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Technical analysis of the fourth biennial update report of Namibia submitted on 18 February 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. Further, paragraph 41(f) of that decision states that Parties not included in Annex I to the Convention shall submit a biennial update report every two years, either as a summary of parts of their national communication in the year in which the national communication is submitted or as a stand-alone update report. As mandated, the least developed country Parties and small island developing States may submit biennial update reports at their discretion. This summary report presents the results of the technical analysis of the fourth biennial update report of Namibia, conducted by a team of technical experts in accordance with the modalities and procedures contained in the annex to decision 20/CP.19.

Abbreviations and acronyms

2006 IPCC Guidelines	*2006 IPCC Guidelines for National Greenhouse Gas Inventories*
2019 Refinement to the 2006 IPCC Guidelines	*2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories*
AD	activity data
AFOLU	agriculture, forestry and other land use
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BUR	biennial update report
C	carbon
CBIT	Capacity-building Initiative for Transparency
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
COVID-19	coronavirus disease 2019
EF	emission factor
ETF	enhanced transparency framework under the Paris Agreement
GCF	Green Climate Fund
GDP	gross domestic product
GEF	Global Environment Facility
GHG	greenhouse gas
HFC	hydrofluorocarbon
HWP	harvested wood products
ICA	international consultation and analysis
IPCC	Intergovernmental Panel on Climate Change
IPCC good practice guidance	*Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*
IPCC good practice guidance for LULUCF	*Good Practice Guidance for Land Use, Land-Use Change and Forestry*
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
MRV	measurement, reporting and verification
N_2O	nitrous oxide
NA	not applicable
NAMA	nationally appropriate mitigation action
NC	national communication
NDC	nationally determined contribution
NE	not estimated
NIR	national inventory report
NMVOC	non-methane volatile organic compound
NO	not occurring
non-Annex I Party	Party not included in Annex I to the Convention
NO_X	nitrogen oxides
PFC	perfluorocarbon
QA/QC	quality assurance/quality control
Revised 1996 IPCC Guidelines	*Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*
SF_6	sulfur hexafluoride
SO_2	sulfur dioxide

TTE	team of technical experts
UNFCCC guidelines for the preparation of NCs from non-Annex I Parties	"Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention"
UNFCCC reporting guidelines on BURs	"UNFCCC biennial update reporting guidelines for Parties not included in Annex I to the Convention"

I. Introduction and process overview

A. Introduction

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

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

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

4. Namibia submitted its third BUR on 23 January 2019, which was analysed by a TTE in the fourteenth round of technical analysis of BURs from non-Annex I Parties, conducted from 2 to 6 September 2019. After the publication of its summary report, Namibia participated in the ninth workshop for the facilitative sharing of views, convened virtually from 24 to 27 November 2020.

5. This summary report presents the results of the technical analysis of the fourth BUR of Namibia, 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, Namibia submitted its fourth BUR on 18 February 2021 as a stand-alone update report. The submission was made within two years and 26 days from the submission of the third BUR. In its BUR, the Party explained that it was unable to submit the fourth BUR on time owing to a delay in receiving funds for its preparation and to circumstances arising from the COVID-19 pandemic, both of which disrupted the schedule.

7. A desk analysis of Namibia's BUR was conducted remotely from 28 June to 2 July 2021 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: Charles Asumana Sr. (Liberia), Irina Atamuradova (former member of the Consultative Group of Experts from Turkmenistan), Diana Barba (Colombia), Joseph Benise Nissa (Saint Lucia), Pierre Brender (United Kingdom of Great Britain and Northern Ireland), Paulo Cornejo (Chile), Patience Thelma Melfah Damptey (former member of the Consultative Group of Experts from Ghana), Elsa Hatanaka (Japan), Brittany Meighan (Belize), Walter Oyhantcabal (Uruguay), Marieke Sandker (Netherlands), John Steller (United States of America), Hartley Walimwipi (Zambia), Jongikhaya Witi (South Africa) and Brian Zutta (Peru). Mr. Steller and Mr. Witi were the co-leads. The technical analysis was coordinated by Sohel Pasha, Hiroaki Odawara and Jeonghyun Emily Park (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 Namibia engaged in consultation[1] on the identification of capacity-building needs for the preparation of BURs and participation in the ICA process. Following the technical analysis of Namibia's fourth BUR, the TTE prepared and shared a draft summary report with Namibia

[1] The consultation was conducted via videoconferencing.

on 1 December 2021 for its review and comment. Namibia, in turn, provided its feedback on the draft summary report on 24 February 2022.

9. The TTE finalized the summary report in consultation with the Party on 24 February 2022.

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 Namibia's BUR outlined in paragraph 10 above.

B. Extent of the information reported

12. The elements of information referred to in paragraph 10(a) above include the national GHG inventory report; information on mitigation actions, including a description of such actions, an analysis of their impacts and the associated methodologies and assumptions, and information on progress in their implementation; information on domestic MRV; and information on support needed and received.

13. According to decision 20/CP.19, annex, paragraph 15(a), in undertaking the technical analysis of the submitted BUR, the TTE is to identify the extent to which the elements of information listed in paragraph 12 above have been included in the BUR of the Party concerned. The TTE considers that the reported information is mostly consistent with the UNFCCC reporting guidelines on BURs. Specific details on the extent of the information reported for each of the required elements are provided in the tables included in annex I.

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

C. Technical analysis of the information reported

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

focus of the technical analysis was on the transparency of the information reported in the BUR.

16. For information reported on national GHG inventories, the technical analysis also focused on the consistency of the methods used for preparing those inventories with the appropriate methods developed by the IPCC and referred to in the UNFCCC reporting guidelines on BURs. Namibia submitted an NIR as a stand-alone document and, further to consultations with the TTE, requested a more detailed analysis and documentation of the findings contained in the NIR to be undertaken using the agreed GHG inventory tool.

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

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

18. As per the scope defined in paragraph 2 of the UNFCCC reporting guidelines on BURs, the BUR should provide an update to the information contained in the most recently submitted NC, including information on national circumstances and institutional arrangements relevant to the preparation of NCs on a continuous basis. In their NCs, non-Annex I Parties report on their national circumstances following the reporting guidance contained in decision 17/CP.8, annex, paragraphs 3–5, and they could report similar information in their BUR, which is an update of their most recently submitted NC.

19. In its fourth BUR, Namibia provided an update on its national circumstances, including a description of its institutional arrangements for implementing reporting obligations under the Convention. The Party also described characteristics of its geography, climate and water resources; features of its agriculture and forestry, fisheries, mining, manufacturing, energy, transportation, tourism and waste sectors; economic indicators; and population and health status. Namibia's long-term vision for the country is guided by its Vision 2030 strategy, which has the aim of achieving high, sustainable economic growth to create jobs and move the country towards income equality. The Fifth National Development Plan (2017–2022) provides strategic direction and concrete action for implementing national development goals. Climate change has been identified as a priority area in the Plan. Namibia is one of the driest countries in sub-Saharan Africa, experiencing persistent droughts, unpredictable and variable rainfall patterns, variability in temperature and scarcity of water. The impacts of climate change, as well as of rapid population growth and a rural to urban exodus, threaten livelihoods and the balance of ecosystems. The tourism industry is particularly vulnerable to the adverse impacts of climate change on natural resources. While sustained GDP growth of 5–6 per cent per year from 2010 resulted in a GDP per capita of USD 4,984.00 in 2019, classifying Namibia as a middle income country, GDP growth has flattened since 2015. In 2020, COVID-19 posed serious challenges to the health sector.

20. In addition, Namibia provided a summary of relevant information regarding its national circumstances in graphical format.

21. Namibia transparently reported in its fourth BUR an update on its existing and planned institutional arrangements relevant to the preparation of its NCs and BURs on a continuous basis. The Cabinet of Namibia is the Government entity entrusted with the overall responsibility of developing climate change policies. The National Climate Change Committee, established in 1999, advises the Government on climate change issues, oversees the implementation of climate change policies and prepares reports that are part of the UNFCCC process. Committee members represent various ministries and other stakeholders, such as the private sector and non-governmental organizations, and the Committee is chaired by the Ministry of Environment, Forestry and Tourism, which is also the national focal point for the UNFCCC. The Ministry is responsible for coordinating and implementing sector-specific and cross-sectoral climate change activities, including the preparation of NCs and BURs, which it does through the Climate Change Unit within its Department of Environmental Affairs. The National Climate Change Committee supports the Climate Change Unit by providing guidance and advice.

22. Namibia reported that its institutional arrangements, which were established in an ad hoc manner, are no longer suitable in terms of meeting increasing reporting obligations. The Ministry of Environment, Forestry and Tourism reviewed the existing institutional

arrangements with a view to developing and implementing new arrangements that are more robust and sustainable, and identified several challenges in this regard, including insufficient capacity of the coordinating body, lack of staff, and inadequate incentives and funding for development and maintenance of the arrangements. The Party noted that developing and implementing robust institutional arrangements will take considerable time, and it will take time (two or three rounds of NCs and BURs) before they become fully operational and can meet the reporting requirements under the ETF. The TTE noted improvements to the information reported in the BUR, including emphasis on equitable gender representation in the technical working groups supporting the preparation of NCs and BURs.

23. Namibia reported in its fourth BUR an update on its domestic MRV arrangements. The MRV arrangements are designed at the national level and cover three main areas: the GHG inventory system, the preparation of mitigation actions and NAMAs, and the MRV of support needed and received. The MRV system for GHG emissions is not yet fully operational. GHG inventories, within the framework of the NCs and BURs, are currently developed by the Project Management Unit of the Climate Change Unit, with the support of international consultants. No law or regulation formalizes this institutional arrangement and no formal memorandum of understanding among institutions ensures data collection. Progress in developing and implementing a national inventory management system has been slow but is expected to accelerate now that Namibia's CBIT project has been approved by the GEF. The MRV of mitigation actions and NAMAs takes place via the same informal institutional arrangements as those for the MRV of GHG emissions, with the exception of a mitigation working group being responsible for collecting and reporting data related to mitigation actions. These arrangements need to be reviewed, upgraded and fully operationalized before enhanced reporting requirements can be met. The MRV of NAMAs, which is not currently consistent with the MRV of mitigation actions, will be integrated within the latter system to ensure information on NAMAs is used to track progress in achieving the NDC.

24. Namibia reported in its BUR (section 5.1) information on its areas for improvement for future BURs and its current initiatives for enhancing its institutional arrangements for compliance with requirements under the ETF. The GEF has approved Namibia's CBIT project, which will provide the resources needed for developing an appropriate institutional framework, including MRV systems, for transparent reporting under the Convention and the Paris Agreement while enhancing the capacity of national experts.

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

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

26. Namibia submitted its fourth BUR in 2021 and the GHG inventory reported is for 1990–2016. The latest reported inventory year is more than four years prior to the date of submission of the Party's BUR. During the technical analysis, Namibia clarified that this was due to the delayed submission of the BUR (see para. 6 above).

27. Namibia submitted an NIR in conjunction with its fourth BUR. The relevant sections of the NIR were referenced in the BUR and the document was made publicly available on the UNFCCC website.[2] The TTE commends the Party for submitting a stand-alone NIR.

28. GHG emissions and removals for the BUR covering the 1990–2016 inventories were estimated using methodologies from the 2006 IPCC Guidelines. The 2019 Refinement to the 2006 IPCC Guidelines was used for some energy sector categories (which ones was not specified in the BUR or the NIR). The TTE commends the Party for using the 2006 IPCC Guidelines and the 2019 Refinement to the 2006 IPCC Guidelines.

29. Information on how the 2019 Refinement to the 2006 IPCC Guidelines was used to estimate GHG emissions was not clearly reported in Namibia's BUR. During the technical analysis, the Party clarified that the 2019 Refinement was used for energy sector emissions

[2] https://unfccc.int/BURs.

only and that this fact was inadvertently not specified in the NIR. Namibia also indicated that applying methodologies from the 2019 Refinement did not improve the estimates.

30. Information on AD and EFs used and their sources was clearly reported in the BUR, including information on AD and EFs used in the tier 2 methodology applied for the categories forest land and enteric fermentation (dairy cows and other cattle), which is an improvement from the previous BUR.

31. Information on the source of the CO_2 EFs used in the tier 2 methodology for road transportation was not clearly reported in Namibia's BUR. During the technical analysis, the Party clarified that it considers the methodology adopted to be consistent with the tier 2 level because disaggregation of the vehicle fleet by fuel has been taken into consideration. Namibia also clarified that there are no means of tracking the carbon content of consignments of imported fuels.

32. Information on the Party's total GHG emissions by gas for 2016 is outlined in table 1 in Gg CO_2 eq. It shows an increase in emissions of 8.0 per cent without land and HWP (categories 3.B and 3.D) since 1990 (19,692 Gg CO_2 eq).

Table 1
Greenhouse gas emissions by gas of Namibia for 2016

Gas	*GHG emissions (Gg CO_2 eq) including land and HWP[a]*	*% change 1990–2016*	*GHG emissions (Gg CO_2 eq) excluding land and HWP[a]*	*% change 1990–2016*
CO_2	–112 988	–40.8	13 700	39.8
CH_4	4 775	–28.0	4 775	–28.0
N_2O	2 665	–18.2	2 665	–18.2
HFCs	120	NA	120	NA
PFCs	NE	NA	NE	NA
SF_6	NE	NA	NE	NA
Other	NE	NA	NE	NA
Total	**–105 428**	**49.9**	**21 260**	**8.0**

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

33. Information on other emissions was clearly reported, including 35.1 Gg NO_X, 445.9 Gg CO, 28.3 Gg NMVOCs and 3.6 Gg SO_2.

34. Information on PFC and SF_6 emissions was not reported in Namibia's BUR. However, the Party provided relevant clarification in its BUR: it is conducting a survey on SF_6 emissions and the survey was not completed in time to include the data collected in the fourth BUR. During the technical analysis, Namibia explained that it is investing in data collection for the use of SF_6 in electrical installations and hopes to include this category in future submissions. This exercise will be extended to the remaining categories using fluorinated gases, subject to the availability of resources, but it is difficult to forecast when the exercise will be completed.

35. Namibia 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, with the exception that some subcategories (3.B.4.b, 3.B.5.b.ii and 3.C.1) that should have had no emissions were not expressed as "NO" in NIR table 6.25. During the technical analysis, the Party clarified that "NO" was inadvertently not reported.

36. Namibia 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.

37. NIR table 6.25 includes net CO_2 emissions/removals and emissions for CH_4, N_2O, NO_X, CO and NMVOCs by land-use category, but it does not include information on CO_2 emissions/removals by carbon pool. During the technical analysis, the Party clarified that

forest land, other wooded land and grassland were the pools considered when estimating CO_2 emissions/removals for each land-use category.

38. The shares of emissions that different sectors contributed to the Party's total GHG emissions excluding land and HWP (category 3.B and, if reported, 3.D), as calculated by the TTE using information from the BUR, in 2016 are reflected in table 2.

Table 2
Shares of greenhouse gas emissions by sector of Namibia for 2016

Sector	*GHG emissions (Gg CO_2 eq)*	*% share*[a]	*% change 1990–2016*
Energy	3 791	18.0	239.4
IPPU	401	2.0	1 809.5
AFOLU	16 902	79.0	–8.5
Waste	167	1.0	128.8

[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)).

39. Namibia reported information on its use of global warming potential values consistent with those provided by the IPCC in its AR2 based on the effects over a 100-year time-horizon of GHGs.

40. For the energy sector, GHG emissions amounted to 3,791 Gg CO_2 eq and were solely from fuel combustion activities. The transport sector was the major contributor to GHG emissions in the sector, with a 78.0 per cent share. Fugitive emissions (from fuels and from carbon dioxide capture and storage) were reported as "NO". GHG emissions were estimated using a combination of tier 1 and tier 2 methodologies. Improvements in data collection for road transportation allowed the application of the tier 2 methodology to estimate CH_4 and N_2O emissions. EFs were sourced from the 2006 IPCC Guidelines, while AD were sourced from public and private databases.

41. Information on CO_2, CH_4 and N_2O emissions from marine bunkers was not clearly reported in Namibia's BUR. These emissions were reported as zero in BUR table 3.15, while emission data were reported in NIR table 4.2. During the technical analysis, the Party clarified that emissions were reported under the memo item as per the table generated by the IPCC inventory software, which is provided below BUR table 3.15. The TTE notes that an explanation of how marine bunker emissions were reported in the BUR as well as the reasons for the difference in reporting between the BUR and the NIR would facilitate a better understanding of the information reported. The TTE also notes that using a notation key instead of reporting zero for marine bunkers will enhance the transparency of the information reported.

42. For the IPPU sector, the emissions reported amounted to 401 Gg CO_2 eq. Cement production (65.5 per cent) and refrigeration and air conditioning (29.8 per cent) were the two most significant categories. Emissions from refrigeration and air conditioning were estimated for the first time, which improved the completeness of the inventory. The remaining GHG emissions originated from lime production, the non-energy use of fuels and medical applications of N_2O. IPPU emissions were estimated using the tier 1 methodology with IPCC default EFs. Namibia reported that most IPPU activities do not occur in the country and appropriate notation keys were applied where relevant. AD for the sector were mainly sourced from the Namibia Statistics Agency, complemented with information from the private sector. The TTE commends the Party for the improvements made in reporting GHG emissions for the IPPU sector.

43. The AD for paraffin wax use for 1990–1999 were estimated as a constant 30,000 t/year, and it was not clear to the TTE whether Namibia considered using the data splicing techniques in the 2006 IPCC Guidelines (vol. 1, chap. 5) to extrapolate AD for each year. During the technical analysis, the Party clarified that while AD for individual years for 1990–1999 are not available, there is no need to fill data gaps given an assumption, based on national circumstances, has been made for this category. The TTE noted that providing this explanation could enhance the transparency of the information reported in the BUR.

44. For the agriculture sector, agricultural soils (N_2O) and enteric fermentation (CH_4) were identified as key categories and the most relevant emissions sources in the sector. The tier 2 methodology was applied for estimating GHG emissions from enteric fermentation for cattle and dairy cows, while the tier 1 methodology was applied for all other animals. The tier 1 methodology was applied for estimating GHG emissions from manure management. The average population of poultry, which was derived from the "number of animals produced annually" and "days alive" reported in the BUR, was not clearly explained. During the technical analysis, the Party clarified that it used the annual average population for estimating GHG emissions from poultry.

45. For land (category 3.B), Namibia reported annual GHG emissions and removals for 1990–2016. For the HWP subcategory 3.D.1, the Party reported annual GHG emissions and removals for 1998–2016. Overall, the net removals from land (category 3.B) fluctuated between a minimum of –81,286 Gg CO_2 eq in 1990 and a maximum of –116,829 Gg CO_2 eq in 2016. In the case of HWP subcategory 3.D.1, overall net removals fluctuated between a minimum of –21.0 Gg CO_2 eq in 2004 and a maximum of –199.0 Gg CO_2 eq in 1999. Forest land remaining forest land (CO_2), land converted to forest land (CO_2), land converted to grassland (CO_2) and emissions (CH_4 and N_2O) from biomass burning were identified as key categories. GHG emissions by source and removals by sink for the land sector were estimated using a combination of tier 1 and tier 2 methodologies. The latter was applied for the categories identified as key. Most of the stock factors were derived using data from forest inventories and other country-specific sources.

46. The TTE noted that in the land matrix for 1991–2000 (NIR table 6.11), the cropland area in 1991 (925,000 ha) may be incorrect. During the technical analysis, the Party clarified that this area should have been reported as 962,500 ha. In addition, the TTE, noting Namibia's efforts to derive country-specific biomass stock factors (as shown in NIR table 6.15), sought clarification on whether (1) woody biomass is a per year value, (2) deadwood can be provided in t dry matter/ha/year, (3) annual growth is a per ha value and (4) grass layer is a per year value. During the technical analysis, Namibia clarified that (1) woody biomass is the growing stock level, (2) deadwood can be converted to t dry matter/ha/year by using a factor of 0.8, (3) annual growth is a per ha value (0.9 t dry matter/ha/year) and (4) grass layer is a per year value. Lastly, the TTE could not identify the source of the default conversion factor of 0.5 t C/m^3 (for sawn wood) and the bark expansion factor of 1.12 referred to in NIR table 6.23. During the technical analysis, the Party clarified that these values are the default conversion factors in the IPCC inventory software so they were used in the calculations; however, the former factor should be 0.295 t C/m^3 and the latter factor 1.13.

47. For the waste sector, Namibia reported total GHG emissions of 167 Gg CO_2 eq. Solid waste disposal contributed the largest share to sectoral emissions (53.4 per cent), followed by wastewater treatment and discharge (29.9 per cent) and open burning of waste (16.9 per cent). The tier 1 methodology with default EFs was used to estimate GHG emissions for the sector. The sources of AD and the assumptions used in generating the AD are clearly documented in the BUR.

48. Information on the amount of recycled solid waste and the assumptions used to account for the waste was not clearly reported in Namibia's BUR. During the technical analysis, the Party clarified that recycled waste that does not go to landfill sites has been discounted by adjusting the waste generation rate for urban high and urban low population on the basis of measurements made in the two main cities of Namibia.

49. The NIR provides an update to all GHG inventories reported in the Party's previous NCs and BURs. The information reported provides an update of the Party's NC3 and third BUR, which addressed anthropogenic emissions and removals for 1994–2014. The update was carried out for 1990–2016 using the methodologies contained in the 2006 IPCC Guidelines and the 2019 Refinement to the 2006 IPCC Guidelines, thus generating a consistent 27-year time series. The Party reported that it recalculated emissions from civil aviation and the residential sector for the whole time series owing to changes in AD. Recalculations were also performed for 1994, 2000 and 2010 as the inventories for these years had been estimated using the Revised 1996 IPCC Guidelines. The Party reported that recalculations were performed using the 2006 IPCC Guidelines and updated data sources and resulted in a decrease of estimated emissions for 2010 by 24.3 per cent.

50. Namibia described in its BUR the institutional framework for the preparation of its 1990–2016 GHG inventory. The Party reported that the Climate Change Unit of the Ministry of Environment, Forestry and Tourism is the governmental body responsible for its climate change policy and GHG inventory, which was prepared with the support of the United Nations Development Programme, which assisted Namibia in designing its GHG inventory system. The Party identified improvements in the information reported such as the preparation of a full time series for the GHG inventory (1990–2016, with 1990 and 2016 being additions to the previous inventory), the use of the 2019 Refinement to the 2006 IPCC Guidelines for the energy sector, the inclusion in the inventory of the subcategory manufacture of solid fuels and the introduction of the tier 2 methodology for road transportation.

51. Namibia clearly reported that a key category analysis was performed for the level of emissions and the trend in emissions. The level assessment identified CH_4 emissions from enteric fermentation, CO_2 emissions from land remaining forest land and CO_2 emissions from road transportation as key categories. Eight more categories were identified as key by the trend assessment, which covered 1990–2016.

52. The BUR provides information on QA/QC measures for all sectors. The information reported includes routine and consistent checks to ensure data integrity, reliability and completeness (including to identify errors and omissions), accuracy checks on data acquisition and calculations, and a comparison of AD with data in international data sets such as those of the Food and Agriculture Organization of the United Nations, the International Energy Agency and the United Nations Statistics Division. The TTE commends Namibia for providing information in accordance with the IPCC good practice guidance. The Party identified improvements in the information reported such as the QA exercise done with the secretariat, which helped to improve the quality of the emission estimates.

53. Namibia clearly reported information on CO_2 fuel combustion using both the sectoral and the reference approach. The information reported indicates that the combustion emissions estimated under the sectoral and reference approach are 3,649 and 4,053 Gg CO_2, respectively. The difference between the estimates calculated using the two approaches was reported as 11.1 per cent.

54. Information on the reasons for the large difference in CO_2 emission estimates between the reference and the sectoral approach was not clearly reported in Namibia's BUR. During the technical analysis, the Party clarified that, for most years of the time series, the difference was greater than 2.0 per cent and transport is a key category in Namibia. Some of the difference between the reference and the sectoral approach is related to how fuel is accounted for in the energy balance versus how it is reported under the sectoral approach.

55. Information was clearly reported on international aviation and marine bunker fuels. Aviation emissions increased from 63.5 Gg CO_2 eq in 1990 to 109.7 Gg CO_2 eq in 2016 (73.0 per cent) and marine bunker fuel emissions increased from 146 Gg CO_2 eq in 1990 to 156 Gg CO_2 eq in 2016 (7.0 per cent).

56. Namibia 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, except emissions from biomass burning, emissions from urea application, direct N_2O emissions from managed soils, indirect N_2O emissions from managed soils and emissions from HWP. The results obtained, as reported in the BUR, reveal that the level uncertainty for emissions is 27.3 per cent and the trend uncertainty is 51.8 per cent. The TTE commends Namibia for providing in its BUR detailed information on the selected uncertainty values for AD and EFs and the reasons for their selection.

57. The TTE noted that the transparency of the information reported on GHG inventories could be further enhanced by addressing the areas noted in paragraphs 26, 29, 31, 34, 35, 37, 41, 43, 44, 46, 48 and 54 above, which could facilitate a better understanding of the information reported on GHG inventories.

58. In paragraph 48 of the summary report on the technical analysis of Namibia's third BUR, the previous TTE noted areas where the transparency of the reporting on GHG inventories could be further enhanced. The current TTE noted the improvements referred to

in paragraphs 30, 40, 42, 50, 52 and 56 above and commends the Party for enhancing the transparency of its reporting.

59. Namibia reported in its BUR (section 5.3) information on its areas for improvement for future BURs for compliance with requirements under the ETF. The initiatives relate to building national capacity to compile GHG inventories, calculate EFs and use the land module in the IPCC inventory software. The TTE commends the Party for the clear and comprehensive reporting on its proactive approach to preparing for ETF implementation.

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

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

61. The information reported provides a clear and comprehensive overview of the Party's mitigation actions and their effects. In its BUR, Namibia framed its national mitigation planning and actions in the context of its National Policy on Climate Change, National Climate Change Strategy and Action Plan for 2013–2020, and intended nationally determined contribution, which has the aim of reducing GHG emissions by about 89.0 per cent by 2030 compared with the 'business as usual' scenario. Namibia reported that climate change has been mainstreamed in and integrated into its national laws and development plans. The reported total mitigation potential across the energy, IPPU, AFOLU and waste sectors is 3,804.6, 10,144.0 and 20,888.6 Gg CO_2 eq in 2025, 2030 and 2035, respectively. Although most of its mitigation actions are in the energy sector, Namibia expects high GHG emission reductions in the AFOLU sector in 2035.

62. The Party reported a summary of its mitigation actions in tabular format in accordance with decision 2/CP.17, annex III, paragraph 11. The summary includes 12 mitigation actions reported in BUR tables 3.2–3.6, consisting of 7 energy sector actions, 1 IPPU sector action, 1 AFOLU sector action and 3 waste sector actions.

63. Consistently with decision 2/CP.17, annex III, paragraph 12(a), Namibia clearly reported the names of mitigation actions, coverage (sectors and gases) and progress indicators in BUR tables 3.2–3.6. A clear description of mitigation actions, as well as information on quantitative goals, was provided in the BUR for some mitigation actions.

64. The description in Namibia's BUR of the only action in the AFOLU sector was not clear, as it included only steps taken to achieve the action. Information on quantitative goals was not reported for the actions in the IPPU and waste sectors, and information on progress indicators as metrics was not reported for the actions in the waste sector. Furthermore, the quantitative goals of most actions in the energy sector and the only action in the AFOLU sector were included in the results achieved of those actions and the reason for this was not clear to the TTE. During the technical analysis, the Party provided a description of the AFOLU sector action and the quantitative goals and progress indicators as metrics for those actions in the IPPU and waste sectors for which they had not been reported.

65. Information on methodologies and assumptions was not clearly reported for some of the mitigation actions in the energy, IPPU and AFOLU sectors, which was not consistent with decision 2/CP.17, annex III, paragraph 12(b). In addition, information on steps taken or envisaged to achieve the actions and progress of implementation of actions and underlying steps taken or envisaged to achieve them was not clearly reported for some of the mitigation actions in the energy and AFOLU sectors. The objectives of the actions were provided consistently with decision 2/CP.17, annex III, paragraph 12(c). Information on results achieved, in accordance with decision 2/CP.17, annex III, paragraph 12(d), was not reported for some of the mitigation actions in the energy sector or for the only action in the AFOLU sector. The progress of implementation was reported clearly. The projected time frame for implementation and expected outcomes for most actions being planned or implemented across all sectors was not clearly reported in the BUR. During the technical analysis, the Party provided some of the missing information, including results achieved, steps envisaged to achieve the mitigation actions, progress of implementation of the underlying steps and time frame for implementation of the mitigation actions.

66. The energy sector has the most significant mitigation potential of all sectors: reductions in emissions of 3,665.2, 5,612.6 and 7,111.0 Gg CO_2 eq are expected in 2025, 2030 and 2035, respectively. Seven mitigation actions are being implemented in the sector. Two actions comprise strategies and programmes focusing on promoting cleaner energy, including solar thermal technologies, through mainstreaming mitigation policy into long-term planning (BUR table 3.2). The other five actions focus on improving energy efficiency through various demand-side management measures, including performing energy audits, distributing light-emitting diode light bulbs and improving the transportation system (BUR table 3.3). The Namibia Energy Efficiency Programme in Buildings is projected to save 17 Gg CO_2 eq/year by 2024 and 60 Gg CO_2 eq/year by 2030 through (1) developing a rating system for buildings and building codes for improving energy efficiency and (2) performing 60 energy audits in commercial and industrial buildings. GHG emissions will also be reduced by an action promoting sustainable urban transport in Windhoek, for which the expected outcome is an annual reduction of 510 Gg CO_2 eq by 2030.

67. The mitigation potential of the IPPU sector is reported as 43.8, 112.8 and 169.8 Gg CO_2 eq in 2025, 2030 and 2035, respectively. Namibia reported that the main source of sectoral GHG emissions not related to energy is cement production. The projected GHG emission reduction to be achieved from the planned action of replacing 10–20 per cent of clinker in cement production (BUR table 3.4) ranges from 17.62 to 59.65 Gg CO_2 eq in the low scenario and from 35.4 to 119.31 Gg CO_2 eq in the high scenario.

68. The mitigation potential of the waste sector is reported as 123.1, 164.3 and 121.8 Gg CO_2 eq in 2025, 2030 and 2035, respectively. Three mitigation actions are planned, all focusing on reducing GHG emissions through converting waste from landfills and wastewater treatment plants to energy (BUR table 3.5). The expected emission reductions from the three individual mitigation actions were not reported in the BUR, but during the technical analysis, the Party indicated that the action with the highest mitigation potential is expected to achieve 12 Gg CO_2 eq in annual GHG emission reductions.

69. In the AFOLU sector, the reported mitigation potential is –28.4, 4,254.3 and 13,395.0 Gg CO_2 eq in 2025, 2030 and 2035, respectively. One mitigation action, the restoration of 15 million ha grasslands, is being implemented in the sector (BUR table 3.6). This initiative is estimated to achieve an annual GHG emission reduction of 1,359 Gg CO_2 eq in 2030. Namibia considers the sustainable removal of invader bush species to rehabilitate grasslands as a promising mitigation option for the sector. The projected GHG emission reduction of this action is 7,440 Gg CO_2 eq in 2035.

70. Namibia provided information on its involvement in international market mechanisms as a Party to the Kyoto Protocol. The Party reported that it has prepared three clean development mechanism project proposals for its three waste-to-energy mitigation actions in the waste sector.

71. Namibia reported information on its domestic MRV arrangements in accordance with decision 2/CP.17, annex III, paragraph 13. The information reported indicates that Namibia has established a domestic MRV for mitigation actions, which is built upon the MRV system for GHG emissions. The mitigation working group comprises representatives of institutions responsible for collecting and reporting data related to mitigation actions by sector. Further, Namibia reported consistently with the voluntary general guidelines for domestic MRV of domestically supported NAMAs, contained in the annex to decision 21/CP.19. Namibia outlined the steps on a proposed pathway to further enhancing its MRV system, including reviewing institutional arrangements, meeting mitigation accounting standards, monitoring data-collection responsibilities, defining reporting obligations and defining roles. The Party has designed templates to facilitate the collection, processing and documentation of information required to be reported for all mitigation actions and to ensure the consistency of this information across actions. The design of the templates will undergo user testing and then the templates will be incorporated into the MRV system for mitigation actions.

72. The TTE noted that the transparency of the information reported on mitigation actions could be further enhanced by addressing the areas noted in paragraphs 64, 65 and 68 above, which could facilitate a better understanding of the information reported on mitigation actions.

73. In paragraphs 53–56 and 58 of the summary report on the technical analysis of Namibia's third BUR, the previous TTE noted areas where the transparency of the reporting on mitigation actions could be further enhanced. The current TTE noted the improvements referred to in paragraph 63 above and commends the Party for enhancing the transparency of its reporting.

74. Namibia reported in its BUR (section X) information on its current initiatives for enhancing its existing MRV system for compliance with requirements under the ETF. The initiatives relate to improving coordination among institutions, including the governmental institutions involved in the system, through defining institutional roles and strengthening institutional arrangements, as well as to strengthening data management, training experts to become specialized reviewers and developing country-specific guidelines for the GHG inventory. The TTE commends the Party for the clear and comprehensive reporting on its proactive approach to preparing for ETF implementation.

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

75. As indicated in table I.3, Namibia 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.

76. Namibia clearly 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, Namibia identified its weak institutional framework, resulting from the unavailability of Government funds for employing staff on a permanent basis, as its major constraint. The Party reported that capacity-building remains urgent and especially important in the context of the ETF. Mitigation and adaptation actions both face various challenges and barriers, particularly given the country's prolonged drought and the effects of the COVID-19 pandemic. Regarding the GHG inventory, Namibia still faces serious challenges in reporting in accordance with the provisions, including in estimating emissions for 1990–1999. The Party created the Environment Investment Fund of Namibia, which plays a role in mobilizing funds from the GCF. The flow of technical and capacity-building support has been low overall – of a level that does not allow the Party to fully implement its identified strategies for mitigating and adapting to climate change impacts. However, some progress has been made in enhancing the technical capabilities and capacity of national experts for reporting under the Convention. The Party reported that its financial, technical and capacity-building needs are primarily in the areas of the GHG inventory, the implementation of mitigation actions and the tracking of progress of mitigation actions.

77. Namibia reported a list, updated from its third BUR, of technical and capacity-building needs (BUR table 5.1). The Party received USD 1.1 million from the GEF for its CBIT project to develop and implement MRV systems, USD 300,000 from the GCF to improve its knowledge of market mechanisms, USD 10.8 million from the GEF and some support from KfW for technical assistance to reduce deforestation, and USD 10 million from the GCF and EUR 6.8 million from the German Agency for International Cooperation to promote community forest management. The Party reported that funds are still urgently needed to build the technical capabilities and capacity of national experts to develop and implement mitigation actions. Substantial funding is also required for Namibia to be able to meet its reporting obligations under the Convention. While the Party appreciated the funds provided by the GEF, it highlighted their inadequacy, as well as the delay in their provision, which needs to be addressed to ensure Namibia can comply with its reporting obligations.

78. Namibia reported information on financial resources, technology transfer, capacity-building and technical support received in accordance with decision 2/CP.17, annex III, paragraph 15. In its BUR, Namibia reported that it received USD 352,000 from the GEF for preparing its fourth BUR, with the Namibian Government contributing USD 50,000 in kind to complement this funding. BUR table 5.2 shows the Party's financial needs, including support received and additional requirements. The financial needs are focused in the areas of reporting on and implementing adaptation and mitigation actions. In this regard, Namibia received USD 4,525,140 from the GEF and USD 4,125,140 from the Namibian Government to implement community-based adaptation programmes; USD 200,000 through the United

Nations Development Programme and EUR 280,000 from the German Ministry of the Environment, Nature Conservation and Nuclear Safety to revise its NDC; USD 10 million from the GCF to implement ecosystem-based adaptation projects; and USD 28,755 from the GCF to implement energy efficiency measures. The Party also reported contributions from its Government to various mitigation programmes.

79. Information reported in BUR table 5.2 on financial needs, including support received and additional requirements, has not been updated since the third BUR. During the technical analysis, the Party indicated that updated information will be provided in the next BUR.

80. Namibia 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, Namibia reported that implementation of mitigation actions depends on the latest technologies and their transfer, which in turn requires adequate human and technical capacities as well as funding. In table 5.3, the Party reported some ongoing and planned activities related to technology needs assessment and determining technology transfer needs, most of which are in the energy and waste sectors. However, the Party has been unable to undertake a comprehensive assessment of its technology needs with regard to the development and transfer of technology for mitigation and adaptation owing to a lack of resources.

81. Information reported in BUR table 5.3 on technology needs assessment and technology transfer needs has not been updated since the third BUR. During the technical analysis, the Party clarified that funds for preparing the BUR were delayed, which hindered it from including all the required information in the report.

82. The TTE noted that the transparency of the information reported on needs and support received could be further enhanced by addressing the areas noted in paragraphs 79 and 81 above, which could facilitate a better understanding of the information reported on needs and support received.

83. In paragraphs 72–73 of the summary report on the technical analysis of Namibia's third BUR, the previous TTE noted areas where the transparency of the reporting on constraints, gaps, needs and support needed and received could be further enhanced. The current TTE noted the improvements in paragraph 77 above and commends the Party for enhancing the transparency of its reporting.

84. Namibia reported in its BUR information on its financial needs to meet its reporting obligations under the existing MRV framework (section 5.4) and on its need to enhance the capacity of national experts to comply with requirements under the ETF (section 5.6). The Party reported that approval of the CBIT project by the GEF will enable it to develop and implement MRV systems to track implementation of the NDC. The TTE commends the Party for the clear and comprehensive reporting on its proactive approach to preparing for ETF implementation.

5. Any other information

85. Namibia reported on its vulnerability to the impacts of climate change and the prime importance of adaptation. It reported that many adaptation approaches offer mitigation co-benefits, for example, locking carbon in soils through the adoption of sustainable practices.

D. Identification of capacity-building needs

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

(a) GHG inventory:

(i) Accessing financial resources for developing a land-use change matrix;

(ii) Measuring fuel carbon content for all fuels, including those used in road transportation;

(iii) Accessing financial resources for reconciling, for fuel consumption in road transportation, bottom-up estimates with top-down statistics;

(iv) Accessing financial resources for implementing the 2019 Refinement to the 2006 IPCC Guidelines;

(v) Accessing financial resources for updating research studies on farming practices and animal breeding;

(vi) Enhancing the national inventory system such that it enables the production of high quality GHG inventories and NIRs;

(b) Mitigation actions and their effects:

(i) Verifying the reported emission reductions achieved from individual mitigation actions and integrating them into the MRV system;

(ii) Further enhancing institutional arrangements in order to strengthen the institutional framework and allow comprehensive implementation of the MRV system;

(iii) Assessing information on mitigation actions and reporting it in the BUR, including:

a. Reporting on mitigation actions and their effects in accordance with the relevant provisions of the UNFCCC reporting guidelines on BURs;

b. Identifying and using methodologies for quantifying the results achieved of individual mitigation actions;

c. Developing approaches and methodologies for assessing the steps taken or envisaged to achieve individual mitigation actions;

d. Developing methodologies for monitoring and reporting on progress in implementing the underlying steps taken or envisaged to achieve individual mitigation actions;

e. Developing assumptions for assessing and monitoring the impacts of individual mitigation actions;

(c) Cross-cutting:

(i) Enhancing human and institutional capacity and technical skills in the thematic areas of the NC, the BUR and the MRV system;

(ii) Training personnel in the use of computer hardware and software needed to manage the MRV system;

(iii) Training personnel in the gender-responsive transparency framework for MRV;

(iv) Training personnel in QC.

87. The TTE noted that, in addition to those identified during the technical analysis, Namibia reported several capacity-building needs in BUR table 5.1 covering the following areas:

(a) Preparation of BURs and NCs;

(b) Development and implementation of MRV systems;

(c) Use of international market mechanisms;

(d) Mitigation actions and their effects.

88. In paragraph 76 of the summary report on the technical analysis of Namibia’s third BUR, the previous TTE, in consultation with Namibia, identified capacity-building needs. In its fourth BUR, Namibia reflected that some of those capacity-building needs have been addressed.

III. Conclusions

89. The TTE conducted a technical analysis of the information reported in the fourth BUR of Namibia in accordance with the UNFCCC reporting guidelines on BURs and concludes that the information reported is mostly consistent. It provides an overview of national circumstances and institutional arrangements relevant to the preparation of NCs on a continuous basis; the national inventory of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol, including an NIR; mitigation actions and their effects, 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 any other information relevant to the achievement of the objective of the Convention. During the technical analysis, additional information was provided by Namibia to clarify the information reported in its BUR. The TTE concluded that the information analysed is mostly transparent.

90. Namibia reported an update on the institutional arrangements relevant to the preparation of its BURs. It has taken significant steps to establish institutional arrangements that allow for the sustainable preparation of its BURs. These include making organizational improvements and establishing knowledge-sharing procedures to facilitate sectoral information transfer. The Ministry of Environment, Forestry and Tourism is responsible for coordinating and implementing climate change activities, including the preparation of NCs and BURs, which it does through the Climate Change Unit within its Department of Environmental Affairs. This Unit also manages the reporting of GHG inventories and tracking of mitigation actions. The National Climate Change Committee oversees the implementation of climate change policy, and provides advice and guidance to the Climate Change Unit. The existing arrangements are being reviewed and upgraded under the CBIT project.

91. In its fourth BUR, submitted in 2021, Namibia reported information on its national GHG inventory for 1990–2016. This included GHG emissions and removals of CO_2, CH_4, N_2O and HFCs for all relevant sources and sinks as well as the precursor gases. The inventory was developed on the basis of the 2006 IPCC Guidelines and the 2019 Refinement to the 2006 IPCC Guidelines. The total GHG emissions for 2016 were reported as 21,260 Gg CO_2 eq (excluding land and HWP) and –105,428 Gg CO_2 eq (including land and HWP). Three key categories and main gases were identified by level assessment: CH_4 emissions from enteric fermentation, CO_2 emissions from land remaining forest land and CO_2 emissions from road transportation. Eight more categories were identified as key by the trend assessment, which covered 1990–2016. Estimates of PFCs and SF_6 were not provided owing to difficulties in obtaining the necessary data, as clarified by the Party in the BUR and during the technical analysis.

92. Namibia reported information on mitigation actions and their effects in tabular format, including the objectives of most of the actions, and framed its national mitigation planning and actions in the context of its National Policy on Climate Change, National Climate Change Strategy and Action Plan for 2013–2020, and intended nationally determined contribution. It reported its total mitigation potential as 20,888.6 Gg CO_2 eq by 2035. Namibia reported 12 mitigation actions in the energy, IPPU, AFOLU and waste sectors, most of which are being implemented and some of which (in the IPPU and waste sectors) are planned. The mitigation actions in the energy sector, which have the most significant mitigation potential (7,111.0 Gg CO_2 eq by 2035), focus on clean energy and energy efficiency. The rapidly increasing mitigation potential of the AFOLU sector (13,395.0 Gg CO_2 eq by 2035) is attributed to implementation of the only mitigation action in that sector – restoring grasslands. Namibia also expects GHG emission reductions to be achieved through replacing clinker in cement production (IPPU sector) and converting waste into energy (waste sector). The Party also reported information on its involvement in international market mechanisms and MRV arrangements. For some mitigation actions, Namibia did not report a clear description or clear information on the quantitative goals, progress indicators, methodologies and assumptions, and steps envisaged and progress of implementation of the underlying steps. During the

technical analysis, the Party provided most of the missing information, except for that on methodologies and assumptions.

93. Namibia reported information on key constraints, gaps and related needs, including support needed and received for mitigation and adaptation activities and for preparing NCs and BURs. Information was reported on the capacity-building support received, including that from the GEF, which enabled the Party to make progress in building the technical capacity of national experts for reporting. Namibia also received support from the GCF, the GEF, bilateral and multilateral agencies, and the Namibian Government for implementing mitigation and adaptation activities. The Party also reported that it received financial support of USD 352,000 from the GEF and USD 50,000 as an in-kind contribution from the Namibian Government for preparing its latest BUR. The Party further reported information on the technology needs assessment and transfer of technology for mitigation activities. Information on technology support received was not reported owing to difficulties in obtaining the necessary data, as clarified by the Party during the technical analysis. The Party indicated that it has started mobilizing resources to review and update its technology needs assessment.

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

95. The TTE, in consultation with Namibia, identified the 13 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. Namibia prioritized all the capacity-building needs.

Annex I

Extent of the information reported by Namibia in its fourth biennial update report

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

Decision	*Provision of the reporting guidelines*	*Assessment of whether the information was reported*	*Comments on the extent of the information provided*
Decision 2/CP.17, paragraph 41(g)	The first BUR shall cover, at a minimum, the inventory for the calendar year no more than four years prior to the date of the submission, or more recent years if information is available, and subsequent BURs shall cover a calendar year that does not precede the submission date by more than four years.	No	Namibia submitted its fourth BUR in February 2021; the GHG inventories reported are for 1990–2016.
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	Namibia used the 2006 IPCC Guidelines, and in some cases 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.	Yes	Namibia used the 2006 IPCC Guidelines, the 2019 Refinement to the 2006 IPCC Guidelines and the IPCC inventory software to update the emission estimates.
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;	NA	Comparable information was reported. The Party used the 2006 IPCC Guidelines where annex 3A.2 to the IPCC good practice guidance for LULUCF is not applicable.
	(b) The sectoral report tables annexed to the Revised 1996 IPCC Guidelines.	Yes	
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.	Yes	
Decision 2/CP.17, annex III, paragraph 8	Non-Annex I Parties that have previously reported on their national GHG inventories contained in their NCs are encouraged to submit summary information tables of inventories for previous submission years (e.g. for 1994 and 2000).	Yes	
	The inventory section of the BUR should consist of an NIR as a summary or as an update of the information contained in decision 17/CP.8, annex,	Yes	Comparable information was reported in the BUR (table 3.13).

Decision	*Provision of the reporting guidelines*	*Assessment of whether the information was reported*	*Comments on the extent of the information provided*
Decision 2/CP.17, annex III, paragraph 9	chapter III (National greenhouse gas inventories), including:		
	(a) Table 1 (National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors);	Yes	
	(b) Table 2 (National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF_6).	Yes	
Decision 2/CP.17, annex III, paragraph 10	Additional or supporting information, including sector-specific information, may be supplied in a technical annex.	Yes	The Party submitted an NIR as a stand-alone document.
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	
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;	Yes	
	(b) CH_4;	Yes	
	(c) N_2O.	Yes	
Decision 17/CP.8, annex, paragraph 15	Non-Annex I Parties are encouraged, as appropriate, to provide information on anthropogenic emissions by sources of:		
	(a) HFCs;	Yes	
	(b) PFCs;	No	
	(c) SF_6.	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) CO;	Yes	
	(b) NO_X;	Yes	
	(c) NMVOCs.	Yes	
Decision 17/CP.8, annex, paragraph 17	Other gases not controlled by the Montreal Protocol, such as sulfur oxides, and included in the Revised 1996 IPCC Guidelines may be included at the discretion of Parties.	Yes	The Party reported on SO_2.
Decision 17/CP.8, annex, paragraph 18	Non-Annex I Parties are encouraged, to the extent possible, and if disaggregated data are available, to estimate and report CO_2 fuel combustion emissions	Yes	

Decision	*Provision of the reporting guidelines*	*Assessment of whether the information was reported*	*Comments on the extent of the information provided*
	using both the sectoral and the reference approach and to explain any large differences between the two approaches.		
Decision 17/CP.8, annex, paragraph 19	Non-Annex I Parties should, to the extent possible, and if disaggregated data are available, report emissions from international aviation and marine bunker fuels separately in their inventories:		
	(a) International aviation;	Yes	
	(b) Marine bunker fuels.	Yes	
Decision 17/CP.8, annex, paragraph 20	Non-Annex I Parties wishing to report on aggregated GHG emissions and removals expressed in CO_2 eq should use the global warming potential provided by the IPCC in its AR2 based on the effects of GHGs over a 100-year time-horizon.	Yes	
Decision 17/CP.8, annex, paragraph 21	Non-Annex I Parties are encouraged to provide information on methodologies used in the estimation of anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol, including a brief explanation of the sources of 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:		Namibia used the 2006 IPCC Guidelines. Tier 2 methodology was used for specific sectors.
	(a) Information on methodologies used in the estimation of anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol;	Yes	
	(b) Explanation of the sources of EFs;	Yes	
	(c) Explanation of the sources of AD;	Yes	
	(d) If non-Annex I Parties estimate anthropogenic emissions and removals from country-specific sources and/or sinks that are not part of the Revised 1996 IPCC Guidelines, they should explicitly describe:	NA	
	(i) Source and/or sink categories;		
	(ii) Methodologies;		
	(iii) EFs;		
	(iv) AD;		
	(e) Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building.	Yes	
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,	Partly	Notation keys were used, but some subcategories (3.B.4.b, 3.B.5.b.ii and 3.C.1) that should have had no emissions were not

Decision	*Provision of the reporting guidelines*	*Assessment of whether the information was reported*	*Comments on the extent of the information provided*
	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.		expressed as "NO" in NIR table 6.25.
Decision 17/CP.8, annex, paragraph 24	Non-Annex I Parties are encouraged to provide information on the level of uncertainty associated with inventory data and their underlying assumptions, and to describe the methodologies used, if any, for estimating these uncertainties:		
	(a) Level of uncertainty associated with inventory data;	Yes	
	(b) Underlying assumptions;	Yes	
	(c) Methodologies used, if any, for estimating these uncertainties.	Yes	

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

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

Decision	*Provision of the reporting guidelines*	*Assessment of whether the information was reported*	*Comments on the extent of the information provided*
Decision 2/CP.17, annex III, paragraph 11	Non-Annex I Parties should provide information, in tabular format, on actions to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol.	Yes	
Decision 2/CP.17, annex III, paragraph 12	For each mitigation action or group of mitigation actions, including, as appropriate, those listed in document FCCC/AWGLCA/2011/INF.1, developing country Parties shall provide the following information, to the extent possible:		
	(a) Name and description of the mitigation action, including information on the nature of the action, coverage (i.e. sectors and gases), quantitative goals and progress indicators;	Partly	A description and information on quantitative goals and progress indicators were not reported for some of the mitigation actions.
	(b) Information on:		
	(i) Methodologies;	Partly	Information on methodologies was not reported for some of the mitigation actions.
	(ii) Assumptions;	Partly	Information on assumptions was not reported for some of the mitigation actions.
	(c) Information on:		

Decision	*Provision of the reporting guidelines*	*Assessment of whether the information was reported*	*Comments on the extent of the information provided*
	(i) Objectives of the action;	Yes	
	(ii) Steps taken or envisaged to achieve that action;	Partly	Information on steps envisaged was not reported for some of the mitigation actions.
	(d) Information on:		
	(i) Progress of implementation of the mitigation actions;	Yes	
	(ii) Progress of implementation of the underlying steps taken or envisaged;	Partly	Information on the progress of implementation of the underlying steps was not reported for some of the mitigation actions.
	(iii) Results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions, to the extent possible;	Partly	Information on the results achieved was not reported for some of the mitigation actions.
	(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 fourth biennial update report of Namibia

Decision	*Provision of the reporting requirements*	*Assessment of whether the information was reported*	*Comments on the extent of the information provided*
Decision 2/CP.17, annex III, paragraph 14	Non-Annex I Parties should provide updated information on:		
	(a) Constraints and gaps;	Yes	
	(b) Related financial, technical and capacity-building needs.	Partly	Information on needs has not been updated since the third BUR.
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;	Yes	
	(b) Information on technical support received from the GEF, Parties included in Annex II to the Convention and other developed country Parties, the GCF and multilateral institutions for activities relating to climate change, including for the preparation of the current BUR.	Yes	
Decision 2/CP.17, annex III, paragraph 16	With regard to the development and transfer of technology, non-Annex I Parties should provide information on:		
	(a) Nationally determined technology needs;	Partly	A comprehensive technology needs assessment has not been undertaken.

Decision	*Provision of the reporting requirements*	*Assessment of whether the information was reported*	*Comments on the extent of the information provided*
	(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/.

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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.ch/report/2019-refinement-to-the-2006-ipcc-guidelines-for-national-greenhouse-gas-inventories/.

B. UNFCCC documents

NC4 of Namibia. Available at https://unfccc.int/non-annex-I-NCs.

Summary report on the technical analysis of the third BUR of Namibia, contained in document FCCC/SBI/ICA/2019/TASR.3/NAM. Available at https://unfccc.int/ICA-reports.

Third BUR of Namibia. Available at https://unfccc.int/BURs.