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Technical analysis of the first biennial update report of Trinidad and Tobago submitted on 29 December 2021

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 Trinidad and Tobago, 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>
AD	activity data
AFOLU	agriculture, forestry and other land use
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BUR	biennial update report
CCS	carbon dioxide capture and storage
CH ₄	methane
CO ₂	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
DTU	Technical University of Denmark
EF	emission factor
ETF	enhanced transparency framework under the Paris Agreement
FAOSTAT	statistical database of the Food and Agriculture Organization of the United Nations
F-gas	fluorinated gas
GEF	Global Environment Facility
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
HWP	harvested wood products
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
MRV	measurement, reporting and verification
N ₂ O	nitrous oxide
NA	not applicable
NC	national communication
NDC	nationally determined contribution
NE	not estimated
NO	not occurring
non-Annex I Party	Party not included in Annex I to the Convention
PFC	perfluorocarbon
QA/QC	quality assurance/quality control
Revised 1996 IPCC Guidelines	<i>Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories</i>
SF ₆	sulfur hexafluoride
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. This summary report presents the results of the technical analysis of the first BUR of Trinidad and Tobago, 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

5. In accordance with the mandate referred to in paragraph 2 above, Trinidad and Tobago submitted its first BUR on 29 December 2021 as a stand-alone update report.
6. During the technical analysis, the Party clarified that it prioritized the preparation of its national Carbon Reduction Strategy (published in 2015) and NDC, which took several years to complete. This resulted in a delay in the preparation of the BUR and hence the Party was unable to comply with the mandated submission timeline outlined in paragraph 2 above.
7. A desk analysis of Trinidad and Tobago's BUR was conducted from 20 to 24 June 2022 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: Ruleta Camacho Thomas (former member of the Consultative Group of Experts from Antigua and Barbuda), Aleksandar Jovovic (Serbia), Nicolo Macaluso (Canada), Neranda Maurice-George (Saint Lucia), Jennifer Mutua (Kenya),¹ Sekai Ngarize (Zimbabwe), Eray Özdemir (Türkiye), Ha Ninh Tran (Viet Nam) and Midori Yanagawa (Japan). Ruleta Camacho Thomas and Nicolo Macaluso were the co-leads. The technical analysis was coordinated by Sohel Pasha and Mirana Andriarisoa (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 Trinidad and Tobago engaged in consultation² on the identification of capacity-building needs for the preparation of BURs and participation in the ICA process. Following the technical analysis of Trinidad and Tobago's first BUR, the TTE prepared and shared a draft summary report with Trinidad and Tobago on 12 March 2023 for its review and comment. Trinidad and Tobago, in turn, provided its feedback on the draft summary report on 12 June 2023.
9. The TTE responded to and incorporated Trinidad and Tobago's comments referred to in paragraph 8 above and finalized the summary report in consultation with the Party on 30 June 2023.

¹ Participated remotely.

² The consultation was conducted via videoconferencing.

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 Trinidad and Tobago'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. Trinidad and Tobago reported in its first BUR information on its national circumstances, including a description of national development priorities, objectives and circumstances, including features of geography, climate, demography and economy that might affect the Party's ability to deal with mitigating and adapting to climate change, as well as information regarding the energy, IPPU, waste and AFOLU sectors.

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

20. Trinidad and Tobago 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, mechanisms for information and data exchange, QA/QC procedures, and provisions for public consultation and other forms of stakeholder engagement. The institutional framework for the MRV system includes the Ministry of Planning and Development as the coordinating entity, the Environmental Management Authority as the host of the Knowledge Management System and data suppliers (emitting entities).

21. Information on the roles and responsibilities of the non-governmental institutions and external experts that participated in the survey conducted to assess their technical and organizational capacity following the launch of the Knowledge Management System in March 2019 was not clearly reported in Trinidad and Tobago's BUR. During the technical analysis, the Party clarified the main roles and responsibilities of relevant stakeholders for future reporting cycles, as well as for the public consultation and stakeholder engagement process.

22. The TTE noted that the transparency of the information reported on institutional arrangements could be enhanced by addressing the area noted in paragraph 21 above, which could facilitate a better understanding of the information reported on institutional arrangements.

23. Trinidad and Tobago reported in its first BUR information on its domestic MRV arrangements. The description covers key aspects of the institutional arrangements, including the roles and responsibilities of key ministries and agencies. The Environmental Management Authority, as the operator of the Knowledge Management System, is responsible for collecting, collating and verifying all data related to GHG emissions, mitigation actions and financial support received for climate change related initiatives. It also performs QA/QC procedures for GHG inventory data submitted by the emitting entities. The Party also reported on how the MRV system was developed and piloted. The MRV arrangements are designed at the national level and cover three main areas: emissions, mitigation actions, and support and resources used.

24. Trinidad and Tobago reported in its BUR (section 1, p.55, and section 5, p.171) information on its current initiatives for enhancing its institutional arrangements for compliance with requirements under the ETF. The initiatives include enhancing the domestic MRV system and Knowledge Management System. The TTE commends the Party for the clear and comprehensive reporting on its proactive approach to preparing for ETF implementation.

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

25. As indicated in table I.1, Trinidad and Tobago 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.

26. Trinidad and Tobago submitted its first BUR in 2021 and the GHG inventory reported is for 2018. The GHG inventory is consistent with the requirements for the reporting time frame.

27. GHG emissions and removals for the BUR covering the 2006–2018 inventories were estimated using tier 1 methodology from the 2006 IPCC Guidelines for all reported categories. The TTE commends the Party for using the most recent IPCC guidelines.

28. Information on AD and EFs used and their sources was reported in the BUR, including the data-collection process, archiving system and improvement plans for AD and EFs. The main sources of AD and EFs used were the 2006 IPCC Guidelines, primary sources (emitting entities) and national and international statistical sources (e.g. the Trinidad and Tobago Solid Waste Management Company Limited and FAOSTAT).

29. Information on country-specific EFs used for some categories in the IPPU sector (e.g. 2.B.1 ammonia production and 2.B.8 petrochemical and carbon black production – methanol) was not reported in Trinidad and Tobago’s BUR. Although the BUR indicates that the AD and EFs are available and archived, the Party did not provide any information on why the country-specific EFs were not reported. During the technical analysis, the Party clarified that the team preparing the first BUR did not have access to the previous calculation sheets, including information on any expert judgment, used during the preparation of the NC1 and NC2.

30. Information on the Party’s total GHG emissions by gas for 2018 is outlined in table 1 in Gg CO₂ eq. It shows a decrease in emissions of 1.3 per cent including land and HWP since 2006 (from 42,181.09 to 41,637.50 Gg CO₂ eq) and a decrease in emissions of 1.2 per cent excluding land and HWP (from 44,900.16 to 44,345.81 Gg CO₂ eq).

Table 1
Greenhouse gas emissions by gas of Trinidad and Tobago for 2018

<i>Gas</i>	<i>GHG emissions (Gg CO₂ eq) including land and HWP^a</i>	<i>% change 2006–2018</i>	<i>GHG emissions (Gg CO₂ eq) excluding land and HWP^a</i>	<i>% change 2006–2018</i>
CO ₂	35 051.53	–5.7	37 759.85	–5.3
CH ₄	5 150.83	9.9	5 150.83	9.9
N ₂ O	1 435.13	332.7	1 435.13	332.7
HFCs	NA	NA	NA	NA
PFCs	NA	NA	NA	NA
SF ₆	NA	NA	NA	NA
Other	NA	NA	NA	NA
Total	41 637.50	–1.3	44 345.81	–1.2

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

31. Information on other emissions was reported, including 0.35 Gg nitrogen oxides and 22.79 Gg carbon monoxide. Non-methane volatile organic compounds and sulfur oxides were reported as “NE” or “NO”.

32. Information on emissions of HFCs, PFCs and SF₆ was not reported in Trinidad and Tobago’s BUR and the reason for this was not clear to the TTE. While the total emissions for each gas were reported as “NE”, the emissions for the subcategories were reported as “NO” and “zero”. During the technical analysis, the Party clarified that this was an error and that the subcategory emissions should have been reported as “NE”. The Party stated that this error will be corrected in the next submission. The Party explained that there are sources of F-gases within the country and that it is currently estimating F-gas emissions, which, once validated, will be included in the national total emissions and in its next submission.

33. Trinidad and Tobago applied notation keys in tables where numerical data were not provided. The use of notation keys was mostly consistent with the UNFCCC guidelines for the preparation of NCs from non-Annex I Parties. BUR annex table 1 provides a list of the categories reported as “NE” and “NO”.

34. The TTE noted that Trinidad and Tobago reported a combination of “zero”, “NE” and “NO” for some sectors in the sectoral tables (e.g. BUR table 3-5). “Zero” was reported for the aggregate category level and either “NE” or “NO” for the subcategory level. It was not clear whether the emissions do not occur or were not estimated. During the technical analysis, the Party clarified that the use of “zero” in the sectoral tables was an error, and the appropriate notation key “NE” or “NO” will be used in the next submission.

35. Trinidad and Tobago reported comparable information addressing the tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF and the sectoral reporting tables annexed to the Revised 1996 IPCC Guidelines. Trinidad and Tobago reported the summary tables generated by the IPCC inventory software, which contain inventory data for each sector and category.

36. Information on individual source categories for the AFOLU sector (e.g. cropland converted to forest land), as described in annex 3A.2 to the IPCC good practice guidance for LULUCF, was not reported in Trinidad and Tobago’s BUR. During the technical analysis, Trinidad and Tobago clarified that data on the types of conversion between land categories were not available at the time of preparation of its BUR.

37. The shares of emissions that different sectors contributed to the Party’s total GHG emissions excluding land and HWP (category 3.B and, if reported, 3.D) for 2018, as calculated by the TTE using information from the BUR, are reflected in table 2.

Table 2

Shares of greenhouse gas emissions by sector of Trinidad and Tobago for 2018

<i>Sector</i>	<i>GHG emissions (Gg CO₂ eq)</i>	<i>% share^a</i>	<i>% change 2006–2018</i>
Energy	19 284.78	43.5	–2.7
IPPU	22 043.79	49.7	–4.2
AFOLU	–2 158.79	NA	NA
Livestock (category 3.A)	463.31	1.0	22.5
Land (category 3.B)	–2 708.32	NA	NA
Aggregate sources and non-CO ₂ emissions sources on land (category 3.C)	86.22	0.2	125.3
HWP and other emissions (category 3.D)	NA	NA	NA
Waste	2 467.72	5.6	49.8

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

38. Trinidad and Tobago reported information on its use of GWP values consistent with those provided by the IPCC in its AR5 based on the effects over a 100-year time-horizon of GHGs.

39. For the energy sector, information was clearly reported on methodological tier levels, AD sources, EFs, key categories and notation keys used. Trinidad and Tobago reported that it used the 2006 IPCC Guidelines, which guided the collection of AD, application of tier levels and EFs, and use of notation keys. The Party explained that, as country-specific EFs were not available, the associated default EFs were applied using the tier 1 approach. Total emissions for the energy sector gradually increased from 19,817 Gg CO₂ eq in 2006 to 22,266 Gg CO₂ eq in 2010, followed by a general decrease from 2010 onward to 19,285 Gg CO₂ eq in 2018. Natural gas usage in the country is the main driver of emissions in the energy sector. Key categories for the energy sector identified by level assessment for 2018 are electricity generation (1.A.1.A.i) (29.8 per cent), venting and flaring (1.B.2.c) (20.4 per cent), production – natural gas (1.B.2.b.2) (24.6 per cent), transport (1.A.3) (13.9 per cent), refining/storage (1.B.2.a.4) (7.6 per cent) and processing – natural gas (1.B.2.b.3) (2.8 per cent), together accounting for 99.1 per cent of total sectoral emissions. The remaining 0.9 per cent is attributed to manufacturing industries and construction (1.A.2).

40. For the IPPU sector, information was clearly reported on methodological tier levels, AD sources, EFs, key categories, notation keys used and other information specific to the

sector. Trinidad and Tobago reported that emissions for all categories were estimated using a tier 1 approach with default EFs, except for ammonia production (2.B.1) and petrochemical and carbon black production – methanol (2.B.8). The Party reported aggregate GHG emissions for the IPPU sector by gas for 2006–2018. Total emissions for the IPPU sector gradually increased from 23,020 Gg CO₂ eq in 2006 to 25,518 Gg CO₂ eq in 2010, followed by a general decrease from 2010 onward to 22,044 Gg CO₂ eq in 2018. Natural gas usage and ammonia and methanol production are the main drivers of emissions. Key categories for the IPPU sector identified by level assessment for 2018 are ammonia production (2.B.1) (74.3 per cent), petrochemical and carbon black production – methanol (2.B.8) (16.9 per cent) and nitric acid production (2.B.2) (4.7 per cent), together accounting for 95.9 per cent of total sectoral emissions. The remaining 4.1 per cent is attributed to iron and steel production (2.C.1) (2.6 per cent) and mineral industry (2.A) (1.5 per cent).

41. Information on GHG emissions by gas was not reported for each of the key categories under the IPPU sector for the entire time series. Only the emissions for the key categories by gas for 2018 were reported, making it difficult for the TTE to analyse trends within the IPPU sector. However, the Party provided relevant clarification in its BUR, noting that this was due to the unavailability of AD. Trinidad and Tobago also clarified in its BUR that, owing to the unavailability of AD for the time series, it was not possible to estimate emissions from activities such as lime production (category 2.A.2) and non-energy products from fuels and solvent use (category 2.D).

42. For AFOLU categories 3.A and 3.C, enteric fermentation (CH₄) was identified as a key category and the most relevant emissions source in the sector. Trinidad and Tobago used EFs from the 2006 IPCC Guidelines and reported that AD were gathered from FAOSTAT. N₂O emissions for the AFOLU sector (category 3.A) were reported as “NE” in the BUR and the information on the reporting of “NE” for those emissions was not clear to the TTE. During the technical analysis, the Party clarified that there was an error in the reporting of the category livestock (3.A) and provided a breakdown of category 3.A in revised summary tables, which included values for N₂O emissions for subcategories enteric fermentation (3.A.1) and manure management (3.A.2).

43. For land (category 3.B), Trinidad and Tobago reported annual GHG emissions and removals for 2018. Overall, net removals from land were 2,708.32 Gg CO₂ eq in 2018. The Party identified forest land remaining forest land (3.B.1.a) as a key category.

44. N₂O emissions for the AFOLU sector (category 3.B) were reported as “NE” in the BUR and the information on the reporting of “NE” for those emissions was not clear to the TTE. During the technical analysis, the Party clarified that it requires capacity-building support for estimating N₂O emissions for subcategories forest land (3.B.1), cropland (3.B.2) and grassland (3.B.3). Information on HWP and other emissions (category 3.D) was not reported owing to data unavailability, as clarified in the BUR. Information on the estimation of losses in biomass due to removals, fuelwood or natural disturbances was not reported in the BUR. However, the Party provided relevant clarification in its BUR that no data were available to estimate biomass losses.

45. For the waste sector, information was clearly reported on methodological tier levels, AD sources, EFs, key categories and notation keys used. Trinidad and Tobago reported that the first-order decay model (tier 1) was used to estimate emissions for the waste sector. The Party indicated in the BUR that AD on waste characterization were provided by the Trinidad and Tobago Solid Waste Management Company Limited, but default waste characterization data were used, as the categories used for the submitted data differed from those required for the first-order decay model. In addition, country-specific values were used for the waste generation rate and percentage of industrial waste sent to solid waste disposal sites. Trinidad and Tobago explained that these values will be validated in time for the next reporting cycle. Total emissions for the waste sector gradually increased from 1,647 Gg CO₂ eq in 2006 to 2,045 Gg CO₂ eq in 2010, followed by a further increase to 2,462 Gg CO₂ eq in 2018, owing to population growth and the increase in industrialization. Key categories for the waste sector identified by level assessment for 2018 are solid waste disposal (4.A) (89.1 per cent) and industrial wastewater treatment and discharge (4.D.2) (9.1 per cent), together accounting for 98.2 per cent of total sectoral emissions. The remaining 1.8 per cent is attributed to domestic wastewater treatment and discharge (4.D.1).

46. Information on GHG emissions by gas for each of the subcategories under the waste sector was not provided for the entire time series. Only the emissions by gas for the key categories for 2018 were reported, making it difficult for the TTE to analyse trends within the waste sector. Although Trinidad and Tobago's BUR suggests that this information is available (i.e. AD and emissions by gas) for 2006–2018, the reason for not reporting this information in the BUR was not clear to the TTE. During the technical analysis, the Party clarified that information on emissions by gas for each of the subcategories under the waste sector for 2006–2018 was not provided owing to a lack of AD.

47. The BUR does not provide an update to the GHG inventories reported in the Party's NC1 and NC2. For the NC2, the inventory reported was for 1990–2006. The Party reported in its BUR that it did not perform a recalculation of previous inventories because of the unavailability of historical data sets and information. However, Trinidad and Tobago has begun the process of collecting historical data sets and analysing potential proxy data. The Party clarified that extrapolation and interpolation were considered for some subcategories but were not used as the data gaps covered a period of more than five years. The GHG inventories for 2006–2018 reported in the BUR are consistent.

48. Information on the estimation of emissions from land (category 3.B) for 2018 was reported in Trinidad and Tobago's BUR, but not for the entire time series (2006–2018). During the technical analysis, the Party clarified that it has begun the process of collecting historical data sets and analysing potential proxy data. The Party provided the TTE with a GHG inventory for 2006–2018 calculated using the IPCC inventory software.

49. Trinidad and Tobago described in its BUR the institutional framework for the preparation of its 2018 GHG inventory. The Party reported that the ministry with responsibility in relation to climate change is currently the Ministry of Planning and Development, which acted as a coordinating entity in the preparation of the GHG inventory. The United Nations Development Programme assisted Trinidad and Tobago in designing its GHG inventory system. The Party identified areas for improvement in the preparation of its GHG inventory, including the need to address data limitations and gaps identified for some subcategories; the need for training in relation to providing AD in the format required for GHG inventories for the AFOLU and waste sectors and with respect to analysing uncertainties in AD; and the need to develop manuals on data disaggregation by category for each sector on the basis of the 2006 IPCC Guidelines, for use as national sectoral workbooks for GHG inventory training, preparation and institutional memory.

50. Information on ministerial arrangements and responsibilities related to the preparation of the GHG inventory and/or climate change policy was not clearly reported in Trinidad and Tobago's BUR. During the technical analysis, the Party provided further information, specifying the roles and responsibilities of the ministries with a climate change related mandate, as well as the roles and composition of the multiple stakeholders and their committees.

51. Trinidad and Tobago clearly reported that a key category analysis was performed for the level of emissions for 2018. The key category analysis was performed for all sectors (energy, IPPU, AFOLU and waste) using the 2006 IPCC inventory software, while the other tables reported in the BUR were completed using Excel calculation spreadsheets. The Party explained that this contributed to a slight difference in total values reported owing to the rounding of decimal places.

52. Information on a key category analysis for the trend in emissions was not reported in Trinidad and Tobago's BUR. However, the Party clarified in its BUR that the key category analysis for the trend in emissions was not completed owing to the limited availability of data but would be completed in time for the next reporting cycle. During the technical analysis, the Party provided a key category analysis for the trend.

53. The BUR provides information on QA/QC measures for all sectors. The information reported includes QA/QC procedures conducted for submitted data and inventories and for information received from emitting entities, as well as QA/QC checks applied to inventories prior to submission using the required templates. The TTE commends Trinidad and Tobago for providing information in accordance with the IPCC good practice guidance. The Party identified improvements in its reporting, such as establishing the domestic MRV system and

Knowledge Management System, drafting legislation to create an enabling environment for mandatory reporting of GHG emissions and providing training on various aspects related to the preparation of the GHG inventory. Trinidad and Tobago also identified improvements for future inventories, such as QC checks to be performed by data suppliers.

54. Trinidad and Tobago reported information on CO₂ fuel combustion emissions using both the sectoral and the reference approach. The information reported indicates that the combustion emissions estimated are 19.3 Gg CO₂ eq for the sectoral approach and 21.3 Gg CO₂ eq for the reference approach. The difference between the estimates calculated using the two approaches was reported as 10 per cent. The Party explained in its BUR that, during the preparation of the BUR, it was able to access improved data sets compared with those used for the preparation of the NC2. This resulted in a smaller difference between the two approaches (10 per cent) than that recorded for 2006 in the NC2 (21 per cent).

55. Information on the reason for the 10 per cent difference between the estimates calculated using the two approaches was not reported in Trinidad and Tobago's BUR. During the technical analysis, Trinidad and Tobago clarified that the difference was due to the inability to access accurate and complete data sets. The Party further clarified that, when it tried to access data for the sectoral approach for each year of the time series, data gaps were observed. The Party is currently analysing these data sets to identify potential data gap filling techniques in order to validate the data sets and incorporate them in its next submission. Information on CO₂ emissions from specific fuels calculated using both the reference and the sectoral approach was not clearly reported in Trinidad and Tobago's BUR, nor was the level of emissions (i.e. emissions were reported as 21.3 Gg CO₂ eq for the reference approach and 19.3 Gg CO₂ eq for the sectoral approach, as noted in para. 54 above). During the technical analysis, the Party clarified that a typographical error was introduced when compiling the BUR and the correct values are approximately 21,300 Gg CO₂ eq for the reference approach and 19,300 Gg CO₂ eq for the sectoral approach. The Party also provided further details on CO₂ emissions by fuel for the sectoral and the reference approach for the entire time series.

56. Information was reported on international aviation (370.67 Gg CO₂ eq) and marine bunker fuels (14.08 Gg CO₂ eq) for the 2018 inventory only.

57. Trinidad and Tobago reported information on the uncertainty assessment (level) of its national GHG inventory. The uncertainty analysis was based on the tier 1 approach and covers all source categories and all direct GHGs. The results obtained, as reported in the BUR, reveal that the level uncertainty for emissions is 9 per cent and the trend uncertainty is 10 per cent for GHG emissions including LULUCF.

58. Information on underlying assumptions was not reported in Trinidad and Tobago's BUR. Information on the selected uncertainty values for AD and EFs was not clearly reported in the BUR. During the technical analysis, the Party clarified that the EF uncertainty values used were default values from the IPCC EF database and software. Following the submission of the BUR, Trinidad and Tobago's technical team observed errors related to AD uncertainty values, and the Party will revise its uncertainty estimates for the reported time series and include them in the next submission with information on underlying assumptions.

59. The TTE noted that the transparency of the information reported on GHG inventories could be enhanced by addressing the areas noted in paragraphs 29, 32, 34, 36, 41, 44, 46–48, 50, 52, 55 and 58 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

60. As indicated in table I.2, Trinidad and Tobago 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.

61. The information reported provides an overview of the Party's mitigation actions and their effects. In its BUR, Trinidad and Tobago reported information on its national context and framed its national mitigation planning and actions in the context of the Carbon Reduction Strategy and its NDC. Trinidad and Tobago conducted a mitigation analysis and

developed an action plan based on a comprehensive study of the national emission profile and contributions of the five emitting sectors (power generation, industry, transport, waste and AFOLU). Most of the mitigation actions are in the power generation, transport and industry sectors. Further, through its NDC the Party has committed to an overall cumulative emission reduction of 15 per cent below the 'business as usual' level by 2030 for these three sectors. In absolute terms, this equates to an emission reduction of 103 Mt CO₂ eq between 2013 and 2030. The Party highlighted three case studies that reflect its progress in that regard, namely fuel switching in transport, renewable energy generation through a solar power pilot project and a solar park at Piarco International Airport.

62. Further, the Party reported estimated emission projections under the 'optimistic business as usual' scenario (1.2 per cent population growth and 1.8 per cent gross domestic product growth) of a 14.2 per cent increase in 2030 (5,949,770 t CO₂ eq) and a 21.9 per cent increase in 2050 (9,383,521 t CO₂ eq) compared with the 'conservative business as usual' scenario (0.6 per cent population growth and 0.2 per cent gross domestic product growth). The Party reported in its BUR that the transport sector is expected to experience the highest increase in emissions, followed by the industry and waste sectors. Emissions associated with power generation are projected to decrease. The emissions under the 'optimistic business as usual' scenario are higher for every sector compared with the 'conservative business as usual' scenario as a result of the expected economic growth under this scenario. The Party used a simplified version of the basic input/output system emission projection model for consistency as this model was the basis for the projection model used in the development of the Carbon Reduction Strategy of Trinidad and Tobago that led to the development of its NDC.

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

64. Consistently with decision 2/CP.17, annex III, paragraph 12(a), Trinidad and Tobago reported the names of mitigation actions and groups of actions, nature of actions and coverage (sector and gases) in the BUR (pp.87–131). A description of the mitigation actions, as well as information on quantitative goals for some mitigation actions, was provided in the BUR. Power generation, transport and industry are the main sectors for the mitigation actions reported.

65. Information on quantitative goals for some mitigation actions was not reported in Trinidad and Tobago's BUR for the transport, waste and AFOLU sectors. Qualitative or quantitative goals were not reported for four of the mitigation actions in the power generation sector and for eight of the mitigation actions reported in the industry sector. During the technical analysis, the Party clarified that information on goals for some mitigation actions could not be captured and therefore could not be included in the BUR. Information on progress indicators was not reported for all mitigation actions. During the technical analysis, the Party clarified that indicators for tracking mitigation actions have not been finalized and are being prepared and that it will update the related information for the upcoming reporting cycle.

66. Trinidad and Tobago clearly reported information on assumptions for six mitigation actions in the power generation sector, one mitigation action in the waste sector and two mitigation actions in the AFOLU sector. The Party clearly reported on objectives and progress of implementation for all mitigation actions in the power generation, transport, industry, waste and AFOLU sectors. The Party also reported in the BUR the mitigation co-benefit results achieved from implementing its mitigation actions, including enhanced natural climate resilience, enrichment of nutrients and enhanced economies, fisheries and livelihoods (AFOLU sector); improving air quality in areas around managed landfills (waste sector); providing opportunities to create new industries and jobs (industry sector); and a potential increase in the resilience of the energy system, for example in post-disaster situations, using distributed renewable energy (power generation sector).

67. Information on methodologies was not reported for all mitigation actions and information on assumptions was not reported for some mitigation actions in Trinidad and Tobago's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party provided updated information on methodologies and assumptions for the mitigation

actions. Information on steps taken or envisaged to achieve its mitigation actions and progress in the implementation of underlying steps taken or envisaged was not clearly reported in Trinidad and Tobago's BUR. During the technical analysis, the Party clarified that it used an alternative phrasing, "task", in the BUR to identify the steps taken or envisaged, and further indicated that efforts will be made to improve the reporting for the next reporting cycle. With regard to progress in the implementation of the underlying steps taken or envisaged, the Party clarified during the technical analysis that the information was not available at the time of reporting.

68. For the power generation sector, Trinidad and Tobago's mitigation actions are focused on promoting energy efficiency and the use of renewables, as well as switching to alternative fuels, including to generate electricity to power electric vehicles. The 11 mitigation actions reported for the sector include non-market mechanisms, specifically feed-in tariffs and domestic bill rebates for power utility customers. The Party reported that 36 per cent of the mitigation actions are completed, 18 per cent are ongoing and 46 per cent are planned. For two mitigation actions, the Party reported the results achieved as an estimated outcome: 130 MW power generation from renewable sources will offset up to 10 per cent of fossil fuel use and the replacement of incandescent bulbs with 1.6 million light-emitting diode bulbs will contribute to an overall reduction of 1 per cent of natural gas use in the power generation sector.

69. Trinidad and Tobago's 11 reported mitigation actions for the transport sector are focused on fuel switching and e-mobility. The Party reported that 36 per cent of the mitigation actions are ongoing and 64 per cent are planned. The Party is committed to an unconditional emission reduction of 1.7 Mt CO₂ eq between 2013 and 2030 in the public transport sector and it achieved 31,509 t CO₂ eq emission reductions in the transport sector between 2019 and 2021.

70. Trinidad and Tobago reported nine mitigation actions for the industry sector, which are mainly focused on energy efficiency and conservation, promotion of renewable energy technologies and CCS. The Party reported that 22 per cent of the mitigation actions are ongoing and 78 per cent are planned. The introduction of energy audits in industries to reduce energy consumption started in 2021 and legislation for compulsory energy auditing is in effect. The other ongoing mitigation action reported was a study on CCS that was commissioned in 2021, which set out a road map for the implementation of CCS technologies in the country.

71. For the waste sector, Trinidad and Tobago's three reported mitigation actions are focused on landfill management and recycling and were reported as ongoing. The Party reported that it aims to reduce landfill waste by 20–50 per cent between 2022 and 2025 and is evaluating proposals for a waste-to-energy project. In addition, the Party aims to increase the quantity of recyclables diverted from landfill sites by 50 per cent over a 10-year period. The Party is assessing the need to establish more transfer stations that would allow recyclables to be recovered and thus not enter landfill sites.

72. For the AFOLU sector, Trinidad and Tobago's six reported mitigation actions are focused on reforestation and forest conservation. The Party reported that 83 per cent of the actions are ongoing, while 17 per cent are planned. Mitigation actions, including through sustainable management of forest resources, forest conservation, reduction of deforestation, reforestation and wetlands management, were reported as ongoing and were all started in 2021.

73. Trinidad and Tobago reported in its BUR that it did not participate in international market mechanisms. The Party also reported, however, that it received capacity-building support to facilitate future participation in the clean development mechanism.

74. Trinidad and Tobago reported information on its domestic MRV arrangements in accordance with decision 2/CP.17, annex III, paragraph 13. The information reported indicates that Trinidad and Tobago is in the process of designing and developing a domestic MRV system for mitigation actions. According to the plan, at the national level the Environmental Management Authority is responsible for establishing reporting requirements for mitigation actions and relevant QC procedures; uploading data and information from emitting entities involved in mitigation efforts into the Knowledge Management System;

collating data and information to be used in analyses; establishing procedures for monitoring and evaluating whether mitigation efforts have achieved their targets; and submitting results to the Ministry of Planning and Development regarding QC, data analyses and the review of findings for incorporation into reports.

75. The TTE noted that the transparency of the information reported on mitigation actions could be enhanced by addressing the areas noted in paragraphs 65 and 67 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, Trinidad and Tobago reported in its BUR, partially in accordance with paragraphs 14–16 of the UNFCCC reporting guidelines on BURs, information on finance, technology and capacity-building needs and support received.

77. Trinidad and Tobago 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. Information on constraints and gaps in the context of GHG inventory preparation was reported in the BUR (section 5.1). The Party further reported that the availability of quality data and information continues to be a challenge. In the context of mitigation, constraints and gaps were reported in the BUR (section 6) for the power generation, transport, industry, AFOLU and waste sectors. Trinidad and Tobago reported in its BUR (table 5-1) that its financial, technical and capacity-building needs are primarily in the areas of conducting wind measurements to develop a wind atlas (USD 2,000,000); preparing a feasibility study on CCS (USD 500,000); establishing and staffing specialized units in identified institutions for sustainable collection of GHG data (USD 930,000); assessing the requirements for renewable energy charging stations to help the transition to electric vehicles (USD 20,000); and establishing and staffing a specialized MRV/ETF unit at the national regulatory agency (USD 450,000).

78. Information on financial, technical and capacity-building needs was not clearly reported. During the technical analysis, the Party clarified that in future submissions information will be reported distinctly under the financial, technical and capacity-building subgroups in order to improve the clarity of the reporting.

79. Trinidad and Tobago reported information on financial resources received in accordance with decision 2/CP.17, annex III, paragraph 15. In its BUR (table 5-2), Trinidad and Tobago reported that it received support from the GEF amounting to USD 2,291,800, of which USD 952,000 was received for preparing its NC3 and first BUR. The Party also received capacity-building support from the UNFCCC secretariat for QA/QC of its GHG inventory during the preparation of the first BUR and NC3. The Party received USD 281,481 from the European Union Environment Action Programme in two disbursements. It also received USD 922,306 in grants and USD 1,001,406 in undisbursed commitments from the Green Climate Fund, as well as a grant of USD 600,000 in the form of technical assistance from the European Union Environment Action Programme. In addition, UNEP Copenhagen Climate Centre³ and the European Commission provided a grant of USD 92,000, while the European Commission, the United Nations Development Programme and other multilateral agencies disbursed USD 1,329,795 and the Inter-American Development Bank disbursed USD 307,500 in the form of grants. The Initiative for Climate Action Transparency disbursed a grant of USD 125,000, and the European Union Global Climate Change Alliance disbursed an additional USD 4,800,000.

80. Information on the total financial support received for the reporting period (2010–2020) and the type of support received (financial resources, technical, technology transfer and capacity-building) was not reported in Trinidad and Tobago's BUR. During the technical analysis, the Party clarified that information on the total amount of financial support received and the classification and categorization of support received will be included in future submissions.

³ Formerly UNEP DTU Partnership.

81. Trinidad and Tobago 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, Trinidad and Tobago reported that it participated in a multi-country project entitled Technology Needs Assessment (TNA) – Phase III in collaboration with UNEP Copenhagen Climate Centre with funding from the GEF. The technology needs assessment process was built on the results of climate risk assessments and the NDC implementation plan for adaptation and mitigation. The project, which will help Trinidad and Tobago to conduct technology needs assessments and prepare a technology action plan, was completed in 2022.

82. Information on whether the technology needs were nationally determined was not reported in Trinidad and Tobago’s BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party provided two technology needs assessment reports (on adaptation and on mitigation), which confirmed that the technology needs identified and prioritized were nationally determined through multi-stakeholder processes that took into account gender dimensions. The processes involved two separate assessments of adaptation and mitigation. The sectors identified and prioritized as most important in relation to carbon reduction and mitigation strategies were power generation (energy audit, supply-side energy efficiency and deployment of solar photovoltaics), industry (CCS and use of biofuel) and transport (intelligent traffic management and e-mobility). For adaptation, the priorities identified in the agriculture sector were pressurized irrigation technologies and protective structure cooling systems (‘caterpillar tunnel’ technologies); in the health sector they were solar powered backup power generation systems for health institutions and disease surveillance, and early warning data on climate-sensitive environmental risks and epidemiological trends; and in the water sector they were rainwater harvesting and water metering.

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 78, 80 and 82 above, which could facilitate a better understanding of the information reported on needs and support received.

5. Any other information

84. Trinidad and Tobago reported some information on adaptation action that may lead to GHG emission reductions, without providing estimates of such reductions. Given the importance of climate change as a national development issue, Trinidad and Tobago has adopted a ‘pathway’ approach to adaptation by building climate resilience and integrating climate change into the national development process by assessing climate risk vulnerability in the short to medium term while aiming at long-term adaptation. A vulnerability capacity assessment study was conducted, which identified the sectors and geographical areas at risk, and a financial investment plan for implementing the recommendations of the study has been developed. Integration of the recommendations, including the potential financing of activities, into sectoral strategies will be pursued. Training on conducting vulnerability and climate risk assessments will be provided for various sectors.

D. Identification of capacity-building needs

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

- (a) In relation to the national GHG inventory:
 - (i) Training national experts to enhance national capacity to collect, archive and report AD;
 - (ii) Training national experts to enhance national capacity to conduct uncertainty analysis for AD;

- (iii) Training national experts to enhance national capacity for data collection, methodological selection (tier 1 or 2) and emission estimation to report emissions of HFCs, PFCs and SF₆;
- (iv) Training national experts to enhance national capacity for data collection, methodological selection (tier 1 or 2) and emission estimation to report emissions and removals for the AFOLU sector by subcategory;
- (v) Enhancing national technical and institutional capacity with respect to calculating GHG emissions, selecting methodologies (tier 1 or 2) and carrying out QA/QC checks for data collectors;
- (vi) Training national experts to develop and apply country-specific EFs for use of higher-tier methods for the key emission and removal categories;
- (vii) Training national experts to enhance national capacity for preparing and reporting the national GHG inventory on a continuous basis using the common reporting tables;
- (b) In relation to mitigation actions and their effects: enhancing national capacity for tracking progress of mitigation actions (quantification of results achieved), including capacity to use common quantitative and qualitative indicators for each individual mitigation action, and for reporting on the methodologies and assumptions used;
- (c) In relation to finance, technology and capacity-building needs:
 - (i) Enhancing national capacity for collecting, reporting and categorizing information on the types of support received;
 - (ii) Enhancing national capacity for collecting and reporting specific information on needs related to climate change activities under the three separate categories of financial, technical and capacity-building.

86. The TTE noted that, in addition to those identified during the technical analysis, Trinidad and Tobago reported the following capacity-building needs in its BUR, which include capacity-building needs for future BURs and transitioning to the ETF, including training on completing the common reporting tables and the common tabular formats:

- (a) Strengthening national capacity, including that of stakeholders, with respect to calculating GHG emissions using the 2006 IPCC Guidelines and related software;
- (b) Strengthening national capacity, including that of stakeholders, regarding accessibility to and availability of data required to perform emission calculations;
- (c) Strengthening institutional capacity to address overlaps in processes related to emission calculations;
- (d) Strengthening human capacity to carry out the additional task of calculating and submitting emission information to the Knowledge Management System;
- (e) Strengthening national capacity to improve the working knowledge of sector-specific GHG methodologies, the 2006 IPCC Guidelines and QC checks;
- (f) Strengthening national capacity to improve the working knowledge of national MRV system templates and the Knowledge Management System, taking into account the limited human resources and time available for carrying out the additional tasks associated with the MRV system;
- (g) Strengthening national capacity to establish a comprehensive communications plan for formalized interactions with stakeholders and the coordinating entity;
- (h) Strengthening national capacity through additional training with respect to reporting AD in the format required for GHG inventories for the AFOLU and waste sectors;
- (i) Strengthening national capacity through additional training with respect to analysing uncertainties in AD to enable data providers to report the AD required for GHG inventories;

(j) Strengthening national capacity to develop manuals on data disaggregation by category for each sector, on the basis of the 2006 IPCC Guidelines, for use as national sectoral workbooks for GHG inventory training, preparation and institutional memory;

(k) Strengthening national capacity to conduct wind measurements in order to inform and develop a wind atlas.

III. Conclusions

87. The TTE conducted a technical analysis of the information reported in the first BUR of Trinidad and Tobago 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, including associated methodologies and assumptions; constraints and gaps, and related financial, technical and capacity-building needs, including a description of support needed and received; the level of support received to enable the preparation and submission of BURs; domestic MRV; and the emission reduction target and progress in achieving it. During the technical analysis, additional information was provided by Trinidad and Tobago on its national GHG inventory and technology needs assessment. The TTE concluded that the information analysed is partially transparent.

88. Trinidad and Tobago reported information on the institutional arrangements relevant to the preparation of its BURs. The information covered key aspects of the institutional arrangements, including the roles and responsibilities of the Ministry of Planning and Development, the Environmental Management Authority and other institutions and experts, mechanisms for information and data exchange, QA/QC procedures, and provisions for public consultation and other forms of stakeholder engagement. Trinidad and Tobago also reported on key features of the domestic MRV system, which includes three components: MRV of emissions, of mitigation actions, and of support and resources used. The institutional framework for the MRV system includes the coordinating entity, the host of the Knowledge Management System and data suppliers (emitting entities). Trinidad and Tobago reported that it will continue to implement the recommendations resulting from the MRV pilot project and consultations with external experts to prepare for compliance with the requirements of the ETF.

89. In its first BUR, submitted in 2021, Trinidad and Tobago reported information on its national GHG inventory for 2006–2018. This included GHG emissions and removals of CO₂, CH₄ and N₂O for all relevant sources and sinks as well as the precursor gases. The inventory was developed on the basis of the 2006 IPCC Guidelines. The total GHG emissions for 2018 were reported as 41,637.50 Gg CO₂ eq (including land and HWP) and 44,345.81 Gg CO₂ eq (excluding land and HWP). Ten key categories were identified; ammonia production (2.B.1) and energy industries – electricity and heat production (1.A.1.a) together account for more than 60 per cent of GHG emissions. The main gases identified were CO₂, CH₄ and N₂O. Estimates of HFC, PFC and SF₆ emissions were reported as “NO” and “NE” owing to difficulties in obtaining the necessary data, as clarified by the Party in the BUR.

90. Trinidad and Tobago reported information on mitigation actions and their effects in both tabular and narrative format. Trinidad and Tobago presented baseline and estimated emission projections under two baseline scenarios, namely the ‘conservative business as usual’ scenario and the ‘optimistic business as usual’ scenario, for 2018–2050. The Party framed its national mitigation planning and actions in the context of its Carbon Reduction Strategy, its NDC, the mitigation analysis report and an action plan based on a comprehensive study of the national emission profile. Trinidad and Tobago reported planned, ongoing and completed actions in the power generation, transport, industry, AFOLU and waste sectors. Key mitigation actions were the promotion of renewable energy, fuel switching, the promotion of energy efficiency and CCS. The Party reported the progress of implementation of its mitigation actions and the results achieved as mitigation co-benefits. The highest emission reduction, 31,509 t CO₂ eq between 2019 and 2021, was reported for the transport

sector. The Party reported the co-benefits of its mitigation actions, including the creation of green jobs, nature conservation and resilience-building. The Party also reported information on its involvement in international market mechanisms and on MRV arrangements. Information on quantitative goals for some mitigation actions and information on progress indicators for all mitigation actions was not reported owing to difficulties in obtaining the necessary data, as clarified by the Party during the technical analysis. During the technical analysis, the Party provided updated information on methodologies and assumptions for the mitigation actions.

91. Trinidad and Tobago reported information on key constraints, gaps and related needs, including constraints and gaps in preparing the GHG inventory and implementing mitigation actions. The Party reported financial needs for conducting wind measurements, collecting GHG data, conducting a feasibility study on CCS, operationalizing a specialized MRV/ETF unit at the national regulatory agency and assessing the requirements for renewable energy charging stations to help the transition to electric vehicles. Information was reported on financial, technical, technology transfer and capacity-building support received, including from Parties included in Annex II to the Convention and international organizations. The Party also reported that it received financial support of USD 952,000 from the GEF for preparing its NC3 and first BUR. Information on whether the technology needs were nationally determined was not reported in Trinidad and Tobago's BUR and during the technical analysis the Party provided two technology needs assessment reports (on adaptation and on mitigation), which confirmed that technology needs were nationally determined in consultation with stakeholders.

92. The TTE, in consultation with Trinidad and Tobago, identified the 10 capacity-building needs listed in chapter II.D above and needs for capacity-building that aim to facilitate reporting in accordance with the UNFCCC reporting guidelines on BURs and participation in ICA in accordance with the ICA modalities and guidelines, taking into account Article 4, paragraph 3, of the Convention. The Party also identified and reported in its BUR 11 needs for capacity-building to facilitate transition to the ETF, which are listed in paragraph 86 above. Trinidad and Tobago prioritized all the capacity-building needs.

Annex I

Extent of the information reported by Trinidad and Tobago 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 Trinidad and Tobago

<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.	Yes	Trinidad and Tobago submitted its first BUR in December 2021; the GHG inventory reported is for 2018 with a time series of 2006–2018.
Decision 2/CP.17, annex III, paragraph 4	Non-Annex I Parties should use the methodologies established in the latest UNFCCC guidelines for the preparation of NCs from non-Annex I Parties approved by the Conference of the Parties or those determined by any future decision of the Conference of the Parties on this matter.	Yes	Trinidad and Tobago used the 2006 IPCC Guidelines.
Decision 2/CP.17, annex III, paragraph 5	The updates of the section on national inventories of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol should contain updated data on activity levels based on the best information available using the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF; any change to the EF may be made in the subsequent full NC.	No	Trinidad and Tobago did not report AD for 2006–2018, but reported AD for the years used for the emission projections (2018, 2030, 2040 and 2050).
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	Comparable information was reported in BUR table 3-9 and annex table 1. However, GHG emission estimates for individual source categories in the LULUCF sector were not reported.
	(b) The sectoral report tables annexed to the Revised 1996 IPCC Guidelines.	Partly	Comparable information was not reported. The BUR contains information equivalent to summary table 7A of the Revised 1996 IPCC Guidelines. However, the information reported did not cover all individual source categories.
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 does not include the inventory years 1990–2006 reported in the NC1 and NC2.

<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 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	The information for 1990–2006, which was reported in the NC1 and NC2, was not reported in the BUR.
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:	Yes	
	(a) Table 1 (National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors);	Yes	Comparable information was reported in BUR annex table 1.
	(b) Table 2 (National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF ₆).	Yes	Comparable information was reported in BUR annex table 1.
Decision 2/CP.17, annex III, paragraph 10	Additional or supporting information, including sector-specific information, may be supplied in a technical annex.	Yes	The Party submitted an annex to its BUR, which contains a GHG inventory summary table for 2018 and another table containing GHG emissions by gas for 2006–2018.
Decision 17/CP.8, annex, paragraph 12	Non-Annex I Parties are also encouraged, to the extent possible, to undertake any key source analysis as indicated in the IPCC good practice guidance to assist in developing inventories that better reflect their national circumstances.	Yes	
Decision 17/CP.8, annex, paragraph 13	Non-Annex I Parties are encouraged to describe procedures and arrangements undertaken to collect and archive data for the preparation of national GHG inventories, as well as efforts to make this a continuous process, including information on the role of the institutions involved.	Yes	Information was reported on 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.
Decision 17/CP.8, annex, paragraph 14	Each non-Annex I Party shall, as appropriate and to the extent possible, provide in its national inventory, on a gas-by-gas basis and in units of mass, estimates of anthropogenic emissions of:		
	(a) CO ₂ ;	Partly	For some subcategories in the IPPU and waste sectors, “NE” was reported.
	(b) CH ₄ ;	Partly	For some subcategories in the IPPU and waste sectors, “NE” was reported.
	(c) N ₂ O.	Partly	For some subcategories in the IPPU and waste sectors, “NE” was reported.
Decision 17/CP.8, annex, paragraph 15	Non-Annex I Parties are encouraged, as appropriate, to provide information on anthropogenic emissions by sources of:	Yes	

<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>
	(a) HFCs;	Yes	Information was reported as either “zero”, “NE” or “NO”.
	(b) PFCs;	Yes	Information was reported as either “zero”, “NE” or “NO”.
	(c) SF ₆ .	Yes	Information was reported as either “zero”, “NE” or “NO”.
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) Carbon monoxide;	Yes	
	(b) Nitrogen oxides;	Yes	
	(c) Non-methane volatile organic compounds.	Yes	Information was reported as either “zero”, “NE” or “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.	Partly	The Party reported on sulfur oxides, but information was reported as either “zero”, “NE” or “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.	Partly	CO ₂ emissions from fuel combustion were reported using the reference approach and the sectoral approach, but the difference between them was not explained.
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;	Partly	Information was reported for 2018 only.
	(b) Marine bunker fuels.	Partly	Information was reported for 2018 only.
Decision 17/CP.8, annex, paragraph 20	Non-Annex I Parties wishing to report on aggregated GHG emissions and removals expressed in CO ₂ eq should use the GWP provided by the IPCC in its AR2 based on the effects of GHGs over a 100-year time-horizon.	NA	Trinidad and Tobago used the GWP provided in the AR5.
Decision 17/CP.8, annex, paragraph 21	Non-Annex I Parties are encouraged to provide information on methodologies used in the estimation of anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol, including a brief explanation of the sources of EFs and AD. If non-Annex I Parties estimate anthropogenic emissions and removals from country-specific sources and/or sinks that are not part of the Revised 1996 IPCC Guidelines, they should explicitly describe the source and/or sink categories, methodologies, EFs and AD used in their estimation of emissions, as appropriate. Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building:		
	(a) Information on methodologies used in the estimation of anthropogenic emissions by sources	Yes	Trinidad and Tobago used the 2006 IPCC Guidelines. Tier 1

<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>
	and removals by sinks of GHGs not controlled by the Montreal Protocol;		methodology was used for all sectors.
	(b) Explanation of the sources of EFs;	Yes	Trinidad and Tobago used the 2006 IPCC Guidelines. Country-specific EFs were used for some categories under the IPPU sector but the EF values were not reported.
	(c) Explanation of the sources of AD;	Yes	Trinidad and Tobago used the 2006 IPCC Guidelines.
	(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	Trinidad and Tobago used the 2006 IPCC Guidelines. Tier 1 methodology was used for all sectors.
	(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.	Partly	Notation keys were used but not in a consistent manner.
Decision 17/CP.8, annex, paragraph 24	Non-Annex I Parties are encouraged to provide information on the level of uncertainty associated with inventory data and their underlying assumptions, and to describe the methodologies used, if any, for estimating these uncertainties:		
	(a) Level of uncertainty associated with inventory data;	Yes	
	(b) Underlying assumptions;	No	
	(c) Methodologies used, if any, for estimating these uncertainties.	Yes	

Note: The parts of the UNFCCC reporting guidelines on BURs on reporting information on GHG emissions by sources and removals by sinks in BURs are contained in decision 2/CP.17, paras. 3–10 and 41(g). Further, as per para. 3 of those guidelines, non-Annex I Parties are to submit updates of their national GHG inventories in accordance with paras. 8–24 of the UNFCCC guidelines for the preparation of NCs from non-Annex I Parties, contained in the annex to decision 17/CP.8. The scope of such updates should be consistent with the non-Annex I Party's capacity and time constraints and the availability of its data, as well as the level of support provided by developed country Parties for biennial update reporting.

Table I.2

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

<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	Information on mitigation actions was provided in both tabular and narrative format in the BUR.
Decision 2/CP.17, annex III, paragraph 12	For each mitigation action or group of mitigation actions, including, as appropriate, those listed in document FCCC/AWGLCA/2011/INF.1, developing country Parties shall provide the following information, to the extent possible:		
	(a) Name and description of the mitigation action, including information on the nature of the action, coverage (i.e. sectors and gases), quantitative goals and progress indicators;	Partly	Information on quantitative goals for some mitigation actions and on progress indicators for all mitigation actions was not reported.
	(b) Information on:		
	(i) Methodologies;	No	Methodological information was not reported for any of the mitigation actions.
	(ii) Assumptions;	Partly	Information on assumptions was not reported for some mitigation actions.
	(c) Information on:		
	(i) Objectives of the action;	Yes	
	(ii) Steps taken or envisaged to achieve that action;	Yes	The Party did not report information on steps taken or envisaged; however, “tasks” were reported for most actions and can be interpreted as steps taken or envisaged.
	(d) Information on:		
	(i) Progress of implementation of the mitigation actions;	Yes	
	(ii) Progress of implementation of the underlying steps taken or envisaged;	No	
	(iii) Results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions, to the extent possible;	Yes	
	(e) Information on international market mechanisms.	Yes	
Decision 2/CP.17, annex III, paragraph 13	Parties should provide information on domestic MRV arrangements.	Yes	

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

Table I.3

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

<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.	Partly	Information on financial needs was reported.
Decision 2/CP.17, annex III, paragraph 15	Non-Annex I Parties should provide:		
	(a) Information on financial resources received, technology transfer and capacity-building received;	Partly	Information on the total amount of financial support received and the types of support (financial resources, technology transfer and capacity-building) was not reported.
	(b) Information on technical support received from the GEF, Parties included in Annex II to the Convention and other developed country Parties, the Green Climate Fund and multilateral institutions for activities relating to climate change, including for the preparation of the current BUR.	Yes	
Decision 2/CP.17, annex III, paragraph 16	With regard to the development and transfer of technology, non-Annex I Parties should provide information on:		
	(a) Nationally determined technology needs;	No	
	(b) Technology support received.	Yes	

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>.

B. UNFCCC documents

First BUR of Trinidad and Tobago. Available at <https://unfccc.int/BURs>.

NC1, NC2 and NC3 of Trinidad and Tobago. Available at <https://unfccc.int/non-annex-I-NCs>.

C. Other documents

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

Trinidad and Tobago. 2021. *Technology Needs Assessment (TNA) Report – Identification and Prioritization of Technologies for Adaptation*. Available at https://tech-action.unepdtu.org/tna-database/?fwp_search=trinidad%20&fwp_tna_database_type=tna_report.

Trinidad and Tobago. 2021. *Technology Needs Assessment (TNA) Report – Identification and Prioritization of Technologies for Mitigation*. Available at https://tech-action.unepdtu.org/tna-database/?fwp_search=trinidad%20&fwp_tna_database_type=tna_report.
