United Nations

FCCC/SBI/ICA/2023/TASR.1/PAK

Framework Convention on Climate Change

Distr.: General
14 September 2023

Original: English

# Technical analysis of the first biennial update report of Pakistan submitted on 28 April 2022

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

# Abbreviations and acronyms

| | |
|---|---|
| 2006 IPCC Guidelines | *2006 IPCC Guidelines for National Greenhouse Gas Inventories* |
| AD | activity data |
| AFOLU | agriculture, forestry and other land use |
| BUR | biennial update report |
| $CH_4$ | methane |
| $CO_2$ | carbon dioxide |
| $CO_2$ eq | carbon dioxide equivalent |
| EF | emission factor |
| F-gas | fluorinated gas |
| GEF | Global Environment Facility |
| GHG | greenhouse gas |
| GWP | global warming potential |
| HFC | hydrofluorocarbon |
| HWP | harvested wood products |
| ICA | international consultation and analysis |
| IPCC | Intergovernmental Panel on Climate Change |
| IPCC good practice guidance | *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 |
| IT | information technology |
| LULUCF | land use, land-use change and forestry |
| MoCC | Ministry of Climate Change |
| MPGs | modalities, procedures and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement |
| MRV | measurement, reporting and verification |
| $N_2O$ | nitrous oxide |
| NA | not applicable |
| NC | national communication |
| NE | not estimated |
| non-Annex I Party | Party not included in Annex I to the Convention |
| PFC | perfluorocarbon |
| 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 |
| TNA | technology needs assessment |
| 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. The least developed countries and small island developing States may submit BURs at their discretion.

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

4. This summary report presents the results of the technical analysis of the first BUR of Pakistan, undertaken by a TTE in accordance with the provisions on the composition, modalities and procedures of the TTE under ICA contained in the annex to decision 20/CP.19.

## B. Process overview

5. In accordance with the mandate referred to in paragraph 2 above, Pakistan submitted its first BUR on 28 April 2022 as a stand-alone update report.

6. During the technical analysis, the Party clarified that it was only possible to submit the first BUR after it had submitted its NC2 (in 2019) and its updated nationally determined contribution (in 2021) and been trained in the use of the 2006 IPCC Guidelines, which enabled it to prepare its GHG inventory for 2017–2018.

7. The technical analysis of Pakistan's BUR was conducted from 30 January to 3 February 2023 in Bonn and was undertaken by the following TTE, drawn from the UNFCCC roster of experts on the basis of the criteria defined in decision 20/CP.19, annex, paragraphs 2–6: Bertha Iris Argueta Tejeda (Honduras), Rocio Danica Condor (Italy), Larissa Maria Felip Spalding (Paraguay), Excellent Hachileka (Zambia), Medeia Inashvili (Georgia), Dovilé Karlonienė (Lithuania), Zammath Khaleel (former member of the Consultative Group of Experts from Maldives), Andrew Lister (United States of America), Brittany Meighan (Belize), Katherine Ovalle (Colombia) and Brian Zutta (Peru). Rocio Danica Condor and Excellent Hachileka were the co-leads. The technical analysis was coordinated by Anna Sikharulidze and Jeeyoon Jung (secretariat).

8. During the technical analysis, in addition to a written exchange to provide technical clarifications on the information reported in the BUR, the TTE and Pakistan engaged in consultation[1] on the identification of capacity-building needs for the preparation of BURs and participation in the ICA process. Following the technical analysis of Pakistan's first BUR, the TTE prepared and shared a draft summary report with Pakistan on 2 May 2023 for its review and comment. Pakistan, in turn, provided its feedback on the draft summary report on 13 September 2023.

9. The TTE responded to and incorporated Pakistan's comments referred to in paragraph 8 above and finalized the summary report in consultation with the Pakistan on 14 September 2023.

[1] The consultation was conducted via email.

# 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 Pakistan's BUR outlined in paragraph 10 above.

## B. Extent of the information reported

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

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

## C. Technical analysis of the information reported

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

15. For information reported on national GHG inventories, the technical analysis also focused on the consistency of the methods used for preparing those inventories with the appropriate methods developed by the IPCC and referred to in the UNFCCC reporting guidelines on BURs.

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

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

17. As per the scope defined in paragraph 2 of the UNFCCC reporting guidelines on BURs, the BUR should provide an update to the information contained in the most recently

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

18. Pakistan reported in its first BUR information on its national circumstances, including a description of national and regional development priorities, objectives and circumstances, such as features of geography, climate, demography and economy that might affect the Party's ability to deal with mitigating and adapting to climate change. The information provided covers, more specifically, extreme climate events and their impacts; an overview of the main economic sectors, environmental management policies, status of urbanization, disaster preparedness and vulnerable ecosystems; and key actions taken by the Government of Pakistan to address climate change related issues.

19. In addition, Pakistan provided a summary of relevant information regarding its national circumstances in tabular and graphical format. The information presented included a map, a list of extreme climate events that occurred in Pakistan in 1985—2020, tabular information on the country's demographics, a list of the main forest types, tabular information on measures taken to reduce GHG emissions and graphs illustrating national economic sectors.

20. The Party 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 roles and responsibilities of the overall coordinating entity, the involvement and roles of other institutions and the current system for monitoring parameters, including related to GHG emissions, used for the GHG inventory.

21. The Party reported that the MoCC is currently the coordinating entity and, along with the Prime Minister's Committee on Climate Change, is the national and international focal point for climate-related activities. The MoCC coordinates climate-related efforts among federal and provincial governments and supports the preparation of climate-related reports, including NCs and BURs. The Global Change Impact Studies Centre, a research arm of the MoCC, collects and manages data from relevant ministries and departments and prepares GHG inventories in accordance with IPCC guidelines. The Pakistan Climate Change Act (2017) mandated the establishment of the Pakistan Climate Change Authority as the implementing arm of the MoCC, but it has yet to be created. The Climate Change Council, which was likewise established under the Pakistan Climate Change Act (2017), is responsible for monitoring national efforts to implement the Convention and will be responsible for considering reports prepared by the Pakistan Climate Change Authority when it is established. The Party stated that it has weak institutional arrangements for GHG inventory preparation and that its GHG inventories are prepared when needed. However, it is focusing on strengthening institutional arrangements on the basis of current Convention reporting requirements and implementing the MPGs, and proposed in its BUR institutional arrangements covering the following five components: stakeholder engagement, organizational mandates, expertise, data flows, and coordination systems and tools.

22. Information on how the institutional arrangements described contribute to the preparation of NCs and BURs on a continuous and sustainable basis was not clearly reported in Pakistan's BUR. During the technical analysis, the Party clarified that it is gradually strengthening its institutional arrangements to ensure reporting on a continuous basis by involving federal and provincial agencies in the process. In particular, those agencies are tasked with developing a road map on robust GHG inventory preparation as part of an MRV system; organizing data collection; aligning their reporting with the MPGs; and developing country-specific EFs in each sector of the GHG inventory.

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

24. Pakistan reported in its first BUR information on its current and planned domestic MRV arrangements. The Party stated that it has no formal MRV system in place, but that the Government has undertaken some initiatives to develop a MRV system for various indicators. In its BUR, the Party proposed key features of a national MRV system and set out the relevant requirements for GHG inventories, mitigation and adaptation, and support needed and received.

25. Pakistan reported in its BUR (chap. 5, section 3.3) that it is focusing on developing institutional arrangements for compliance with requirements under the enhanced transparency framework. The TTE commends the Party for reporting on its proactive approach to preparing for implementation of the enhanced transparency framework.

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

26. As indicated in table I.1, Pakistan 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.

27. Pakistan submitted its first BUR in 2022 and the GHG inventory reported is for 2017–2018. The GHG inventory is consistent with the requirements for the reporting time frame.

28. GHG emissions and removals for the BUR covering the 2017–2018 inventory were estimated using tier 1 methodology from the 2006 IPCC Guidelines for all categories. The TTE commends Pakistan for using the 2006 IPCC Guidelines.

29. Pakistan reported that it used default EFs from the IPCC inventory software for the energy sector, and identified the main sources of AD for all sectors except the waste sector.

30. The actual values of AD in all sectors and the EFs applied in sectors other than the energy sector were not clearly reported in Pakistan's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that default EFs from the 2006 IPCC Guidelines were used to estimate emissions from all sectors, and provided a list of the EFs used. Further, it clarified that most of the AD used in the inventory compilation were published in government documents, reports and research papers. Some data gaps were filled using data tables (Excel sheets) provided by relevant government and private sector departments.

31. Information on the Party's total GHG emissions by gas for 2018 is outlined in table 1 in Gg $CO_2$ eq.

Table 1
**Greenhouse gas emissions by gas of Pakistan for 2018**

| *Gas* | *GHG emissions (Gg $CO_2$ eq) including land and HWP*[a] | *GHG emissions (Gg $CO_2$ eq) excluding land and HWP*[a] |
|---|---|---|
| $CO_2$ | 268 800 | 240 100 |
| $CH_4$ | 135 830 | 133 900 |
| $N_2O$ | 85 210 | 84 320 |
| HFCs | NE | NE |
| PFCs | NE | NE |
| $SF_6$ | NE | NE |
| Other | NA | NA |
| **Total** | 489 840 | 458 320 |

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

32. Information on emissions of precursor gases was not reported in the BUR. However, Pakistan clarified that these emissions were not estimated because the 2006 IPCC Guidelines do not include methodologies for estimating them.

33. Emissions of HFCs, PFCs and $SF_6$ were not estimated in Pakistan's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that

this was due to data gaps, but that it is making significant progress in this area, which will enable it to include emissions of F-gases in future GHG inventories. Owing to the complexity of including emissions F-gases, however, the Party also highlighted the need to build the capacity of national experts in this regard.

34. Pakistan did not use notation keys in the BUR and the reason for this was not clear to the TTE. During the technical analysis, Pakistan provided sectoral tables equivalent to table 1 in the UNFCCC guidelines for the preparation of NCs from non-Annex I Parties for 2018 and 2019; however, the tables were inconsistent with the information reported in the BUR (e.g. national total net emissions for 2018 were reported as 489,956.96 Gg $CO_2$ eq, and not 489,840 Gg $CO_2$ eq as reported in the BUR, and notation keys were not used in the tables).

35. 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 Pakistan's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that all reported estimates were based on comparable tables and provided the sectoral tables it used. It further clarified that data at the level of detail required for the tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF were not available and therefore were not reported, but that it is working to collect the data needed for these tables.

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

Table 2
**Shares of greenhouse gas emissions by sector of Pakistan for 2018**

| *Sector* | *GHG emissions (Gg $CO_2$ eq)* | *% share*[a] |
|---|---|---|
| Energy | 218 910 | 47.8 |
| IPPU | 25 760 | 5.6 |
| AFOLU | 223 450 | NA |
| Livestock (category 3.A) | 109 120 | 23.8 |
| Land (category 3.B) | 31 520 | NA |
| Aggregate sources and non-$CO_2$ emissions sources on land (category 3.C) | 82 810 | 18.1 |
| HWP and other emissions (category 3.D) | NA | NA |
| Waste | 21 720 | 4.7 |

[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)).

37. Information on the GWP values used was not reported in Pakistan's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that GWP values consistent with those provided by the IPCC in its Second Assessment Report based on the effects over a 100-year time-horizon of GHGs were used.

38. For the energy sector, Pakistan reported emissions from fuel combustion from energy industries (1.A.1), manufacturing industries and construction (1.A.2), transport (1.A.3), other sectors (1.A.4), non-specified emissions (1.A.5) and fugitive emissions (1.B). The most important sources are electricity generation (1.A.1.a.i), road transport (1.A.3.b) and fuel combustion in construction (1.A.2.k), which account for 24.0, 20.7 and 20.9 per cent respectively of the total sectoral emissions. AD were sourced from the *Pakistan Energy Year Book 2018*.

39. For the IPPU sector, Pakistan reported emissions from mineral industry (2.A), chemical industry (2.B), non-energy products from fuels and solvent use (2.C) and other emissions (2.H). The AD for IPPU were sourced from the 2018 *Pakistan Economic Survey*. The main emissions sources for the IPPU sector were cement production (2.A.1) and ammonia production (2.B.1), which accounted for 82.7 and 10.5 per cent respectively of the total sectoral emissions.

40. Information on emissions by gas for the IPPU sector was not reported in Pakistan's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that all industries included in the Party's IPPU sector result in $CO_2$ emissions only.

41. For the agriculture sector, information was reported using the 2006 IPCC Guidelines for AFOLU categories 3.A (enteric fermentation (3.A.1) and manure management (3.A.2)) and 3.C (biomass burning (3.C.1), indirect and direct $N_2O$ emissions from managed soils (3.C.4 and 3.C.5), urea application (3.C.3) and rice cultivation (3.C.7)). $CH_4$ emissions from enteric fermentation and $N_2O$ emissions from managed soils were identified as the highest emissions sources in the sector, accounting for 33.55 and 48.83 per cent respectively of the total sectoral emissions. The Party reported that GHG emissions for categories 3.A and 3.C were estimated at the national level using aggregated national data sets taken from published national and international sources, including national agriculture statistics for 2017–2018, the 2018 *Pakistan Economic Survey* and the statistical database of the Food and Agriculture Organization of the United Nations for 2018.

42. For the land sector, Pakistan reported emissions and removals of $CO_2$ and non-$CO_2$ gases from four land-use categories (3.B.1, 3.B.2, 3.B.3 and 3.B.4). Pakistan identified forest land (3.B.1) as the main contributor to GHG emissions in the land sector, accounting for 79.6 per cent of total sectoral emissions. The Party reported that forest types in the forest land category collectively emitted 57.54 Mt $CO_2$ eq and removed 32.68 Mt $CO_2$ eq in 2018. The second largest GHG emissions source in the sector was identified as cropland (3.B.2), which accounted for 18.8 per cent of the total sectoral emissions. The Party reported using approach 1 from the 2006 IPCC Guidelines, noting that land conversion from one category to another was not considered in the preparation of the GHG inventory. AD on forests and cropland and other land-use categories were collected from various national and international sources, including forest reference emission level/forest reference level and national forest monitoring system data, its MRV system for REDD+, national agriculture statistics for 2017–2018, the statistical database of the Food and Agriculture Organization of the United Nations for 2018 and the Forestrypedia.[2]

43. Information on emissions from HWP (3.D.1) was not reported in Pakistan's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that data availability and consistency were the main challenges faced in estimating these emissions.

44. Pakistan reported in its BUR that it estimated $CO_2$ emissions on the basis of carbon stock changes from biomass, dead organic matter and soils. However, it did not report any numerical information on these stock changes on a disaggregated basis. During the technical analysis, the Party clarified that it is working to collect relevant data for future inventories and recalculating previous inventories where possible.

45. For the waste sector, Pakistan reported emissions from solid waste disposal (4.A), waste incineration and open burning (4.C) and wastewater treatment and discharge (4.D). The main emissions for this sector were from solid waste disposal sites and wastewater treatment and discharge, which accounted for 47.1 and 45.0 per cent respectively of the total sectoral emissions. AD were provided for municipal solid waste generation, together with assumptions applied about municipal solid waste management.

46. The sources of AD used were not reported in Pakistan's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that a single-phase model based on bulk waste was used to calculate emissions from solid waste disposal sites owing to limited time-series data available, and that the main sources of data used were government documents, reports and research papers, with data gaps filled by data provided by relevant government and private sector departments.

47. Pakistan reported information on national GHG emissions for 1994, 2008, 2012 and 2015. However, those emissions were estimated using the Revised 1996 IPCC Guidelines, as the 2006 IPCC Guidelines were used for the latest submission only. Therefore, estimates of emissions reported for those years were not consistent with the 2017–2018 GHG inventory.

[2] https://forestrypedia.com/.

48. Information on why the GHG inventories reported in the Party's previous NCs were not recalculated was not reported in its BUR. During the technical analysis, the Party clarified that it has started recalculating the previous inventories with a view to providing consistent information in its next BUR. It is also developing software and an IT platform that will enable it to acquire, store and process sectoral data for the compilation of its national GHG inventory, which will enable it to enhance the consistency of its GHG inventory reporting in the future.

49. Pakistan reported that there are weak institutional arrangements in place for preparing national GHG inventories. Pakistan acknowledged in the BUR the need to strengthen the system for preparing national GHG inventories that incorporates legal, institutional and procedural elements so as to ensure consistency and continuity in its GHG inventory preparation process. During the technical analysis, the Party explained that it will gradually strengthen the MRV system for its national GHG inventories by developing a road map, incorporating institutional and regulatory arrangements by federal and provincial agencies and enabling sectoral agencies to collect, align and report data in accordance with the MPGs.

50. A key category analysis was not reported in Pakistan's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party provided such analysis, which identified 23 key categories by level assessment for 2018; however, that analysis did not include $CH_4$ emissions (10,229.52 Gg $CO_2$ eq) from unmanaged waste disposal sites, as clarified by the Party during the technical analysis.

51. Information on $CO_2$ fuel combustion emissions using the reference approach was not reported in Pakistan's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that it is in the process of establishing an IT platform that will enable it to report using the reference approach.

52. Information on international aviation and marine bunker fuels was not reported in Pakistan's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that emissions from international aviation and international waterborne navigation (marine bunker fuels) were 848.12 and 124.46 Gg $CO_2$ eq respectively in 2018.

53. Information on the uncertainty assessment (level) of the national GHG inventory was not reported in Pakistan's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that an uncertainty analysis was not carried out because the data collected did not include uncertainty values. It further clarified, however, that it is working with data providers to identify uncertainties pertaining to GHG inventory compilation and understands the importance of an uncertainty analysis.

54. The TTE noted that the transparency of the information reported on GHG inventories could be enhanced by addressing the areas noted in paragraphs 30, 33, 34, 35, 37, 43, 44, 46, 48, 50, 51, 52 and 53 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

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

56. The information reported provides a clear overview of the Party's mitigation actions and their effects. In its BUR, Pakistan reported information on its national context and framed its national mitigation planning and actions in the context of its 2012 National Climate Change Policy (updated in 2021), its National Disaster Risk Reduction Policy (2013) and its Framework for Implementation of Climate Change Policy (2014–2030), which provide a comprehensive framework for policy goals and actions with regard to climate change. Pakistan reported that climate change has been mainstreamed in and integrated into its development plans. Most of the mitigation actions are in the energy and forestry sectors.

57. The Party reported information on its mitigation actions in narrative format only and the reason for this was not clear to the TTE. The generalized information on measures,

strategies, policies, plans and projects made it difficult for the TTE to identify individual mitigation actions. During the technical analysis, Pakistan clarified that it had limited information with which to compile and report on mitigation actions, and stated that capacity-building on climate analytics may be required to prioritize mitigation actions and develop a uniform MRV mechanism for mitigation actions.

58. Consistently with decision 2/CP.17, annex III, paragraph 12(a), Pakistan reported in the BUR the names and descriptions of the mitigation actions, including information on the nature of the actions and sector coverage.

59. Pakistan did not report in its BUR information on gases covered, quantitative goals or progress indicators for most mitigation actions. During the technical analysis, the Party reported that this was mainly due to weak institutional arrangements. It further stated that it expects quantifiable goals and progress indicators for sectors and subsectors to be available for the next BUR, which will help to systematically track progress in achieving mitigation actions.

60. The Party reported information on the objectives of relevant national policies and legislation (e.g. the Government of Pakistan adopted the National Forest Policy (2015), which has broad objectives, including increasing awareness, reducing deforestation, enhancing afforestation, managing protected areas, reducing carbon footprints and helping to implement initiatives under different relevant international conventions of which Pakistan is a member), but did not report the objectives of specific mitigation actions for most sectors. Pakistan reported information on some results achieved with action-specific metrics for some mitigation actions.

61. Mitigation actions in the energy sector focus mainly on energy efficiency and conservation through the National Energy Efficiency and Conservation Act (2016), which regulates energy conservation practices in the country. The Party reported that the Act facilitated several programmes, including a programme on energy efficiency standards and labelling, which was launched in 2016 and aims to reduce energy consumption and facilitate implementation of the Minimum Energy Performance Standards developed by the Pakistan Standards & Quality Control Authority for the manufacturing of electric fans, electric motors and cooking stoves. The Party also reported renewable energy mitigation actions aimed at promoting the use of bioenergy, solar energy, hydroelectric energy, biofuel energy, wind energy, geothermal energy and nuclear energy.

62. For the industry sector, Pakistan reported on mitigation actions aimed at improving electrical system efficiency, with 40 companies audited and efficiency improved by 5 per cent on average, as well as at switching from single-stage dry kilns to high-efficiency multi-stage kilns; waste heat recovery and power generation in the cement sector; switching from existing bull trench/clamp kilns to zig zag or other modern designs in brick manufacturing; improving thermal efficiency; introducing energy audits and periodic inspections for manufacturing processes; promoting energy management practices; promoting the use of bagasse for electricity generation in the sugar industry; and requiring industries to demonstrate regular maintenance of boilers and other machinery and their replacement with higher-performance, more efficient equipment.

63. Pakistan reported legislative and policy instruments relating to mitigation actions in the transport sector that include the Electric Vehicle Policy, the National Transport Policy of 2018, the Automobile Development Policy (2016), the National Aviation Policy (2015) and the National Trade and Transportation Facilitation Strategy (2016). Mitigation actions in the transport sector relate to electric vehicles, implementing fuel economy standards, upgrading, expanding and modernizing the railway network, minimizing GHG emissions from transport and minimizing the adverse effects of aviation emissions on the environment.

64. Mitigation actions in the buildings sector relate to building codes, green building initiatives, energy audits for buildings, labelling schemes for fans, energy-efficient lighting, and energy efficiency standards and labelling for air-conditioning units. For example, the Party reported on its green building guidelines that were launched in 2016, energy audits for buildings and the construction of green buildings, collectively estimated to save 30 GWh energy annually. The Party also reported on its energy labelling scheme targeting 16 different manufacturers, which was launched in 2016, with the capacity to save 22,320 Mt $CO_2$ eq

annually by supressing electricity demand by 10–15 MW on the user side and 25–30 MW on the generation side, and on energy-efficient lighting in residential, commercial, industrial and outdoor sectors. The mitigation action pertaining to the revision of the building codes is aimed at reducing energy consumption by 30–40 per cent, with an expected energy saving of 0.5 Mtoe. Under the green building initiatives, Pakistan reported retrofitting lights and fans in public buildings in Punjab to save 30 GWh energy annually, which will result in total annual savings of 22,320 Mt $CO_2$ eq once completed. Further, the Party reported that redesigned energy-efficient ceiling fans have the potential to save 40–60 W per fan on average, which, assuming the production of 4.5 million ceiling fans, could save up to 180–270 MW electricity per annum.

65. Mitigation actions in the forestry sector focus mainly on increasing forest cover. Pakistan reported that its legal instruments underpinning forest management are the National Forest Policy (2015) and the Forest Act of 2019, and provided information on a number of mitigation actions in the forestry sector, including the implementation of community-based forest management or social forestry measures, particularly to conserve rare species and conifer forests; the implementation of agroforestry practices, particularly in irrigated farmlands through the planting of multipurpose and fast-growing tree species; developing commercial plantations; afforestation of rangeland and degraded land; reforestation of degraded land; preservation of forest land; management of forest fires; planting of riverine plantations; and provision of alternative fuels to reduce dependency on fuelwood. Other mitigation actions reported by the Party in the forestry sector include a programme under the Mangroves for the Future initiative; preparation and implementation of the National Biodiversity Strategy and Action Plan; revival of forestry and wildlife resources under the Green Pakistan Programme, which is currently being upscaled into the Ten Billion Tree Tsunami; scaling-up of the Glacial Lake Outburst Flood risk reduction programme in northern Pakistan; reversal of deforestation and degradation in high-conservation-value pine forests in Pakistan; and implementation of the Sustainable Land Management Programme to Combat Desertification in Pakistan.

66. Mitigation actions in the agriculture sector focus mainly on improving the management of irrigation and water systems, reducing $CH_4$ emissions from rice cultivation, promoting better manure storage and management, introducing genetically modified, more carbon-responsive crops, limiting crop burning practices and reducing the production of $CH_4$ emitted during enteric fermentation. Other mitigation actions reported by the Party are the introduction of new breeds of cattle that produce less $CH_4$, the use of appropriate chemical fertilizers to reduce $N_2O$ release from soils, and the promotion of no-till farming to improve soil carbon and nutrient management. The mitigation actions reported have the potential to save 11.83 Mt $CO_2$ eq by 2030.

67. Mitigation actions in the waste sector focus mainly on waste minimization, waste prevention, recycling, composting, waste-to-energy incineration, waste segregation, anaerobic digestion for biogas production, creating sanitary landfill sites with $CH_4$ capture capacities, promoting health-care waste management, tax waivers for recycling enterprises, and $CH_4$ capture from landfills and wastewater management facilities. The policy and regulatory instruments underpinning these measures include the National Policy on Control and Safe Management of Radioactive Waste, the National Climate Change Strategy and Action Plan 2011–2015, guidelines for handling, storage, inspection and accident investigation of hazardous substances and hazardous wastes, the Pakistan Environmental Protection Act, including section 11 thereof prohibiting the discharge of waste in an amount or concentration that violates the National Environmental Quality Standards, the Hazardous Substances Rules of 1999, and guidelines for hospital waste management. Specific mitigation actions in the waste sector include drafting solid waste management guidelines, which are being prepared with the support of the Japan International Cooperation Agency; a project on converting agricultural biomass wastes into energy and materials, run with the United Nations Environment Programme International Environmental Technology Centre and North Sindh Urban Services Corporation Limited; and a project on water supply, sanitation and solid waste management run by The Urban Unit.

68. Owing to the Party’s reporting in narrative format, it was difficult for the TTE to understand the progress of implementation for many mitigation actions. In many cases, the

Party provided a date of adoption but did not clearly specify whether the action had been implemented, was ongoing or had not been initiated. This was the case for the waste sector in particular, for which broad policies and strategies were described in most cases. During the technical analysis, Pakistan clarified that, owing to its weak institutional arrangements, it had difficulties in tracking the progress of mitigation actions. For the waste sector, although mitigation strategies and plans are identified in the National Climate Change Policy, the Party has not yet provided an implementation framework.

69. Information on the methodologies and assumptions used to evaluate the results achieved for mitigation actions was not reported for any sector. During the technical analysis, Pakistan provided clarification for the energy sector only, stating that estimates of GHG emission reductions are based on a reduction in energy consumption compared with the 'business as usual' level.

70. Information on results achieved, such as estimated outcomes and emission reductions, and the co-benefits of the actions was not provided for most of the actions in the energy, industry, transport, forestry and waste sectors and for some actions in the buildings and agriculture sectors. During the technical analysis, the Party clarified that it lacks an institutional framework for mitigation actions and that the documentation of relevant information remained a challenge, but noted that in some cases the expected results are calculated as specific project outcomes, for example improved electrical system efficiency in the industry sector, for which 287 GWh energy savings were achieved.

71. Pakistan provided information on its involvement in international market mechanisms and reported a number of projects under the clean development mechanism, which include a project supporting the transition to more efficient forms of lighting, an organic waste project and two composting projects.

72. Pakistan reported information on its domestic MRV arrangements by sector in accordance with decision 2/CP.17, annex III, paragraph 13. It reported in its BUR its proposed national MRV structure, consisting of a single national entity as the supervisory body.

73. The TTE noted that the transparency of the information reported on mitigation actions could be enhanced by addressing the areas noted in paragraphs 57, 59 and 68–70 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

74. As indicated in table I.3, Pakistan 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.

75. The Party 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, the Party identified constraints and gaps and related financial, technical and capacity-building needs in the areas of GHG inventory preparation, vulnerability assessments, and adaptation and mitigation actions, and provided related solutions for overcoming them. Its main constraints and gaps were identified as (1) weak institutional arrangements for preparing national GHG inventories; (2) a lack of credible AD and country-specific EFs; (3) limited technical expertise in climate change related modelling and forecasting; (4) technical and financial issues hindering the implementation of adaptation actions; (5) difficulties in mainstreaming climate change in sectoral policies and mechanisms to evaluate progress in implementing adaptation actions; and (6) technical and financial issues hindering the implementation of mitigation technologies. To identify those constraints and gaps, the Party carried out a literature review, including of its NCs and other national climate-related policies; solutions and associated needs were proposed though a consultative process involving relevant federal and provincial government departments and civil society organizations.

76. The Party 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, the Party reported that it received USD 342,000 from the GEF to prepare its first BUR, as well as USD 50,000 from national sources. The information reported indicates that the Party also received capacity-building support from the GEF Trust Fund for strengthening its institutional arrangements and training for preparing its first BUR. It also received funding from sources such as the Green Climate Fund, the GEF and the Korea International Cooperation Agency for mitigation projects.

77. Information on some sources of technical support received, such as for installing automatic weather stations in ecological zones and delineating flood and drought-prone areas, was not reported in Pakistan's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that this support was provided by the Pakistan Agricultural Research Centre.

78. The Party 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. However, the technology needs were not reported separately, but rather collectively with other types of needs. Some examples of technology needs reported by the Party relate to adopting dry (aerobic) rice production technology, setting up satellite-based crop monitoring and yield estimation systems and promoting solar groundwater pumping solutions.

79. Information on whether the TNA report mentioned in BUR section 2.4 served as an input to identifying the technology needs reported was not clearly reported in the Party's BUR. In addition, it was not clear why information on technology needs and support received was not reported on a disaggregated basis. During the technical analysis, the Party reported that the technology needs and support received were identified together with other types of needs and support as part of the literature review (including a review of the TNA report) and consultative process described in paragraph 75 above.

80. 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 77 and 79 above, which could facilitate a better understanding of the information reported on needs and support received.

### 5. Any other information

81. The Party reported information on its institutional mechanism for dealing with gender and climate change aspects and presented conclusions and recommendations that it will use to prepare a gender action plan that promotes gender equality while taking into account the country's social and political constraints. It noted the need to empower women to streamline efforts to combat climate change in a patriarchal society.

## D. Identification of capacity-building needs

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

(a) Enhancing capacity to prepare reports in accordance with the UNFCCC guidelines for the preparation of NCs from non-Annex I Parties, the UNFCCC reporting guidelines on BURs and the MPGs and using the latest IPCC methodologies for GHG inventory preparation;

(b) Enhancing capacity to provide comparable information addressing the tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF;

(c) Building capacity to use notation keys in sectoral and summary tables to improve the transparency of information provided in the GHG inventory;

(d) Building capacity to identify all categories under which emissions occur but have not been estimated;

(e) Enhancing institutional capacity to ensure consistency in GHG inventory preparation and reporting;

(f) Enhancing technical capacity to perform recalculations of the GHG inventory to ensure the consistency of the time series;

(g) Enhancing capacity to collect AD and apply IPCC guidelines to estimate emissions of F-gases (HFCs, PFCs and $SF_6$);

(h) Enhancing capacity to collect energy supply data and estimate and report $CO_2$ emissions from fuel combustion using the reference approach;

(i) Enhancing technical capacity to estimate the level of uncertainty associated with GHG inventory data;

(j) Enhancing capacity to apply uncertainty assessment methodologies;

(k) Enhancing capacity to systematically categorize and report specific mitigation actions in tabular format and to include all information required under decision 2/CP.17, annex III, paragraph 12;

(l) Enhancing capacity to identify gases covered, quantitative goals and progress indicators for each mitigation action;

(m) Strengthening capacity to develop and apply methodologies and assumptions underlying the estimation of emission reductions for mitigation actions;

(n) Enhancing capacity to monitor the progress of implementation of and the underlying steps taken or envisaged for mitigation actions;

(o) Enhancing capacity to use and report information on international market mechanisms;

(p) Enhancing capacity to identify and quantify results achieved in terms of action-specific metrics, emission reductions or co-benefits for sustainable development;

(q) Enhancing capacity to report technology needs and technology support received separately from technical assistance needed and received;

(r) Enhancing capacity to identify and report financial resources and capacity-building and technical support needed and received.

83. The TTE noted that, in addition to those identified during the technical analysis, Pakistan reported several capacity-building needs in BUR table 6.7 covering the following areas:

(a) GHG inventory preparation;

(b) Vulnerability assessments;

(c) Mitigation actions;

(d) Adaptation actions.

# III. Conclusions

84. The TTE conducted a technical analysis of the information reported in the first BUR of Pakistan in accordance with the UNFCCC reporting guidelines on BURs and concludes that the information reported is partially consistent. It provides an overview of mitigation actions and their effects; 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. The TTE concludes that the information analysed is partially transparent.

85. Pakistan reported information on its existing and planned institutional arrangements relevant to the preparation of its NCs and BURs on a continuous basis. The description covers some key aspects of the institutional arrangements, including the roles and responsibilities of

the MoCC as the overall coordinating entity; the involvement and roles of other institutions and the research arm of MoCC, the Global Change Impact Studies Centre, which collects and manages data from relevant ministries and departments and prepares the national GHG inventory; and the current system for monitoring parameters, including related to GHG emissions, used for the GHG inventory. Pakistan outlined that it does not have formally established institutional arrangements for GHG inventory preparation and that its GHG inventories are prepared when needed. The Party reported that it is focusing on developing institutional arrangements and an MRV system to facilitate reporting to the UNFCCC on a continuous basis, and proposed institutional arrangements covering the following five components: stakeholder engagement, organizational mandates, expertise, data flows, and coordination systems and tools.

86. In its first BUR, submitted in 2022, Pakistan reported information on its national GHG inventory for 2018. This included GHG emissions and removals of $CO_2$, $CH_4$ and $N_2O$ for all relevant sources and sinks. The inventory was developed on the basis of tier 1 methodology from the 2006 IPCC Guidelines. The total GHG emissions for 2018 were reported as 458,320 Gg $CO_2$ eq (excluding land and HWP) and 489,840 Gg $CO_2$ eq (including land and HWP). The main categories were identified as energy industries, road transport, fuel combustion from construction, cement production, livestock and managed soil. Estimates of F-gases, comparable information addressing the tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF and uncertainty assessments were not provided owing to difficulties in obtaining the necessary data, as clarified by the Party during the technical analysis. Estimates of emissions from fuel combustion using the reference approach, but the Party clarified that it is establishing an IT platform that will enable it to report using the reference approach.

87. Pakistan reported information on mitigation actions and their effects in narrative format in the energy, industry, transport, buildings, forestry, agriculture and waste sectors. The mitigation actions focus on energy efficiency and conservation in the industrial, buildings and transport sectors; renewable energy use; waste source reduction through waste prevention, recycling and composting; $CH_4$ reduction from livestock enteric fermentation and rice production; manure management and storage; and agroforestry activities. The Party only reported the results achieved, including emission reductions, for a few mitigation actions in the energy and agriculture sectors. During the technical analysis, the Party clarified that a lack of formal institutional arrangements was the main reason for not collecting and reporting some information on mitigation actions (such as quantitative goals, progress indicators, progress of implementation and results achieved). It reported on its existing MRV arrangements, its plans to establish institutional arrangements and its proposed national MRV structure.

88. Pakistan reported information on key constraints, gaps and related needs in the areas of GHG inventory preparation, vulnerability assessments, and adaptation and mitigation actions, and provided related solutions. These constraints, gaps and needs were identified on the basis of a literature review and a detailed survey to collect primary information. Information was reported on the technical, technology transfer and capacity-building support received. The Party reported that it received financial support of USD 342,000 from the GEF for preparing its first BUR, which was supplemented with USD 50,000 from national sources, and capacity-building support from the GEF Trust Fund for strengthening its institutional arrangements and training for preparing its first BUR. The Party also reported that it received funding for mitigation projects from sources such as the Green Climate Fund, the GEF and the Korea International Cooperation Agency. Information on the sources of some technical support received was not reported, and information on technology transfer was not provided on a disaggregated basis. During the technical analysis, the Party clarified that such support was provided by the Pakistan Agricultural Research Centre and clarified that technology needs and support were identified together with other types of needs and support as part of a literature review and consultative process.

89. The TTE, in consultation with Pakistan, identified the 18 capacity-building needs listed in chapter II.D above, which 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.

Pakistan identified the capacity-building needs referred to in paragraph 82(a), (b), (e–j), (o) and (r) above as being of high priority, with remaining ones being of medium priority.

# Annex I

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

| *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 | Pakistan submitted its first BUR in April 2022; the GHG inventory reported is for 2017–2018. |
| Decision 2/CP.17, annex III, paragraph 4 | Non-Annex I Parties should use the methodologies established in the latest UNFCCC guidelines for the preparation of NCs from non-Annex I Parties approved by the Conference of the Parties or those determined by any future decision of the Conference of the Parties on this matter. | Yes | The Party used the 2006 IPCC Guidelines. |
| Decision 2/CP.17, annex III, paragraph 5 | The updates of the section on national inventories of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol should contain updated data on activity levels based on the best information available using the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF; any change to the EF may be made in the subsequent full NC. | No | |
| 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 Party reported emissions for 2018 using the 2006 IPCC Guidelines. Historical emissions for 1994, 2008, 2012 and 2015 were also presented, but these were not recalculated using the 2006 IPCC Guidelines. |
| Decision 2/CP.17, annex III, paragraph 8 | Non-Annex I Parties that have previously reported on their national GHG inventories contained in their NCs are encouraged to submit summary information tables of inventories for previous submission years (e.g. for 1994 and 2000). | Yes | This information is reported for 1994, 2008, 2012 and 2015, but was not recalculated using the 2006 IPCC Guidelines. |

| *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 a national inventory report as a summary or as an update of the information contained in decision 17/CP.8, annex, chapter III (National greenhouse gas inventories), including: | | |
| | (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); | Partly | Emissions were provided on a gas-by-gas basis in $CO_2$ eq. The GWP values used were not reported. |
| | (b) Table 2 (National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF6). | No | |
| 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 IPCC good practice guidance to assist in developing inventories that better reflect their national circumstances. | No | |
| Decision 17/CP.8, annex, paragraph 13 | Non-Annex I Parties are encouraged to describe procedures and arrangements undertaken to collect and archive data for the preparation of national GHG inventories, as well as efforts to make this a continuous process, including information on the role of the institutions involved. | Yes | |
| Decision 17/CP.8, annex, paragraph 14 | Each non-Annex I Party shall, as appropriate and to the extent possible, provide in its national inventory, on a gas-by-gas basis and in units of mass, estimates of anthropogenic emissions of: | | |
| | (a) $CO_2$; | Partly | Notation keys were not used in the tables with numerical values; therefore, it was not possible to identify the categories for which emissions occurred but were not estimated. |
| | (b) $CH_4$; | Partly | Emissions were provided on a gas-by-gas basis in $CO_2$ eq. The GWP values used were not reported. Notation keys were not used. |
| | (c) $N_2O$. | Partly | Emissions were provided on a gas-by-gas basis in $CO_2$ eq. The GWP values used were not identified. Notation keys were not used. |
| 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) Carbon monoxide; | No | |
| | (b) Nitrogen oxides; | No | |
| | (c) Non-methane volatile organic compounds. | No | |
| Decision 17/CP.8, annex, paragraph 17 | Other gases not controlled by the Montreal Protocol, such as sulfur oxides, and included in the Revised 1996 IPCC Guidelines may be included at the discretion of Parties. | No | |
| Decision 17/CP.8, annex, paragraph 18 | Non-Annex I Parties are encouraged, to the extent possible, and if disaggregated data are available, to estimate and report $CO_2$ fuel combustion emissions using both the sectoral and the reference approach and to explain any large differences between the two approaches. | No | The information was reported only for the sectoral approach. |
| Decision 17/CP.8, annex, paragraph 19 | Non-Annex I Parties should, to the extent possible, and if disaggregated data are available, report emissions from international aviation and marine bunker fuels separately in their inventories: | | |
| | (a) International aviation; | No | |
| | (b) Marine bunker fuels. | No | |
| Decision 17/CP.8, annex, paragraph 20 | Non-Annex I Parties wishing to report on aggregated GHG emissions and removals expressed in $CO_2$ eq should use the GWP provided by the IPCC in its Second Assessment Report based on the effects of GHGs over a 100-year time-horizon. | NA | |
| 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 | The Party used the 2006 IPCC Guidelines. Tier 1 methodology was used for all sectors. |
| | (b) Explanation of the sources of EFs; | Yes | |
| | (c) Explanation of the sources of AD; | Partly | The Party used the 2006 IPCC Guidelines. The sources of AD |

| *Decision* | *Provision of the reporting guidelines* | *Assessment of whether the information was reported* | *Comments on the extent of the information provided* |
|---|---|---|---|
| | | | were provided for all sectors except the waste sector. |
| | (d) If non-Annex I Parties estimate anthropogenic emissions and removals from country-specific sources and/or sinks that are not part of the Revised 1996 IPCC Guidelines, they should explicitly describe: | NA | |
| | (i) Source and/or sink categories; | | |
| | (ii) Methodologies; | | |
| | (iii) EFs; | | |
| | (iv) AD; | | |
| | (e) Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building. | Yes | |
| Decision 17/CP.8, annex, paragraph 22 | Each non-Annex I Party is encouraged to use tables 1–2 of the guidelines annexed to decision 17/CP.8 in reporting its national GHG inventory, taking into account the provisions established in paragraphs 14–17. In preparing those tables, 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 | |
| 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; | No | |
| | (b) Underlying assumptions; | No | |
| | (c) Methodologies used, if any, for estimating these uncertainties. | No | |

*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 Pakistan**

| *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. | No | The Party did not include information in tabular format. |

| *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 12 | For each mitigation action or group of mitigation actions, including, as appropriate, those listed in document FCCC/AWGLCA/2011/INF.1, developing country Parties shall provide the following information, to the extent possible: | | |
| | (a) Name and description of the mitigation action, including information on the nature of the action, coverage (i.e. sectors and gases), quantitative goals and progress indicators; | Partly | Information on the coverage of gases by sector, quantitative goals and progress indicators was not reported for most of the mitigation actions. |
| | (b) Information on: | | |
| | (i) Methodologies; | No | |
| | (ii) Assumptions; | No | |
| | (c) Information on: | | |
| | (i) Objectives of the action; | Partly | The Party reported information on the objectives of relevant national policies and legislation but not on specific mitigation actions in most sectors. |
| | (ii) Steps taken or envisaged to achieve that action; | Yes | |
| | (d) Information on: | | |
| | (i) Progress of implementation of the mitigation actions; | Partly | The Party reported information on the progress of implementation of mitigation policies, strategies, plans and measures in all sectors except the waste sector, for which it only provided general information on ongoing and planned projects. |
| | (ii) Progress of implementation of the underlying steps taken or envisaged; | Partly | The Party specified a date of adoption for most mitigation actions. |
| | (iii) Results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions, to the extent possible; | Partly | The Party reported some information on results achieved with action-specific metrics in the energy sector, but did not report either quantitative emission reductions or qualitative co-benefits for any sector. |
| | (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 Pakistan**

| *Decision* | *Provision of the reporting requirements* | *Assessment of whether the information was reported* | *Comments on the extent of the information provided* |
|---|---|---|---|
| Decision 2/CP.17, annex III, paragraph 14 | Non-Annex I Parties should provide updated information on: | | |
| | (a) Constraints and gaps; | Yes | |
| | (b) Related financial, technical and capacity-building needs. | 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 was not provided on a disaggregated basis. |
| | (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 | The Party did not specify the source of the technical support received. |
| 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 | The Party provided comparable information on technology needs, mainly within the technical support section of the BUR. |
| | (b) Technology support received. | Yes | The Party provided comparable information on technology support received within the technical support section of the BUR. |

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

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