United Nations

FCCC/SBI/ICA/2020/TASR.1/BEN

Framework Convention on Climate Change

Distr.: General
12 November 2020

English only

Technical analysis of the first biennial update report of Benin submitted on 24 October 2019

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 Benin, conducted by a team of technical experts in accordance with the modalities and procedures contained in the annex to decision 20/CP.19.

GE.20-15056(E)

2015056

Abbreviations and acronyms

AD	activity data
AFOLU	agriculture, forestry and other land use
BUR	biennial update report
CGE	Consultative Group of Experts
CH_4	methane
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
DTU	Technical University of Denmark
EF	emission factor
FAO	Food and Agriculture Organization of the United Nations
GEF	Global Environment Facility
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
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
NA	not applicable
NC	national communication
NDC	nationally determined contribution
NIR	national inventory report
non-Annex I Party	Party not included in Annex I to the Convention
N_2O	nitrous oxide
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
TTE	team of technical experts
UNDP	United Nations Development Programme
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"
2006 IPCC Guidelines	*2006 IPCC Guidelines for National Greenhouse Gas Inventories*

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 BURs 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 Benin, 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, Benin submitted its first BUR on 24 October 2019 as a stand-alone update report.

6. During the technical analysis, the Party clarified that delays in establishing the team responsible for coordinating the preparation of the BUR resulted in the delay to its submission.

7. A desk analysis of Benin's BUR was conducted from 9 to 13 March 2020[1] 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: Rodrigue Abourou Otogo (former member of the CGE from Gabon), Diana Barba (Colombia), Menouer Boughedaoui (former member of the CGE from Algeria), Xiang Gao (China), Patricia Grobben (former member of the CGE from Belgium), Lawrence Ibhafidon (Nigeria), Medeia Inashvili (Georgia), Gervais Ludovic Itsoua Madzous (member of the CGE from Congo), Sohyang Lee (Republic of Korea), Nicolo Macaluso (Canada) and Pascale Vizy (France). Mr. Gao and Ms. Grobben were the co-leads. The technical analysis was coordinated by Luca Birigazzi, Hajar Benmazhar and Gopal Joshi (secretariat).

8. During the technical analysis, in addition to the written exchange, through the secretariat, to provide technical clarifications on the information reported in the BUR, the TTE and Benin engaged in consultation[2] on the identification of capacity-building needs for the preparation of BURs and participation in the ICA process. Following the technical analysis of Benin's first BUR, the TTE prepared and shared a draft summary report with Benin on 12 June 2020 for its review and comment. Benin, in turn, provided its feedback on the draft summary report on 30 August 2020.

9. The TTE responded to and incorporated Benin's comments referred to in paragraph 8 above and finalized the summary report in consultation with the Party on 30 October 2020.

[1] Owing to the circumstances related to the coronavirus disease 2019, the technical analysis of the BUR submitted by Benin had to be conducted remotely.

[2] The consultation was conducted via teleconferencing.

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 Benin'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 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 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. Benin submitted an NIR as a stand-alone document with its first BUR. As requested by the Party, an in-depth technical analysis was conducted for the GHG information reported in both the BUR and the NIR.

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 NCs, 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. Benin reported in its first BUR the following information on its national circumstances: a description of its geography, climate, water resources, soil, vegetation, demography and socioeconomic conditions, as well as information on its economy.

19. Benin transparently 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 national GHG inventory system, which comprises working groups for the inventory sectors and thematic teams for the other components of NCs and BURs. The Ministry of Living Environment and Sustainable Development, as the national focal point, is the overall coordinating entity of the institutional arrangements. The roles and responsibilities of the institutions within this framework are defined within the arrangements for each component of NCs and BURs. The description of the Party's institutional arrangements also includes information on the mechanisms for information and data exchange, overarching QA/QC procedures and the provisions for public consultation and other forms of stakeholder engagement. The TTE commends the Party for providing detailed information about its institutional arrangements.

20. It was not clear to the TTE from the BUR how provisions for public consultation and stakeholder engagement are included in the process of preparing and validating Benin's national reports. During the technical analysis, the Party clarified that all governmental bodies are involved in validating the reports during a workshop conducted for this purpose. Benin also clarified that there are no operational mechanisms for public consultation or information-sharing with regard to the reports because the Party lacks the capacity to disseminate information on climate change and promote public participation.

21. The TTE noted that the transparency of the information reported on institutional arrangements could be further enhanced by addressing the areas noted in paragraph 20 above, which could facilitate a better understanding of the information reported on institutional arrangements.

22. Benin 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 all entities involved in the MRV system. The MRV arrangements are designed at the national level and cover three main areas: the BUR preparation process, the GHG inventory system and MRV of support needed and received. The system is newly established and builds on the existing systems, processes and infrastructure, as reflected in national policy documents, and on the lessons learned while preparing the NC2, conducting monitoring and evaluation at the national level and implementing the NDC. The MRV system developed by Benin will also serve to implement and monitor NDCs and will contribute to enhancing transparency under the Paris Agreement. During the technical analysis, the Party informed the TTE that a decree specifying the composition and mission of all entities that are part of the MRV system has been drafted and is in the process of being adopted. Benin also provided the TTE with the legal texts and procedures for implementing the MRV and inventory systems.

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

23. As indicated in table I.1, Benin 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.

24. Benin submitted its first BUR in 2019 and the GHG inventory reported is for 1990–2015. The GHG inventory is consistent with the requirements for the reporting time frame.

25. Benin submitted an NIR in conjunction with its first BUR. The NIR covers methods, AD and EFs used for all categories in the inventory. The relevant sections of the NIR were referenced in the BUR and the document was also made publicly available on the UNFCCC website.[3]

26. GHG emissions and removals for the BUR covering the 1990–2015 inventories were estimated using methodology from the 2006 IPCC Guidelines and the IPCC inventory software.

27. Information on AD and EFs used and their sources was clearly reported in the BUR, including a table summarizing the tier levels, EFs and AD used by GHG source category. Further details on the sources of AD and EFs by subcategory were presented in the NIR.

28. Information on the Party's total GHG emissions by gas for 2015 is outlined in table 1 in Gg CO_2 eq. With respect to GHG emissions including land, it shows an increase in emissions, including removals, of 812.5 per cent (8,886 Gg CO_2 eq) since 1990. With respect to GHG emissions excluding land, the information shows an increase in emissions of 263.2 per cent (8,516 Gg CO_2 eq) since 1990.

Table 1
Greenhouse gas emissions by gas of Benin for 2015

Gas	*GHG emissions (Gg CO_2 eq) including land*[a]	*% change 1990–2015*	*GHG emissions (Gg CO_2 eq) excluding land*[a]	*% change 1990–2015*
CO_2	–2 961.18	71.7	5 344.92	924.6
CH_4	6 264.75	23.9	4 113.34	131.5
N_2O	4 320.34	0.3	2 125.46	126.7
HFCs	168.47	NA	168.47	NA
PFCs	NA	NA	NA	NA
SF_6	NA	NA	NA	NA
Other	NA	NA	NA	NA
Total	**7 792.37**	**812.5**	**11 752.19**	**263.2**

[a] 2006 IPCC Guidelines AFOLU category 3.B (land).

29. Information on other emissions was clearly reported, including, for 2015, 167.74 Gg nitrogen oxides, 3,011.35 Gg carbon monoxide, 143.64 Gg non-methane volatile organic compounds and 19.37 Gg sulfur dioxide.

30. Information on SF_6 and PFCs was not reported in Benin's BUR. However, the Party provided relevant clarification both in its BUR and during the technical analysis, explaining that data for estimating PFCs and SF_6 are not available. Benin also noted that the data on HFC-134a did not cover the entire time series and therefore were not reported.

31. Benin applied notation keys in tables where numerical data were not provided. The use of notation keys was consistent with the UNFCCC guidelines for the preparation of NCs from non-Annex I Parties.

32. Benin reported partially comparable information (i.e. at the aggregate level) addressing the tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF and comparable information addressing the sectoral reporting tables annexed to the Revised 1996 IPCC Guidelines. During the technical analysis, Benin provided the TTE with the database generated from the IPCC inventory software, which included all the calculation worksheets used to compile the national GHG inventory.

33. The shares of emissions that different sectors contributed to the total GHG emissions excluding land (category 3.B), as reported by the Party and as calculated by the TTE using information from the BUR, in 2015 are reflected in table 2.

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

Table 2
Shares of greenhouse gas emissions by sector of Benin for 2015

Sector	*GHG emissions (Gg CO_2 eq)*	*% share*[a]	*% change 1990–2015*
Energy	6 166.64	52.5	614.5
IPPU	382.45	3.3	427.7
AFOLU			
Livestock (category 3.A)	2 933.54	25.0	108.9
Land (category 3.B)	–3 959.81	NA	8.5
Aggregate sources and non-CO_2 emissions sources on land (category 3.C)	1 930.15	16.4	135.9
Waste	339.41	2.9	351.3

[a] Share of total without 2006 IPCC Guidelines AFOLU category 3.B (land).

34. Benin reported information on its use of GWP values consistent with those provided by the IPCC in its Fourth Assessment Report based on the effects over a 100-year time-horizon of GHGs.

35. For the energy sector, information was clearly reported on tier levels, AD and their sources, EFs, key categories and notation keys used. The transport and residential categories were the sources of the most significant emissions in the sector. Between 1990 and 2015, emissions from the sector increased from 863.09 to 6,166.64 Gg CO_2 eq (i.e. by 614.5 per cent).

36. It was unclear to the TTE whether emissions from fuel consumption in the agriculture sector were reported and, if they were reported, under which subcategory. During the technical analysis, the Party clarified that these emissions were included in the road transportation subcategory, for which disaggregated data were not available, and noted that fuel consumption in the agriculture sector was estimated to be low owing to the limited mechanization of the sector. During the technical analysis, the Party provided the TTE with a GHG inventory specific to the energy sector that offered additional information on data and methodologies used to estimate emissions for the sector, including detailed statistics on national public electricity use and heat production. During the technical analysis, Benin informed the TTE that there are no refineries, natural gas extraction activities or national pipeline systems in the country, and that until 1998 all the crude oil produced in the country was exported.

37. For the IPPU sector, information was clearly reported on tier levels, key categories and notation keys used. Between 1990 and 2015, emissions from industry and the use of industrial products increased from 72.47 to 382.45 Gg CO_2 eq (i.e. by 427.7 per cent). The main drivers of this increase were the production of clinker used to produce cement, and the addition of HFC-134a emissions, which the Party began to account for in 2012.

38. Information on IPPU sector emissions for 2000 and EFs was not reported in Benin's BUR. However, the Party provided relevant clarification in its BUR, explaining that for this first BUR, country-specific EFs had yet to be estimated and not all subcategories of the sector were relevant to the country. Emissions were not reported for the following IPPU categories: 2.A (mineral industry), 2.D (non-energy products from fuels and solvent use) and 2.G (other product manufacture and use). During the technical analysis, the Party clarified that AD for these categories are not available. In its NIR, Benin reported that the AD for emissions of fluorinated substitutes for ozone-depleting substances were available only for three years. The data for the remaining years were estimated using a non-linear model built using the available data. However, neither the sources of those data nor the estimation calculations used to build the model were clear to the TTE. During the technical analysis, the Party clarified that the model was used to estimate the rate of growth in the consumption of refrigeration and stationary air-conditioning equipment in accordance with the methodology recommended in the 2006 IPCC Guidelines (vol. 3, p.7.47). Benin also provided the TTE with the calculation spreadsheets used in developing the model, which included the underlying data and formulas. During the technical analysis the Party provided a separate

sectoral GHG inventory report for the IPPU sector, which included additional information on the data and methodologies used to estimate emissions in the sector.

39. For the AFOLU sector, net emissions increased from –2,104.4 CO_2 eq in 1990 to 903.9 CO_2 eq in 2015; that is, the sector went from being a sink in 1990 to an emissions source by 2015. For categories 3.A and 3.C under the AFOLU sector, N_2O from agricultural soils and CH_4 from enteric fermentation were identified as key categories and the most relevant emissions sources in the sector. In these two categories, emissions rose steadily in 1990–2015, increasing from 2,225.10 to 4,863.69 CO_2 eq.

40. Emissions of CH_4 from enteric fermentation in cattle were estimated using a tier 2 methodology. The NIR referenced the scientific study that is the source of the country-specific EFs for cattle but the actual EFs used were not reported. During the technical analysis, the Party provided the TTE with a copy of the referenced study together with the calculation spreadsheets used to estimate emissions from enteric fermentation, which included the underlying data and formulas.

41. For land (category 3.B), Benin reported annual GHG emissions and removals for 1990–2015. Overall, the net removals from land (category 3.B) fluctuated between a minimum of 2,754.51 CO_2 eq in 2000 and a maximum of 4,329.47 CO_2 eq in 1990. During 1990–2015, net removals decreased from 4,329.47 CO_2 eq in 1990 to 3,959.81 CO_2 eq in 2015 (i.e. by 8.5 per cent). Benin reported that this decrease is due to the combined effects of the degradation of forests and meadows (the decrease in carbon stocks is attributable mainly to the commercial harvesting of timber and harvesting of fuelwood), the conversion of forest land to cropland (deforestation) and the conversion of grassland to cropland. Between 1990 and 2015, the quantity of commercial wood felled increased by 56 per cent and that of fuelwood felled increased by 2.3 per cent. The area of forest land converted to cultivated land increased by 27.1 per cent from 1990 to 2015.

42. The Party did not report estimates of emissions and removals for the land subcategories 3.B.4 (wetlands), 3.C.1.d (emissions from biomass burning in other lands) and 3.D.1 (harvested wood products) in its BUR, noting that AD for these subcategories were not available. Information on the deadwood and litter pools, emissions and removals from wetlands, and non-CO_2 emissions from biomass burning in other lands was also not provided. In its BUR, Benin noted that this information was also not reported owing to a lack of AD and relevant EFs and parameters (e.g. for wetlands). The Party also reported that information on deadwood and wetlands would be included in future inventories in accordance with the inventory improvement plan.

43. For the waste sector, information was clearly reported on tier levels and most AD and their sources, EFs, key categories and notation keys used. Between 1990 and 2015, sectoral GHG emissions increased from 75.21 to 339.41 CO_2 eq (i.e. by 351.3 per cent). In 2015, the main source of emissions for the sector was the treatment and discharge of wastewater (297.86 CO_2 eq or 87.8 per cent of total sectoral emissions), followed by the disposal of solid waste (27.62 CO_2 eq or 8.1 per cent of total sectoral emissions) and the incineration and open burning of waste (13.91 CO_2 eq or 4.1 per cent of total sectoral emissions).

44. AD for the incineration and open burning of waste were not reported. During the technical analysis, the Party provided the calculation spreadsheet used to estimate emissions for this category, which included the estimated annual amount of waste burned in the country for 1990–2015.

45. The information reported provides an update of the Party's NC1 and NC2, which addressed anthropogenic emissions and removals for 1995 and 2000, respectively. The update was carried out for 1990–2015 using the methodologies contained in the 2006 IPCC Guidelines, thus generating a consistent 25-year time series. The previous national inventory, reported in the NC2, was prepared using the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF.

46. Benin described in its BUR the institutional framework for the preparation of its 2015 GHG inventory. The Party reported that the Ministry of Living Environment and Sustainable Development is the governmental body responsible for its climate change policy and GHG inventory, which was prepared with the support of UNDP, which assisted Benin in designing

its GHG inventory system. The Party identified improvements in the information reported compared with previous NCs such as improved methodologies for data collection, the use of higher tiers and the development and entry into force of legislation (laws, decrees, etc.) that formalize the institutional configuration under which Benin will prepare its inventories and BURs. Benin's NIR (table 31) provides detailed information on the improvements planned for each inventory category in the next NIR. This information includes a description of the activities to be carried out, the institutions responsible for them and the time frame for their implementation. During the technical analysis, the Party provided the TTE with a document indicating the priority level (low, medium or high) of each of the planned improvements.

47. Benin clearly reported that a key category analysis was performed for the level of emissions and the trend in emissions. The Party applied IPCC approach 1 for 1990 and 2015 for the level of emissions and for the whole period for the trend in emissions. Key categories for the level of emissions include several AFOLU categories, such as forest land, cropland, enteric fermentation and biomass burning. Road transport was identified as a key source of CO_2 emissions. In its BUR, Benin noted that the lack of complete and reliable information on emission uncertainties prevented the Party from using IPCC approach 2 to identify key categories.

48. The BUR provides information on QA/QC measures for all sectors of the national GHG inventory, including on validation of the inventory data by a pool of experts, QA workshops, identification and correction of aberrant data and results, and examination of time-series consistency. Benin noted that in 2018 it submitted on a voluntary basis its national inventory for analysis by a pool of experts sourced by the secretariat. The findings of the experts helped the Party to correct errors and plan many improvements to the inventory methodologies for preparing subsequent national inventories. The TTE commends the Party for providing in its BUR detailed information on its QA/QC measures.

49. It was not clear to the TTE which QA/QC procedures are in place for AD originating from private sector companies. During the technical analysis, Benin clarified that there is no official QA/QC procedure imposed on data from private companies. Each company is required to carry out internal checks. The Party also clarified that QA/QC procedures involving both internal and external experts have been implemented for all sectoral reports. Benin also provided the TTE with the national procedural manual used for these sectoral QA/QC procedures.

50. Benin reported information on CO_2 fuel combustion using both the sectoral and the reference approach. However, only the values from the sectoral approach were reported in table 2 of Benin's BUR. While the values from the reference approach were not reported in the BUR, the difference was reported. The difference between the estimates using the two approaches was reported as varying between –1.4 and +1.5 per cent for all years between 1990 and 2015, except 1996, 1998, 1999 and 2000. For these years, the difference was more than 5 per cent in absolute value. In its BUR, the Party explained that these differences might result from not taking into account the fuels used for non-energy purposes in CO_2 emission calculations as per the sectoral approach or from gaps in consumption availabilities and effective consumption of fuels. During the technical analysis, Benin provided the TTE with the estimated annual emissions of CO_2 fuel combustion using both the sectoral and the reference approach for 1990–2015. For 2015, emissions under the reference approach were estimated to be 5,054.83 Gg CO_2 and those under the sectoral approach were estimated to be 5,118.04 Gg CO_2, with a difference of 1.25 per cent.

51. Information was clearly reported on international aviation and marine bunker fuels for 1990–2015 in table 2.9 of the BUR. Over that period, emissions from international aviation increased from 54.66 to 117.09 Gg CO_2 eq (i.e. by 114.2 per cent), while emissions from marine bunker fuels increased from 10.56 to 58.87 Gg CO_2 eq (i.e. by 457.5 per cent).

52. Benin reported information on the uncertainty assessment (level) of its national GHG inventory in its BUR. The uncertainty analysis was based on the default uncertainties from the 2006 IPCC Guidelines. In its NIR, Benin provided the actual uncertainty values associated with the EFs and AD that were used to carry out the uncertainty assessment for each sector. The uncertainty of the total inventory is 54.9 per cent. Uncertainties vary between 5.4 per cent (for subcategory 1.A.3.c (railways – liquid fuels)) and 903.5 per cent

(for subcategories 1.A.1.c.ii (other energy industries – biomass), 1.A.2 (manufacturing industries and construction – biomass), 1.A.4.a (commercial/institutional – biomass) and 1.A.4.b (residential – biomass)). Country-specific uncertainties associated with both AD and EFs were not estimated by Benin. In its BUR, the Party identified performing this estimation as a priority for future inventories.

53. The TTE noted that the transparency of the information reported on GHG inventories could be further enhanced by addressing the areas noted in paragraphs 32, 36, 38, 40, 44, 49, and 50 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

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

55. The information reported provides a clear and comprehensive overview of the Party's mitigation actions and their effects for the sectors contributing most to the country's GHG emissions, namely, AFOLU and energy. In its BUR Benin reported information on the policy, legislative and regulatory framework that governs its climate change strategy. Benin reported that climate change, along with low-carbon development, has been mainstreamed in and integrated into its development plans. Benin reported on several laws and decrees related to the environment, including a specific law related to combating climate change and its impacts, which was adopted in 2018.

56. The Party framed its national mitigation planning and actions for each sector in the context of sectoral strategies and ongoing development projects. Benin has submitted its NDC, which is based on strategies, plans, programmes and projects that contribute to sustainable development and climate change resilience in several sectors. The mitigation actions identified in the energy and agriculture sectors are expected to reduce emissions by 3,461 Gg CO_2 eq in 2030 compared with the 'business as usual' scenario, with agriculture being the main source of emission reductions. If all policies and measures in the forestry sector are implemented, emissions will be reduced (absorbed) by an additional 66,290 Gg CO_2 eq in 2030 compared with the 'business as usual' scenario.

57. It was not clear to the TTE what underlying data were used in the reference scenario or in the projections from the Long-range Energy Alternatives Planning Model and the Ex-Ante Carbon-balance Tool (EX-ACT). During the technical analysis, the Party clarified that it lacks data on the trends in AD and that this lack constitutes an area for further improvement.

58. The Party reported a summary of its mitigation actions in tabular format in accordance with decision 2/CP.17, annex III, paragraph 11. Benin also provided a detailed description of its sectoral mitigation actions in narrative form, including the reference and mitigation scenarios for 2016–2030 for the agriculture sector and for 2002–2030 for the energy sector.

59. Consistently with decision 2/CP.17, annex III, paragraph 12(a), Benin clearly reported the names of mitigation actions or groups of actions, coverage (sector and gases) and progress indicators in table 3.1 of the BUR. A clear description of mitigation actions, as well as information on quantitative goals, was provided in annex 5 to the BUR.

60. Benin clearly reported information on methodologies and assumptions, the objectives of the actions and steps taken or envisaged to achieve those actions for all mitigation actions in the energy, agriculture and forestry sectors. The BUR includes a section on the Party's general methodological approach and assumptions, and tables in annex 5 to the BUR present specific information on methodologies and assumptions for each individual mitigation action. The Party also reported the results of implementing its mitigation actions as estimated emission reductions and as sustainable development co-benefits. The nationally appropriate mitigation action in the field of animal husbandry, developed with the support of UNDP, was the only one for which such information was not provided. During the technical analysis, the Party clarified that this action is still at the planning stage and is awaiting funding from the GEF.

61. The mitigation actions in the energy sector include using natural gas (instead of diesel) to produce electricity; enhancing access to electricity for all households by 2030, thereby replacing the use of kerosene for lighting; promoting energy efficiency in the residential, tertiary and transport sectors; and developing renewable energy. Most of these mitigation actions are ongoing and Benin expects them to be extended to 2030. The Party also reported the results of implementing its mitigation actions in the energy sector as mission reductions, which are estimated to amount to an additional 1,386 Gg CO_2 eq in 2030 compared with the 'business as usual' scenario, with the highest emission reduction potential coming from the use of natural gas and renewable sources of energy, which amount to 8,958 Gg CO_2 eq for 2003–2030, a reduction of 9.4 per cent compared with the 'business as usual' scenario. Benin anticipates the following sustainable development co-benefits: the diversification and improvement of energy supply, the development of economic activities and a reduction in local air pollution. Benin also reported on a mitigation action aimed at reducing electricity transmission and distribution losses. Though it did not estimate the emission reduction associated with this action, stating in the BUR that this was due to a lack of data, the Party noted that this measure is expected to have a significant impact on emissions.

62. The mitigation actions in the agriculture sector involve using agricultural inputs rationally, increasing the availability of improved maize seeds and improving water management in paddy fields. These actions are ongoing (since 2011), and Benin plans to extend them to 2030. The anticipated GHG emission reductions resulting from the above-mentioned mitigation actions amount to 2,075 Gg CO_2 eq in 2030, a reduction of 33.1 per cent compared with the 'business as usual' scenario. The cumulative expected emission reduction for 2013–2030 amounts to 28,537 Gg CO_2 eq, with the highest emission reduction potential of all reported mitigation actions in the agriculture sector coming from increasing the availability of quality corn seeds, for which the cumulative expected emission reduction for 2013–2030 amounts to 24,902 Gg CO_2 eq (1,464.82 Gg CO_2 eq per year). The anticipated co-benefits include an increase in agricultural production and the sustainable development of rice production.

63. In the forestry sector, mitigation actions include supporting communal forest management, restoring and managing forests classified as degraded and strengthening the reforestation policy. These mitigation actions are estimated to absorb an additional 66,290 Gg CO_2 in 2030 compared with the 'business as usual' scenario. Restoring degraded forest land accounts for 70.6 per cent of this impact, while strengthening the reforestation policy accounts for 23.4 per cent. In its BUR, Benin clarified that because of a lack of data, GHG emissions related to afforestation/reforestation measures (emissions from machinery, transport, etc.) could not be taken into account. The sustainable development co-benefits of forestry mitigation actions are reported as the preservation and rational use of natural resources.

64. Benin did not provide information on its involvement in international market mechanisms, clarifying in the BUR that activities financed by international market mechanisms have not been developed.

65. Benin reported information on its domestic MRV arrangements in accordance with decision 2/CP.17, annex III, paragraph 13. The information reported indicates that Benin has in place a domestic MRV system for mitigation actions. The Party reported that the domestic MRV system is based on the experience gained during work on the NC3 and the first BUR, national procedures for monitoring and evaluation, the institutional framework for implementing NDCs and national policy documents. Benin expects to use the domestic MRV system for evaluating domestic efforts (and reporting on the results in national reports), promoting national debate on its progress in achieving the objective of the Convention, facilitating QA/QC at the national level, facilitating implementation of NDCs (and the evaluation thereof) and implementing the enhanced transparency framework of the Paris Agreement.

66. The TTE noted that the transparency of the information reported on mitigation actions could be further enhanced by addressing the areas noted in paragraph 57 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

67. As indicated in table I.3, Benin 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.

68. Benin 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 Benin identified its main constraints and gaps as a lack of institutional arrangements for compiling GHG inventories and information on mitigation measures and their effects, an absence of regulatory texts to support the institutional arrangements, and a lack of country-specific data and national technical expertise related to preparing all components of NCs and BURs.

69. Benin reported that its financial, technical and capacity-building needs are primarily in the areas of reinforcing the legal aspects of its institutional arrangements with appropriate legal texts, obtaining equipment for collecting and processing data, setting up up-to-date databases and reinforcing national expertise in the use of tools and software for compiling GHG inventories and information on mitigation measures and their effects. Capacity-building needs focus on training related to developing and managing databases, tools related to the GHG inventory and mitigation assessment, and other technical functions. Benin also prioritized financial needs to prepare the next NC and BUR.

70. Benin reported information on financial resources, capacity-building and technical support received in accordance with decision 2/CP.17, annex III, paragraph 15. In its BUR Benin reported that it received USD 352,000 from the GEF, which included allocation for preparing its first BUR. The Party received further financial resources from FAO, the German Agency for International Cooperation, UNDP and the United States Environmental Protection Agency, as well as the secretariat, which were allocated to adaptation projects in all sectors vulnerable to climate change and to capacity-building and mitigation projects in the key sectors energy and waste. The information reported indicates that Benin received capacity-building and technical support from UNDP to facilitate its use of the 2006 IPCC Guidelines for preparing its GHG inventory.

71. Benin did not report detailed 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. However, the Party did report in its BUR that it is launching a technology needs assessment with technical and financial support from the UNEP DTU Partnership. The priority sectors targeted in the assessment are agriculture, forestry and energy. During the technical analysis, Benin also clarified that it had not yet received any technological support for implementing its climate change action plan.

72. 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 paragraph 71 above, which could facilitate a better understanding of the information reported on needs and support received.

D. Identification of capacity-building needs

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

(a) Cross-cutting: improving QA/QC procedures and their implementation for all components of the BUR;

(b) National GHG emissions by sources and removals by sinks:

(i) Collecting AD, in particular disaggregated data or category-level data;

(ii) Developing country-specific EFs for disaggregated data;

(iii) Improving the reporting of emissions/removals in the common reporting format;

(iv) Enhancing financial support to ensure the preparation of future NIRs on a continuous basis;

(c) Mitigation actions:

(i) Identifying and estimating the impact of mitigation actions in terms of emission reductions in sectors other than AFOLU and energy;

(ii) Evaluating and reporting on data, including assumptions used, for estimating emission reductions and/or projections;

(iii) Reporting on the outcomes of mitigation actions;

(d) Constraints and gaps, and related technology, financial, technical and capacity-building needs:

(i) Training legal department staff to develop regulatory texts that strengthen institutional arrangements;

(ii) Ensuring public consultation and civil society information-sharing in preparing and validating national reports;

(iii) Encouraging academics to integrate climate change issues into their studies and research programmes and develop knowledge and data specific to Benin.

74. The TTE noted that, in addition to those identified during the technical analysis, Benin reported several capacity-building needs in its BUR (table 4.2), covering the following areas:

(a) GHG inventory preparation;

(b) Mitigation actions and their effects;

(c) Support received.

III. Conclusions

75. The TTE conducted a technical analysis of the information reported in the first BUR of Benin 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 removal 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; and domestic MRV. During the technical analysis, additional information was provided by Benin on all of those areas. Overall, the TTE finds that the information provided in Benin's first BUR is well organized, detailed, transparent and consistent in most areas with the UNFCCC reporting guidelines on BURs. The TTE commends the Party for this effort.

76. Benin reported information on the institutional arrangements relevant to the preparation of its BURs, including the national GHG inventory system, which comprises working groups for the inventory sectors and thematic teams for other components of NCs and BURs. The BUR identifies the responsible entities and defines their roles. The Ministry of Living Environment and Sustainable Development, as the national focal point, is responsible for coordinating the institutional framework. The roles and responsibilities of the institutions within this framework are defined within the arrangements for each component of NCs and BURs. Benin established a legal framework by adopting regulations for national institutional arrangements, the inventory system, the MRV system and the QA/QC system.

77. In its first BUR, submitted in 2019, Benin reported information on its national GHG inventory for 1990–2015. This included GHG emissions and removals of CO_2, CH_4 and N_2O for all relevant sources and sinks as well as the precursor gases. The inventory was developed on the basis of the 2006 IPCC Guidelines and the IPCC inventory software. The total GHG

emissions for 1990–2015 were reported as 3,235.85 and 11,752.19 Gg CO_2 eq (excluding land) in 1990 and 2015, respectively, and –1,093.61 and 7,792.37 Gg CO_2 eq (including land) in 1990 and 2015, respectively. Benin performed a key category analysis for the level of emissions and the trend in emissions. The key categories were classified into those excluding LULUCF (14 categories) and those including LULUCF (10 categories). With respect to fluorinated gases, Benin reported estimates of HFCs, but estimates of PFCs and SF_6 were not provided owing to difficulties in obtaining the necessary data, as clarified by the Party in its BUR. Benin also reported that lack of data was the main reason for not reporting emissions for some categories and subcategories.

78. Benin reported information on mitigation actions and their effects in both tabular and narrative format, including the baseline and mitigation scenarios for 2016–2030 for the agriculture sector and for 2002–2030 for the energy sector. Benin framed its national mitigation planning and actions in the context of its national development and environment legislative framework and the respective sectoral strategies and development projects. Benin reported actions that are planned, implemented, ongoing or completed in the energy, agriculture and forestry sectors. The mitigation actions focus on enhancing agricultural productivity for maize, cotton and rice; enhancing access to electricity; producing electricity using natural gas instead of diesel; producing renewable energy; and enhancing forest management and reforestation. The Party reported the progress of implementation of its mitigation actions and the results achieved, including estimated emission reductions and sustainable development co-benefits. The highest cumulative emission reduction compared with the 'business as usual' scenario was reported for the agriculture sector of 28,537 Gg CO_2 eq between 2013 and 2030. If the forestry actions reported are implemented, the estimated sink amounts to an additional 66,290 Gg CO_2 eq by 2030, compared with the 'business as usual' scenario. The Party also reported information on its MRV arrangements and clarified that it does not participate in any international market mechanisms.

79. Benin reported information on key constraints, gaps and related needs, including an absence of regulatory texts to support the institutional arrangements and a lack of specific data and national technical expertise related to preparing all components of NCs and BURs. Information was reported on the technical and capacity-building support received. The Party also reported that it received financial support of USD 352,000 from the GEF, which included allocation for preparing its first BUR. The Party received further financial resources from FAO, the German Agency for International Cooperation, UNDP and the United States Environmental Protection Agency, as well as the secretariat, which were allocated to adaptation projects in all sectors vulnerable to climate change and to capacity-building and mitigation projects in the key sectors energy and waste. The Party also reported that it is launching a technology needs assessment with technical and financial support from the UNEP DTU Partnership.

80. The TTE, in consultation with Benin, identified 11 capacity-building needs listed in chapter II.D above, and additional 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. Benin identified the following as priority capacity-building needs:

(a) Evaluating and reporting on data, including assumptions used, for estimating emission reductions and/or projections;

(b) Reporting on the outcomes of mitigation actions;

(c) Improving QA/QC procedures and their implementation for all components of the BUR;

(d) Collecting relevant AD, in particular disaggregated data or category-level data;

(e) Developing country-specific EFs for disaggregated data;

(f) Enhancing financial support to ensure the preparation of future reports on a continuous basis.

Annex I

Extent of the information reported by Benin 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 Benin

Decision	*Provision of the reporting guidelines*	*Yes/partly/no/NA*	*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.	Yes	Benin submitted its first BUR in September 2019; the GHG inventories reported are for 1990–2015.
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	Benin used the 2006 IPCC Guidelines and the IPCC inventory software.
Decision 2/CP.17, annex III, paragraph 5	The updates of the section on national inventories of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol should contain updated data on activity levels based on the best information available using the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF; any change to the EF may be made in the subsequent full NC.	Partly	Benin, in its BUR, reported the sources of activity but not the actual AD. AD for selected source categories and years were reported in the annex to Benin's NIR (e.g. tables entitled "National energy balance sheet for 2015", "Characteristics of livestock (1990–2015)" and "Land use for 2015").
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	Benin's BUR includes summary tables containing subcategory totals only.
	(b) The sectoral report tables annexed to the Revised 1996 IPCC Guidelines.	Yes	Comparable information was reported in tables 2.6 and 2.7 of the BUR.
Decision 2/CP.17, annex III, paragraph 7	Each non-Annex I Party is encouraged to provide a consistent time series back to the years reported in its previous NCs.	Yes	Benin's BUR reports the time series 1990–2015 and clearly reports emission levels for the years reported in previously submitted NCs (i.e. 1995 and 2000). Benin's NC3 also reports the time series for 1990–2015.
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	This information was reported for 1995 and 2000.
	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,		

Decision	*Provision of the reporting guidelines*	*Yes/partly/no/NA*	*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	Comparable information was reported in tables 2.6 and 2.7 of the BUR.
	(b) Table 2 (National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF_6).	Partly	Comparable information was reported in table 2.7 of the BUR. The information reported is for aggregate fluorinated gases rather than for individual gases.
Decision 2/CP.17, annex III, paragraph 10	Additional or supporting information, including sector-specific information, may be supplied in a technical annex.	Yes	The Party submitted an NIR as an annex to its BUR.
Decision 17/CP.8, annex, paragraph 12	Non-Annex I Parties are also encouraged, to the extent possible, to undertake any key source analysis as indicated in the IPCC good practice guidance to assist in developing inventories that better reflect their national circumstances.	Yes	
Decision 17/CP.8, annex, paragraph 13	Non-Annex I Parties are encouraged to describe procedures and arrangements undertaken to collect and archive data for the preparation of national GHG inventories, as well as efforts to make this a continuous process, including information on the role of the institutions involved.	Yes	
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) Carbon monoxide;	Yes	
	(b) Nitrogen oxides;	Yes	
	(c) Non-methane volatile organic compounds.	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 other gases, such as sulfur dioxide.
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	No	The information was reported only using the sectoral approach. The BUR does, however, report

Decision	*Provision of the reporting guidelines*	*Yes/partly/no/NA*	*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.		the difference in aggregate emissions between the reference and the sectoral approach.
Decision 17/CP.8, annex, paragraph 19	Non-Annex I Parties should, to the extent possible, and if disaggregated data are available, report emissions from international aviation and marine bunker fuels separately in their inventories:		
	(a) International aviation;	Yes	
	(b) Marine bunker fuels.	Yes	
Decision 17/CP.8, annex, paragraph 20	Non-Annex I Parties wishing to report on aggregated GHG emissions and removals expressed in CO_2 eq should use the GWP provided by the IPCC in its Second Assessment Report based on the effects of GHGs over a 100-year time-horizon.	NA	The Party used the GWP provided in the Fourth Assessment Report of the IPCC.
Decision 17/CP.8, annex, paragraph 21	Non-Annex I Parties are encouraged to provide information on methodologies used in the estimation of anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol, including a brief explanation of the sources of EFs and AD. If non-Annex I Parties estimate anthropogenic emissions and removals from country-specific sources and/or sinks that are not part of the Revised 1996 IPCC Guidelines, they should explicitly describe the source and/or sink categories, methodologies, EFs and AD used in their estimation of emissions, as appropriate. Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building:		
	(a) Information on methodologies used in the estimation of anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol;	Yes	Benin used the 2006 IPCC Guidelines. Tier 1 methodology was used for all sectors, except for the category cement production, for which the tier 2 methodology was used.
	(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 and 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	Yes	

Decision	*Provision of the reporting guidelines*	*Yes/partly/no/NA*	*Comments on the extent of the information provided*
	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.		
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 first biennial update report of Benin

Decision	*Provision of the reporting guidelines*	*Yes/partly/no*	*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;	Yes	Benin reported on mitigation actions in the AFOLU and energy sectors. Information on quantitative goals and progress indicators for the mitigation actions was reported in the annexes to the BUR. Quantitative goals were also described in the text of the BUR.
	(b) Information on:		
	(i) Methodologies;	Yes	Information is included in the annexes to the BUR.
	(ii) Assumptions;	Yes	Information is included in the annexes to the BUR.
	(c) Information on:		
	(i) Objectives of the action;	Yes	
	(ii) Steps taken or envisaged to achieve that action;	Yes	

Decision	*Provision of the reporting guidelines*	*Yes/partly/no*	*Comments on the extent of the information provided*
	(d) Information on:		
	(i) Progress of implementation of the mitigation actions;	Yes	The Party reported mitigation actions that are completed, ongoing or planned.
	(ii) Progress of implementation of the underlying steps taken or envisaged;	Yes	
	(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 Benin

Decision	*Provision of the reporting requirements*	*Yes/partly/no*	*Comments on the extent of the information provided*
Decision 2/CP.17, annex III, paragraph 14	Non-Annex I Parties should provide updated information on:		
	(a) Constraints and gaps;	Yes	
	(b) Related financial, technical and capacity-building needs.	Yes	
Decision 2/CP.17, annex III, paragraph 15	Non-Annex I Parties should provide:		
	(a) Information on financial resources received, technology transfer and capacity-building received;	Yes	
	(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-ggip.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 Benin. Available at https://unfccc.int/BURs.

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

C. Information provided by the Party

The following documents[1] were provided by the Party in response to requests for technical clarification during the technical analysis:

Direction générale de l'environnement et du climat du Benin. 2018. *Système de mesure, notification et vérification des actions relatives aux changements climatiques au Benin.*

Direction générale de l'environnement et du climat du Benin. 2007. *Manuel de procédures pour la gestion des inventaires de gaz à effet de serre au Benin*.

Direction générale de l'environnement et du climat du Benin - Equipe thématique Energie. 2017. *Rapport de collecte de données pour l'élaboration des inventaires de gaz à effet de serre.* Projet PRBA-BENIN : élaboration du premier rapport biennal actualise du Benin sur les changements climatiques (Projet NO GFL-5070-2724-4C96-2227).

Direction générale de l'environnement et du climat du Benin - Groupe thématique « procèdes industriels et utilisation des produits ». 2018. *Rapport de collecte de données pour l'inventaire des gaz à effet de serre dans le secteur des procèdes industriel et utilisation des produits*. Projet PRBA-BENIN : élaboration du premier rapport biennal actualise du Benin sur les changements climatiques (Projet NO GFL-5070-2724-4C96-2227).

Direction générale de l'environnement et du climat du Benin – Groupe thématique « déchets ». 2017. *Rapport de collecte de données*. Projet PRBA-BENIN : élaboration du

[1] Reproduced as received from the Party.

premier rapport biennal actualise du Benin sur les changements climatiques (Projet NO GFL-5070-2724-4C96-2227).

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