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# Technical analysis of the first biennial update report of Uganda submitted on 1 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 Uganda, 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

| | |
|---|---|
| AD | activity data |
| AFOLU | agriculture, forestry and other land use |
| AR | Assessment Report of the Intergovernmental Panel on Climate Change |
| BUR | biennial update report |
| CCD | Climate Change Department of Uganda |
| CDM | clean development mechanism |
| CGE | Consultative Group of Experts |
| $CH_4$ | methane |
| $CO_2$ | carbon dioxide |
| $CO_2$ eq | carbon dioxide equivalent |
| EEA | European Environment Agency |
| EF | emission factor |
| EMEP | Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe |
| GEF | Global Environment Facility |
| GHG | greenhouse gas |
| 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 |
| NAMA | nationally appropriate mitigation action |
| NC | national communication |
| NDC | nationally determined contribution |
| NIR | national inventory report |
| NMVOC | non-methane volatile organic compound |
| non-Annex I Party | Party not included in Annex I to the Convention |
| $NO_X$ | nitrogen oxides |
| $N_2O$ | nitrous oxide |
| PFC | perfluorocarbon |
| QA/QC | quality assurance/quality control |
| REDD+ | reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks (decision 1/CP.16, para. 70) |
| Revised 1996 IPCC Guidelines | *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* |
| $SF_6$ | sulfur hexafluoride |
| TTE | team of technical experts |
| UNEP | United Nations Environment Programme |
| UNFCCC guidelines for the preparation of NCs from non-Annex I Parties | "Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention" |
| UNFCCC reporting guidelines on BURs | "UNFCCC biennial update reporting guidelines for Parties not included in Annex I to the Convention" |
| 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. Decision 14/CP.19, paragraph 7, outlines that developing country Parties seeking to obtain and receive payments for results-based actions can submit relevant information and data through the BUR in the form of a technical annex as per decision 2/CP.17, annex III, paragraph 19.[1] Decision 14/CP.19, paragraph 8, outlines that the submission of the technical annex is voluntary and in the context of results-based payments. As mandated by decision 14/CP.19, paragraphs 10–14, the technical annex submitted by Uganda has been subject to technical analysis by two LULUCF experts who are included as members of a TTE. The results of the technical analysis are captured in a separate technical report.[2]

5. This summary report presents the results of the technical analysis of the first BUR of Uganda, 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, Uganda submitted its first BUR on 1 October 2019 as a stand-alone update report.

7. A desk analysis of Uganda's BUR was conducted from 22 to 26 June 2020[3] 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: Siriluk Chiarakorn (Thailand), Ana-Maria Danila (former member of the CGE from the European Union), Ryan Deosaran (Trinidad and Tobago), Madeleine Rose Diouf (former member of the CGE from Senegal), Leticia Guimarães (Brazil), Juan Luis Martin Ortega (El Salvador), Esther Mertens (Belgium), Noura Mohamed Lotfy (Egypt), Sekai Ngarize (Zimbabwe), Emma Salisbury (United Kingdom of Great Britain and Northern Ireland), Ioannis Sempos (Greece), Virginia Sena Cianci (member of the CGE from Uruguay), Chisa Umemiya (Japan), Maarten van der Eynden (Norway) and Alexander Zahar (Australia). Ms. Danila and Ms. Ngarize were the co-leads. The technical analysis was coordinated by Anna Sikharulidze, Hiroaki Odawara and Sabin Guendehou (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 Uganda engaged in consultation[4] on the identification of capacity-building needs

[1] The technical annex on the results from the implementation of REDD+ activities.

[2] FCCC/SBI/ICA/2020/TATR.1/UGA. At the time of publication of this report, the technical report was being prepared.

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

[4] The consultation was conducted via teleconferencing.

for the preparation of BURs and participation in the ICA process. Following the technical analysis of Uganda's first BUR, the TTE prepared and shared a draft summary report with Uganda on 18 September 2020 for its review and comment. Uganda, in turn, provided its feedback on the draft summary report on 11 January 2021.

9. The TTE responded to and incorporated Uganda's comments referred to in paragraph 8 above and finalized the summary report in consultation with the Party on 27 January 2021.

# 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 Uganda's BUR outlined in paragraph 10 above.

## B. Extent of the information reported

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

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

## C. Technical analysis of the information reported

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

15. For information reported on national GHG inventories, the technical analysis also focused on the consistency of the methods used for preparing those inventories with the

appropriate methods developed by the IPCC and referred to in the UNFCCC reporting guidelines on BURs.

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

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

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

18. Uganda reported in its first BUR information on its national circumstances, including a description of national and regional development priorities, objectives and circumstances, including information on features of geography, climate and economy.

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

20. Uganda transparently reported in its first BUR information on its existing and planned institutional arrangements relevant to the preparation of its NCs and BURs on a continuous basis. The description covers key aspects of the institutional arrangements, including the legal status and roles and responsibilities of the overall coordinating entity and the involvement and roles of other institutions and experts. The Party reported that CCD within the Ministry of Water and Environment is the UNFCCC national focal point serving as the main coordinating institution for all climate change activities. CCD oversees Uganda's implementation of the Convention, the Kyoto Protocol and the Paris Agreement. As a coordinator of the NC and BUR process, CCD has established sectoral working groups that work closely with mitigation and adaptation experts to ensure transparency of the reports. Uganda reported that its National Climate Change Bill, drafted in 2018 and still under development, will enable the country to meet its reporting obligations in a continuous manner, including the preparation and submission of its BURs and NCs.

21. Uganda reported in its first BUR information on its domestic MRV arrangements. The MRV arrangements are designed at the national level and cover three main areas: GHG inventories, baselines for NAMAs and mitigation actions (including REDD+ activities). Uganda reported that its current MRV system is not well developed, particularly in terms of data collection processes, regular data updates, GHG computation approaches and QA/QC processes. The Party further reported that the MRV arrangements for many domestic mitigation actions are not well defined. In its BUR, Uganda stated that it has developed a draft MRV framework document in consultation with a range of national stakeholders to improve the coordination and institutional arrangements of the current MRV system. The Party used an organizational chart to illustrate the suggested framework, which is composed of nine administrative and technical levels. CCD will have overall responsibility for coordinating the proposed MRV framework. Uganda reported that it faces many challenges in building a comprehensive domestic MRV system owing to the weaknesses of its existing institutional arrangements and limited financial resources and technical capacity.

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

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

23. Uganda submitted its first BUR in 2019 and the GHG inventory reported is for 2005–2015. The GHG inventory is consistent with the requirements for the reporting time frame.

24. Uganda submitted a draft NIR as an additional document during the technical analysis but did not include the relevant references in the BUR. The TTE notes that the information

presented in the BUR was not sufficient to enable a clear understanding of Uganda's GHG inventory.

25. GHG emissions and removals for the BUR covering the 2005–2015 inventories were estimated using the tier 1 methodology from the 2006 IPCC Guidelines, while in some cases the IPCC good practice guidance or the IPCC good practice guidance for LULUCF were applied, as appropriate. The *EMEP/EEA air pollutant emission inventory guidebook 2019* was used by the Party to estimate NMVOC, sulfur dioxide, carbon monoxide and $NO_X$ emissions where applicable. The TTE commends the Party for using the 2006 IPCC Guidelines.

26. Information on AD and EFs used and their sources was clearly reported in the BUR, for most of the categories reported.

27. Information on AD of the cement industry, consumption of HFCs, PFCs and $SF_6$, fertilizers and lime applied for managed soil, solid waste and wastewater, and information on EFs used to estimate non-$CO_2$ emissions from biomass burning was not clearly reported in Uganda's BUR. During the technical analysis, the Party provided clarification on these issues (see paras. 31, 39, 41, 42 and 45 below for further details).

28. The numerical values of $CO_2$, $CH_4$ and $N_2O$ emissions from different categories and sectors were not reported in the BUR and information on national GHG emissions was presented using graphs. During the technical analysis, The Party provided its draft NIR, which included numerical information.

29. Information on the Party's total GHG emissions by gas for 2015 was reported in table A in appendix 1 to the draft NIR, and is outlined in table 1 in Gg $CO_2$ eq. The TTE noted inconsistencies in the GHG emissions reported by the Party in different parts of the NIR. For example, $CO_2$ emissions were reported as 57,658 Gg in NIR table 2.1 but as 57,772 Gg in appendix 1 to the NIR. When providing comments to the draft summary report, the Party clarified that the discrepancies are due to small edits in the IPCC 2006 software database for the energy and AFOLU sectors, and that some sections in the BUR were not revised to reflect the new results. The Party further clarified that table A in appendix 1 to the NIR reflects the final correct data. The change in total emissions for 2005–2015 has been calculated by the TTE.

Table 1
**Greenhouse gas emissions by gas of Uganda for 2015**

| *Gas* | *GHG emissions (Gg ) including land*[a] | *% change 2005–2015* | *GHG emissions (Gg) excluding land*[a] | *% change 2005–2015* |
|---|---|---|---|---|
| $CO_2$ | 57 772 | NA | 4,711 | NA |
| $CH_4$ | 838 | NA | 838 | NA |
| $N_2O$ | 34 | NA | 34 | NA |
| HFCs | NA | NA | NA | NA |
| PFCs | NA | NA | NA | NA |
| $SF_6$ | NA | NA | NA | NA |
| Other | NA | NA | NA | NA |
| **Total (Gg $CO_2$ eq)** | **90 235** | **70.8** | **37 175** | **59.9** |

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

30. Information on other emissions was clearly reported, including 80.29 Gg $NO_X$, 1,228.76 Gg carbon monoxide and 2,551.05 Gg NMVOCs.

31. Information on HFCs, PFCs and $SF_6$ was not clearly reported in Uganda's BUR. During the technical analysis, the Party clarified that although available, the data were not included in the BUR owing to a lack of communication between CCD, the Uganda Revenue Authority and Umeme (the largest power distribution company in Uganda). When providing comments to the draft summary report, the Party also clarified that through the support of the Capacity-building Initiative for Transparency, the Uganda Revenue Authority obtained information on importing HFCs and PFCs and the associated equipment that can be used for

assessing the AD for 2017–2018. Thus the next BUR will include the estimates of emissions of these GHGs for the most recent years and IPCC splicing methods will be used to estimate emissions for previous years.

32. Regarding the $SF_6$ emissions, the Party clarified that efforts to obtain the necessary information to estimate these emissions are ongoing. Umeme has provided information on total imports of $SF_6$, but further efforts are needed to obtain information from Umeme and the Uganda Electricity Transmission Company on the amount of $SF_6$ used for refilling owing to leakages and to obtain new equipment (switch gears, transformers and circuit breakers).

33. Uganda did not apply notation keys in tables where numerical data were not provided, which is not consistent with the UNFCCC guidelines for the preparation of NCs from non-Annex I Parties. Instead, the Party presented tables on the completeness of AD, which was assessed using scores defined by the Party itself. When providing comments to the draft summary report, the Party clarified that notation keys will be used in the next BUR.

34. 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 was not reported in Uganda's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that it had not submitted information on the aforementioned tables because it believed that references to the NIR would be sufficient to meet the reporting requirements.

35. The shares of emissions that different sectors contributed to the Party's total GHG emissions excluding land, as calculated by the TTE using information from the BUR and the draft NIR in 2015 are reflected in table 2.

Table 2
**Shares of greenhouse gas emissions by sector of Uganda for 2015**

| *Sector* | *GHG emissions (Gg $CO_2$ eq)* | *% share*[a] | *% change 2005–2015* |
|---|---|---|---|
| Energy | 9 702 | 26.1 | 106.4 |
| IPPU | 487 | 1.3 | 184.9 |
| AFOLU | 77 977 | NA | 65.1 |
| Livestock (category 3.A) | 16 293 | 43.8 | 51.1 |
| Land (category 3.B) | 53 061 | NA | 79.3 |
| Aggregate sources and non-$CO_2$ emissions sources on land (category 3.C) | 8 623 | 23.2 | 26.1 |
| Harvested wood products and other emissions (category 3.D) | NA | NA | NA |
| Waste | 2 070 | 5.6 | 173.4 |

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

36. Uganda reported information on its use of global warming potential values consistent with those provided by the IPCC in its AR5 based on the effects over a 100-year time-horizon of GHGs.

37. For the energy sector, information was clearly reported on the use of the tier 1 methodology from the 2006 IPCC Guidelines, with default EF values used for all subcategories. The AD were retrieved from national statistics, in particular from the annual statistical abstracts from the Uganda Bureau of Statistics, and annual reports from the Electricity Regulatory Authority.

38. For the IPPU sector, information was clearly reported in the Party's BUR on the use of a tier 1 methodology from the 2006 IPCC Guidelines and default EF values for all subcategories. The AD were retrieved from national statistics and international publications. Because of the limited AD, Uganda reported $CO_2$ emissions only from cement, lime production and lubricant uses. The $CO_2$ emissions from non-energy product use (lubricant) were included in the GHG inventory for the first time. The TTE commends Uganda for its efforts to improve the completeness of the inventory.

39. Information on the amount of ordinary Portland cement and Portland pozzolana cement was not clearly reported in Uganda's BUR. During the technical analysis, the Party clarified that efforts to establish the amounts of different types of cement produced had proved futile and that alternative methods may be sought. When providing comments to the draft summary report, the Party further clarified that Uganda produces both ordinary Portland cement and Portland pozzolana cement and that ordinary Portland cement is produced to order. It estimated that 5 per cent of the cement produced is ordinary Portland cement.

40. For categories 3.A and 3.C under the AFOLU sector from the 2006 IPCC Guidelines, agricultural soils ($N_2O$), enteric fermentation ($CH_4$) and rice cultivation ($CH_4$) were identified as key categories and the most relevant emissions sources in the sector. Uganda used EFs from the 2006 IPCC Guidelines and the IPCC good practice guidance.

41. The AD of some fertilizers were reported using a hyphen, with no explanation of its meaning. During the technical analysis, the Party clarified that the hyphen meant that either the fertilizer is not used in the country or there are no data available on its use.

42. Information was not reported on $CO_2$ emissions from liming. During the technical analysis, the Party clarified that no data on agricultural lime use were available. The AFOLU working group plans to work with the Ministry of Agriculture, Animal Industry and Fisheries and the Uganda Revenue Authority to identify potential data sources for agricultural lime use in the country. For non-$CO_2$ emissions from biomass burning, the use of the EF for savannah and grassland for all land categories was not clearly explained in the BUR. During the technical analysis, the Party clarified that the EF for savannah and grassland was used for all land categories because of the similarity between the physiognomic characteristics of savannah and grassland and those of the vegetation types under consideration, namely grassland (shrubland and open grassland), subsistence farmland (which accounts for a large amount of fallow land and scattered bushes and trees), woodland, forest plantations and other land (where burning occurs).

43. For land (category 3.B), Uganda reported annual GHG emissions and removals for 2005–2015. Uganda reported net emissions from land including forest land, cropland, grassland, wetlands and settlements. Uganda also reported emissions for land subcategories, including those concerning both land use remaining the same and land-use conversion. Uganda did not report removals separately from emissions in this sector, but reported net emissions only.

44. For the waste sector, information was clearly reported in the Party's BUR on the use of a tier 1 methodology from the 2006 IPCC Guidelines for estimating emissions from solid waste disposal and wastewater treatment and discharge.

45. Information on the EFs and sources of AD used for the waste sector and on emissions from incineration and open burning was not clearly reported in Uganda's BUR. For example, the source of information on the number of people connected to the national sewerage system was not reported. The AD of total organic carbon in wastewater and organic components removed as sludge used to estimate emissions from domestic and industrial wastewater were not clearly reported. During the technical analysis, the Party explained how the number of people connected to the national sewerage system was estimated and stated that AD collection from industry was a barrier.

46. When providing comments to the draft summary report, the Party clarified that the number of people connected to the national sewerage system was estimated at 6 per cent of the urban population. The data on the urban population were obtained from the Uganda Bureau of Statistics. More information, obtained through the Capacity-building Initiative for Transparency, includes the segregation of wastewater by urban and rural areas and the different types of sanitation based on income, which will also help to improve emission estimates. For the emissions from industrial wastewater, industrial sources will be required to provide the necessary AD in order to obtain an operating licence while considering confidentiality issues.

47. The BUR provides an update to some of the GHG inventories reported in Uganda's previous NCs. The information reported provides an update of the Party's NC2, which addressed anthropogenic emissions and removals for 2015. The update was carried out for

2005–2015 using the methodologies contained in the 2006 IPCC Guidelines, thus generating a consistent 11-year time series for most categories (see para. 49 below). However, the TTE noted that information on GHG emissions for 2006–2014 for all sectors except AFOLU is presented only in graphs, with no numerical values provided. The previous national inventory was prepared using the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF.

48. Information on GHG inventories for 1994 and 2000 was not reported in Uganda's BUR, although this was reported in the Party's NC1 and NC2. In the BUR the Party indicated that the emission estimates were recalculated for 2005–2015 only and thus only the GHG inventories for these years were reported.

49. For the emission time series, the TTE noted that $CO_2$ emissions from lime production in 2011–2015 changed significantly compared with the estimates for previous years. During the technical analysis, Uganda explained that this was due to intermittent data collection. Initially, lime production data at the national level were handled by the Ministry of Energy and Mineral Development, but following the retirement of the responsible officer, a data set with high uncertainty from a 2018 geological survey published in the United States of America was used to estimate emissions for 2011 onward. When providing comments to the draft summary report, the Party clarified that the data needed to estimate emissions from lime production in Tororo's cement factory are currently not reported in the national statistics. The Party intends to use a survey to collect better data from the factory and will make efforts to use expert judgment. It was noted that data accessed through international publications were much higher than expected.

50. Uganda described in its BUR the institutional framework for the preparation of its 2015 GHG inventory. The Party reported that CCD is the governmental body responsible for its climate change policy and GHG inventory, which was prepared with the support of UNEP and the GEF. The Party identified improvements in the information reported, such as establishing sectoral working groups that coordinate with CCD on data collection, archiving and QA/QC and are tasked with identifying improvements and gaps in relation to the AD and EFs used.

51. Uganda clearly reported that a key category analysis was performed for the level of emissions for 2015 and for the trend. Both assessments included LULUCF emissions. The most important key categories by level and trend were forest land remaining forest land ($CO_2$), enteric fermentation ($CH_4$) and land converted to cropland ($CO_2$).

52. Information on the base year used during the trend analysis was not clearly reported in the BUR. During the technical analysis, the Party clarified that the base year was 2005.

53. The BUR provides information on QA/QC measures for all sectors. Uganda reported that it understands the need for a QA/QC and verification and validation system and has started the process of estimating the level of uncertainty for both measured and estimated AD. With the support of the REDD+ programme, QC protocols have been introduced into data collection processes for the estimation of forest carbon stocks. For land use, an accuracy assessment has been introduced into land-cover mapping as a QC protocol. QA is currently sourced outside Uganda for final GHG emission reporting. The Party reported that it is planning to introduce in-country QA to supplement the existing international processes. The TTE commends Uganda for reporting information on its QA/QC procedures.

54. Uganda 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 4,219 Gg $CO_2$ and 4,745 Gg $CO_2$, respectively. The difference between the estimates calculated using the two approaches was reported as 11.1 per cent.

55. Information on the reasons for the difference between estimates obtained using the reference and the sectoral approach was not clearly reported in Uganda's BUR. During the technical analysis, the Party clarified that the difference in estimates using the two approaches can be explained as follows: the initial difference of about 5 per cent is as per the national energy balance; and the difference between the imports and the amount of fuel available is between 4.6 and 5 per cent, depending on the type of fuel.

56. Information on international aviation was not clearly reported in Uganda's BUR, but was provided in the summary tables in appendix 1 to the draft NIR. During the technical analysis, the Party clarified that the omission of GHG emission estimates for international aviation as a memo item was an oversight, and that emissions were calculated for this subcategory during the latest inventory reporting cycle. The Party also clarified that it intends to include emission estimates for international aviation under memo items in its next BUR. When providing comments to the draft summary report, the Party further clarified that very limited information is available on domestic aviation. However, negotiations with appropriate authorities to obtain the data are ongoing and the Party explained these emissions will be reported in the next BUR.

57. Uganda reported information on the uncertainty assessment (level) of its national GHG inventory. The uncertainty analysis was based on the tier 1 approach and covers all source categories and all direct GHGs. However, information on the uncertainty of the overall inventory totals was not reported.

58. The TTE noted that the transparency of the information reported on GHG inventories could be enhanced by addressing the areas noted in paragraphs 24, 28, 29, 31–34, 39, 41–42, 45–47, 49, 52 and 55–56 above, which could facilitate a better understanding of the information reported on GHG inventories.

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

59. As indicated in table I.2, Uganda 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.

60. The information reported provides a clear and comprehensive overview of the Party's mitigation actions and their effects. In its BUR, Uganda reported information on its national context and framed its national mitigation planning and actions in the context of achieving its NDC emission reduction target by 2030. Uganda is committed to reducing emissions through its NDC on the basis of the policy priorities in its Second National Development Plan, with a specific NDC mitigation commitment to reduce emissions by 22 per cent by 2030 in relation to a 'business as usual' scenario, to be achieved through nationally and internationally supported mitigation actions.

61. In its BUR Uganda has organized the information on its mitigation actions into two broad thematic types of action. The first group comprises NAMAs that have received technical support for development and implementation or are registered in the UNFCCC NAMA registry. The NAMAs are in the agriculture, energy, waste and transport sectors. The second group relates to actions that are categorized by the Party as "other mitigation actions"; they are policy measures and initiatives to address national needs that have a recognizable contribution to the mitigation of climate change. These mitigation actions mostly concern implementing NDC commitments for the energy, forestry and agriculture sectors. They also include other mitigation options in the energy and IPPU sectors, namely policies and strategies mainly aimed at addressing national developmental challenges and impacting society in terms of socioeconomic benefits, poverty reduction and, to some extent, environmental effects, without necessarily explicitly defining emission reduction objectives or levels. Uganda also elaborated in its BUR on its plans for implementing national REDD+ interventions.

62. In its BUR Uganda reported the estimated impact of its policies and measures, which are expected to reduce emissions to approximately 22 per cent below the 'business as usual' level by 2030. The Party further reported that an indicative NDC 'business as usual' emission projection for Uganda, including LULUCF, is 77.3 Mt $CO_2$ eq/year by 2030, which is an increase of 111.8 per cent from the total emissions in 2000 of 36.5 Mt $CO_2$ eq/year. Furthermore, Uganda reported that the energy sector mitigation impact of an increased share of renewable energy sources in the total energy supply is forecast to be between 2.7 and 3.7 Mt $CO_2$ eq/year by 2030.

63. The Party reported a summary of its mitigation actions in tabular format in accordance with decision 2/CP.17, annex III, paragraph 11, for the second group of actions ("other

mitigation actions") referred to in paragraph 61 above. Information on NAMAs was reported in narrative format.

64. For its five NAMAs, consistently with decision 2/CP.17, annex III, paragraph 12(a), Uganda clearly reported the names and descriptions of mitigation actions or groups of actions, coverage (sector and gases), related quantitative goals and progress indicators, and implementing institution. For the group of other mitigation actions for the energy and IPPU sectors, the Party reported a description of the mitigation actions, their objectives and progress indicators. For other mitigation actions related to NDC implementation for the energy, forestry and agriculture sectors, the Party only reported the description and information on associated GHG emission reductions.

65. The Party did not report information on progress indicators for its energy sector NAMA on greening schools through the uptake of improved institutional cookstoves. During the technical analysis, the Party indicated that the NAMA was not implemented as funding could not be secured to support the acquisition of the appliances despite detailed preparations, including piloting some of the activities. Moreover, no information on progress indicators was reported for the waste sector NAMA on integrated waste management and biogas, even though it has been implemented. Uganda explained that implementation had just commenced at the time of data collection and write-up for the BUR, and no information on indicators could be reported.

66. Information on gases, progress indicators and quantitative goals for the mitigation actions other than NAMAs was not reported in the BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that where gases are not specified, the emission reductions are given in $CO_2$ or $CO_2$ eq, and that the gas concerned would be $CO_2$ except in the agriculture sector, where the gases are $CH_4$ and $N_2O$. The Party further clarified that it has experienced barriers and constraints in reporting on quantitative goals and progress indicators for mitigation actions owing to its limited capacity to plan mitigation actions, particularly with regard to establishing baselines, identifying mitigation options and estimating emission reductions.

67. The reported five NAMAs focused mainly on improving energy efficiency, promoting renewable energy sources, improving public transport use, using climate-smart agricultural practices and integrating waste management, and were reported as implemented or planned as of 2015. Uganda clearly reported information on methodologies and assumptions for these NAMAs. The objectives of the mitigation actions and steps taken or envisaged to achieve those actions were reported for all five NAMAs. During the technical analysis, the Party clarified the objectives of the climate-smart agriculture NAMA. The Party indicated that measures related to policy development include the introduction of a feed standards and certification system and a labelling system; assistance includes the production of improved animal feed, the production and supply of hay, the establishment of milk collection and storage points, and the creation of systems for livestock manure management and biogas production; and measures related to access to finance include reduced income tax for the first three years after obtaining feed certification and a value added tax discount for purchasing biodigesters.

68. The Party reported the results achieved as estimated outcomes and emission reductions for three NAMAs. The Party reported that for the integrated waste management and biogas NAMA total estimated GHG emission reductions include direct emission reductions of 88,315 t $CO_2$ eq/year and 1,766,000 t $CO_2$ eq over the 20-year lifetime of investments. A revolving loan facility for the uptake of improved cookstoves in Ugandan schools will result in a reduction of 17.41 million t $CO_2$ eq over 24 years. The NAMA on climate-smart dairy livestock value chains in Uganda will result in reductions of 402,500 t $CO_2$ eq/year from enteric fermentation.

69. Information on outcomes and results achieved was not reported for two of Uganda's NAMAs. During the technical analysis, the Party clarified that it had faced barriers to obtaining information on the impact of its NAMA on vehicle fuel efficiency, as a limited amount of documentation was available and officials of the relevant ministry had not provided an estimate. The required information was not available for the NAMA on bus rapid transit for the greater Kampala metropolitan area because all the feasibility studies were

focused on mobility; however, the city authorities have since engaged consultants on emission quantification.

70. Information on the progress of implementation of the Party's NAMAs was not reported in its BUR. During the technical analysis, Uganda clarified that although all five of its reported NAMAs are included in the UNFCCC NAMA registry, only one has been allocated funding, and noted that a number of NAMAs have a policy or public intervention component and cannot be allocated any funding from the Government budget owing to other priorities. For this reason, these NAMAs require international climate change finance.

71. Uganda clearly reported information on the objectives of the actions and steps taken or envisaged to achieve them for the group of other mitigation actions. The mitigation actions focused mainly on the use of renewable energy, climate-smart agriculture techniques and forest protection, afforestation and sustainable biomass production.

72. The Party also reported the results of implementing other mitigation actions, as both emission reductions and mitigation co-benefits. For the energy sector, the construction of enabling infrastructure for electricity sector development, including power lines, substations and transmission facilities, is expected to provide at least 3,200 MW renewable electricity generation capacity by 2030, up from 729 MW in 2013. Promotion and wider uptake of solar energy systems has the potential to reduce emissions by about 1.5 Mt $CO_2$ eq/year by 2030. In the AFOLU sector, the use of climate-smart agriculture techniques for cropping agricultural soils is expected to reduce emissions by 2.7 Mt $CO_2$ eq/year by 2030, while developing an enabling environment for forestry management will reverse the deforestation trend and is expected to increase forest cover to 21 per cent by 2030, up from approximately 14 per cent in 2013, through forest protection, afforestation and sustainable biomass production measures.

73. Uganda reported information on co-benefits in the BUR. For the energy sector, co-benefits include the diversification and conservation of energy sources for energy security and independence, more efficient use of fossil fuels, rural electrification and improved transport networks. AFOLU sector co-benefits include increased forest cover, protection of biodiversity and protection of sites of cultural and historical importance. Waste sector co-benefits are clean and renewable energy sources, alternative sources of fertilizers and other soil conditioners, improved waste collection, improved air quality through the reduction of emissions of $CH_4$ and other trace gases (reducing strong odours), reduced environmental pollution within Lake Victoria catchments, and others.

74. The TTE noted that no information on methodologies and assumptions was provided for the group of other mitigation actions. During the technical analysis, Uganda clarified that such information would be taken from its NDC, but the BUR team had experienced challenges in accessing the methodologies and assumptions made by the consultant during the studies and the original documentation was not available.

75. Uganda did not report information on the progress of implementation of actions consistently with decision 2/CP.17, annex III, paragraph 12(d), for the group of other mitigation actions. During the technical analysis, the Party indicated that it had experienced barriers and constraints owing to limited capacity with regard to planning mitigation actions (in particular, establishing baselines, identifying mitigation options and estimating emission reductions) and accessing finance for implementation, and the lack of an MRV system to register, track and make accessible information on progress of the actions.

76. Uganda did not report information on the results achieved for several actions in the energy sector and reported this information for only one action in the IPPU sector in the group of other mitigation actions. During the technical analysis, the Party indicated that, in the energy sector, the relevant ministry had not indicated any plans to estimate emission reductions linked to the actions and the relevant policies, strategies and programme. The actions were proposed on the basis of qualitative assessment. In the case of the action in the IPPU sector, the Party indicated that no detailed information about the activities or results of the action was available as it had closed by the time data were collected for the BUR. The reported IPPU action was implemented as a clean production initiative. It was included in the BUR to demonstrate a possible linkage between clean production and emission reduction when there is an MRV system in place.

77. Uganda provided information on its involvement in international market mechanisms as a Party to the Kyoto Protocol. Uganda documented 20 CDM projects approved by its designated national authority, of which 5 are verified CDM projects under the UNFCCC CDM process. Uganda reported that the projects under implementation in 2015 had a strong focus on forestry (seven projects) and renewable energy, particularly hydropower (six projects). Other stand-alone CDM projects include three biomass energy projects and four projects relating to landfill gas, wastewater treatment, domestic lighting and biodiesel. As of 2015, cumulative issuance of certified emission reductions amounted to 1,641,362 t $CO_2$ eq. The reported information includes the number of total projects, sectors covered and quantity of certified emission reductions issued for Uganda.

78. Uganda reported information on its domestic MRV arrangements in accordance with decision 2/CP.17, annex III, paragraph 13. The information reported indicates that Uganda is in the process of developing and designing a domestic MRV system that includes the MRV of mitigation actions. The Party reported that there are plans to establish a national mitigation action registry as the main mechanism for MRV, including setting up Uganda's mitigation registry link on the UNFCCC NAMA registry. Uganda reported that although several mitigation actions, including NAMAs, are registered, a system for tracking the progress of mitigation activities, support provided and general progress in implementation is yet to be established. The Party further reported a capacity-building need with regard to establishing mitigation working groups with representation of the institutions responsible for collecting and reporting data related to mitigation actions in the source categories of energy, IPPU, AFOLU and waste.

79. The TTE noted that the transparency of the information reported on mitigation actions could be further enhanced by addressing the areas noted in paragraphs 65–66, 69–70 and 74–76 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

80. As indicated in table I.3, Uganda 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.

81. Uganda 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. The Party reported the key constraints and gaps in relation to its national circumstances, GHG inventory, mitigation actions and MRV system. In its BUR, Uganda identified the absence of mechanisms for collecting and updating information based on reliable data in its reporting on its GHG inventory, limited capacity to undertake mitigation assessments and a limited budget for carrying out climate change activities as constraints. Uganda further reported gaps and constraints related to the absence of formal relations with the private sector, particularly in the implementation of mitigation actions (e.g. concerning transport, charcoal production and IPPU). The Party explained that it also faces constraints and gaps in relation to fulfilling its reporting obligations and that it has a limited understanding of how to capture information on all the issues related to the UNFCCC reporting requirements. In its BUR, Uganda reported that it faces numerous challenges in identifying information on constraints and gaps and related financial, technical and capacity-building needs.

82. Uganda reported in appendix IV to its BUR that its financial, technical and capacity-building needs are primarily in the areas of preparing GHG inventories, implementing mitigation actions and developing a comprehensive MRV system. Uganda reported technical, technology, capacity-building and financial needs for implementing mitigation actions in areas such as forestry, wetlands, agriculture, energy generation, industry, transport and waste management. The Party further reported information on financial, technical and capacity-building needs for adaptation actions covering the following areas: agriculture, water, fisheries, transport, forestry, wetlands, biodiversity, health, energy, wildlife and tourism, human settlements, disaster risk management and vulnerable groups. Uganda also reported an estimation of its financial needs with respect to overcoming its technical and capacity constraints amounting to USD 11 million for preparing its GHG inventory and tracking

mitigation actions and USD 290 million to USD 700 million for implementing mitigation and adaptation activities.

83. Uganda 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, Uganda reported that it received USD 352,000 from the GEF, through UNEP, to support the preparation of its first BUR. Uganda also reported that it received financial support from the Coalition for Rainforest Nations and the Global Green Growth Institute for peer-reviewing its BUR.

84. The Party also reported, in appendices V and VII to its BUR, that it received financial support from the GEF for activities relating to climate change, biodiversity and land degradation. It was not clear to the TTE whether the Party considers all the listed support related to biodiversity as climate change activities. During the technical analysis, Uganda clarified that land degradation, climate change and biodiversity are linked. The Party added that any support related specifically to climate change activities will be listed separately in its next BUR.

85. Information on financial resources, technology transfer, capacity-building and technical support received from Parties included in Annex II to the Convention and other developed country Parties and multilateral institutions for activities relating to climate change was not reported in the BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that information on the support received by the country is limited to the support provided by the GEF. Uganda added that it needs a system to track and report support received from other Parties and organizations. The Party further clarified that it faces considerable challenges related to identifying, characterizing and quantifying information on technology transfer, capacity-building and technical support received.

86. Uganda 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 appendix IV to its BUR, Uganda reported a number of technology needs in relation to its mitigation actions.

87. It was not clear to the TTE whether the technology needs referred to in paragraph 85 above were nationally determined. During the technical analysis, the Party clarified that the information on technology needs is derived from the implementation strategy for the Party's national climate change policy and the REDD+ implementation strategy. The Party further clarified that Uganda received a grant to undertake a technology needs assessment, as well as technical assistance to identify the technology needs and requirements to implement climate action. The process is ongoing.

88. Information on technology support received was not reported in Uganda's BUR. During the technical analysis, the Party explained that the process of receiving technology support depends on the completion of the technology needs assessment referred to in paragraph 87 above.

89. 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 84–85 and 87–88 above, which could facilitate a better understanding of the information reported on needs and support received.

## D. Identification of capacity-building needs

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

(a) Enhancing national capacity to estimate and report emissions of HFCs, PFCs and $SF_6$ (e.g. HFC emissions from air conditioning and refrigeration, HFC and PFC emissions from the electronics industry, $SF_6$ emissions from electrical equipment, switchgear and circuit breakers as insulators);

(b) Establishing technical capacity to collect data on lime production (IPPU sector) and on application of lime to soils (agriculture sector);

(c) Enhancing the capacity to quality check the parameters used to estimate GHG emissions from domestic and industrial wastewater;

(d) Enhancing the capacity, through training, to disaggregate cement data or use clinker production data to facilitate the estimation and reporting of emissions;

(e) Enhancing technical capacity for data collection procedures, disaggregation of sectoral data and data archiving procedures in the energy sector (sectoral approach);

(f) Enhancing technical capacity to collect data and apply splicing methods from the 2006 IPCC Guidelines to fill data gaps and estimate a consistent time series for the years reported in previous submissions, with a particular emphasis on the changes in methodologies and assumptions used as the Party transitioned from use of the Revised 1996 IPCC Guidelines to use of the 2006 IPCC Guidelines;

(g) Enhancing technical capacity for QA/QC checks and procedures in reporting of GHG emissions for all sectors;

(h) Enhancing the technical capacity of the GHG inventory team and all stakeholders involved in the reporting process through training in GHG reporting procedures, calculation methodologies and analysis;

(i) Establishing technical capacity for the GHG inventory team in all reported sectors to collect and manage GHG and related data, including data interpretation, storage and updating of databases;

(j) Establishing and enhancing the capacity to assess and quantify the impacts of mitigation actions, including establishing baselines, methods and assumptions, identifying mitigation options and estimating emission reductions; this includes the need for training and for enhancing the capacity to collect data to calculate the results achieved in terms of benefits of mitigation actions across all sectors;

(k) Establishing the capacity to access international finance for implementing mitigation actions and assessing progress of implementation;

(l) Establishing and enhancing the capacity to carry out domestic MRV for reporting and measuring the impacts of mitigation actions, including the technical capacity to register, track and make accessible information on progress of the actions for each sector (AFOLU, energy, IPPU and waste);

(m) Enhancing national capacity to identify the most appropriate methodologies for developing progress indicators to facilitate reporting of the progress of implementation of mitigation actions across the different sectors;

(n) Enhancing the institutional capacity to track and disaggregate information on support received by reporting support received for climate change activities separately from support received for other activities;

(o) Enhancing the technical capacity of the coordinating entity and other stakeholders to interpret the provisions in the UNFCCC reporting guidelines on BURs on needs and support received;

(p) Enhancing technical capacity to access financial resources, technology transfer, capacity-building and technical support from multilateral and bilateral agencies on a continuous basis;

(q) Developing the capacity to identify, characterize and quantify information on constraints and gaps and related financial, technical and capacity-building needs;

(r) Enhancing the technical and financial capacity to conduct national technology needs assessments, carry out technology transfer activities and deploy new endogenous technologies;

(s) Further enhancing the technical capacity of CCD and other stakeholders to use and manage the MRV system.

91. The TTE noted that, in addition to those identified during the technical analysis, Uganda reported in the tables in appendix IV to its BUR and in its draft NIR several capacity-building needs covering the following areas:

(a) Adaptation to climate change, including developing appropriate and integrated plans for key sectors and enhancing the technical capacity of sector-specific staff;

(b) Enhancing the capacity to address the recommendations from the AFOLU working group, in particular:

(i) Disaggregate cattle populations into dairy and non-dairy cattle within annual agricultural surveys;

(ii) Disaggregate swine populations into market and breeding swine within annual agricultural surveys, if possible;

(iii) Initiate studies on manure management systems so as to improve or validate current estimates, which are based on expert judgment;

(iv) Work with academia and research institutes to develop EFs for Uganda's indigenous livestock breeds;

(v) Carry out laboratory tests to improve the current estimates of emissions from fertilizer application;

(vi) Validate data sources that are used to estimate agricultural lime use in Uganda;

(vii) Improve estimates of the area under paddy cultivation;

(viii) Engage with the production units under local governments to gather annual data on rice management practices (e.g. cultivation period, water management), crop management practices (mulching, irrigation, tillage, etc.) and residue management practices, particularly with regard to residue burning on croplands, and to develop agroforestry survey and monitoring protocols to improve estimates on land-use management practices in Uganda;

(ix) Address some of the required improvements identified during the technical assessment of Uganda's forest reference emission level, giving priority to harmonizing the minimum mapping unit to 1 ha; using emerging technologies to improve the mapping and carbon stock estimates of forest plantations, including the small woodlots; integrating an updated soils database into the national GHG inventory; and exploring technologies for improved estimation of emissions related to forest fires.

# III. Conclusions

92. The TTE conducted a technical analysis of the information reported in the first BUR of Uganda in accordance with the UNFCCC reporting guidelines on BURs and concludes that the information reported is partially consistent. It provides an overview of national circumstances and institutional arrangements relevant to the preparation of NCs on a continuous basis; the national inventory of anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol; mitigation actions and their effects, including associated methodologies and assumptions; constraints and gaps, and related financial, technical and capacity-building needs, including a description of support needed and received; the level of support received to enable the preparation and submission of BURs; domestic MRV; and other information relevant to the achievement of the objective of the Convention. During the technical analysis, additional information was provided by Uganda in the form of a draft NIR as part of a technical clarification. The TTE concluded that the information analysed is partially transparent.

93. Uganda reported information on the institutional arrangements relevant to the preparation of its BURs. The Party reported that CCD within the Ministry of Water and Environment is the UNFCCC national focal point serving as the main coordinating institution for all climate change activities. Uganda also reported that the National Climate Change Bill was drafted in 2018 to enable it to meet its reporting obligations, including preparation and

submission of its BURs and NCs. The Party reported on the existing MRV system, which covers GHG inventories, baselines for NAMAs, REDD+ and other mitigation actions, and on its proposed overarching MRV framework. It has taken significant steps to create institutional arrangements that allow for the sustainable preparation of its BURs, including organizational improvements and knowledge-sharing procedures to facilitate sectoral information transfer.

94. In its first BUR, submitted in 2019, Uganda reported information on its national GHG inventory for 2005–2015. This included GHG emissions and removals of $CO_2$, $CH_4$ and $N_2O$ for some relevant sources and sinks as well as some precursor gases. The inventory was developed on the basis of the 2006 IPCC Guidelines, while in some cases the IPCC good practice guidance or the IPCC good practice guidance for LULUCF was applied, and specific EF values from the 2006 IPCC Guidelines were applied for individual key categories. The total GHG emissions for 2015 were reported as 90,235 Gg $CO_2$ eq with land and 37,175 Gg $CO_2$ eq without land. A total of 12 key categories and main gases were identified, with the three most significant sources being category 3.B.1.a forest land remaining forest land ($CO_2$), category 3.A.1 enteric fermentation ($CH_4$) and category 3.B.2.b land converted to cropland ($CO_2$). Estimates of HFC, PFC and $SF_6$ emissions were not provided owing to difficulties in obtaining the necessary data as a result of miscommunication between relevant data providers, as clarified by the Party during the technical analysis.

95. Uganda reported its mitigation actions in the context of its 2030 emission reduction target, which aims to reduce emissions to 22 per cent below its 'business as usual' scenario. The Party reported information on mitigation actions related to its NDC for the energy, forestry and agriculture sectors and other mitigation options for the energy and IPPU sectors in tabular format. Information on mitigation actions related to NAMAs for the agriculture, energy, waste and transport sectors was reported in narrative format. Information on objectives of the actions and steps taken or envisaged to achieve them was reported for most of the NAMAs. The Party did not report methodologies and assumptions for some of its NAMAs or for any of its actions categorized as "other mitigation actions". Uganda did not report on the progress of implementation, outcomes or results achieved for some actions in both groups of mitigation actions (NAMAs and other mitigation actions). During the technical analysis, the Party clarified that it had experienced challenges in assessing the progress of implementation and estimating results achieved owing to lack of capacity to assess and quantify the impacts of mitigation actions. Of the few measures that were quantified, the measure with the greatest impact was reported in the energy sector, with a forecast mitigation impact from an increased share of renewable energy in the total energy supply of 2.7–3.7 Mt $CO_2$ eq/year. The Party also reported information on its international market mechanisms and MRV arrangements.

96. Uganda reported information on key constraints, gaps and related needs, including the absence of mechanisms for collecting and updating AD using reliable sources for its reporting of GHG inventories, limited capacity to undertake mitigation assessments and a limited budget for carrying out climate change activities. Uganda reported information on its financial, technical and capacity-building needs. The Party also reported that it received financial support of USD 352,000 from the GEF, through UNEP, to support the preparation of its latest BUR. Information on the technology transfer, capacity-building and technical support received was not reported by Uganda. During the technical analysis, the Party clarified that it faces significant challenges in identifying such information. Information on some technology needs related to mitigation actions was reported by the Party. During the technical analysis, the Party clarified that the information on technology needs was derived from the implementation strategies for its national climate change policy and REDD+. Information on technology support received was not reported in the BUR.

97. The TTE, in consultation with Uganda, identified the 19 capacity-building needs listed in chapter II.D above 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. Uganda categorized them as high priority (the needs listed in paras. 90(c), (e–h), (j), (l), (n–s) and 91(b) above), medium priority (para. 90(a–b), (i) and (k) above) and low priority (para. 90(d) and (m) above).

# Annex I

## Extent of the information reported by Uganda 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 Uganda**

| *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. | Yes | Uganda submitted its first BUR in October 2019; the latest GHG inventory reported is for 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 | Uganda used the 2006 IPCC Guidelines. |
| Decision 2/CP.17, annex III, paragraph 5 | The updates of the section on national inventories of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol should contain updated data on activity levels based on the best information available using the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF; any change to the EF may be made in the subsequent full NC. | Yes | |
| 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; | No | Uganda did not provide the tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF or any other table from the 2006 IPCC Guidelines that would include comparable information. |
| | (b) The sectoral report tables annexed to the Revised 1996 IPCC Guidelines. | No | Uganda did not include the sectoral tables annexed to the Revised 1996 IPCC Guidelines or any other table from the 2006 IPCC Guidelines that would include comparable information. |
| Decision 2/CP.17, annex III, paragraph 7 | Each non-Annex I Party is encouraged to provide a consistent time series back to the years reported in its previous NCs. | Partly | The time series reported in the BUR did not include 1994–2004. |
| Decision 2/CP.17, annex III, paragraph 8 | Non-Annex I Parties that have previously reported on their national GHG inventories contained in their NCs are encouraged to submit summary information tables of inventories for previous submission years (e.g. for 1994 and 2000). | No | This information was not reported for 1994 and 2000. |

| *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 | The inventory section of the BUR should consist of an NIR as a summary or as an update of the information contained in decision 17/CP.8, annex, chapter III (National greenhouse gas inventories), including: | | |
| | (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); | No | Uganda did not report comparable information. |
| | (b) Table 2 (National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and $SF_6$). | No | Uganda did not report comparable information. |
| Decision 2/CP.17, annex III, paragraph 10 | Additional or supporting information, including sector-specific information, may be supplied in a technical annex. | Yes | Uganda submitted a REDD+ technical annex as annex III 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. | Partly | Descriptions of the procedures and arrangements for the preparation of the national GHG inventory were not reported by the Party. |
| Decision 17/CP.8, annex, paragraph 14 | Each non-Annex I Party shall, as appropriate and to the extent possible, provide in its national inventory, on a gas-by-gas basis and in units of mass, estimates of anthropogenic emissions of: | | |
| | (a) $CO_2$; | Partly | $CO_2$ emissions for category 4.C (incineration and open burning of waste) were not estimated, although they occur in the country. |
| | (b) $CH_4$; | Partly | $CH_4$ emissions for categories 4.B (biological treatment of solid waste) and 4.C (incineration and open burning of waste) were not estimated, although they occur in the country. |
| | (c) $N_2O$. | Partly | $N_2O$ emissions for categories 4.B (biological treatment of solid waste) and 4.C (incineration and open burning of waste) were not estimated, although they occur in the country. |
| 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; | No | |
| | (b) PFCs; | No | |

| *Decision* | *Provision of the reporting guidelines* | *Assessment of whether the information was reported* | *Comments on the extent of the information provided* |
|---|---|---|---|
| | (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 | Uganda reported on other gases, such as sulfur oxides. |
| Decision 17/CP.8, annex, paragraph 18 | Non-Annex I Parties are encouraged, to the extent possible, and if disaggregated data are available, to estimate and report $CO_2$ fuel combustion emissions using both the sectoral and the reference approach and to explain any large differences between the two approaches. | Partly | Uganda provided information on both the sectoral approach and the reference approach but did not provide information on the difference between the estimates of the approaches in its BUR. |
| Decision 17/CP.8, annex, paragraph 19 | Non-Annex I Parties should, to the extent possible, and if disaggregated data are available, report emissions from international aviation and marine bunker fuels separately in their inventories: | | |
| | (a) International aviation; | No | |
| | (b) Marine bunker fuels. | NA | Uganda is a landlocked country. |
| 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. | NA | Uganda used the global warming potential values provided in the AR5. |
| Decision 17/CP.8, annex, paragraph 21 | Non-Annex I Parties are encouraged to provide information on methodologies used in the estimation of anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol, including a brief explanation of the sources of EFs and AD. If non-Annex I Parties estimate anthropogenic emissions and removals from country-specific sources and/or sinks that are not part of the Revised 1996 IPCC Guidelines, they should explicitly describe the source and/or sink categories, methodologies, EFs and AD used in their estimation of emissions, as appropriate. Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building: | | |
| | (a) Information on methodologies used in the estimation of anthropogenic emissions by sources 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 | NA | |

| *Decision* | *Provision of the reporting guidelines* | *Assessment of whether the information was reported* | *Comments on the extent of the information provided* |
|---|---|---|---|
| | part of the Revised 1996 IPCC Guidelines, they should explicitly describe: | | |
| | (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 should strive to present information that is as complete as possible. Where numerical data are not provided, Parties should use the notation keys as indicated. | No | Notation keys were not used. |
| 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 Uganda**

| *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 | Uganda included information in narrative format for NAMAs and in tabular format for the group categorized as "other mitigation actions". |
| 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 | | |

| *Decision* | *Provision of the reporting guidelines* | *Assessment of whether the information was reported* | *Comments on the extent of the information provided* |
|---|---|---|---|
| | country Parties shall provide the following information, to the extent possible: | | |
| | (a) Name and description of the mitigation action, including information on the nature of the action, coverage (i.e. sectors and gases), quantitative goals and progress indicators; | Partly | Information on gases, progress indicators and quantitative goals was not reported for the actions in the "other mitigation actions" group; information on progress indicators was not reported for NAMAs. |
| | (b) Information on: | | |
| | (i) Methodologies; | Partly | Information on methodologies was not reported for the group of mitigation actions excluding NAMAs. |
| | (ii) Assumptions; | Partly | Information on assumptions was not reported for the group of mitigation actions excluding NAMAs. |
| | (c) Information on: | | |
| | (i) Objectives of the action; | Yes | |
| | (ii) Steps taken or envisaged to achieve that action; | Yes | |
| | (d) Information on: | | |
| | (i) Progress of implementation of the mitigation actions; | Partly | The Party did not indicate the status of implementation for some of the mitigation actions. |
| | (ii) Progress of implementation of the underlying steps taken or envisaged; | No | |
| | (iii) Results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions, to the extent possible; | Partly | Information on results achieved was not provided for four NAMAs and most actions in the energy and IPPU sectors in the group of other mitigation actions excluding NAMAs. |
| | (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 Uganda**

| *Decision* | *Provision of the reporting requirements* | *Assessment of whether the information was reported* | *Comments on the extent of the information provided* |
|---|---|---|---|
| | Non-Annex I Parties should provide updated information on: | | |

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

*Note*: The parts of the UNFCCC reporting guidelines on BURs on the reporting of information on finance, technology and capacity-building needs and support received in BURs are contained in decision 2/CP.17, annex III, paras. 14–16.

# Annex II

## Reference documents

### A. Reports of the Intergovernmental Panel on Climate Change

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

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

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

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

### B. UNFCCC documents

First BUR of Uganda. Available at https://unfccc.int/BURs.

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

### C. Other documents

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

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

Draft NIR of Uganda.