



Technical analysis of the second biennial update report of Jordan submitted on 2 June 2021

Summary report by the team of technical experts

Summary

According to decision 2/CP.17, paragraph 41(a), Parties not included in Annex I to the Convention, consistently with their capabilities and the level of support provided for reporting, were to submit their first biennial update report by December 2014. Further, paragraph 41(f) of that decision states that Parties not included in Annex I to the Convention shall submit a biennial update report every two years, either as a summary of parts of their national communication in the year in which the national communication is submitted or as a stand-alone update report. As mandated, the least developed country Parties and small island developing States may submit biennial update reports at their discretion. This summary report presents the results of the technical analysis of the second biennial update report of Jordan, conducted by a team of technical experts in accordance with the modalities and procedures contained in the annex to decision 20/CP.19.



Abbreviations and acronyms

2006 IPCC Guidelines	<i>2006 IPCC Guidelines for National Greenhouse Gas Inventories</i>
2019 Refinement to the 2006 IPCC Guidelines	<i>2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories</i>
AD	activity data
AFOLU	agriculture, forestry and other land use
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BUR	biennial update report
CH ₄	methane
CO 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
ETF	enhanced transparency framework under the Paris Agreement
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
HWP	harvested wood products
ICA	international consultation and analysis
IE	included elsewhere
IPCC	Intergovernmental Panel on Climate Change
IPCC good practice guidance for LULUCF	<i>Good Practice Guidance for Land Use, Land-Use Change and Forestry</i>
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
MRV	measurement, reporting and verification
N ₂ O	nitrous oxide
NA	not applicable
NC	national communication
NDC	nationally determined contribution
NE	not estimated
NIR	national inventory report
NMVOC	non-methane volatile organic compound
non-Annex I Party	Party not included in Annex I to the Convention
PFC	perfluorocarbon
QA/QC	quality assurance/quality control
Revised 1996 IPCC Guidelines	<i>Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories</i>
SF ₆	sulfur hexafluoride
TTE	team of technical experts
UNFCCC guidelines for the preparation of NCs from non-Annex I Parties	“Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention”
UNFCCC reporting guidelines on BURs	“UNFCCC biennial update reporting guidelines for Parties not included in Annex I to the Convention”

I. Introduction and process overview

A. Introduction

1. The process of ICA consists of two steps: a technical analysis of the submitted BUR and a facilitative sharing of views under the Subsidiary Body for Implementation, resulting in a summary report and a record, respectively.
2. According to decision 2/CP.17, paragraph 41(a), non-Annex I Parties, consistently with their capabilities and the level of support provided for reporting, were to submit their first BUR by December 2014. In addition, paragraph 41(f) of that decision states that non-Annex I Parties shall submit a BUR every two years, either as a summary of parts of their NC in the year in which the NC is submitted or as a stand-alone update report.
3. Further, according to paragraph 58(a) of the same decision, the first round of ICA is to commence for non-Annex I Parties within six months of the submission of the Parties' first BUR. The frequency of developing country Parties' participation in subsequent rounds of ICA, depending on their respective capabilities and national circumstances, and the special flexibility for small island developing States and the least developed country Parties, will be determined by the frequency of the submission of BURs.
4. Jordan submitted its first BUR on 8 November 2017, which was analysed by a TTE in the tenth round of technical analysis of BURs from non-Annex I Parties, conducted from 5 to 9 March 2018. After the publication of its summary report, Jordan participated in the sixth workshop for the facilitative sharing of views, convened in Katowice on 3 December 2018.
5. This summary report presents the results of the technical analysis of the second BUR of Jordan, 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, Jordan submitted its second BUR on 2 June 2021 as a stand-alone update report. The submission was made within three years and seven months from the submission of the first BUR. The reasons for receiving the submission more than two years after the previous submission were not clearly reported in the BUR.
7. During the technical analysis, the Party clarified that the submission of the second BUR was delayed by internal administrative and institutional bureaucracy that hindered access to funding from the Global Environment Facility, and also by challenges associated with the coronavirus disease 2019 pandemic.
8. A desk analysis of Jordan's BUR was conducted remotely from 29 November to 3 December 2021 and was undertaken by the following TTE, drawn from the UNFCCC roster of experts on the basis of the criteria defined in decision 20/CP.19, annex, paragraphs 2–6: Ménouèr Boughedaoui (former member of the Consultative Group of Experts from Algeria), Manuel Estrada (Mexico), Lawrence Ibhafeon (Nigeria), Hassan Ibrahim (Singapore), Tsutomu Koyama (Japan), Rocio Lichte (Germany), Guadalupe Alejandra Martínez (Uruguay), Kakhaberi Mdivani (Georgia), Awassada Phongphiphat (Thailand), Orlando Ernesto Rey Santos (Cuba), Dalia Abdelhamid Mahmoud Sakr (Egypt), Emma Salisbury (United Kingdom of Great Britain and Northern Ireland), Janka Szemesova (member of the Consultative Group of Experts from Slovakia), Marcelo Theoto Rocha (Brazil), Maarten van der Eynden (Norway) and Robin White (Canada). Ms. Lichte and Mr. Rey Santos were the co-leads. The technical analysis was coordinated by Amr Abdel-Aziz and Sohel Pasha (secretariat).
9. During the technical analysis, in addition to the written exchange, in the virtual team room, to provide technical clarifications on the information reported in the BUR, the TTE

and Jordan engaged in consultation¹ on the identification of capacity-building needs for the preparation of BURs and participation in the ICA process. Following the technical analysis of Jordan's second BUR, the TTE prepared and shared a draft summary report with Jordan on 22 April 2022 for its review and comment. Jordan, in turn, provided its feedback on the draft summary report on 14 July 2022.

10. The TTE finalized the summary report in consultation with the Party on 14 July 2022.

II. Technical analysis of the biennial update report

A. Scope of the technical analysis

11. 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).

12. The remainder of this chapter presents the results of each of the three parts of the technical analysis of Jordan's BUR outlined in paragraph 10 above.

B. Extent of the information reported

13. The elements of information referred to in paragraph 11(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.

14. 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 13 above have been included in the BUR of the Party concerned. The TTE considers that the reported information is mostly consistent with the UNFCCC reporting guidelines on BURs. Specific details on the extent of the information reported for each of the required elements are provided in the tables included in annex I.

15. The current TTE noted improvements in the reporting in Jordan's second BUR compared with that in its first BUR. Information on certain aspects of the GHG inventory and on mitigation actions and their effects reported in the Party's second BUR demonstrates that it has taken into consideration some of the areas for enhancing the transparency of the extent of information reported noted by the previous TTE in the summary report on the technical analysis of the Party's first BUR. These areas include reporting SF₆ emissions in the GHG inventory and providing clarifying information in narrative format on mitigation actions and their effects, including on methodology and activity implementation of such actions.

¹ The consultation was conducted via videoconferencing.

C. Technical analysis of the information reported

16. The technical analysis referred to in paragraph 11(b) above aims to increase the transparency of information reported by the Parties on mitigation actions and their effects, without engaging in a discussion on the appropriateness of those actions. Accordingly, the focus of the technical analysis was on the transparency of the information reported in the BUR.

17. 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.

18. 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

19. 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.

20. In its second BUR, Jordan provided an update on its national circumstances, including a description of national and regional development priorities, objectives and circumstances, including features of geography, climate and economy that might affect the Party's ability to deal with mitigating and adapting to climate change, as well as information regarding national circumstances and constraints on the specific needs and concerns arising from the adverse effects of climate change.

21. In addition, Jordan provided a summary of relevant information regarding its national circumstances in tabular format and provided figures and graphs to illustrate information on its governance structure, energy profile, water resources, and agriculture and forestry.

22. Jordan transparently reported in its second BUR an update on its existing institutional arrangements relevant to the preparation of its NCs and BURs on a continuous basis. The description covers key aspects of the institutional arrangements, including the legal status and roles and responsibilities of the overall coordinating entity, the involvement and roles of other institutions and experts, mechanisms for information and data exchange, QA/QC procedures, and provisions for public consultation and other forms of stakeholder engagement. Notably, Jordan reported the enactment of by-law 79/2019 on climate change, which empowers the National Committee on Climate Change to establish, when necessary, technical teams composed of staff from governmental and non-governmental agencies. The TTE noted improvements in the information reported in the BUR, including a description of the institutional framework for addressing environmental and climate change issues, and details of social and economic indicators that could help to explain the Party's ability to deal with mitigating and adapting to climate change impacts. The TTE commends the Party for such improvements.

23. Jordan reported in its second BUR an update on its domestic MRV arrangements. With support from the World Bank's Partnership for Market Readiness initiative, Jordan launched a multi-tiered integrated MRV system in 2018, which includes inputs from different national stakeholders and is administrated by the Ministry of Environment. The description of the system covers key aspects of the institutional arrangements, including key stakeholders and their roles and functions at different levels. The MRV arrangements are designed at the national level and cover three main areas: the GHG inventory; progress towards NDC commitments; and national reporting, including BURs. The MRV system was built on existing systems and capacities, rendering it cost-effective. During the technical analysis, Jordan informed the TTE that work on improving the multi-tiered integrated MRV system

was interrupted by the pandemic. As a result, at the time of the BUR submission, the system covered only tracking the progress of implementation of mitigation actions.

24. Jordan reported in its BUR (section 4.3) information on its current initiatives for enhancing its MRV system and registry of climate mitigation measures for compliance with requirements under the ETF. The initiatives relate to having a fully functional MRV system that covers the transport and waste sectors in addition to the energy sector. The TTE commends the Party for the clear and comprehensive reporting on its proactive approach to preparing for ETF implementation.

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

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

26. Jordan submitted its second BUR in 2021 and the GHG inventory reported is for 2016. The latest reported inventory year is more than four years prior to the date of submission of the BUR. During the technical analysis, Jordan clarified that this was due to delays in the government review and publication processes owing to the pandemic.

27. GHG emissions and removals for the BUR covering the 2016 inventory were estimated using the 2006 IPCC Guidelines in combination with the 2019 Refinement to the 2006 IPCC Guidelines. However, the overall summary table for the 2016 GHG inventory follows the structure in the Revised 1996 IPCC Guidelines. The TTE commends the Party for using the 2006 IPCC Guidelines and the 2019 Refinement to the 2006 IPCC Guidelines.

28. Jordan indicated in the BUR that it used tier 1 methodology for most sectors and subsectors, without specifying the exceptions. During the technical analysis, Jordan provided additional specifications regarding methodologies for individual source categories.

29. Jordan indicated in its BUR that tier 1 EFs were used for most sectors and subsectors. Regarding AD, a list of data sources was provided in an annex to the GHG chapter of the BUR, but there was no explanation of which data sources were used for estimating emissions for individual source categories.

30. The actual AD used were not provided. During the technical analysis, Jordan explained that such data and information could be made available, and confirmed that the MRV system that was recently developed would enable them to be reported in future BURs, as explained during the technical analysis of the first BUR.

31. Information on the Party's total GHG emissions by gas for 2016 is outlined in table 1 in Gg CO₂ eq.

Table 1

Greenhouse gas emissions by gas of Jordan for 2016

<i>Gas</i>	<i>GHG emissions (Gg CO₂ eq, including land^a)</i>	<i>GHG emissions (Gg CO₂ eq, excluding land^a)</i>
CO ₂	24 385.37	25 307.91
CH ₄	4 675.49	4 675.49
N ₂ O	1 245.14	1 245.14
HFCs	757.29	757.29
PFCs	NE	NE
SF ₆	0.022	0.022
Total	31 063.32	31 985.85

Note: Jordan used the GWP values from the AR2.

^a 2006 IPCC Guidelines AFOLU category 3.B (land) and, if reported, 3.D (HWP (3.D.1) and other emissions (3.D.2)). The values in this table are from table 2.8 of Jordan's second BUR and include the AFOLU sector with the exception of category 3.D.

32. Information on other emissions was clearly reported, including 42.9 Gg nitrogen oxides, 122 Gg carbon monoxide and 55.3 Gg NMVOCs, which were estimated using the *EMEP/EEA air pollutant emission inventory guidebook 2019*.

33. Information on fluorinated gases was reported in the BUR, including SF₆ for the first time, which constitutes an improvement compared with the first BUR.

34. HFC emissions were reported in aggregate rather than by gas, and emissions of PFCs were reported as “NE”. During the technical analysis, Jordan clarified that this is due to the unavailability of disaggregated data on HFCs from the relevant entities, and that improvements to data collection are planned as part of a project in the cooling sector; also, the information necessary to estimate PFC emissions is not available.

35. Jordan applied notation keys in tables where numerical data were not provided. The use of notation keys was mostly consistent with the UNFCCC guidelines for the preparation of NCs from non-Annex I Parties. In some instances where estimates were summed under another gas or category, “NA” was applied instead of “IE”; for example, individual HFCs were reported as “NA” even though the gases are included together under other HFCs.

36. Jordan did not report comparable information addressing the tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF or the sectoral tables annexed to the Revised 1996 IPCC Guidelines. During the technical analysis, the Party clarified its understanding that the level of information presented in the BUR would be sufficient and noted that tables with the level of information required for this sector could be annexed to future BURs.

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

Table 2

Shares of greenhouse gas emissions by sector of Jordan for 2016

<i>Sector</i>	<i>GHG emissions (Gg CO₂ eq)</i>	<i>% share^a</i>
Energy	23 649.47	73.9
IPPU	3 177.42	9.9
AFOLU	428.71	NA
Livestock (category 3.A)	630.45	2.0
Land (category 3.B)	-922.54	NA
Aggregate sources and non-CO ₂ emissions sources on land (category 3.C)	720.80	2.3
HWP and other emissions (category 3.D)	NA	NA
Waste	3 807.73	11.9

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

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

39. For the energy sector, information was clearly reported on emissions of CO₂, CH₄ and N₂O in CO₂ eq from fuel combustion activities for the main categories, including energy industries, manufacturing industries and construction, transport, other sectors and non-specified, as well as fugitive emissions from oil and natural gas. CO₂ from road transportation (category 1.A.3.b) and from gaseous fuels in energy industries (category 1.A.1) were identified as the two major key categories.

40. Information on GHG emissions for the reported categories of the energy sector was not clearly reported in the BUR, as the level of disaggregation for each category does not align with the sectoral tables annexed to the Revised 1996 IPCC Guidelines. During the technical analysis, Jordan clarified its understanding that the level of disaggregation in the

tables presented in the BUR, which do not include the actual AD used, would be sufficient, and noted that tables with a higher level of detail could be annexed to future BURs.

41. For the IPPU sector, information was clearly reported on GHG emissions for the main categories, including mineral industry, chemical industry, metal industry, non-energy products from fuels and solvent use, product uses as substitutes for ozone-depleting substances, and other product manufacture and use, as well as emissions of NMVOCs from other (food and beverage industry) and non-energy products from fuels and solvent use. Under mineral industry, disaggregated estimates were provided for cement production and other process uses of carbonates and other uses of soda ash, while emissions from lime production were reported as “not occurring” since 2012. Within the IPPU sector, CO₂ from mineral industry was the most relevant emissions source, followed by HFCs from product uses as substitutes for ozone-depleting substances. CO₂ from cement production (category 2.A.1) was identified as the major key category.

42. Information on GHG emissions for the reported categories of the IPPU sector was not clearly reported in the BUR, as the level of disaggregation for each category does not align with the sectoral tables annexed to the Revised 1996 IPCC Guidelines, except for the mineral industry subcategory. HFCs were reported in aggregate and PFCs were not estimated. Information on AD for the IPPU sector was also not clearly reported in the BUR, as the actual values used (e.g. amounts produced) and data sources were not provided. During the technical analysis, Jordan clarified its understanding was that the level of disaggregation in the tables presented in the BUR, which do not include the actual AD used, would be sufficient, and noted that tables with a higher level of detail could be annexed to future BURs.

43. For categories 3.A and 3.C under the AFOLU sector from the 2006 IPCC Guidelines, enteric fermentation (CH₄) and agricultural soils (N₂O) were identified as key categories and the most relevant emissions sources in the sector. Jordan used EFs from the 2006 IPCC Guidelines.

44. Information was not reported on the number of livestock or the amount of fertilizer used. Moreover, information on categories 3.A and 3.C was not clearly reported in the BUR, as the level of disaggregation for each category does not align with the sectoral tables annexed to the Revised 1996 IPCC Guidelines; for example, for livestock (category 3.A), no distinction was made by the Party between enteric fermentation and manure management. Similarly, for category 3.C, no distinction was made by the Party between N₂O emissions from soils, manure management or other sources within the category. During the technical analysis, Jordan clarified its understanding that the level of disaggregation in the tables presented in the BUR, which do not include the actual AD used, would be sufficient, and noted that tables with a higher level of detail could be annexed to future BURs.

45. Information on land (category 3.B) was not clearly reported in the BUR, as the subcategories were not provided and the level of disaggregation does not align with the respective sectoral disaggregation by the IPCC. Moreover, AD (e.g. areas of land, carbon stock changes) were not provided and their sources not clearly explained. CO₂ was reported as net estimates without distinguishing between emissions and removals, and information comparable with that in the tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF and the sectoral tables annexed to the Revised 1996 IPCC Guidelines was not provided. No information was reported in the BUR on HWP as the category (3.D) was not included in the corresponding table. During the technical analysis, Jordan clarified its understanding that the level of disaggregation in the tables presented in the BUR, which do not include the actual AD used, would be sufficient, and noted that tables with a higher level of detail could be annexed to future BURs.

46. For the waste sector, information was clearly reported on GHG emissions for the main categories, including solid waste disposal, incineration and open burning of waste, and wastewater treatment and discharge. Within the sector, CH₄ from domestic solid waste disposal was the most relevant emissions source and constituted the third largest key category. Jordan used tier 1 methodology with, in general, default tier 1 EFs. CH₄ and N₂O emissions from waste incineration were not estimated.

47. Information on GHG emissions for the reported categories of the waste sector was not clearly reported in Jordan’s BUR, as the level of disaggregation for each category does not

align with the sectoral tables annexed to the Revised 1996 IPCC Guidelines. Information on AD for the waste sector was also not clearly reported in the BUR, as the actual values used (e.g. amounts of municipal solid waste disposed) and their sources were not provided. During the technical analysis, Jordan clarified its understanding that the level of disaggregation in the tables presented in the BUR, which do not include the actual AD used, would be sufficient, and noted that tables with a higher level of detail could be annexed to future BURs.

48. The BUR provides an update for some of the GHG inventories reported in the Party's previous NCs and BURs (i.e. NC2, NC3 and the first BUR). Emissions and removals for 2000 and 2006 were provided in the second BUR, but only for the energy and waste sectors, as this information was reported as NE for IPPU and AFOLU for those years. For 2010 and 2012, updated GHG inventories were provided, which include updated GHGs for the energy and IPPU sectors, using methodologies contained in the 2006 IPCC Guidelines. The Party reported that it recalculated emissions from fugitive oil and gas (category 1.B) in the energy sector and non-energy product and solvent use (category 2.D) in the IPPU sector for 2010 and 2012 owing to changes in the EFs applied. The Party reported that recalculations were performed using the correct EF for onshore for category 1.B and that the EF unit conversion was corrected for category 2.D. This resulted in an increase of estimated emissions for 2010 by 0.1 per cent and for 2012 by 0.4 per cent. The GHG inventories of the energy and IPPU sectors for 2010, 2012 and 2016 reported in the BUR can be considered consistent.

49. Information on the inventory year 1994 was not reported in Jordan's BUR. However, the Party provided relevant clarification in its BUR and indicated that it will provide a recalculated GHG inventory for 1994 in its third BUR. Also, Jordan reported national totals for 2000 and 2006, but they do not include the IPPU and AFOLU sectors, which the Party reported as "NE" in the BUR. Jordan reported that it did not perform recalculations for the IPPU and AFOLU sectors, clarifying in the BUR that this was due to unavailability of AD at the time, and that it will include the sectors in its third BUR.

50. Jordan described in its BUR the institutional framework for the preparation of its GHG inventory and BUR. The Ministry of Environment is the governmental body responsible for the national climate change policy and GHG inventory, which was prepared in cooperation with the United Nations Development Programme and with support from the Royal Scientific Society. The Party outlined, in a dedicated chapter of the BUR on MRV arrangements, data collection and storage processes, which are the main functions and roles of stakeholders in its multi-tiered MRV system that was expected to be fully operational by the end of 2020. During the technical analysis, Jordan provided additional explanation of the legal framework that governs its institutional arrangements.

51. Jordan reported that a key category analysis was performed for the level of emissions. The results provided clearly identify a number of fuel combustion categories (in particular transport and energy industries) and solid waste as the most important key categories. In the BUR, Jordan explained that it has not yet used the key category analysis to inform methodological choices but aims to do so for future BURs.

52. The BUR provides information on QA/QC measures for the GHG inventory as a whole, which include various data-checking procedures and an external review. Such QA/QC measures have helped Jordan to improve the inventory and develop a future improvement plan. The plan proposes short- and long-term actions, which include collecting data for using higher-tier estimation methods for key categories, estimating emissions for sources and gases that have not yet been estimated, and undertaking a key category analysis for the trend in emissions. The TTE commends Jordan for providing information in accordance with the IPCC good practice guidance.

53. Jordan reported information on CO₂ fuel combustion using both the sectoral and the reference approach. The information reported indicates that the CO₂ combustion emissions in 2016 estimated under the sectoral and the reference approach are 23,043 and 24,018 Gg, respectively. The difference between the estimates calculated using the two approaches was reported as 4.2 per cent. In addition, Jordan provided CO₂ emission estimates using only the reference approach for 2013–2015, including data on total energy consumption and corresponding trends, thus providing useful information on trends in the energy sector.

54. Information was clearly reported on international aviation and marine bunker fuels.

55. Jordan reported information on the uncertainty assessment of its national GHG inventory. The uncertainty analysis was based on the tier 1 approach and covers all source categories and all direct GHGs. The results obtained, as reported in the BUR, reveal that the level uncertainty for emissions is 5 per cent and the trend uncertainty is 4 per cent, taking 2010 as the base year for the assessment.

56. Information on uncertainty estimates by sector was not reported in Jordan's BUR. During the technical analysis, the Party clarified that uncertainty was estimated by individual source category using default EFs, AD and assumptions.

57. The TTE noted that the transparency of the information reported on GHG inventories could be further enhanced by addressing the areas noted in paragraphs 29, 30, 34, 36, 40, 42, 44, 45, 47 and 56 above, which could facilitate a better understanding of the information reported on GHG inventories.

58. In paragraph 41 of the summary report on the technical analysis of Jordan's first BUR, the previous TTE noted areas where the transparency of the reporting on GHG inventories could be further enhanced. The current TTE noted the improvements referred to in paragraph 33 above and commends the Party for enhancing the transparency of its reporting.

59. During the technical analysis, Jordan outlined its current initiatives for enhancing its GHG inventory reporting for compliance with requirements under the ETF, such as establishing institutional arrangements to enable reporting the GHG inventory within shorter time frames and involving relevant ministries in the biennial transparency reporting process.

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

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

61. The information reported provides a clear and comprehensive overview of the Party's mitigation actions and their effects. In its BUR, Jordan reported information on its national context and framed its national mitigation planning and actions in the context of its NDC to a large extent and all relevant national policies, strategies, reports, programmes and studies. These include the National Energy Strategy for 2020–2030, the 2020–2025 National Agricultural Development Strategy, the solid waste management framework law, the National Renaissance Plan (2019–2020), the Jordan Economic Growth Plan (2018–2021) and its industrial policy (2017–2021). Of the 39 mitigation actions proposed in the first BUR, 23 remain viable. In its second BUR, Jordan provided a GHG abatement cost analysis for those 23 measures, which relate to primary energy, renewable energy, energy efficiency, industry, domestic solid waste and wastewater, and agriculture and forestry. The abatement cost analysis indicates that the most feasible mitigation actions are those in the energy sector. However, for most of the completed mitigation actions, GHG emission reductions were not estimated. During the technical analysis, the Party clarified that, for the mitigation actions undertaken in 2020–2021, owing to delays caused by the pandemic, it was difficult to complete reporting on such actions in due time. The Party reported on emission reduction estimates for future mitigation actions. Some of the mitigation actions listed in document FCCC/AWGLCA/2011/INF.1 are described in the BUR.

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

63. Consistently with decision 2/CP.17, annex III, paragraph 12(a), Jordan reported the names of mitigation actions or groups of actions and coverage (sector and gases) in the BUR (tables 3.4–3.15, appendix A and appendix B (transport sector)). A description of the mitigation actions and information on quantitative goals were provided in the BUR.

64. Information on progress indicators for most of the mitigation actions and groups of mitigation actions, and quantitative goals of mitigation actions in the transport sector were not clearly reported in Jordan's BUR. During the technical analysis, the Party clarified that

it lacks national expertise for estimating quantitative goals for mitigation actions in the transport sector.

65. Jordan reported in its BUR (chap. 3.3, pp.81–93, and appendices A–B, pp.134–153) information on assumptions and updates in relation to mitigation policies and strategies; objectives of mitigation actions; and steps taken or envisaged to achieve all mitigation actions in the energy, waste, AFOLU and IPPU sectors.

66. Mitigation actions were reported for the energy sector. The actions focused mainly on primary energy demand and supply, improving energy efficiency and promoting renewable energy sources. They were reported as implemented, ongoing or planned. The Party reported information on actions implemented in 2020, including the construction of a natural gas pipeline in the north of Jordan to substitute diesel use. By the end of 2019, 850 MW capacity solar and 375 MW capacity wind projects were connected to the grid. Jordan reported that 2 and 2.7 Mt CO₂ eq emission reductions are expected to result from the primary energy mitigation projects on loss reduction in the electricity transmission and distribution network and natural gas distribution network, respectively, in Amman, Zarqa and Aqaba.

67. Jordan also reported anticipated GHG emission reductions from renewable energy projects, including 100 MW concentrated solar power (1.9 Mt CO₂ eq), 300 MW concentrated solar power (9.0 Mt CO₂ eq) and solar water heaters for 30,000 houses (0.4 Mt CO₂ eq). Energy efficiency actions include returning unreturned condensate to the feed water tanks in food industry; insulating uninsulated pipes, fittings and tanks in food industry; insulating walls and roofs in 3,500 new houses; and using regenerative burners instead of conventional burners in the steel reheating industry. Such actions are anticipated to result in emission reductions of 0.007, 0.008, 0.070 and 0.072 Mt CO₂ eq, respectively, by 2046.

68. Jordan reported in its BUR potential mitigation actions for the transport sector, which are focused mainly on developing public transport, facilitating use of electric vehicles and enhancing the railway system. Jordan aims to increase the share of commuters using public transport to 25 per cent by 2025 by developing a bus rapid transit system within the country. There are plans in the private sector to install 3,000 charging stations (on- and off-grid) to support 10,000 zero-emission electric vehicles. Jordan also aims to develop the railway network for transporting goods within the country and the surrounding region.

69. Information on GHG emission mitigation effects for actions in the transport sector was not clearly reported in Jordan's BUR. During the technical analysis, the Party clarified that it lacks relevant national expertise and that responsibilities and mandates among relevant entities lack clarity, as reported in the first BUR.

70. Jordan reported in its BUR five planned mitigation actions in the IPPU sector: using steel slag and/or fly ash as a substitute for additives in clinker; increasing the share of pozzolana in the cement produced at the CEM II cement production facility; producing cement at CEM IV with 45 per cent pozzolana; using biomass (municipal solid waste and/or sewage sludge) as alternative fuel; and catalytic reduction of N₂O within the ammonia burner at the nitric acid production plant. These actions are planned to be implemented between 2022 and 2046 and expected to reduce GHG emissions by 0.3, 0.4, 0.2, 0.8 and 1.7 Mt CO₂ eq, respectively.

71. Jordan reported planned mitigation actions for the AFOLU sector, including measures for agriculture and land use: introducing new plantations in urban areas, introducing new plantations in the northern part of the country, restoring rangeland areas, establishing new protected rangeland area as a natural reserve, and promoting climate-smart agricultural practices in the Jordan Valley. These actions are expected to reduce GHG emissions by 0.0002, 0.011, 1.8, 0.9 and 0.013 Mt CO₂ eq, respectively, in 2022–2042.

72. The mitigation actions for the waste sector are mostly waste-to-energy projects relating to municipal solid waste management and wastewater treatment. Jordan reported four planned actions: using biogas produced at the Al-Dhulil landfill for electricity production (2022–2047), using sludge produced at the Wadi Al Arab wastewater treatment plant (2021–2026), using sludge produced at the Baqa'a wastewater treatment plant (2025–2049) and using sludge produced at the Madaba wastewater treatment plant (2021–2046). The Party provided information on the methodology used for estimating mitigation effects

from all landfills identified in a 1993 study on the environment and use of methane from municipal waste in Amman. These actions are expected to reduce GHG emissions for the entire time period by 1.00366, 0.2803, 0.18803 and 0.18823 Mt CO₂ eq, respectively.

73. Jordan reported in its BUR emission projections for 23 updated mitigation actions. Cumulative estimated emission reductions of 1.5, 2.5, 2.4 and 1.2 Mt CO₂ eq are projected to be achieved in 2025, 2030, 2040 and 2050, respectively, from implementing those actions. However, information on the methodologies used to calculate the projected GHG emission reductions was not reported. During the technical analysis, Jordan clarified that the 23 mitigation actions were updated on the basis of the strategies, frameworks and plans listed in paragraph 60 above.

74. Information on assumptions used to develop mitigation scenarios was not provided for the sectors and quantitative estimates of GHG emission reductions for completed mitigation actions were not clearly reported in Jordan's BUR. During the technical analysis, the Party clarified that it had difficulties reporting on mitigation actions in time for the second BUR owing to challenges associated with the pandemic and the fact that most of the actions were undertaken in 2020–2021. The Party also clarified that it experienced particular difficulties in relation to the transport sector owing to its limited experience.

75. Jordan did not provide information on its involvement in international market mechanisms as a Party to the Kyoto Protocol. During the technical analysis, Jordan clarified that, as stated in its first BUR, it has limited experience with the clean development mechanism, with only four projects registered, and that no progress had been made since the first BUR.

76. Jordan reported information on its domestic MRV arrangements in accordance with decision 2/CP.17, annex III, paragraph 13. The information reported indicates that Jordan is in the process of designing and developing a domestic MRV system for mitigation actions. It reported that the first milestone for the national MRV system and registry has been achieved by completing the public sector energy projects (renewable energy and energy efficiency) and including GHG data and support data at the sectoral and national level, which will help in tracking progress towards achieving the NDC.

77. The TTE noted that the transparency of the information reported on mitigation actions could be further enhanced by addressing the areas noted in paragraphs 61, 64, 69, 73, 74 and 75 above, which could facilitate a better understanding of the information reported on mitigation actions.

78. In paragraphs 45 and 51 of the summary report on the technical analysis of Jordan's first BUR, the previous TTE noted areas where the transparency of the reporting on mitigation actions could be further enhanced. The current TTE noted the improvements referred to in paragraphs 65 and 71 above and commends the Party for enhancing the transparency of its reporting.

79. Jordan reported in its BUR (section 5.3, p.109) information on its areas for improvement for future BURs and its current initiatives for enhancing its existing MRV system (section 5.5, p.114) for compliance with requirements under the ETF. The initiatives relate to enhancing technical capacity to report on implemented or ongoing mitigation actions; establishing a system for verifying and tracking GHG emission reductions resulting from mitigation actions; and establishing an entity to oversee the collection and verification of information on support received related to climate change.

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, Jordan reported in its BUR, fully 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. Jordan 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, Jordan identified its small-scale economy, lack of natural resources (particularly energy and water), high population growth rate, ongoing regional conflicts and

rising cost of health care as constraints on the country's sustainable social and economic development. Other gaps in and constraints on climate change activities at the national level include lack of human resources and capacity to carry out climate-related tasks over the long term, insufficient collaboration among stakeholders and entities responsible for providing necessary climate-related data, limited availability and quality of data, and challenges arising from the pandemic.

82. Jordan reported that its financial, technical and capacity-building needs are primarily in the areas of developing, implementing and tracking the progress of its mitigation actions (such as technical support for feasibility studies, developing financing strategies, monitoring and evaluation services, and financial support for implementation) and using the 2006 IPCC Guidelines for preparing its GHG inventory. Jordan also reported on the need for a capacity-building programme for the National Committee on Climate Change, and the technical working groups formed according to the climate change by-law.

83. Jordan reported information on financial resources, technology transfer, capacity-building and technical support received in accordance with decision 2/CP.17, annex III, paragraph 15. Information was reported on support received for fulfilling national climate change related commitments and for action plans and implementation projects in sectors including water, vulnerable communities and urban planning. In its BUR, Jordan reported that it received USD 1,204,000 from the Global Environment Facility, which included USD 852,000 for preparing its NC4 and second BUR. The information reported indicates that Jordan received capacity-building and technical support from the United Nations Development Programme for developing those reports. Jordan also reported that it received other financial resources to enable it to fulfil national climate change related commitments regarding its GHG inventory and NDC.

84. Jordan reported information on nationally determined technology needs with regard to the development and transfer of technology in accordance with decision 2/CP.17, annex III, paragraph 16. In its BUR, Jordan reported that the technology needs assessment was nationally determined and the basis for the technology needs reported in the BUR.

85. In paragraph 57 of the summary report on the technical analysis of Jordan's first BUR, the previous TTE noted areas where the transparency of the reporting on constraints, gaps, needs and support needed and received could be enhanced. The current TTE noted the improvements referred to in paragraph 82 above and commends the Party for enhancing the transparency of its reporting.

86. Jordan reported in its BUR (section 5.5) information on its areas for improvement for future BURs for compliance with requirements under the ETF. There is a need to expand the MRV system to cover support received. Jordan noted that its capacity for transparency can be strengthened through enhanced governance and institutional structure and supported by engagement of relevant stakeholders. Moreover, Jordan recently started preparing a road map to promote and facilitate its engagement in implementing Article 6 of the Paris Agreement.

5. Any other information

87. Jordan reported in the BUR (section 5.4 and chap. 6) some information on adaptation action, projects and technologies in the waste and agriculture sectors that may lead to GHG emission reductions.

D. Identification of capacity-building needs

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

(a) Enhancing technical capacity to prepare the BUR in accordance with the BUR guidelines, particularly in terms of the amount, type and level of disaggregation of information or data that should be presented in the report, including for earlier or recalculated years of the time series;

- (b) Enhancing technical capacity to collect data for estimating PFCs and HFCs on a gas-by-gas basis;
- (c) Enhancing technical capacity to estimate and report uncertainties for each of the major IPCC sectors, including making underlying assumptions;
- (d) Enhancing capacity to update and maintain tools (e.g. the Low Emissions Analysis Platform) for making projections for mitigation policies and measures, pursuant to the reporting requirements;
- (e) Enhancing the system on actions taken or envisaged for implementing individual mitigation actions in sectors other than energy;
- (f) Further developing the measurement system for mitigation actions, incorporating risk assessment tools.

89. The TTE noted that, in addition to those identified during the technical analysis, Jordan reported the following capacity-building needs in its BUR, which include capacity-building needs for future BURs and transitioning to implementing the ETF:

- (a) Enhancing technical capacity to use the 2006 IPCC Guidelines and related tools and software;
- (b) Enhancing technical capacity to use surrogate data and other splicing techniques from the 2006 IPCC Guidelines to fill gaps in historical data and generate a consistent time series;
- (c) Developing technical capacity to collect data for estimating HFC emissions on a gas-by-gas basis, particularly for collecting data from equipment, and processing raw data from the customs department and other national and/or international sources;
- (d) Developing technical capacity to perform key category analysis, including level and trend, and on how to use the outcomes of the key category analysis;
- (e) Developing technical capacity to perform uncertainty analysis, particularly for AD, EFs and other parameters for each source or sink category, and to use the outcomes of uncertainty analysis;
- (f) Enhancing technical capacity to conduct regular surveys to provide accurate AD and to integrate climate change related questions into existing energy surveys;
- (g) Enhancing technical capacity to develop national EFs for using higher-tier estimation methods for key categories, particularly in the AFOLU and waste sectors;
- (h) Enhancing technical capacity to analyse and report on implemented or ongoing mitigation actions;
- (i) Enhancing capacity to report on progress and underlying steps in relation to planned mitigation actions;
- (j) Enhancing technical capacity to establish a system for verifying and tracking GHG emission reductions resulting from mitigation actions;
- (k) Enhancing capacity for data collection and information tracking for reporting technology support received;
- (l) Enhancing institutional and governance structures that will enable the Party to collect, report and use data for decision-making;
- (m) Enhancing the Government's ability to engage effectively with key stakeholders in order to obtain quality GHG data;
- (n) Building technical capacity in key national institutions to produce active national and regional peer and professional communities for GHG data;
- (o) Raising awareness and building capacity of national stakeholders in GHG data.

III. Conclusions

90. The TTE conducted a technical analysis of the information reported in the second BUR of Jordan 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, including the domestic MRV system, relevant to the preparation of NCs and BURs on a continuous basis; the national inventory of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol; mitigation actions and their effects, including associated methodologies and assumptions; constraints and gaps, and related financial, technical and capacity-building needs, including a description of support needed and received; the level of support received to enable the preparation and submission of BURs; and other information relevant to the achievement of the objective of the Convention. During the technical analysis, additional information was provided by Jordan in response to questions raised by the TTE with regard to the submission cycle of GHG data and institutional arrangements, some aspects of the GHG inventory and mitigation actions, cross-cutting issues and support needed and received. The TTE concluded that the information analysed is mostly transparent.

91. Jordan reported in its second BUR an update on the institutional arrangements relevant to the preparation of its BURs. It has taken significant steps to establish institutional arrangements that allow for the sustainable preparation of its BURs. These include the enactment of the climate change by-law, which empowers the National Committee on Climate Change to form technical teams to help the Ministry of Environment with national reports within the framework of Jordan's international commitments and related climate change activities; and the development of the national MRV system and registry for climate mitigation measures. The Party's multi-tiered integrated MRV system currently covers mitigation in the energy sector but will be expanded to include the transport and waste sectors.

92. In its second BUR, submitted in 2021, Jordan reported information on its national GHG inventory for 2016, as well as information for 2000, 2006, 2010 and 2012. The 2016 inventory includes GHG emissions and removals of CO₂, CH₄ and N₂O for all relevant sources and sinks as well as the precursor gases. The inventory was developed on the basis of the 2006 IPCC Guidelines using the tier 1 approach. The total GHG emissions in 2016 were reported as 31,986 Gg CO₂ eq (excluding LULUCF) and 31,063 Gg CO₂ eq (including LULUCF). Thirteen key categories and main gases were identified, with CO₂ from road transport and energy industries being the largest contributors to total emissions, followed by CH₄ from solid waste disposal. Estimates of PFC emissions were not provided owing to difficulties in obtaining the necessary data, as clarified by the Party during the technical analysis.

93. Jordan reported information on mitigation actions and their effects in both tabular and narrative format, including emission reduction targets and baseline and mitigation scenarios for 2020–2045, and framed its national mitigation planning and actions in the context of its NDC to a large extent and all relevant national policies, strategies, reports, programmes and studies. Jordan reported planned, implemented, ongoing and completed actions in the energy (primary energy, renewable energy, energy efficiency), waste, AFOLU and IPPU sectors. The mitigation actions focus on reducing losses in electricity and natural gas transmission and distribution networks, increasing solar and wind power generation, improving energy efficiency in the water and buildings sectors, developing a bus rapid transit system, reducing emissions from cement and nitric acid production, introducing smart agriculture and land-use practices and facilitating waste-to-energy projects relating to municipal solid waste management and wastewater treatment. Jordan reported co-benefits of its mitigation actions, including reduced electricity transmission and distribution losses, enhanced use of natural gas in all sectors (such as industrial, residential, commercial and transportation), improved soil health in terms of structure, productivity and water retention, and reduced vehicle kilometres travelled at the national level. According to Jordan, if the 23 updated mitigation actions reported in the BUR are implemented, the cumulative GHG emission reductions estimated by the Party will be 1.5, 2.5, 2.4 and 1.2 Mt CO₂ eq in 2025, 2030, 2040 and 2050, respectively.

94. The Party reported information on MRV arrangements. However, it did not report specific information on the methodologies used to calculate projected GHG emission reductions for the 23 mitigation actions, information on progress indicators for most mitigation actions and groups of mitigation actions, quantitative goals of mitigation actions in the transport sector, or quantitative estimated GHG emission reductions for completed actions owing to difficulties obtaining the necessary data caused by the pandemic and lack of capacity in relation to the transport sector. Jordan did not provide information on its involvement in international market mechanisms as a Party to the Kyoto Protocol since no progress had been made on clean development mechanism projects, as clarified by the Party during the technical analysis.

95. Jordan reported information on key constraints, gaps and related needs, including its small-scale economy, limited natural resources, demographic change, ongoing regional conflicts, limited human resources and capacity, insufficient collaboration among stakeholders, lack of availability of quality data, and challenges arising from the pandemic. Jordan also reported that its financial, technical and capacity-building needs are primarily in the areas of developing, implementing and tracking the progress of its mitigation actions and preparing its GHG inventory. Information was reported on technical, technology transfer and capacity-building support received, including support for fulfilling its national climate change related commitments and support for action plans and implementation projects in sectors including water, vulnerable communities and urban planning. The Party received financial support of approximately USD 852,000 from the Global Environment Facility for preparing its second BUR and NC4. The Party reported information on the transfer of technology received, including for renewable energy and energy efficiency, solid waste management and transport, environmentally sound technology for the industry sector, climate change mitigation and adaptation technology for water and wastewater, and vulnerable communities and urban planning.

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

97. The TTE, in consultation with Jordan, identified the six capacity-building needs listed in chapter II.D above and needs for capacity-building that aim to facilitate reporting in accordance with the UNFCCC reporting guidelines on BURs and participation in ICA in accordance with the ICA modalities and guidelines, taking into account Article 4, paragraph 3, of the Convention. The Party, in consultation with the TTE, also identified the 15 needs for capacity-building to facilitate transition to the ETF listed in paragraph 88 above. Jordan prioritized all the capacity-building needs listed in chapter II.D above.

Annex I

Extent of the information reported by Jordan in its second biennial update report

Table I.1

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

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Assessment of whether the information was reported</i>	<i>Comments on the extent of the information provided</i>
Decision 2/CP.17, paragraph 41(g)	The first BUR shall cover, at a minimum, the inventory for the calendar year no more than four years prior to the date of the submission, or more recent years if information is available, and subsequent BURs shall cover a calendar year that does not precede the submission date by more than four years.	No	Jordan submitted its second BUR in June 2021; the GHG inventory reported is for 2016.
Decision 2/CP.17, annex III, paragraph 4	Non-Annex I Parties should use the methodologies established in the latest UNFCCC guidelines for the preparation of NCs from non-Annex I Parties approved by the Conference of the Parties or those determined by any future decision of the Conference of the Parties on this matter.	Yes	Jordan 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 <i>Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories</i> and the IPCC good practice guidance for LULUCF; any change to the EF may be made in the subsequent full NC.	No	The inventory section of the BUR does not contain activity levels or AD.
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	Comparable information was not reported.
	(b) The sectoral report tables annexed to the Revised 1996 IPCC Guidelines.	No	Comparable information was not reported.
Decision 2/CP.17, annex III, paragraph 7	Each non-Annex I Party is encouraged to provide a consistent time series back to the years reported in its previous NCs.	Partly	The time series reported includes aggregate estimates (national totals and totals for major sectors) for 2000, 2006, 2010, 2012 and 2016 but not back to 1994.
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).	Partly	This information was not reported for 1994.
	The inventory section of the BUR should consist of an NIR as a summary or as an update of the information contained in decision 17/CP.8, annex,	Yes	

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Assessment of whether the information was reported</i>	<i>Comments on the extent of the information provided</i>
Decision 2/CP.17, annex III, paragraph 9	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); (b) Table 2 (National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF ₆).	Yes Partly	 For HFCs, estimates were given in aggregate, not on a gas-by-gas basis. PFC emissions were not estimated.
Decision 2/CP.17, annex III, paragraph 10	Additional or supporting information, including sector-specific information, may be supplied in a technical annex.	NA	
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 <i>Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories</i> to assist in developing inventories that better reflect their national circumstances.	Yes	
Decision 17/CP.8, annex, paragraph 13	Non-Annex I Parties are encouraged to describe procedures and arrangements undertaken to collect and archive data for the preparation of national GHG inventories, as well as efforts to make this a continuous process, including information on the role of the institutions involved.	Yes	Information on institutional arrangements for the preparation of the GHG inventory was reported in the GHG and MRV chapters of the BUR.
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 ; (b) CH ₄ ; (c) N ₂ O.	Yes Partly Partly	 CH ₄ emissions from waste incineration were not estimated. N ₂ O emissions from waste incineration were not estimated.
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; (b) PFCs; (c) SF ₆ .	Yes Yes Yes	 PFCs were reported as “NE”.
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; (b) Nitrogen oxides; (c) NMVOCs.	Yes Yes Yes	
Decision 17/CP.8, annex, paragraph 17	Other gases not controlled by the Montreal Protocol, such as sulfur oxides, and included in the	Yes	Jordan reported on sulfur oxides.

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Assessment of whether the information was reported</i>	<i>Comments on the extent of the information provided</i>
	Revised 1996 IPCC Guidelines may be included at the discretion of Parties.		
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.	Yes	
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 AR2 based on the effects of GHGs over a 100-year time-horizon.	Yes	
Decision 17/CP.8, annex, paragraph 21	Non-Annex I Parties are encouraged to provide information on methodologies used in the estimation of anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol, including a brief explanation of the sources of EFs and AD. If non-Annex I Parties estimate anthropogenic emissions and removals from country-specific sources and/or sinks that are not part of the Revised 1996 IPCC Guidelines, they should explicitly describe the source and/or sink categories, methodologies, EFs and AD used in their estimation of emissions, as appropriate. Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building:		
	(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;	Partly	Sources of AD were provided at a general level as a list but no explanations were provided.
	(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;		

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Assessment of whether the information was reported</i>	<i>Comments on the extent of the information provided</i>
	(e) Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building.	Yes	
Decision 17/CP.8, annex, paragraph 22	Each non-Annex I Party is encouraged to use tables 1–2 of the guidelines annexed to decision 17/CP.8 in reporting its national GHG inventory, taking into account the provisions established in paragraphs 14–17. In preparing those tables, Parties should strive to present information that is as complete as possible. Where numerical data are not provided, Parties should use the notation keys as indicated.	Yes	Notation keys were 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;	Partly	Jordan referred to the use of the tier 1 from the 2006 IPCC Guidelines; further specifications regarding assumptions were not made.
	(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 second biennial update report of Jordan

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Assessment of whether the information was reported</i>	<i>Comments on the extent of the information provided</i>
Decision 2/CP.17, annex III, paragraph 11	Non-Annex I Parties should provide information, in tabular format, on actions to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol.	Partly	Jordan provided information in tabular format on implemented, ongoing and planned mitigation actions in all sectors except the transport sector.
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	Partly	Information on progress indicators for most mitigation actions and groups of mitigation actions was not reported, nor were quantitative

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Assessment of whether the information was reported</i>	<i>Comments on the extent of the information provided</i>
	the action, coverage (i.e. sectors and gases), quantitative goals and progress indicators;		goals for mitigation actions in the transport sector.
	(b) Information on:		
	(i) Methodologies;	Yes	
	(ii) Assumptions;	Partly	Information on assumptions used to develop mitigation scenarios for the transport sector was not provided.
	(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;	Yes	
	(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;	Partly	Jordan reported information on completed mitigation actions but did not report quantitative estimates of GHG emission reductions for all of them.
	(e) Information on international market mechanisms.	No	
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 second biennial update report of Jordan

<i>Decision</i>	<i>Provision of the reporting requirements</i>	<i>Assessment of whether the information was reported</i>	<i>Comments on the extent of the information provided</i>
Decision 2/CP.17, annex III, paragraph 14	Non-Annex I Parties should provide updated information on:		
	(a) Constraints and gaps;	Yes	
	(b) Related financial, technical and capacity-building needs.	Yes	
Decision 2/CP.17, annex III, paragraph 15	Non-Annex I Parties should provide:		
	(a) Information on financial resources received, technology transfer and capacity-building received;	Yes	
	(b) Information on technical support received from the Global Environment Facility, Parties included in Annex II to the Convention and other developed country	Yes	

<i>Decision</i>	<i>Provision of the reporting requirements</i>	<i>Assessment of whether the information was reported</i>	<i>Comments on the extent of the information provided</i>
	Parties, the Green Climate Fund and multilateral institutions for activities relating to climate change, including for the preparation of the current BUR.		
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.	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>.

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

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

IPCC. 2019. *2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories*. E Calvo Buendia, K Tanabe, A Kranjc, et al. (eds.). Geneva: IPCC. Available at <https://www.ipcc.ch/report/2019-refinement-to-the-2006-ipcc-guidelines-for-national-greenhouse-gas-inventories/>.

B. UNFCCC documents

Second BUR of Jordan. Available at <https://unfccc.int/BURs>.

Summary report on the technical analysis of the first BUR of Jordan, contained in document FCCC/SBI/ICA/2018/TASR.1/JOR. Available at <https://unfccc.int/ICA-reports>.

C. Other documents

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

EEA. 2019. *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>.