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Technical analysis of the first biennial update report of Suriname submitted on 5 November 2022

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. 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 first biennial update report of Suriname, 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	<i>2006 IPCC Guidelines for National Greenhouse Gas Inventories</i>
2019 Refinement to the 2006 IPCC Guidelines	<i>2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories</i>
AD	activity data
AFOLU	agriculture, forestry and other land use
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BUR	biennial update report
CH ₄	methane
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
EF	emission factor
FAOSTAT	statistical database of the Food and Agriculture Organization of the United Nations
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
ICA	international consultation and analysis
IPCC	Intergovernmental Panel on Climate Change
IPCC good practice guidance	<i>Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories</i>
IPCC good practice guidance for LULUCF	<i>Good Practice Guidance for Land Use, Land-Use Change and Forestry</i>
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
Montreal Protocol	Montreal Protocol on Substances that Deplete the Ozone Layer
MRV	measurement, reporting and verification
N ₂ O	nitrous oxide
NA	not applicable
NC	national communication
NDC	nationally determined contribution
NMVO	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	<i>Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories</i>
SF ₆	sulfur hexafluoride
SO _x	sulfur oxides
TTE	team of technical experts
UNEP	United Nations Environment Programme

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. The least developed countries and small island developing States may submit at their discretion.
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. Decision 14/CP.19, paragraph 7, outlines that developing country Parties seeking to obtain and receive payments for results-based actions can submit relevant information and data through the BUR in the form of a technical annex as per decision 2/CP.17, annex III, paragraph 19.¹ Decision 14/CP.19, paragraph 8, outlines that the submission of the technical annex is voluntary and in the context of results-based payments. As mandated by decision 14/CP.19, paragraphs 10–14, the technical annex submitted by Suriname has been subject to technical analysis by two LULUCF experts who are included as members of a TTE. The results of the technical analysis are captured in two separate technical reports.²
5. This summary report presents the results of the technical analysis of the first BUR of Suriname, 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, Suriname submitted its first BUR on 5 November 2022 as a stand-alone update report.
7. The technical analysis of Suriname's BUR was conducted from 17 to 22 February 2023 in Bonn 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: Buket Akay (Türkiye), Irina Atamuradova (former member of the Consultative Group of Experts from Turkmenistan), Bernard Ayittah (Ghana), Hoy Yen Chan (Malaysia), Sangay Dorji (Bhutan), Craig William Elvidge (New Zealand), Baasansuren Jamsranjav (Mongolia), Nato Lomidze (Georgia), Soriano Luna Maria de los Angeles (Mexico), Anwar Sidahmed Mohamed Abdalla (Sudan), Gherghita Nicodim (Romania), Marcela Itzel Olguin-Alvarez (Mexico) and David Glen Thistlethwaite (United Kingdom of Great Britain and Northern Ireland). Irina Atamuradova and Gherghita Nicodim were the co-leads. The technical analysis was coordinated by Gopal Joshi (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 Suriname engaged in consultation³ on the identification of capacity-building needs for the preparation of BURs and participation in the ICA process. Following the technical analysis of Suriname's first BUR, the TTE prepared and shared a draft summary report with

¹ The technical annex on the results of implementing REDD+ activities.

² FCCC/SBI/ICA/2023/TATR.1/SUR and FCCC/SBI/ICA/2023/TATR.2/SUR. At the time of publication of this report, the technical reports were being prepared.

³ The consultation was conducted via videoconferencing.

Suriname on 15 May 2023 for its review and comment. Suriname, in turn, provided its feedback on the draft summary report on 25 July 2023.

9. The TTE responded to and incorporated Suriname's comments referred to in paragraph 8 above and finalized the summary report in consultation with the Party on 7 August 2023.

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 Suriname'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 partially 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.

C. Technical analysis of the information reported

14. 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.

15. 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.

16. 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

17. 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.

18. Suriname reported in its first BUR information 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 on national circumstances and constraints in relation to 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, paragraphs 9–10, of the Convention.

19. In addition, Suriname provided a summary of relevant information regarding its national circumstances in tabular and graphical format.

20. Suriname reported in its first BUR information on its existing institutional arrangements relevant to the preparation of its NCs and BURs on a continuous basis. 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, and mechanisms for information and data collection. The Party reported that the Directorate of the Environment under the Ministry of Spatial Planning and Environment is responsible for coordinating all policies and activities related to climate change, including the preparation of NCs, NDCs and BURs. The National Institute for Environment and Development in Suriname functions as an advisory body to all the government ministries and agencies in relation to climate change activities. All relevant ministries and government institutions take climate change issues into consideration in their operations and functions, including generating and sharing data and information for preparing NCs, NDCs and BURs. The Suriname Environmental Information Network manages and disseminates all environmental data in close collaboration with key stakeholders.

21. The TTE noted planned improvements to the information reported in the BUR on institutional arrangements. The National Environmental Authority, established in 2020 under the Environmental Framework Act, will supervise the implementation of the Environmental Framework Act and environmental policies together with other relevant ministries. The Directorate of the Environment under the Ministry of Spatial Planning and Environment will continue to coordinate the formulation, implementation and monitoring of policies and activities related to climate change and the environment and support the implementation of multilateral environmental agreements. Under the Environmental Framework Act, which is currently undergoing some revisions, the National Institute for Environment and Development will be integrated into the National Environmental Authority. Coordination Environment, which was part of the Cabinet of the President, has now been transferred to the Directorate of the Environment. The National Institute for Environment and Development functions as the technical working arm for the Ministry of Spatial Planning and Environment. The Suriname Environmental Information Network, which is part of the National Institute for Environment and Development, will be further strengthened to function as a clearing house for coordinating and standardizing data across ministries and feeding the information to the Ministry of Spatial Planning and Environment for reporting purposes.

22. Suriname reported in its first BUR information on its domestic MRV arrangements. The information reported indicates that Suriname does not currently have a fully functional domestic MRV system that covers all major sectors. However, Suriname uses several online

databases and tools (e.g. Dondru,⁴ KOPI⁵ and Gonini⁶) to track and report on climate change and environmental data and indicators, adaptation and mitigation actions, GHG inventories and support received. The forestry sector has a well-developed national forest monitoring system for gathering and reporting data on forestry-related activities. The Party reported that no institution is currently assigned to coordinate the domestic MRV system. However, the relevant ministries and institutions, guided by their operations and functions, are collecting and sharing data to support the domestic MRV system. For example, the Foundation for Forest Management and Production Control collects and reports all forest-related data, while the Directorate of the Environment coordinates the compilation of GHG inventories and tracks the progress of mitigation actions.

23. The Party also reported that its MRV tools and the database for storing and processing information on support needed and received are not yet fully developed, meaning that available data are decentralized and scattered. The TTE noted that Suriname is assessing and strengthening the existing systems and processes that support MRV actions in order to further develop and improve the domestic MRV system to meet the UNFCCC reporting requirements. The domestic MRV system is being developed at the national level and will cover support needed and received; progress on mitigation actions and on emission reduction and sustainable development; and compilation of the national GHG inventory.

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

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

25. Suriname submitted its first BUR in 2022 and the GHG inventory reported is for 2000–2017. The latest reported inventory year is more than four years prior to the date of submission of the Party's BUR. In its first BUR, Suriname reported that this delay was due to its limited capacity regarding technical resources and funding within ministries and institutions to enable it to prepare UNFCCC-compliant documents. During the technical analysis, Suriname further clarified that it faced several challenges and gaps during the GHG inventory process, relating to (1) procedures and institutional arrangements; (2) lack of awareness of the process among the data providers, including with respect to their responsibilities for compiling and managing data; (3) stakeholder engagement; and (4) availability, accessibility and consistency of information on AD and EFs.

26. GHG emissions and removals for the BUR covering the 2000–2017 inventories were estimated using the 2006 IPCC Guidelines and the 2019 Refinement to the 2006 IPCC Guidelines. The TTE commends the Party for using the latest IPCC guidelines.

27. Suriname reported in its BUR (p.16) that a tier 1 methodology was used for estimating GHG emissions and removals for most of the sectors and categories. However, a tier 2 methodology was used for all land categories under the forestry sector (i.e. categories 3.B.1–3.B.6) and for biomass burning in forest land and grassland (category 3.C.1). As part of its improvement plan, the Party intends to implement a combination of tier 2 and 3 methodologies for future submissions.

28. The TTE noted that Suriname mentioned in its BUR (p.52) the use of a combination of tiers 1–3 for land and harvested wood products (categories 3.B and 3.D). However, the information provided on the specific tiers corresponding to each category (BUR p.53, table 6) did not include a tier 3 methodology for any of the reported categories; only tier 1 and 2 methodologies were reported. The information reported in the BUR was not clear to the TTE. During the technical analysis, the Party clarified that the tier 3 methodology was not applied for developing the GHG inventory presented in its BUR; rather, approach 3 from the 2006

⁴ A climate database used to track national climate change indicators and assess the implementation of mitigation actions. See <https://dondru.sr/>.

⁵ A data portal for all statistical data produced within the framework of the national forest monitoring system. See <https://kopi.sbb.sr/>.

⁶ A data portal for Suriname's land monitoring system. See <https://www.gonini.org/>.

IPCC Guidelines was used to produce the land use and land-use change map for land (category 3.B). In addition, Suriname indicated that it used a tier 2 methodology for the energy and IPPU sectors following advice received from national experts. However, Suriname did not provide details on how this methodology was applied and for which IPPU sector categories.

29. Some information on AD and EFs used and their sources was reported in the BUR. The sources of the EFs used include IPCC default EFs for the energy, IPPU, agriculture and waste sectors and a combination of IPCC default and country-specific EFs for the AFOLU sector, while the AD were sourced from national online data sets and reports or provided by experts. Suriname reported information on updated AD for land only (e.g. land use and land-use conversions (in hectares)) for 2000–2015.

30. Information on updated AD used was not reported in the Party's BUR for the energy, IPPU, agriculture and waste sectors, and the reason for this was not clear to the TTE. In addition, information on the EFs used for the AFOLU sector in terms of whether default or country-specific values were used per category was not clearly reported in the BUR (pp.53–54, table 6). During the technical analysis, the Party provided additional, but limited, information on the updated AD it used for the GHG inventory and more detailed information on the EFs and other specific parameters used for estimating GHG emissions for the waste and AFOLU sectors.

31. The Party did not report in its BUR information on GHG emissions and removals on a gas-by-gas basis and in units of mass. The BUR did not contain summary tables containing numerical values and/or notation keys for GHG emissions and removals covering all the sectors and categories in its national GHG inventory (see para. 37 below). The Party reported in its BUR in graphical format the total national and sectoral emissions and removals (in Gg CO₂ eq) for three key gases only, namely CO₂, CH₄ and N₂O. The TTE was unable to understand the reason for the Party not reporting information in tabular format using numerical values and/or notation keys. During the technical analysis, Suriname clarified that two different teams of experts and consultants were engaged to prepare its first BUR and NC3. The BUR team generated graphs of GHG emissions and removals on the basis of the GHG inventory information compiled at that time by the NC team, and the Party explained that work on compiling the national GHG inventory is ongoing. The Party further clarified that it found it challenging to report in its BUR information on GHG emissions and removals in tabular format using numerical values and/or notation keys because the data are dispersed between the two above-mentioned teams of consultants and experts. The Party intends to report all the necessary information in tabular format in the next submission. In the absence of complete and comparable information, the TTE could not analyse GHG emissions and removals on a gas-by-gas and sectoral basis and their trends for Suriname.

32. Information on other emissions (e.g. NO_x, CO, NMVOCs and SO_x) was not reported by Suriname and reason for this was not clear to the TTE. During the technical analysis, the Party clarified that the estimation of these gases is not mandatory for non-Annex I Parties. In addition, the Party explained that the estimation of these gases is not a priority at the moment owing to the lack of technical capacity to measure them, the limited availability of data and the relative insignificance of the emissions of these gases in its inventory. At the same time, Suriname indicated its intention to estimate these gases within two to three years once the parliament ratifies the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer.

33. Information on HFCs, PFCs and SF₆ was not reported in Suriname's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that Suriname did not report on the anthropogenic emissions of HFCs, PFCs and SF₆ because it does not have the necessary capacity to do so. At the same time, Suriname is a Party to the Vienna Convention and its Montreal Protocol and, in partnership with UNEP, it will consider implementing a plan to collect data and report the fluorinated gases.

34. Suriname used in its BUR (p.53) three notation keys, "existent", "non-existent" and "NO", to indicate whether emissions for an IPCC category were included in emission calculations for the AFOLU sector. For example, the Party reported "non-existent" or "NO" for categories 3.C.2 (liming) and 3.D.1 (harvested wood products), indicating that emissions

for these categories do not exist or did not occur (table 6, pp.52–53). However, the TTE noted that the use of “non-existent” is not consistent with the corresponding reporting provision on notation keys in the UNFCCC guidelines for the preparation of NCs from non-Annex I Parties, according to which emissions and/or removals that occur but have not been estimated or reported should be reported as “not estimated”. Furthermore, the Party did not report tables containing numerical values and/or notation keys for GHG emissions and removals covering all sectors and categories in its national GHG inventory (see paras. 31 above and 37 below). During the technical analysis, the Party clarified that it acknowledges the TTE’s observation regarding notation keys and intends to apply the correct notation keys in its next submission.

35. Suriname reported limited comparable information addressing the tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF. The Party reported, in graphical format, information on annual estimates of emissions and removals for land (category 3.B) disaggregated by land category in CO₂ eq.

36. Information on emissions and removals for land (category 3.B) was not further disaggregated by carbon pool or by gas in Suriname’s BUR and the reason for this was not clear to the TTE. During the technical analysis, Suriname provided information in tabular format on estimates of GHG emissions and removals by gas (CO₂, CH₄ and N₂O), but without including additional information on estimates by each carbon pool (living biomass and dead organic matter).

37. Suriname did not report in its BUR comparable information addressing the sectoral reporting tables annexed to the Revised 1996 IPCC Guidelines, the 2006 IPCC Guidelines or decision 17/CP.8 to present its national GHG emissions and removals, and the reason for this was not clear to the TTE. During the technical analysis, the Party provided partially comparable information addressing the sectoral reporting tables contained in the 2006 IPCC Guidelines in terms of reported information and level of disaggregation, emphasizing the challenges it has encountered in summary and sectoral reporting (see para. 31 above).

38. Suriname reported information on its use of GWP values consistent with those provided by the IPCC in its AR2 based on the effects over a 100-year time-horizon of GHGs.

39. For the energy sector, information was reported on methodological tier levels, sources of AD and EFs, key category analysis and QA/QC. The Party used a tier 1 methodology, default EFs and country-specific AD for estimating GHG emissions. The AD were sourced from national online data sets, reports and consultations with experts. The key categories identified within the energy sector were 1.A.2 (manufacturing industries and construction), 1.A.3.b (road transportation) and 1.A.4 (other sectors). The Party indicated in its BUR that the energy sector is the largest contributor of emissions in the national GHG inventory. CO₂ contributed 98 per cent of total energy sector emissions, with CH₄ and N₂O accounting for the remaining 2 per cent. The Party indicated that the level of the CO₂ emissions for 2017 was 13 per cent below the level for 2012, whereas the N₂O and CH₄ emissions remained at the same level.

40. The GHG emissions in the energy sector decreased during 2007–2008 as a result of the departure of a mine operator and a decline in alumina refining activities. However, the ownership of that mine was subsequently transferred to a refinery operator, causing both production and subsequent emissions to increase once more. The decreasing trend in emissions for the energy sector between 2012 and 2015 is due to the decommissioning of production units of alumina refinery activities that were completely stopped by 2015. Emissions increased for category 1.A.1 (energy industries) owing to the expansion of Suriname’s thermal power plants and increased crude oil production, whereas commissioning of a gold refinery was responsible for an increase in emissions in category 1.A.2 (manufacturing and construction).

41. For the IPPU sector, information was reported on methodological tier levels, sources of AD and EFs, and QA/QC. The Party used a tier 1 methodology, default EFs and country-specific AD for estimating GHG emissions. The AD were sourced from national online data sets, reports and consultations with experts. Category 2.A.2 (lime production) was the most significant source of GHG emissions in the IPPU sector during 2000–2015. However, lime production began to decline in 2007, and production ceased between 2016 and 2017. In 2016,

GHG emissions for category 2.D (non-energy products from fuels and solvent use) became most significant source of GHG emissions in the sector.

42. For 2006 IPCC Guidelines AFOLU categories 3.A and 3.C, CH₄ emissions for subcategory 3.C.7 (rice cultivation) and 3.A.1 (enteric fermentation), and N₂O emissions for subcategory 3.C.4 (direct N₂O emissions from managed soils) were identified as the most relevant emissions sources in the sector. Suriname used a tier 1 methodology and IPCC default and country-specific EFs. The AD were sourced from national online data sets, national institutions, international organizations and statistics, private companies, expert research and reports, and expert consultations and dialogue. Information was not reported in the BUR on the number of livestock and the amount of fertilizer used.

43. For land (category 3.B), Suriname reported in its BUR (pp.58 and 61–63) annual GHG emissions and removals for 2000–2017 in graphical format only. Overall, category 3.B was a net sink of emissions throughout the time series, fluctuating between a minimum in 2001 and a maximum in 2017. Suriname reported in its BUR (pp.53–54, table 6) that it used a combination of tier 1 and 2 methodologies from the 2006 IPCC Guidelines and the 2019 Refinement to the 2006 IPCC Guidelines for estimating carbon stock changes from the living biomass and dead organic matter pools, and their corresponding CO₂ fluxes, for land transitions under category 3.B.

44. For the waste sector, information was clearly reported on methodological tier levels, AD and their sources, EFs, key categories, uncertainty levels, QA/QC and improvement plans. The Party used a tier 1 methodology, default EFs and country-specific AD for estimating GHG emissions. The AD were sourced from the environmental statistics of the General Bureau of Statistics, industrial companies, research reports and international statistics (e.g. FAOSTAT). The key categories identified within the waste sector were CH₄ emissions under category 4.A (solid waste disposal), CO₂, CH₄ and N₂O emissions under category 4.C (incineration and open burning of waste) and CH₄ and N₂O emissions under category 4.D (wastewater treatment and discharge). The Party reported that waste sector emissions are relatively low; however, since 2000 they have been steadily increasing owing to the rapid economic development, increased population and increased amount of solid waste in the country. Household waste increased by 43 per cent between 2000 and 2017. The shares of hazardous medical waste and industrial waste, and bulky residential and garden waste are also increasing. The Party also reported that emissions for category 4.B (biological treatment of solid waste) were not reported because Suriname does not practise composting on a commercial scale.

45. The BUR provides an update to all GHG inventories reported in the Party's previous NCs in graphical format. The information reported provides an update of the Party's NC1 and NC2, which address anthropogenic emissions and removals for 2003 and 2008 respectively. The update was carried out for 2000–2017 using the methodologies contained in the 2006 IPCC Guidelines, thus generating an 18-year time series. The Party reported that it recalculated previously published figures and data from the base year (2008) for the energy, IPPU and AFOLU sectors, including in some cases by subcategory, owing to changes in methodology and EFs, and more accurate AD.

46. Information on the assessment of the impact of the recalculations made for the energy, IPPU, AFOLU and waste sectors was not reported in Suriname's BUR. During the technical analysis, the Party clarified that the recalculations resulted in small changes with respect to the previous NCs, and noted that it did not report recalculations for the waste sector because inventory data for this sector were not reported in its NC2. Consequently, and because the Party did not report the emission estimates in tabular format using the numerical values or notation keys and the corresponding AD in its BUR, the TTE was unable to assess the consistency of the GHG inventory for the estimated period. During the technical analysis, the Party provided limited summary data from its NC2 on CO₂, CH₄ and N₂O emissions presented in CO₂ eq. The Party provided further clarification on the limitations and barriers that prevented it from including this information in its BUR, as referred to in paragraph 31 above.

47. Suriname described in its BUR the institutional framework for the preparation of its 2000–2017 GHG inventory. The Party reported that the Ministry of Spatial Planning and

Environment is the governmental body responsible for its climate change policy and GHG inventory, with the support of UNEP, which coordinated the preparation of the national GHG inventory. The Party identified in its BUR (pp.88–90) gaps and improvements in the information reported. In terms of intended improvements for future submissions, for example, the Party intends to assess new land categories in the AFOLU sector, as well as use higher-tier levels and maintain consistency with its most recent forest reference emission level.

48. In addition, the Party identified progress aimed at improving archiving of GHG inventory data from all sectors in the Dondru online database. Once this platform becomes fully functional, the National Institute for Environment and Development in Suriname will coordinate and standardize data across ministries, feeding the information to the Ministry of Spatial Planning and Environment for reporting purposes. During the technical analysis, Suriname noted that, through its Environmental Framework Act (2020), every company and citizen has been mandated to provide the necessary climate-related data and information to the national environmental authority. The Party also clarified that its aim is to enhance the collection, management and archiving of the data required to produce GHG inventory information, which it expects to achieve in the near future through memorandums of understanding with key institutions and data providers.

49. Suriname reported that a key category analysis was performed for the level of and trend in emissions to identify major GHG emissions sources at the sectoral level (for the energy and waste sectors only).

50. Information on a key category analysis for the AFOLU and IPPU sectors was not reported. In addition, information on the contribution of key categories to the absolute level of total national emissions and removals or to the trend of emissions and removals covering all sectors was not reported in Suriname's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party provided additional information in the case of the AFOLU sector. For example, CO₂ emissions for subcategories 3.B.1.b (land converted to forest land), 3.B.5.b (land converted to settlements) and 3.B.3.b (land converted to grassland) accounted for 63.9, 21.4 and 6.4 per cent respectively of the total AFOLU sector emissions for 2017. The Party also mentioned the challenges and barriers faced (e.g. limited human resources and limited technical capacity) in undertaking this analysis and including the information in its BUR.

51. The BUR provides information on QA/QC measures for the energy, IPPU and waste sectors. The information reported includes, for the energy and IPPU sectors, the explanation that the Party performs cross-checking of collected data with the General Bureau of Statistics, compares the results of the backward linear extrapolation in graphs and uses additional surrogate data to check the spliced time series. The Party has in place QC measures to ensure accurate transfer and avoid double counting of data in the national GHG inventory. For the waste sector the information related to QA/QC includes an overview of the technical implementation of data collection and verification of the GHG inventory results through regular meetings and training sessions for personnel. The experts responsible for collecting the AD and the EFs are also responsible for entering data into software, and ensuring their review and accuracy. Cross-checking verification is also used by the waste sector experts.

52. For land (category 3.B) the information on QA/QC measures reported refers to the use of QA/QC procedures published in scientific literature (e.g. on generating deforestation maps), as well as through consultations and validation processes with key stakeholders. The Party reported that no QA/QC protocols are in place for the agriculture sector. However, Suriname also reported in its BUR its intention to develop a system that provides information in accordance with the 2006 IPCC Guidelines on QA/QC activities, to ensure data quality and consistency, as well as to help to identify improvements for future reporting, covering all sectors. The TTE commends Suriname for providing extensive information related to the QA/QC measures it has developed for specific sectors, as well as its plans for future improvements.

53. The Party reported in its BUR (p.51) that it estimated CO₂ emissions using both the sectoral and the reference approach. However, the TTE noted that information on the estimation of the CO₂ emissions using the reference approach and the difference between the

results of the reference approach and the sectoral approach were not clearly reported in the Party's BUR. During the technical analysis, the Party provided information regarding fuel supply data (e.g. primary production, import, export, international transport, stock changes) but it did not provide details on the calculation of the apparent fuel consumption and the corresponding CO₂ emissions, or a comparison between the CO₂ emissions estimated using the reference and the sectoral approach.

54. The Party indicated in its BUR (p.51) that GHG emission data on international aviation and marine bunkers were estimated separately, in accordance with the 2006 IPCC Guidelines. However, information on international aviation and marine bunker fuels and other relevant information were not reported in the Party's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party provided limited GHG emission estimates for international transportation for 2000–2017, but it did not specify the measurement units used. For international navigation the Party reported "0".

55. Suriname reported information on the uncertainty assessment (level) of the GHG inventory for the waste sector only. The uncertainty analysis was based on the tier 1 approach. The total waste sector uncertainty for 2017 is 27.7 per cent (BUR p.87, table 15). The Party reported information on underlying assumptions and methodologies used for estimating uncertainties in the energy, IPPU and waste sectors.

56. Suriname did not report in its BUR information on the level of uncertainty for the energy, IPPU and AFOLU sectors or for the overall national GHG inventory. In addition, information on underlying assumptions and methodologies used for estimating uncertainties for the AFOLU sector was not reported. The reason for this was not clear to the TTE. During the technical analysis, the Party provided additional information on its uncertainty methodology and estimates for the waste sector and land (category 3.B) (only for activities related to the forest reference emission level). For the energy and IPPU sectors, the Party provided the total inventory uncertainty and the uncertainty introduced into the trend of the total GHG emissions. Nevertheless, it was not clear to the TTE whether the reported total inventory uncertainty represents the compilation of the uncertainties for all the sectoral categories, or only those of the energy and IPPU sectors. In response to a follow-up question from the TTE regarding the reporting of "0" as part of the uncertainty analysis tables for the GHG emissions for the energy and IPPU sectors, the Party acknowledged that it should have reported "not estimated" for those cells. Suriname clarified that it faced challenges, owing to limited technical and human resource capacity, in estimating uncertainties to cover all sectors, including in reporting on the underlying methodologies and assumptions. However, the Party also communicated its plans to improve data collection and analysis to enhance uncertainty estimates in the national GHG inventory.

57. The TTE noted that the transparency of the information reported on GHG inventories could be enhanced by addressing the areas noted in paragraphs 28, 30–34, 36–37, 46, 50, 53–54 and 56 above, which could facilitate a better understanding of the information reported on GHG inventories.

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

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

59. The information reported provides an overview of the Party's mitigation actions and their effects. In its BUR, Suriname reported information on its national context and framed its national mitigation planning and actions in the context of its Environmental Framework Act (2020), its national development plans for 2012–2016 and 2017–2021, the environmental policy plan (2012–2016), the national climate change policy, strategy and action plan (2015), the national REDD+ strategy (2019) and the second NDC (2020). Suriname reported that climate change has been mainstreamed in and integrated into its development plans and priorities, including mitigation. The Party is seeking opportunities for low-emission development. Suriname highlighted in its BUR that reported mitigation actions satisfy and

build upon the goals and themes outlined in its second NDC. Most of the mitigation actions reported in the BUR are in the energy sector.

60. The Party reported information on NDC targets, mitigation actions included in the NDC and the progress of implementation of these actions. Suriname's NDC contains conditional and unconditional mitigation contributions covering the energy, transport, agriculture and forestry sectors. Suriname has made a commitment to maintain its 93 per cent forest cover of more than 15.2 million hectares (conditional contribution) and increase the percentage of forests and wetland areas under a national protection system to at least 17 per cent of the terrestrial area by 2030 (unconditional contribution). The conditional contribution for the energy sector includes maintaining the share of renewable energy above 25 per cent by 2025, and the unconditional contribution refers to achieving a share of renewable energy of more than 35 per cent by 2030. For the agriculture sector, Suriname intends to reduce climate vulnerability and increase climate change adaptation through the promotion of climate-smart agricultural technologies (unconditional contribution) and apply biomass to energy technology (conditional contribution). For the transport sector, Suriname intends to implement a number of infrastructure investment projects for improving roads and drainage facilities (conditional contribution) and updating the transport master plan, introducing vehicle emission controls by 2027 and tightening regulations concerning the importation of old vehicles (unconditional contribution).

61. Suriname reported in its BUR (pp.92–93) a summary of its mitigation actions outlined in the second NDC and a progress update for them. The update includes progress made so far and an estimated timeline for completing the mitigation actions considering the current circumstances. Out of 18 mitigation actions, 7 are not yet implemented and will be started once funding and capacity are available. For the other mitigation actions implementation is ongoing, and some progress has been achieved. The TTE acknowledged the information, which is presented in this summary report as contextual without assessing the completeness and transparency of the information reported.

62. The Party reported a summary of its sectoral mitigation actions in tabular format in accordance with decision 2/CP.1.7, annex III, paragraph 11. The Party also reported information on its mitigation actions in narrative format. The reported mitigation actions covered the energy, transport, AFOLU sectors.

63. Suriname reported in its BUR that, according to its latest GHG inventory (2000–2017), the highest emissions are for activities in the energy, IPPU, waste and AFOLU sectors and these are potential areas for emission reductions. However, the information on mitigation actions in the IPPU and waste sectors was not reported in Suriname's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that information on mitigation actions in the waste and IPPU sectors was not provided owing to insufficient human resources and limited information available at the time of BUR preparation. Nevertheless, it will analyse the potential for emission reductions for these sectors and present the information in its next submission.

64. Consistently with decision 2/CP.17, annex III, paragraph 12(a), Suriname reported the descriptions, nature and names of all mitigation actions in the reported sectors (energy, agriculture and forestry) except transport. The Party also provided information on gases covered by mitigation actions in the agriculture sector, as well as quantitative goals for only four mitigation actions across the forestry, agriculture and energy sectors. Suriname reported information on objectives for all mitigation actions for all reported sectors.

65. Suriname did not report in its BUR information on (1) the names of any mitigation actions in the transport sector; (2) the gases covered by any mitigation actions in the forestry, energy and transport sectors; (3) the quantitative goals for most mitigation actions in the reported sectors; and (4) progress indicators for any mitigation actions in the reported sectors. The reason for the missing information was not clear to the TTE. During the technical analysis, the Party clarified that all the mitigation actions covered CH₄, N₂O and CO₂. Furthermore, the Party clarified that it faces challenges (e.g. limited human resources and absence of a centralized platform to manage, coordinate and report mitigation actions) in reporting the required information on the mitigation actions. Suriname plans to address this gap by creating a dedicated pool of trainers who will provide relevant training to the

personnel from various entities and ministries who are responsible for reporting on mitigation actions. Suriname plans to report the missing information in its next submission.

66. In the energy sector, Suriname reported six mitigation actions that mainly focus on promoting energy efficiency and renewable energy technologies through legal and fiscal frameworks (e.g. energy efficiency standards, a renewable energy act, and a guarantee fund for investment risk mitigation). Suriname intends to implement various renewable energy projects (e.g. four hydropower projects with a total capacity of 434.2 MW, three biomass projects with a total capacity of 112 MW, nine solar projects with a total capacity of more than 100 MW_{peak} and wind energy projects with a total capacity of 3 MW). Among these mitigation actions is a project to electrify more than 200 villages using solar energy systems. These renewable energy projects will assist Suriname in achieving 25 and 35 per cent of total electricity being generated from renewable energy sources in 2025 and 2030 respectively. Suriname is developing energy efficiency standards and building codes for housing construction, road network and equipment. The Party reported that all six mitigation actions are ongoing and some progress has been achieved (e.g. operationalization of the Electricity Authority of Suriname, availability of funds through the National Development Bank of Suriname for risk mitigation of investors, electrification of 10 villages with solar mini-grids and installation of solar power plants with a total capacity of 35.25 MW).

67. In the transport sector, Suriname reported in BUR table 28 six mitigation actions aimed at responding to the growth in emissions owing to the steadily increasing number of private cars and the crowded road network. These actions mostly intend to improve public transport systems (e.g. adding dedicated bus lanes and increasing the bus service coverage); introduce limits on emissions from public and private vehicles and the age of imported used vehicles; promote car and bicycle sharing; rehabilitate main roads (e.g. protection from flooding and increased safety for pedestrians); promote facilities for pedestrians (e.g. more walkways and green parks); and start land-use and zone planning. The Party reported five mitigation actions as ongoing, while one has not yet been started. Suriname reported that progress is being made in designing and implementing the necessary legal and fiscal frameworks for these mitigation actions.

68. In the agriculture sector, Suriname reported in BUR table 21 three mitigation actions that focus mainly on improving rice cultivation practices (e.g. reducing application of fertilizer, increasing the period of aeration in the rice fields and shortening cultivation time). The Party mentioned in its BUR that the Ministry of Agriculture, Livestock and Fisheries has promoted climate-smart agriculture pilot projects that focus on adaptation rather than mitigation (e.g. micro-irrigation, water harvesting and protective agriculture, including mulching, composting and integrated crop management). Suriname is also promoting agroforestry practices that will have both adaptation and mitigation benefits. However, the contribution of these actions to mitigation efforts in Suriname have not been assessed by the Party.

69. In the forestry sector, Suriname reported in BUR table 20 six mitigation actions aimed at improving forest governance and land-use planning, converting forestry-based activities into sustainable forestry activities, and increasing the resilience of forest communities. All six mitigation actions were reported as ongoing. Reported progress on mitigation actions in the forestry sector includes enhancing the national forest monitoring system; developing a sustainable forestry information system; conducting research on reduced-impact logging, mangrove inventory and mapping and developing EFs; drafting a forest finance strategy; conducting research on investment and the capacity needs of the wood processing industry; drafting regulations and restrictions concerning roundwood exports and mining activities; conducting training and awareness activities for sustainable forest activities; and supporting forest communities (agroforestry and tourism).

70. Information on steps taken or envisaged to achieve mitigation actions was provided only for the energy, transport and forestry sectors. The Party reported information on methodologies and assumptions for one mitigation action in the agriculture sector. Furthermore, Suriname reported information on the progress of implementation of the mitigation actions in the energy and transport sector.

71. Suriname did not report information on (1) methodologies and assumptions for any mitigation actions in the energy, transport and forest sectors, and for two of the mitigation actions in the agriculture sector; (2) steps taken or envisaged to achieve the mitigation actions in the agriculture sector; (3) progress regarding implementing the mitigation actions in the agriculture sector; and (4) the underlying steps taken or envisaged for implementing any mitigation actions in the reported sectors. The reason for this missing information was not clear to the TTE. During the technical analysis, the Party clarified that, in general, Suriname does not have sufficient human resources and technical expertise to collect, analyse and report information in line with most of the reporting provisions for mitigation actions. The Party also clarified that it recently started using mitigation assessment tools. Furthermore, the Party clarified that information was not reported owing to the limited progress made and scarce data available for the reported mitigation actions at the time of BUR preparation. The Party plans to report missing information in its next submission.

72. Information on the results achieved or expected, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions, to the extent possible, was not reported for most mitigation actions in the reported sectors (except for two actions in the energy sector). The reason for the missing information was not clear to the TTE. During the technical analysis, the Party clarified that information on results achieved or expected was not reported owing to the limited human resources and technical expertise and lack of a centralized system for collecting and analysing data and information on mitigation actions. The Party further clarified that the limited availability of data presented another challenge because most of the reported mitigation actions were either at an early stage of implementation or not yet started. Currently, Suriname is building its national capacity to set up and operationalize the system for gathering, managing and analysing data on climate change and mitigation. The Party is also developing emission projections up to 2030. Suriname intends to report the missing information on results achieved or expected for mitigation actions in its next submission.

73. Suriname did not provide information on its involvement in international market mechanisms as a Party to the Kyoto Protocol and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that it is not currently participating in international market mechanisms. However, the process has started and the Ministry of Spatial Planning and Environment is already designated as the national authority to approve clean development mechanism projects.

74. Suriname reported information on its domestic MRV arrangements in accordance with decision 2/CP.17, annex III, paragraph 13. The Directorate of the Environment within the Ministry of Spatial Planning and Environment is responsible for the domestic MRV of mitigation actions. The information reported indicates that the Party is strengthening its institutional arrangements and developing a centralized domestic MRV system to better implement and track mitigation actions. However, progress has been delayed owing to lack of human, financial and technical resources. Suriname uses various online databases and tools, as referred to in paragraph 22 above, to track and report on climate change and environmental data and indicators, adaptation and mitigation actions, GHG inventories and support received. These databases and tools are being enhanced to facilitate efficient data submission and updating. In its BUR, Suriname reported that it has an advanced MRV system (the national forest monitoring system) for tracking and reporting on mitigation actions in the forestry sector under REDD+. However, the Party noted that it needs to improve its data collection and processing capabilities in other sectors.

75. The TTE noted that the transparency of the information reported on mitigation actions could be enhanced by addressing the areas noted in paragraphs 63, 65, 71, 72 and 73 above, which could facilitate a better understanding of the information reported on mitigation actions.

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

76. As indicated in table I.3, Suriname 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.

77. Suriname 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, Suriname identified its limited institutional, financial and technical capacity to design, implement and report climate change activities as constraints. As a small island developing State, Suriname faces developmental challenges, further exacerbated by climate change impacts, typical of smaller developing economies. It lacks the funding to launch critically required actions to address climate change issues. Suriname is facing challenges regarding compiling and analysing the data required for compiling GHG inventories; assessing and implementing mitigation actions; and identifying support needed to address climate change issues. These challenges arise from weak institutional arrangements, lack of technical capacity within ministries, a limited number of climate experts and lack of research work, inadequate inter-institutional cooperation and poor stakeholder engagement.

78. Suriname reported its financial, technical and capacity-building needs primarily in the areas of improving institutional arrangements for coordinating climate change activities, including the GHG inventory; implementing mitigation actions as indicated in its NDC; collecting, analysing and reporting climate action data in line with the UNFCCC reporting provisions; implementing a fully operational MRV system to track GHG emissions, the effect of mitigation actions and support needed and received; implementing environmental, legal and fiscal frameworks; and raising general awareness of climate change issues, including climate change reporting.

79. Suriname reported information on financial resources, and technical and capacity-building support received in accordance with decision 2/CP.17, annex III, paragraph 15. In its BUR, the Party reported that it received funding from a number of international sources to develop and implement climate change mitigation and adaptation projects. Suriname has been allocated USD 16.70 million from the Green Climate Fund and received USD 580.90 million from the Global Environment Facility since 2017, which included an allocation (USD 10.11 million) for preparing its BURs and NCs. The Party provided in its BUR (table 40) information on financial support received (project, type of funding, amount received or allocated). The information reported indicates that Suriname received technical and capacity-building support from UNEP to prepare BURs and NCs, and for the compilation of GHG inventories. The Party also received technical and capacity-building support from other international organizations to develop and implement the MRV system and conduct QA/QC processes for the forestry sector GHG inventory.

80. Information on technical and capacity-building support received was not reported in a disaggregated manner in the BUR and it was not clear to the TTE whether the contributions reported were provided for technical or capacity-building support, or both. During the technical analysis, the Party clarified that it faces difficulties in collecting and reporting disaggregated information owing to the limited data available and lack of a centralized MRV system to track and report on support needed and received.

81. The Party 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, the Party reported that the technology needs assessment, undertaken in 2019 with support from the Global Environment Facility, UNEP and the Technical University of Denmark, was the basis for reporting technology needs in the BUR. The identified technology needs cover three priority areas: water management (water modelling, water resource mapping, water storage and harvesting, and water purification), agriculture (integrated farming systems, improved irrigation efficiency, and climate-resilient crop varieties and livestock breeds), and infrastructure and housing (forest-specific land-use planning and energy-efficient building design).

82. Information on support received for technology development and transfer was not reported in Suriname's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that the missing information was not reported owing to the limited data available and lack of a centralized MRV system to track and report on support needed and received.

83. The TTE noted that the transparency of the information reported on needs and support received could be enhanced by addressing the areas noted in paragraphs 80 and 82 above, which could facilitate a better understanding of the information reported on mitigation actions.

D. Identification of capacity-building needs

84. In consultation with Suriname, the TTE identified the following needs for capacity-building that could facilitate the preparation of subsequent BURs and participation in ICA:

(a) Enhancing the national capacity for reporting GHG inventory information in accordance with the relevant reporting guidelines and provisions;

(b) Enhancing the national capacity for estimating and reporting information on the level of uncertainty associated with inventory data (e.g. for AD, each gas and the whole inventory), the methodology used and the underlying assumptions for estimating the uncertainties;

(c) Enhancing the national capacity for reporting the specific sources of the EFs used for estimating the GHG emissions in terms of the sectors of the national GHG inventory;

(d) Enhancing the national capacity for compiling and reporting information on updated AD, covering all sectors;

(e) Strengthening the national capacity for assessing and preparing information comparable to that requested in annex 3A.2 to the IPCC good practice guidance for LULUCF, to further enhance the reporting of national GHG emissions and removals of CO₂ and non-CO₂ gases, by land-use category and carbon pool;

(f) Building capacity for identifying and reporting information on a key category analysis covering all sectors in order to assess the contribution (on absolute level or trend) of the key categories to the overall national emissions/removals;

(g) Enhancing the national capacity for developing and implementing procedures, including relevant templates, on data collection, archiving and data improvement, to support the reporting of GHG emissions/removals from all sectors, on an ongoing basis;

(h) Enhancing the national capacity for reporting the CO₂ emission estimations by using the reference approach and the difference between the reference approach and the sectoral approach in order to check and improve the quality of the CO₂ emission estimates in the energy sector;

(i) Enhancing the national capacity for implementing the corresponding methodology to estimate and report HFC, PFC and SF₆ emissions from sectoral activity categories;

(j) Strengthening the technical capacity of the inventory team for identifying and reporting information using notation keys in accordance with the 2006 IPCC Guidelines;

(k) Enhancing the national capacity to report sectoral reporting tables in accordance with IPCC reporting guidelines;

(l) Building the national capacity for defining methodologies and assumptions for all mitigation actions, including training to enhance the proficiency of local experts in using IPCC and any other necessary analysis tools;

(m) Enhancing the national capacity by creating a pool of experienced experts to provide relevant training to the reporting teams (from relevant entities including ministries) on developing, supporting and reporting mitigation actions;

(n) Enhancing the national capacity by designing and implementing a centralized management/coordination platform, to manage and coordinate mitigation actions across the ministries and relevant State entities;

(o) Building the capacity for defining progress indicators and estimating quantitative goals and results of the mitigation actions in all sectors;

- (p) Building the national capacity for developing methodologies and establishing a coherent information collection process across relevant ministries in relation to reporting mitigation actions;
- (q) Enhancing the national capacity for data collection and analysis for reporting on steps taken or envisaged to achieve the objectives for the agriculture sector;
- (r) Building the national capacity to institute robust MRV systems with clearly defined roles and institutional arrangements;
- (s) Building the capacity of personnel and institutional arrangements to support timely compilation and submission of future national reports;
- (t) Building the national capacity for compiling and reporting information on technical and capacity-building support received in a disaggregated manner for each provider;
- (u) Building the national capacity for compiling and reporting information on the technology support received.

85. The TTE noted that, in addition to those identified during the technical analysis, Suriname reported the following capacity-building needs in its BUR, which include capacity-building needs for future reporting:

- (a) Strengthening the national capacity to prepare the GHG inventory and the national inventory report for the purpose of preparing the BUR;
- (b) Strengthening institutional and human capacity to fulfil obligations under the Convention;
- (c) Enhancing the national capacity to establish a systematic and continuous approach to raising public awareness of climate change.

III. Conclusions

86. The TTE conducted a technical analysis of the information reported in the first BUR of Suriname in accordance with the UNFCCC reporting guidelines on BURs and concludes that the information reported is partially 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; mitigation actions and their effects; 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; and domestic MRV. During the technical analysis, additional information was provided by Suriname on GHG emissions estimated in the energy, IPPU, AFOLU and waste sectors; mitigation actions; and support needed and received. The TTE concludes that the information analysed is partially transparent.

87. Suriname reported information on the institutional arrangements relevant to the preparation of its BURs. The Directorate of the Environment under the Ministry of Spatial Planning and Environment is responsible for coordinating all policies and activities related to climate change and the environment, including preparing NCs, NDCs and BURs. The National Environmental Authority, established in 2020 under the Environmental Framework Act, will supervise the implementation of the Environmental Framework Act and environmental policies together with other relevant ministries. Suriname is assessing and strengthening existing systems and processes to further develop and improve the domestic MRV system. At the national level, the domestic MRV system will cover support needed and received; progress on mitigation actions and on emission reduction and sustainable development; and compilation of the GHG inventory.

88. In its first BUR, submitted in 2022, Suriname reported information on its national GHG inventory for 2000–2017. The summary of national GHG emissions and removals (CO₂, N₂O and CH₄) for all relevant sources and sinks was presented in graphical format only; the BUR did not contain summary tables containing numerical values and/or notation

keys for GHG emissions and removals covering all the sectors and categories in the national GHG inventory. The inventory was developed on the basis of the 2006 IPCC Guidelines and the 2019 Refinement to the 2006 IPCC Guidelines. Complete information was not provided on updated AD, key category analysis, fuel combustion emissions using the reference approach, and level of uncertainty covering the overall national GHG inventory. In the absence of complete and comparable information, the TTE could not analyse GHG emissions and removals on a gas-by-gas and sectoral basis or their trends for Suriname. On the basis of the limited information provided during the technical analysis, the TTE noted that land (category 3.B) is the key driver of Suriname's GHG removals and the three key categories and main gas are 3.B.1 land converted to forest land (CO₂), 3.B.5 land converted to settlements (CO₂) and 3.B.3 land converted to grassland (CO₂). Estimates of fluorinated gases were not provided owing to difficulties in obtaining the necessary data, as clarified by the Party during the technical analysis. The Party also explained that it faced challenges regarding providing the complete GHG inventory information in a tabular format because the work on compiling the GHG inventory is ongoing, adding that the missing information will be provided in the next submission.

89. Suriname 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 relevant national development and environmental policy frameworks and its second NDC (2020). Suriname reported planned, implemented, ongoing and/or completed actions in the energy, forestry, agriculture and transport sectors. The mitigation actions focus on promoting energy efficiency and renewable energy technologies and measures; improving rice cultivation practices; promoting sustainable forestry activities; and lowering emissions from the transport sector. If the two actions in the energy sector are sustained, Suriname will electrify more than 200 villages using solar energy systems and implement hydropower projects (434.2 MW), biomass projects (112 MW), solar projects (100 MW_{peak}) and wind projects (3 MW). Some information on mitigation actions (e.g. names, gases covered, quantitative goals, methodologies and assumptions, steps taken or envisaged to achieve the actions, progress of implementation and steps taken or envisaged for implementation, results achieved or expected and the international carbon market) was not reported fully owing to lack of human resources, limited technical capacity and expertise, the early stage of implementation of mitigation actions, limited data available, and the lack of a centralized MRV system, as clarified by the Party during the technical analysis.

90. Suriname reported information on key constraints, gaps and related needs, including strengthening institutional arrangements, implementing a fully operational MRV system, and building financial and technical capacity to design, implement and report climate change activities. Information was reported on the financial, technical and capacity-building support received from a number of international sources to develop and implement climate change activities. The Party also reported that it received financial support of USD 10.11 million from the Global Environment Facility and technical and capacity-building support from UNEP for preparing its BURs and NCs. The Party further reported information on its needs for technology development and transfer, based on the technology needs assessment conducted in 2019, covering three priority areas: water management, agriculture, and infrastructure and housing. Information on technology transfer support received as well as disaggregated information on technical and capacity-building support received was not reported owing to the limited data available and lack of a centralized MRV system, as clarified by the Party during the technical analysis.

91. The TTE, in consultation with Suriname, identified the 21 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. Suriname prioritized all the capacity-building needs.

Annex I

Extent of the information reported by Suriname in its first biennial update report

Table I.1

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

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Assessment of whether the information was reported</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, and subsequent BURs shall cover a calendar year that does not precede the submission date by more than four years.	No	Suriname submitted its first BUR in November 2022; the GHG inventory reported is for 2000–2017, more than four years prior to the date of submission.
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	Suriname used the 2006 IPCC Guidelines and the 2019 Refinement to 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.	Partly	Suriname reported information on updated AD for land (e.g. land use and land-use conversions (in hectares) for 2000–2015). However, information was missing for the energy, IPPU, waste and agriculture sectors.
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;	Partly	Fully comparable information was not reported. Information on emissions/removals was not further disaggregated by carbon pool (living biomass, dead organic matter) or by gas.
	(b) The sectoral report tables annexed to the Revised 1996 IPCC Guidelines.	No	Comparable information was not 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.	No	The time series reported in the BUR, in graphical format, covers the 2000–2017 inventory, including inventory years 2003 and 2008, which were reported in the NC1 and NC2 respectively.
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 previous submission years (e.g. for 1994 and 2000).	No	This information was not reported for the previous submission years (i.e. 2003 for NC1 and NC2 for 2008).

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Assessment of whether the information was reported</i>	<i>Comments on the extent of the information provided</i>
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: <p>(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);</p> <p>(b) Table 2 (National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF₆).</p>	No	Comparable information was not reported. GHG emissions and removals were presented in graphical format only.
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 a REDD+ technical annex 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.	Partly	Suriname reported information on key category analyses conducted for the energy and waste sectors. However, the key category analysis covering the overall national GHG inventory was not reported.
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.	Partly	Information on data sources and on the institutions involved in data collection and management was reported for some sectors (i.e. energy and AFOLU), while no information was provided on efforts to make this a continuous process in all sectors.
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: <p>(a) CO₂;</p> <p>(b) CH₄;</p> <p>(c) N₂O.</p>	No	Information was provided in graphical format only, on a gas-by-gas basis expressed in CO ₂ eq, for all sectors.
		No	Information was provided in graphical format only, on a gas-by-gas basis expressed in CO ₂ eq, for all sectors.
		No	Information was provided in graphical format only, on a gas-by-gas basis expressed in CO ₂ eq, for all sectors.
Decision 17/CP.8, annex, paragraph 15	Non-Annex I Parties are encouraged, as appropriate, to provide information on anthropogenic emissions by sources of: <p>(a) HFCs;</p> <p>(b) PFCs;</p> <p>(c) SF₆.</p>	No	
		No	
		No	

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Assessment of whether the information was reported</i>	<i>Comments on the extent of the information provided</i>
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 ₂ ;	No	
	(b) NO _x ;	No	
	(c) NMVOCs.	No	
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.	No	
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.	No	The Party did not report the CO ₂ fuel combustion emission estimates using the reference approach and did not report the difference between the sectoral and the reference approach.
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;	No	
	(b) Marine bunker fuels.	No	
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.	Yes	The Party used the GWP provided in the AR2.
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 and removals by sinks of GHGs not controlled by the Montreal Protocol;	Yes	In general, the Party used a tier 1 methodology for the energy, IPPU and waste sectors, indicating that tier 2 had been used for the energy sector, but without providing detailed information. For the AFOLU sector the Party used a combination of tier 1 and tier 2 methodologies.
	(b) Explanation of the sources of EFs;	Yes	

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Assessment of whether the information was reported</i>	<i>Comments on the extent of the information provided</i>
	(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	
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.	No	
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;	Partly	Suriname provided the level of uncertainty for the waste sector. However, such information was not reported for the other sectors or for the overall national GHG inventory.
	(b) Underlying assumptions;	Partly	Suriname reported the underlying assumptions for the energy, IPPU and waste sectors. However, such information was not reported for the AFOLU sector.
	(c) Methodologies used, if any, for estimating these uncertainties.	Partly	Suriname reported the use of the 2006 IPCC Guidelines and the Revised 1996 IPCC Guidelines for estimating the uncertainty in the energy, IPPU and waste sectors. However, information was not reported for the AFOLU sector.

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 first biennial update report of Suriname

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Assessment of whether the information was reported</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 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	Suriname reported information on mitigation actions (forestry, agriculture, energy and transport sectors) in tabular as well as narrative format.
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	Suriname did not report information on (1) the names of any mitigation actions in the transport sector; (2) the gases covered for any mitigation actions in the reported sectors; (3) the quantitative goals for many mitigation actions in the reported sectors; and (4) the progress indicators for any mitigation actions in the reported sectors.
	(b) Information on:		
	(i) Methodologies;	Partly	Suriname reported information on methodologies for one mitigation action in the agriculture sector. However, such information was missing for all other mitigation actions in the reported sectors.
	(ii) Assumptions;	Partly	Suriname reported information on assumptions for one action in the agriculture sector. However, such information was missing for all other mitigation actions in the reported sectors.
	(c) Information on:		
	(i) Objectives of the action;	Yes	
	(ii) Steps taken or envisaged to achieve that action;	Partly	Suriname did not report information on steps taken or envisaged to achieve the mitigation actions in the agriculture sector.
	(d) Information on:		
	(i) Progress of implementation of the mitigation actions;	Partly	Suriname did not provide the information on progress of implementation of mitigation actions in the agriculture sector.
	(ii) Progress of implementation of the underlying steps taken or envisaged;	No	Suriname did not report information on the underlying steps taken or envisaged for implementation of

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Assessment of whether the information was reported</i>	<i>Comments on the extent of the information provided</i>
			mitigation actions in any of the reported sectors.
	(iii) Results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions, to the extent possible;	Partly	Suriname did not report information on results achieved such as estimated outcome and/or estimated emission reductions for most of its mitigation actions (except for two actions in the energy sector).
	(e) Information on international market mechanisms.	No	Suriname did not report the information on international market mechanisms.
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 first biennial update report of Suriname

<i>Decision</i>	<i>Provision of the reporting requirements</i>	<i>Assessment of whether the information was reported</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:		
	(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, technology transfer and capacity-building received from the Global Environment Facility, 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;	Partly	Information on capacity-building and technical support received was not reported in a disaggregated manner. Furthermore, information on technology transfer support received was not reported.
	(b) Information on technical support received from the Global Environment Facility, 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.	Partly	Information on capacity-building and technical support received was not reported in a disaggregated manner.
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;	Yes	

<i>Decision</i>	<i>Provision of the reporting requirements</i>	<i>Assessment of whether the information was reported</i>	<i>Comments on the extent of the information provided</i>
	(b) Technology support received.	No	Suriname did not report information on technology transfer 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 BUR of Suriname. Available at <https://unfccc.int/BURs>.

NC1 and NC 2 of Suriname. Available at <https://unfccc.int/non-annex-I-NCs>.