of the information reported noted by the TTE in the summary report on the technical analysis of the first BUR. However, improvements are ongoing, and the Party has taken note of outstanding areas for future improvements.

108. The TTE, in consultation with Ecuador, identified the 15 capacity-building needs listed in chapter II.D above and needs for capacity-building that aim to facilitate reporting in accordance with the UNFCCC reporting guidelines on BURs and participation in ICA in accordance with the ICA modalities and guidelines, taking into account Article 4, paragraph

3, of the Convention. The Party, in consultation with the TTE, also identified the need for capacity-building to facilitate transition to the ETF listed in paragraph 100(a) above. Ecuador prioritized all the capacity-building needs.

Annex I

Extent of the information reported by Ecuador in its second biennial update report

Table I.1
Identification of the extent to which the elements of information on greenhouse gases are included in the second biennial update report of Ecuador

Decision	*Provision of the reporting guidelines*	*Assessment of whether the information was reported*	*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, and subsequent BURs shall cover a calendar year that does not precede the submission date by more than four years.	No	Ecuador submitted its second BUR in February 2023; the GHG inventory reported is for specific years within the period 1994–2018.
Decision 2/CP.17, annex III, paragraph 4	Non-Annex I Parties should use the methodologies established in the latest UNFCCC guidelines for the preparation of NCs from non-Annex I Parties approved by the Conference of the Parties or those determined by any future decision of the Conference of the Parties on this matter.	Yes	Ecuador used the 2006 IPCC Guidelines.
Decision 2/CP.17, annex III, paragraph 5	The updates of the section on 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 EF may be made in the subsequent full NC.	Yes	Ecuador used the 2006 IPCC Guidelines.
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) The tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF;	Yes	Comparable information was reported in NIR table 151 (p.335) on the biomass carbon pool only, and in Excel spreadsheets annexed to the NIR on the biomass, litter and deadwood carbon pools, by subcategory under category 3.B land.
	(b) The sectoral report tables annexed to the Revised 1996 IPCC Guidelines.	Yes	Comparable information was reported.
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 its previous NCs.	Partly	The time series reported in the BUR does not include 1990, which was reported in previous NCs.
Decision 2/CP.17, annex III, paragraph 8	Non-Annex I Parties that have previously reported on their national GHG inventories contained in their NCs are encouraged to submit summary information tables of inventories for	Partly	This information was not reported for 1990.

Decision	*Provision of the reporting guidelines*	*Assessment of whether the information was reported*	*Comments on the extent of the information provided*
	previous submission years (e.g. for 1994 and 2000).		
Decision 2/CP.17, annex III, paragraph 9	The inventory section of the BUR should consist of an NIR as a summary or as an update of the information contained in decision 17/CP.8, annex, chapter III (National greenhouse gas inventories), including:	Yes	
	(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);	Yes	Comparable information was reported in BUR table 5 (p.19).
	(b) Table 2 (National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF_6).	No	Comparable information was not reported.
Decision 2/CP.17, annex III, paragraph 10	Additional or supporting information, including sector-specific information, may be supplied in a technical annex.	Yes	The Party submitted an NIR as an annex to its BUR.
Decision 17/CP.8, annex, paragraph 12	Non-Annex I Parties are also encouraged, to the extent possible, to undertake any key source analysis as indicated in the IPCC good practice guidance to assist in developing inventories that better reflect their national circumstances.	Yes	
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	Information on procedures and arrangements for collecting and archiving data, the Party's efforts to make this a continuous process, and the role of the institutions involved was reported.
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:		
	(a) CO_2;	Partly	Emissions were not estimated for some categories, such as incineration and open burning of waste.
	(b) CH_4;	Partly	Emissions from incineration and open burning of waste were not estimated.
	(c) N_2O.	Partly	Emissions from incineration and open burning of waste were not estimated.
Decision 17/CP.8, annex, paragraph 15	Non-Annex I Parties are encouraged, as appropriate, to provide information on anthropogenic emissions by sources of:	Yes	
	(a) HFCs;	No	HFC emissions were incorrectly reported as "NO".
	(b) PFCs;	No	PFC emissions were incorrectly reported as "NO".
	(c) SF_6.	No	SF_6 emissions were incorrectly reported as "NO".

Decision	*Provision of the reporting guidelines*	*Assessment of whether the information was reported*	*Comments on the extent of the information provided*
Decision 17/CP.8, annex, paragraph 16	Non-Annex I Parties are encouraged, as appropriate, to report on anthropogenic emissions by sources of other GHGs, such as:		
	(a) CO;	Partly	CO emissions were incorrectly reported as “NO” or “NA” for many categories, instead of “NE”.
	(b) NO_X;	Partly	NO_X emissions were incorrectly reported as “NO” or “NA” for many categories, instead of “NE”.
	(c) NMVOCs.	Partly	NMVOC emissions were incorrectly reported as “NO” or “NA” for many categories, instead of “NE”.
Decision 17/CP.8, annex, paragraph 17	Other gases not controlled by the Montreal Protocol, such as sulfur oxides, and included in the Revised 1996 IPCC Guidelines may be included at the discretion of Parties.	Yes	The Party reported on other gases, such as SO_2.
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.	Yes	
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	
	(b) Marine bunker fuels.	Yes	
Decision 17/CP.8, annex, paragraph 20	Non-Annex I Parties wishing to report on aggregated GHG emissions and removals expressed in CO_2 eq should use the GWP provided by the IPCC in its AR2 based on the effects of GHGs over a 100-year time-horizon.	NA	The Party used the GWP provided in the AR4 based on the effects of GHGs over a 100-year time-horizon.
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 EFs and AD. 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, EFs and AD 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	Yes	Ecuador used the 2006 IPCC Guidelines. Tier 1 methodology was used for the energy sector.

Decision	*Provision of the reporting guidelines*	*Assessment of whether the information was reported*	*Comments on the extent of the information provided*
	and removals by sinks of GHGs not controlled by the Montreal Protocol;		A combination of tier 1 and 2 methodology was used for the other sectors.
	(b) Explanation of the sources of EFs;	Yes	
	(c) Explanation of the sources of AD;	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:	NA	
	(i) Source and/or sink categories;		
	(ii) Methodologies;		
	(iii) EFs;		
	(iv) AD;		
	(e) Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building.	Yes	The Party provided detailed information on planned improvements under each category reported in the sectoral chapters of the NIR.
Decision 17/CP.8, annex, paragraph 22	Each non-Annex I Party is encouraged to use tables 1–2 of the guidelines annexed to decision 17/CP.8 in reporting its national GHG inventory, taking into account the provisions established in paragraphs 14–17. In preparing those tables, Parties should strive to present information that is as complete as possible. Where numerical data are not provided, Parties should use the notation keys as indicated.	Partly	Notation keys were not used appropriately for many categories. The Party did not use table 2 of the guidelines annexed to decision 17/CP.18, which requires fluorinated gases to be reported on a gas-by-gas basis, and did not report similar information.
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	
	(b) Underlying assumptions;	Yes	
	(c) Methodologies used, if any, for estimating these uncertainties.	Yes	

Note: 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, paras. 3–10 and 41(g). Further, as per para. 3 of those guidelines, non-Annex I Parties are to submit updates of their national GHG inventories in accordance with paras. 8–24 of the UNFCCC guidelines for the preparation of NCs from non-Annex I Parties, 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.

Table I.2
Identification of the extent to which the elements of information on mitigation actions are included in the second biennial update report of Ecuador

Decision	*Provision of the reporting guidelines*	*Assessment of whether the information was reported*	*Comments on the extent of the information provided*
Decision 2/CP.17, annex III, paragraph 11	Non-Annex I Parties should provide information, in tabular format, on actions to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol.	Yes	
Decision 2/CP.17, annex III, paragraph 12	For each mitigation action or group 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	Information on quantitative goals and progress indicators for some of the mitigation actions in the IPPU, agriculture and waste sectors was not reported.
	(b) Information on:		
	(i) Methodologies;	Partly	Information on methodologies for the agriculture and waste sectors was not reported.
	(ii) Assumptions;	Partly	Information on assumptions for the IPPU and waste sectors was not reported.
	(c) Information on:		
	(i) Objectives of the action;	Yes	
	(ii) Steps taken or envisaged to achieve that action;	Yes	
	(d) Information on:		
	(i) Progress of implementation of the mitigation actions;	Yes	
	(ii) Progress of implementation of the underlying steps taken or envisaged;	Partly	The Party did not report on the status of the mitigation actions.
	(iii) Results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions, to the extent possible;	Partly	The Party reported on the emission reduction potential of most of the mitigation actions in the energy sector. Estimated emission reductions for other sectors were not reported.
	(e) Information on international market mechanisms.	Yes	
Decision 2/CP.17, annex III, paragraph 13	Parties should provide information on domestic MRV arrangements.	Yes	

Note: 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, paras. 11–13.

Table I.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 second biennial update report of Ecuador

Decision	*Provision of the reporting requirements*	*Assessment of whether the information was reported*	*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:		
	(a) Constraints and gaps;	Yes	
	(b) Related financial, technical and capacity-building needs.	Yes	
Decision 2/CP.17, annex III, paragraph 15	Non-Annex I Parties should provide:		
	(a) Information on financial resources received, technology transfer and capacity-building received;	Partly	Ecuador did not provide disaggregated information on the support received.
	(b) Information on technical support received from the GEF, Parties included in Annex II to the Convention 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 BUR.	Yes	
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) Nationally determined technology needs;	Partly	Ecuador did not describe how it determined its technology needs.
	(b) Technology support received.	Partly	Ecuador did not specify the type of technology support received.

Note: 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, paras. 14–16.

Annex II

Reference documents

A. Reports of the Intergovernmental Panel on Climate Change

IPCC. 1997. *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*. JL Houghton, LG Meira Filho, B Lim, et al. (eds.). Paris: IPCC/Organisation for Economic Co-operation and Development/International Energy Agency. Available at https://www.ipcc-nggip.iges.or.jp/public/gl/invs1.html.

IPCC. 2000. *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*. J Penman, D Kruger, I Galbally, et al. (eds.). Hayama, Japan: IPCC/Organisation for Economic Co-operation and Development/International Energy Agency/Institute for Global Environmental Strategies. Available at http://www.ipcc-nggip.iges.or.jp/public/gp/english/.

IPCC. 2003. *Good Practice Guidance for Land Use, Land-Use Change and Forestry*. J Penman, M Gytarsky, T Hiraishi, et al. (eds.). Hayama, Japan: Institute for Global Environmental Strategies. Available at http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.html.

IPCC. 2006. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. S Eggleston, L Buendia, K Miwa, et al. (eds.). Hayama, Japan: Institute for Global Environmental Strategies. Available at http://www.ipcc-nggip.iges.or.jp/public/2006gl.

IPCC. 2019. *2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.* E Calvo Buendia, K Tanabe, A Kranjc, et al. (eds.). Geneva: IPCC. Available at https://www.ipcc-nggip.iges.or.jp/public/2019rf/index.html.

B. UNFCCC documents

First and second BURs of Ecuador, including the NIRs. Available at https://unfccc.int/BURs.

NC1, NC2, NC3 and NC4 of Ecuador. Available at https://unfccc.int/non-annex-I-NCs.

Summary report on the technical analysis of the first BUR of Ecuador, contained in document FCCC/SBI/ICA/2016/TASR.1/ECU. Available at https://unfccc.int/documents/28217.

C. Other documents

The following references may not conform to UNFCCC editorial style as some have been reproduced as received:

EEA. 2016. *EMEP/EEA air pollutant emission inventory guidebook 2016: Technical guidance to prepare national emission inventories*. Luxembourg: Publications Office of the European Union. Available at https://www.eea.europa.eu/publications/emep-eea-guidebook-2016.

EEA. 2019. *EMEP/EEA air pollutant emission inventory guidebook 2019: Technical guidance to prepare national emission inventories*. Luxembourg: Publications Office of the European Union. Available at https://www.eea.europa.eu/publications/emep-eea-guidebook-2019.