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Technical analysis of the second biennial update report of South Africa submitted on 28 December 2017

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 (non-Annex I Parties), consistently with their capabilities and the level of support provided for reporting, were to submit their first biennial update report (BUR) by December 2014. Further, 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 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 BURs at their discretion. This summary report presents the results of the technical analysis of the second BUR of South Africa conducted by a team of technical experts in accordance with the modalities and procedures contained in the annex to decision 20/CP.19.

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Abbreviations and acronyms

2006 IPCC Guidelines	*2006 IPCC Guidelines for National Greenhouse Gas Inventories*
AD	activity data
AFOLU	agriculture, forestry and other land use
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BUR	biennial update report
CDM	clean development mechanism
CGE	Consultative Group of Experts on National Communications from Parties not included in Annex I to the Convention
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
DEA	Department of Environmental Affairs of South Africa
DTU	Technical University of Denmark
EF	emission factor
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
ICA	international consultation and analysis
IPCC	Intergovernmental Panel on Climate Change
IPCC good practice guidance	*Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*
IPCC good practice guidance for LULUCF	*Good Practice Guidance for Land Use, Land-Use Change and Forestry*
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
MRV	measurement, reporting and verification
N_2O	nitrous oxide
NA	not applicable
NC	national communication
NDC	nationally determined contribution
NIR	national inventory report
NMVOC	non-methane volatile organic compound
non-Annex I Parties	Parties not included in Annex I to the Convention
NO_X	nitrogen oxides
PFC	perfluorocarbon
QA/QC	quality assurance/quality control
Revised 1996 IPCC Guidelines	*Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*
SF_6	sulfur hexafluoride
SO_X	sulfur oxides
TTE	team of technical experts
UNEP	United Nations Environment Programme
UNFCCC guidelines for the preparation of NCs from non-Annex I Parties	"Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention"
UNFCCC reporting guidelines on BURs	"UNFCCC biennial update reporting guidelines for Parties not included in Annex I to the Convention"

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 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 BURs. 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. South Africa submitted its first BUR on 17 December 2014, which was analysed by a TTE in the first round of technical analysis of BURs from non-Annex I Parties, conducted from 18 to 22 May 2015. After the publication of its summary report, South Africa participated in the first workshop for the facilitative sharing of views, convened in Bonn on 20 and 21 May 2016.

5. This summary report presents the results of the technical analysis of the second BUR of South Africa 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. South Africa submitted its second BUR on 28 December 2017, which is more than two years since the submission of its first BUR. The Party indicated capacity-related challenges and staff turnover within DEA as the reason for the delay.

7. The technical analysis of the BUR took place from 5 to 9 March 2018 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: Ms. Estefania Ardila Robles (member of the CGE from Colombia), Ms. Rocio Danica Condor (Italy), Ms. Liudmila Hristova Naydenova (Netherlands), Ms. Sekai Ngarize (Zimbabwe), Ms. Anne Nyatichi Omambia (former member of the CGE from Kenya), Ms. Lilian Portillo (former member of the CGE from Paraguay), Mr. Ioannis Sempos (Greece) and Mr. Arda Uludag (Turkey). Ms. Ngarize and Mr. Sempos were the co-leads. The technical analysis was coordinated by Ms. Anna Sikharulidze and Ms. Alma Jean (secretariat).

8. During the technical analysis, in addition to the written exchange, through the secretariat, to provide technical clarifications on the information reported in the BUR, the TTE and South Africa 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 South Africa's second BUR, the TTE prepared and shared a draft summary report with South Africa on 8 June 2018 for its review and comment. South Africa, in turn, provided its feedback on the draft summary report on 24 August 2018.

9. The TTE responded to and incorporated the Party's comments referred to in paragraph 8 above and finalized the summary report in consultation with South Africa on 14 December 2018.

[1] The consultation was conducted via teleconferencing.

II. Technical analysis of the biennial update report

A. Scope of the technical analysis

10. The scope of the technical analysis is outlined in decision 20/CP.19, annex, paragraph 15, according to which the technical analysis aims to, without engaging in a discussion on the appropriateness of the actions, increase the transparency of mitigation actions and their effects and shall entail the following:

(a) The identification of the extent to which the elements of information listed in paragraph 3(a) of the ICA modalities and guidelines (decision 2/CP.17, annex IV) have been included in the BUR of the Party concerned (see chapter 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 chapter 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 chapter II.D below).

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

B. Extent of 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 the progress made in their implementation; information on domestic MRV; and information on support needed and received.

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

14. The TTE noted improvements in the reporting in the second BUR of South Africa compared with the first BUR. Significant improvements have been made to the GHG inventory by incorporating more detailed AD, EFs and parameters across the sectors, and establishing a new GHG inventory improvement programme that will facilitate projects aimed at improving AD, country-specific methodologies and EFs for most of the key categories. The TTE also noted that South Africa has improved the transparency of reporting on the quantification of emission reductions for some mitigation actions and provided information on methods and assumptions. In addition, the Party has improved the reporting on the tracking of financial support received.

C. Technical analysis of the information reported

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

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

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

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

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

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

19. In accordance with decision 17/CP.8, annex, paragraph 3, South Africa reported in its first BUR information on national circumstances. In its second BUR, the Party provided an update on its national circumstances, including information on features of geography, climate and economy that may affect its ability to deal with mitigating and adapting to climate change, and a description of national and regional development priorities and circumstances.

20. South Africa transparently described in its BUR the 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, such as the South African National Climate Change Response Policy White Paper, which provides directions for the integration of climate change planning and action into the various levels of government. DEA is the central coordinating authority for environmental management, including climate change. The domestic institutional arrangements for addressing climate change response actions include a clear definition of the roles and responsibilities of different structures, provisions for public consultation and other forms of stakeholder engagement, and future improvement plans.

21. The TTE noted that, in South Africa's second BUR, the information reported on the institutional arrangements for the preparation and submission of NCs and BURs on a continuous basis identifies the coordinating institution and the other agencies involved in the process. DEA is the coordinating institution that compiles the NCs and BURs and lies within the Chief Directorate of Climate Change Monitoring and Evaluation.

22. South Africa reported on its proposed domestic MRV system, which includes a National Climate Change Response Monitoring and Evaluation System. This system is designed to operate at the national level and covers three elements: data and information coordination networking, a national climate change response database and the GHG inventory system. The proposed system reflects the current vision of South Africa's Government, and implementation is expected to be initiated in the near future.

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

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

24. South Africa submitted its second BUR in December 2017, and the GHG inventory data reported are for the 2000–2012 time series, which is more than four years prior to the date of the BUR submission. In the preface to the BUR, South Africa indicated that it faced some capacity-related challenges within DEA, and, during the technical analysis, the Party clarified that various technical and institutional capacity-related challenges were caused by the loss of DEA personnel working on BURs and NIRs. Consequently, there was a delay in submitting the BUR as new personnel had to be trained.

25. South Africa submitted an NIR as part of its BUR submission. Comprehensive and detailed information on each category was provided in the NIR in a clear, systematic and well-organized manner, including a description of categories, an overview of shares and trends in emissions, a description of methodological issues, sources of data (EFs, AD and

other parameters), an uncertainty analysis, information on time-series consistency and source-specific QA/QC recalculations, planned improvements and recommendations. In addition, the TTE noted that significant improvements were made to the GHG inventory by improving AD and EFs in many categories and using more consistent land-cover maps and commends the Party for its efforts.

26. GHG emissions and removals reported in the BUR submission cover the 2000–2012 inventories, and were estimated using a combination of tier 1 and tier 2 methodologies from the 2006 IPCC Guidelines for most source and sink categories. For some categories (e.g. ammonia production, aluminium production and nitric acid production), South Africa used tier 3 methods. The TTE commends the Party for applying tier 2 and tier 3 methodologies to improve the accuracy of its emission estimates.

27. With regard to the methodologies used, information was reported transparently in the NIR and included comprehensive explanations of the methods and sources of data used to prepare the national GHG inventory, as well as information on updated AD and EFs. South Africa also reported on the establishment of a new GHG inventory improvement programme that will facilitate projects aimed at improving sector-specific AD, country-specific methodologies and EFs for most of the key categories in the inventory.

28. The total GHG emissions for 2012 reported in the BUR, including AFOLU, amounted to 518,297 Gg CO_2 eq, an increase of 19.3 per cent since 2000 (434,304 Gg CO_2 eq). Those emissions include 433,839.25 Gg CO_2, 55,436.76 Gg CO_2 eq CH_4 and 25,645.87 Gg CO_2 eq N_2O. The Party reported 1,396.12 Gg CO_2 eq HFC emissions and 1,979.19 Gg CO_2 eq PFC emissions. Emissions of SF_6 were not reported; however, South Africa plans to report them in future submissions.

29. Other emissions reported include an average of 1,458 Gg CO and 70 Gg NO_X emitted from biomass burning over the period 2000–2012.

30. Decision 17/CP.8, paragraph 22, encourages Parties to use tables 1 and 2 from the UNFCCC guidelines for the preparation of NCs from non-Annex I Parties in reporting their national GHG inventory. The TTE noted that South Africa did not include in its NIR tables 1 and 2 from the UNFCCC guidelines for the preparation of NCs from non-Annex I Parties. However, South Africa included comprehensive tables in appendix A to the NIR that were based on the 2006 IPCC Guidelines, and these tables provide a good overview of the GHG inventory. The Party did not use notation keys in the tables presented in appendix A to the NIR; however, it did report separately in table 1.14 of the NIR the categories for which emissions were not estimated, were included elsewhere or were not occurring. The TTE noted that using notation keys for elements for which no values are reported in the inventory tables could facilitate a better understanding of the information reported.

31. South Africa reported GHG emissions in CO_2 eq. The Party presented information in units of mass in the trends section of the NIR in graphical format without presenting the underlying numerical data in tabular format. The TTE noted that reporting estimates of emissions and removals on a gas-by-gas basis and in units of mass in inventory tables could facilitate a better understanding of the information reported, particularly if South Africa wishes to use GWP values from the AR4, as indicated in the NIR. During the review of the draft summary report prepared by the TTE, the Party clarified that it intends to report emissions in units of mass, to the extent possible, in its next BUR.

32. 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 were not provided because South Africa used the 2006 IPCC Guidelines. However, comparable information was reported throughout the NIR and its appendices. The TTE considers that sufficient comparable information, in terms of the level of disaggregation for the LULUCF categories, the land area and revised land-use transition matrices, the annual change in carbon stocks for each carbon pool and other parameters, was provided in appendices F and G to the NIR.

33. The shares of emissions that different sectors contributed to the total GHG emissions including AFOLU, as reported by the Party in the BUR, are for 2012: energy, 82.6 per cent; industrial processes, 7.2 per cent; AFOLU, 6 per cent; and waste, 4.2 per cent.

34. GHG emissions in 2012 from the energy sector amounted to 428,112 Gg CO_2 eq. The majority of the emissions were from the key categories identified by the Party, namely energy industries (63.2 per cent), transport (10.7 per cent) and manufacturing industries and construction (9.1 per cent). Information on the types of fuel used in the country was clearly reported. The CO_2 emissions from electricity production were estimated using country-specific EFs and plant-specific AD. A country-specific methodology was applied for calculating GHG emissions from the manufacture of solid fuels and other energy industries; that is, emissions were calculated on the basis of an actual process material balance analysis. The tier 1 approach and IPCC default EFs were used for other subcategories.

35. Industrial process emissions amounted to 37,129 Gg CO_2 eq, with 80.0 per cent coming from the metal industry, 11.9 per cent from the mineral industry, 3.6 per cent from the chemical industry and 4.5 per cent from other categories. The methods and data used to estimate GHG emissions for this sector were explained in a transparent manner in the NIR. South Africa reported that IPPU emissions were recalculated due to the availability of updated EFs for iron and steel production, updated AD on ferromanganese, and updated data on substitutes for ozone-depleting substances and zinc production. The recalculations resulted in a 20 per cent reduction in the estimated GHG emissions from the IPPU sector compared with the 2010 inventory (table 8 of the BUR), owning mostly to the adjusted EF for iron and steel production. South Africa reported emissions of PFCs (1,979.19 Gg CO_2 eq) and HFCs (1,396.12 Gg CO_2 eq). HFCs were reported for 2005–2012, while PFCs were reported for 2000–2012, during which period these emissions doubled. No explanation was provided for this increase. The TTE noted that reporting on the key drivers of these emissions could facilitate a better understanding of the information reported.

36. For the AFOLU sector, South Africa reported GHG emissions of 31,128 Gg CO_2 eq in 2012, with N_2O from agricultural soils and CH_4 from enteric fermentation being identified as the main key category emission sources in the sector. South Africa applied tier 2 methods and country-specific EFs for estimating CH_4 emissions from livestock enteric fermentation and manure management and for forest land remaining forest land. The methodology used to determine soil carbon was corrected to incorporate soil types and land-use change over the 20-year IPCC default transition period. South Africa reported on corrected AD for several subcategories (such as beef cattle, poultry, harvested wood products, biomass burning) and on estimating emissions from game on privately owned land, as well as from the dead organic matter carbon pool and other land for the first time. Detailed, higher-resolution land-cover maps were introduced. A detailed explanation was provided on the methodology for obtaining a land-use conversion matrix based on satellite data (Landsat 5 and Landsat 8) and on the definition of land-use categories used in South Africa's national GHG inventory. The recalculations performed for the AFOLU sector had the largest impact on the estimated total sectoral emissions (table 9 of the BUR), with increases of 50.4 and 49.6 per cent for 2000 and 2010, respectively, owing mostly to the availability of updated land-use change maps and corrected estimates for harvested wood products.

37. For the waste sector, South Africa reported emissions of 21,928 Gg CO_2 eq for 2012, with CH_4 from solid waste disposal sites contributing 84.0 per cent and from wastewater handling 16.0 per cent (both key categories). South Africa reported that source-specific recalculations were performed for the waste sector for the period 2000–2012 due to: (1) new population statistics for the period 2002–2012 from the 2011 national census conducted by the South African Statistics Council; and (2) updated information based on the 2012 *National Waste Information Baseline Report*,[2] which included the percentage of generated waste that is disposed to solid waste disposal sites, the municipal solid waste generation rate and industrial waste tonnage rates. The latter, and the gross domestic product reported by the South African Statistics Council, were used to estimate industrial waste generation rates.

38. The TTE noted that South Africa did not include the inventory years 1990 and 1994 in its BUR, as encouraged by the UNFCCC guidelines on BURs, although 1994 was reported in its initial NC. The Party stated in the BUR that data from the 1990 and 1994 GHG inventories were not included in the trend analysis because the Revised 1996 IPCC Guidelines had been applied for those inventories, thus hampering data comparability and

[2] Available at http://sawic.environment.gov.za/documents/1295.pdf.

consistency in reporting over time. During the technical analysis, South Africa further clarified that the inventory for 1994 was also not included in the BUR because of inadequate AD, as there were no data archiving systems when the inventory for 1994 was developed. South Africa also highlighted the current challenges associated with the limited number of technical staff compiling the inventory to dedicate additional work and time for back-extrapolation to 1994. South Africa included in its BUR an update of GHG inventories from its NC2, which included anthropogenic GHG emissions and removals for 2000, and an update of GHG inventories from its first BUR, which included emissions and removals for 2001–2010. Both updates were carried out using the methodologies contained in the 2006 IPCC Guidelines, thus generating a consistent 12-year time series for the period 2000–2012. The TTE noted that including the GHG inventory for the years 1990 and 1994 in the BUR could facilitate a better understanding of the information reported on the time series of the inventory. During the review of the draft summary report prepared by the TTE, the Party clarified that it will work on enhancing its capacity to comply with this provision in the future.

39. South Africa provided a detailed and comprehensive description of its institutional arrangements relevant to the preparation of its NCs and BURs on a continuous basis. The description covers key aspects of the institutional arrangements, such as roles and responsibilities of the overall coordinating entity, involvement and roles of other institutions and experts, mechanisms for information and data collection, and provisions for public consultation and other forms of stakeholder engagement.

40. South Africa reported a key category analysis performed for both the level of and the trend in emissions including all sectors. The BUR provides information on QA/QC measures for all sectors. The TTE commends South Africa for providing information on QA/QC measures in accordance with the IPCC good practice guidance.

41. The Party reported information on CO_2 fuel combustion using both the sectoral and the reference approaches. The difference in the estimates of the two approaches is 21 per cent for 2012, and the reasons for the observed difference between them are transparently described in the NIR (appendix D).

42. Information was reported on international aviation, but emissions from international marine bunker fuels were not reported separately owing to a lack of data. During the technical analysis, South Africa indicated that it will develop data on marine activities in order to improve the accuracy of the emission estimates for both waterborne navigation and marine bunkers, to the extent possible. The TTE noted that reporting information on such emissions in the BUR could facilitate a better understanding of the information reported.

43. South Africa did not report information on its use of GWP values consistent with those provided in the AR2, which are based on the effects of GHGs over a 100-year period. South Africa has reported its GHG inventory using the GWP values provided in the AR3, which are based on the effects of GHGs over a 100-year time-horizon, in order to calculate GHG emissions in CO_2 eq. According to South Africa, it may consider using GWP values from both the AR2 and the AR3 for its future submissions, in order to support both domestic and international reporting obligations. The TTE noted that reporting GHG emissions in CO_2 eq using GWP values from the AR2 could facilitate a better understanding of the information reported.

44. South Africa reported information on the uncertainty assessment of its national GHG inventory for the energy and IPPU sectors (in appendix C to the NIR). The uncertainty analysis was based on the tier 1 approach and covers all direct GHGs in these sectors. South Africa stated that the energy sector was determined to have an overall uncertainty of 6.5 per cent, while the trend uncertainty was 6.3 per cent. In contrast, the IPPU sector had an overall uncertainty of 30.6 per cent. This uncertainty was elevated due to the incorporation of subcategory 2.F (product uses as substitutes for ozone-depleting substances), which has no emission estimates for 2000–2004 and quite high emission estimates for 2005–2012. South Africa reported that if this category is excluded from the uncertainty analysis, the total uncertainty of the IPPU sector drops to 8.8 per cent and the trend uncertainty is reduced to 4.7 per cent. The Party reported that there were insufficient data to include the AFOLU and waste sectors in the uncertainty assessment; however, these sectors will be included in the next inventory. The TTE noted that including information on uncertainties for the AFOLU

and waste sectors in future submissions could facilitate a better understanding of the information reported.

45. The TTE noted that the transparency of the information reported could be further enhanced by addressing the areas noted by the TTE in paragraphs 30, 31, 35, 38 and 42–44 above, which could enable the TTE to better understand the information reported.

46. In paragraphs 33, 36 and 41 of the summary report on the technical analysis of South Africa's first BUR,[3] the previous TTE noted where transparency of information could be further enhanced. The present TTE noted that South Africa took into consideration the areas for improvement referred to in paragraph 41 of the summary report on the technical analysis of South Africa's first BUR by improving the transparency of the reporting on iron and steel production and by providing a clarification regarding emissions from the production of limestone and dolomite use in the BUR and in the NIR. The TTE commends the Party for enhancing the transparency of the information reported.

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

47. As indicated in table 2 in annex I, South Africa 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. The TTE commends South Africa for improving the transparency of the reporting on mitigation actions following the summary report on the technical analysis of its first BUR.

48. The information reported provides a clear and comprehensive overview of the Party's mitigation actions and their effects, including national context as outlined in its NDC. South Africa's overall approach to mitigation is informed by its contribution to reducing global GHG emissions and the management of poverty eradication. Policies and measures focus on meeting South Africa's Cancun Agreements pledge (2016–2020), while for the periods 2021–2025 and 2026–2030 the Party will focus on achieving the pledges made in its intended nationally determined contribution.[4] South Africa has pledged to reduce its GHG emissions by 34 per cent by 2020 and 42 per cent by 2025 below 'business as usual' emission levels under a 'peak, plateau and decline' scenario. This level of effort will see South Africa's GHG emissions peak between 2020 and 2025, plateau for approximately a decade and decline in absolute terms thereafter. Most of the reported mitigation actions are in the energy sector. The Party reports that the implemented mitigation actions contributed to estimated cumulative GHG emission reductions of 593.4 Mt CO_2 eq in the period 2000–2014, with the National Energy Efficiency Strategy response measure being responsible for most of the emission reductions.

49. The Party reported a summary of its mitigation actions in tabular format. It reported three groups of mitigation actions in the BUR: mitigation actions with quantified effects (in table 15), mitigation actions without quantified effects (in tables 22–26) and additional mitigation actions not included in the first BUR (in tables 27–30). Consistently with decision 2/CP.17, annex III, paragraph 12(a), for each group of mitigation actions, the information reported included a description, sector, nature of the action, goals and GHGs affected. However, the progress indicators were not explicitly reported. Information on progress indicators under the National Climate Change Response Monitoring and Evaluation System was provided in the BUR (section 6 and table 40). Information on progress indicators was reported at the country (tier 1) and sectoral (tier 2) level, but no information was provided on the level of response measures (tier 3). During the technical analysis, South Africa clarified that the monitoring and evaluation system is not yet fully implemented and operationalized, and highlighted the technical, institutional and financial constraints related to its operationalization. The Party mentioned that it is in the process of finalizing sector-specific MRV guidelines that will outline progress indicators and methodologies for assessing the impacts of mitigation actions. Further, South Africa clarified that, currently, information on mitigation actions is mainly gathered and analysed manually. The TTE noted that providing

[3] FCCC/SBI/ICA/2015/TASR.1/ZAF.

[4] See http://www4.unfccc.int/Submissions/INDC.

information on the progress indicators for mitigation actions could facilitate a better understanding of the information reported.

50. Information was reported on mitigation actions with quantified effects, including the methodologies and underlying assumptions used. South Africa indicated that emission reductions and environmental co-benefits reported for key governmental policies and measures were based on the World Resources Institute's 2014 policy and action standard[5] and on CDM methodologies.[6] Further details on methodologies were provided for this group of mitigation actions in table 18 of the BUR. The mitigation actions reported are mainly in the energy sector, including promoting the use of renewable energy sources and energy efficiency actions, and CDM projects. The objectives of the mitigation actions and information on the steps taken to achieve them were reported. The Party reported that mitigation measures in this group are implemented, adopted or ongoing. Information on the progress of implementation of the mitigation actions and on the underlying steps taken or envisaged was provided.

51. Information on the results achieved, such as estimated outcomes and estimated emission reductions, was also reported for mitigation actions with quantified effects. South Africa reported quantified sustainable development benefits of key mitigation projects until 2014, including socioeconomic benefits, such as jobs created, electricity saved and investments made, and environmental benefits, such as the reduction of certain air pollutants and of water use. South Africa reported that the implemented mitigation actions contributed to an estimated cumulative GHG emission reduction of 593.4 Mt CO_2 eq in the period 2000–2014, with the National Energy Efficiency Strategy response measure being responsible for most of the emission reductions. The Party did not clearly report on the GWP values used for its mitigation assessment. During the technical analysis, South Africa clarified that GWP values from the AR2 were used. The TTE noted that providing information on GWP values in the next BUR could facilitate a better understanding of the information reported.

52. Information was reported on mitigation actions without quantified effects, including the objectives of these actions and information on the steps taken to achieve them. These mitigation actions were further grouped by sector, namely energy (20 actions), IPPU (2 actions), AFOLU (7 actions), waste (3 actions) and financial (5 actions). The Party reported that its mitigation measures were derived from projects that are implemented, ongoing or planned. Information on the progress of implementation of the mitigation actions and on the underlying steps taken or envisaged was provided.

53. Information on quantified estimated outcomes and estimated emission reductions, or on associated methodologies and assumptions, was not reported for mitigation actions without quantified effects; however, information was provided on co-benefits, such as energy security, job creation and reduced air pollution. South Africa also reported in its BUR (section 3.1.4) that a study is currently under way to determine the effects and impacts of all national policies and measures. During the technical analysis, South Africa clarified that the study will assess the mitigation impact of major policies and measures, but will not necessarily assess all individual actions. During the review of the draft summary report prepared by the TTE, the Party clarified that the study was designed to focus on policies and measures that impact emission reductions, rather than those with actions that are deemed as insignificant. South Africa mentioned that some capacity-building gaps might be addressed, through the Capacity-building Initiative for Transparency presented to the Global Environment Facility, if the project is approved.

54. Information was reported on additional mitigation actions not included in the first BUR, including their objectives. These mitigation actions were further grouped under the energy (eight actions), IPPU (three actions), AFOLU (three actions) and waste (three actions) sectors. Information on the progress of implementation of the mitigation actions and on the underlying steps taken or envisaged was not provided. During the technical analysis, South Africa clarified that it encountered challenges in acquiring from data providers information on the progress achieved for the various measures, and also highlighted the personnel and

[5] See https://www.wri.org/publication/policy-and-action-standard.
[6] See https://cdm.unfccc.int/methodologies/index.html.

technical capacity constraints it faced in tracking progress. The Party reported that its mitigation measures were derived from projects that are implemented, ongoing or planned.

55. Information on the quantified estimated outcomes and estimated emission reductions, or on associated methodologies and assumptions, was not reported for most mitigation actions in this group, but information was provided on co-benefits, such as socioeconomic and environmentally sustainable growth. The mitigation actions with reported estimated emission reductions included some private sector initiatives for low-carbon installations and transport- and process-related improvements, as well as a project for diversifying electricity generation and the Kuzuko Lodge private game reserve thicket restoration project. In its BUR, the Party reported that progress in the implementation of the actions reported and mitigation effects achieved until 2016 will be reported in its third BUR.

56. South Africa provided information on its involvement in international market mechanisms as a Party to the Kyoto Protocol. The Party documented information on the CDM in table 15 of the BUR together with the first group of mitigation actions, aggregated under the themes renewable energy generation, energy efficiency, fuel switch, N_2O reduction, mine CH_4 capture and CH_4 emissions from wastewater/landfills; in table 16 as a summary of mitigation effects; and in table 22 under the theme of renewable electricity generation (e.g. National Solar Heating Programme, and Solar Park and Concentrated Solar Power Plant). No information on the total number of CDM projects was provided. In table 15, the UNFCCC was referred to as the data source for some CDM projects (e.g. fuel switch and N_2O emission reduction), and in table 16 the UNEP DTU Partnership[7] was cited as the data source for other CDM projects. South Africa reported a total cumulative GHG emission reduction equal to 8.2 Mt CO_2 eq for the period 2000–2014, excluding energy efficiency projects. During the technical analysis, the Party clarified that it will report separately on the CDM in its next submission, including all progress that can be tracked, but also highlighted that there are data collection and provision constraints in tracking the progress of all registered CDM projects because institutional arrangements have not yet been fully formalized. During the review of the draft summary report prepared by the TTE, the Party also clarified that the designated national authority at the Department of Energy requires more capacity as an institution in order to be able to track the status and progress of all registered CDM projects.

57. South Africa reported information on its domestic MRV arrangements. The Party indicated the National Climate Change Response Monitoring and Evaluation System as the overall system for monitoring all climate change information, policies, strategies and actions (see para. 22 above). The Party also reported that nationally appropriate mitigation actions are nested and developed within the Climate Change Flagship Programmes and are the building blocks or components of those programmes. It is not clear, however, how the MRV of mitigation actions is performed by the monitoring and evaluation system. During the technical analysis, South Africa clarified that its monitoring and evaluation system is not yet fully operationalized. The TTE noted that providing information on how mitigation actions are being monitored under the overarching MRV system of South Africa could facilitate a better understanding of the information reported.

58. The TTE noted that the transparency of the information reported could be further enhanced by addressing the areas noted by the TTE in paragraphs 49, 51 and 57 above, which could enable the TTE to better understand the information reported.

59. In paragraphs 66 and 67 of the summary report on the technical analysis of South Africa's first BUR, the previous TTE noted where the transparency of the reporting on the quantification of emission reductions could be enhanced or further enhanced. The current TTE noted that South Africa took into consideration these areas for improvement in sections 3.1 and 3.1.4 of its second BUR. The TTE commends the Party for enhancing the transparency of the information reported.

[7] The Partnership, formerly known as the UNEP Risoe Centre, operates under a tripartite agreement between Denmark's Ministry of Foreign Affairs, DTU and UNEP.

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

60. As indicated in table 3 in annex I, South Africa 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.

61. South Africa identified gaps and constraints related to the initiation, implementation and scaling up of mitigation actions due to a lack of MRV methodologies, institutional arrangements and trained human resources to implement programmes and projects. During the technical analysis, the Party clarified that there are additional constraints and gaps not reported in the BUR, and that those reported are in line with the ones included in its NDC. During the review of the draft summary report prepared by the TTE, South Africa clarified that technical and capacity-building needs reported in its second BUR address constraints and gaps that are additional to those in the NDC. In addition, the Party provided a comment clarifying that one of the main constraints related to the preparation of the GHG inventory is the shortage of technical staff within the GHG inventory team, thereby limiting the capacity of DEA to cover all sectors of the inventory. The TTE acknowledged the Party's clarification and noted that including the additional gaps and constraints in the next BUR would enhance the transparency of the reporting.

62. South Africa reported information related to financial, technical and capacity-building needs. It reported information related to the support received from international sources as well as domestic funds committed through government grants and loans. South Africa reported that it received financial support of USD 156.0 million in the form of grants and USD 1.033 billion in the form of loans over the period 2000–2014. Of this, 55.8 per cent was multilateral loans and 35.2 per cent was bilateral loans, mainly for mitigation actions. The Party received 67.9 per cent of the bilateral funds in the form of loans from Germany, 19.0 per cent as loans from France and 13.1 per cent as grant funding from various donor Parties. Of the multilateral support, up to 92.9 per cent was multilateral loans, mainly through the Clean Technology Fund, European Investment Bank and World Bank. The contributions received or committed as grant funding were mostly received through the Global Environment Facility.

63. South Africa reported information on financial resources and technical support received from the Global Environment Facility, which included the allocation of funding for its BUR. South Africa indicated that, owing to the delay in the receipt of funding for the first BUR, the approved funding was reallocated for the compilation of the second BUR.

64. South Africa reported information on its technology needs and technology support received. Its 2007 technology needs assessment was the basis for the technology needs reported in its second BUR, and the technology needs were nationally determined. The technology needs assessment was completed by 2007 and updated in 2017 by the Department of Science and Technology in collaboration with DEA; the results of the update will be reported in the Party's NC3.

5. Any other information

65. South Africa reported additional detailed information related to the initiatives reported in its first BUR and the progress of those initiatives, such as South Africa's NDC, nationally appropriate mitigation actions, National Climate Change Near-Term Priority Flagship Programme, Renewable Energy Near-Term Flagship Programme, Energy Efficiency and Energy Demand Management Near-Term Priority Flagship Programme, Carbon Capture and Storage Near-Term Priority Flagship Programme, Transport Near-Term Priority Flagship Programme, Waste Management Near-Term Priority Flagship Programme and vertically integrated nationally appropriate mitigation actions. Regarding adaptation actions, South Africa reported additional information related to actions presented in its NDC and the six goals established. Regarding capacity-building, additional information was reported on two initiatives, the Let's Respond Toolkit[8] and the Simplified 2050 Pathways Calculator.[9]

[8] See http://www.letsrespondtoolkit.org/home.

[9] Available at http://my2050.environment.gov.za.

D. Identification of capacity-building needs

66. In consultation with South Africa, the TTE identified the following capacity-building needs related to the facilitation of the preparation of subsequent BURs and participation in ICA:

(a) Enhancing technical capacity for GHG inventory development on a regular and continuous basis;

(b) Enhancing technical capacity for the development of the GHG management system, including for:

(i) Operationalizing the system in terms of the personnel capacity to operate and maintain it;

(ii) Operationalizing QA/QC components, processes and plans;

(c) Enhancing capacity related to the use of surrogate data or other splicing techniques from the 2006 IPCC Guidelines that can help fill data gaps and generate a consistent time series (including a dedicated project to specifically address the technical capacity and additional personnel needed to ensure that inventories are recalculated in cases where historical data or inventory years are missing);

(d) Enhancing technical capacity for the development of country-specific EFs for some key categories in the AFOLU sector, namely direct and indirect N_2O emissions from managed soils and land converted to cropland;

(e) Enhancing technical capacity for tracking land-use changes;

(f) Enhancing the technical capacity of national sectoral experts to prepare a GHG inventory with the aim of also increasing the number of experts in the GHG inventory team of DEA;

(g) Enhancing technical capacity for data collection on a regular basis in order to improve the accuracy of the emission estimates for both waterborne navigation and marine bunkers, including improving the capacity to develop modelling tools and estimate GHG emissions for the transport sector in general;

(h) Enhancing the capacity of data providers to estimate emission reductions, track the progress of mitigation actions and share data on emission reductions and progress on a regular and continuous basis;

(i) Enhancing the technical capacity of DEA to track the progress of mitigation actions;

(j) Building the capacity for undertaking comprehensive technical analyses to identify constraints and gaps at the operational level.

67. The TTE noted that, in addition to those identified during the technical analysis, South Africa reported several capacity-building needs related to mitigation and adaptation in table 39 and in the national inventory chapter of the BUR, covering the following areas:

(a) Aligning the GHG emissions inventory compilation process with the Statistical Quality Assessment Framework of South African Statistics Council;

(b) Performing mitigation potential analysis;

(c) Compiling GHG inventories for domestic and international reporting;

(d) Training provincial and local governments in project design and implementation;

(e) Developing and maintaining GHG inventory management systems for data storage and archiving;

(f) Developing MRV methodologies to validate and verify the emission reduction potential of projects (e.g. in the waste, energy and transport sectors);

(g) Enhancing institutional arrangements and human capital to effectively implement projects under the flagship programmes.

68. In paragraphs 91 and 93 of the summary report on the technical analysis of South Africa's first BUR, the previous TTE, in consultation with the Party, identified and prioritized capacity-building needs. In its second BUR, South Africa reflected that some of those capacity-building needs have been addressed, such as using higher-tier methodologies for the estimation of emissions for some key categories.

III. Conclusions

69. The TTE conducted a technical analysis of the information reported in the second BUR of South Africa in accordance with the UNFCCC reporting guidelines on BURs. The TTE concludes that the reported information is mostly consistent with the UNFCCC reporting guidelines on BURs and provides an overview of: national circumstances and institutional arrangements relevant to the preparation of NCs on a continuous basis; the national inventory of anthropogenic emissions by sources and removal by sinks of all GHGs not controlled by the Montreal Protocol, including an NIR; mitigation actions and their effects, including associated methodologies and assumptions; constraints and gaps and related financial, technical and capacity-building needs, including a description of support needed and received; the level of support received to enable the preparation and submission of BURs; domestic MRV; and any other information relevant to the achievement of the objective of the Convention. The TTE concluded that the information analysed is mostly transparent.

70. South Africa reported information on the institutional arrangements relevant to the preparation of BURs. DEA is the central coordinating authority for environmental management, including climate change, and is responsible for the compilation of BURs and NCs. The Party has taken significant steps to create institutional arrangements that allow for the sustainable preparation of BURs, including organizational improvements and knowledge-sharing procedures to facilitate sectoral information transfer. South Africa reported in its BUR on progress in and plans for improving the overall MRV system, namely the National Climate Change Response Monitoring and Evaluation System.

71. In its second BUR, submitted in 2017, South Africa reported information on its national GHG inventory for 2000–2012. This included GHG emissions and removals of CO_2, CH_4 and N_2O for all relevant sources and sinks as well as the precursor gases. Estimates of emissions of fluorinated gases were reported for HFCs and PFCs, but not for SF_6 owing to difficulties in obtaining the necessary data, as clarified by the Party during the technical analysis. The inventory was developed using the 2006 IPCC Guidelines. The total GHG emissions for 2012 were reported as 539,112 CO_2 eq (excluding forestry and other land use) and 518,297 CO_2 eq (including forestry and other land use). South Africa performed both level and trend key category analyses for individual key categories, and 37 key categories were identified. CO_2 emissions from solid fuel combustion in energy industries (the main activity for electricity and heat production) in the energy sector was the top emission source, accounting for 47.9 per cent of emissions (excluding AFOLU) in 2012. The main key categories in other sectors were land converted to forest land (CO_2) in the AFOLU sector, solid waste disposal (CH_4) in the waste sector and iron and steel production in the metal industry (CO_2) in the IPPU sector.

72. South Africa reported information on mitigation actions and their effects, including the mitigation goal of reducing emissions by 34 per cent by 2020 and by 42 per cent by 2025 below 'business as usual' emission levels. The mitigation actions were categorized into three groups, where the first group of actions included those for which the mitigation effects had been quantified. These mitigation actions are mainly in the energy sector, with the National Energy Efficiency Strategy response measure being responsible for most of the emission reductions, resulting in overall cumulative GHG emission reductions of 428.1 Mt CO_2 eq in the period 2000–2014. For all reported mitigation actions in the first group, cumulative GHG emission reductions of 593.4 Mt CO_2 eq were reported for the period 2000–2014. South Africa also presented actions without quantified effects as the second group of actions, and

new mitigation actions not included in the first BUR of South Africa as the third group. The mitigation actions in the second and third group cover the energy, IPPU, AFOLU and waste sectors. The social, economic and environmental co-benefits, such as energy security, job creation and improved air quality, were provided for these two groups of actions, while estimated emission reductions were reported for some mitigation actions in the third group.

73. South Africa reported information on key constraints, gaps and related needs in relation to the initiation, implementation and scaling up of mitigation actions. The BUR clearly identifies the technical, technology and capacity-building needs focusing on mitigation and adaptation. Information on support received and needed was reported in tabular format. Information on technology needs and technology support received was also reported in the BUR. The technology needs were identified on the basis of the 2007 technology needs assessment.

74. The TTE, in consultation with South Africa, identified 10 capacity-building needs listed in chapter II.D above that aim to facilitate reporting in accordance with the UNFCCC reporting guidelines on BURs and participation in ICA in accordance with the ICA modalities and guidelines, taking into account Article 4, paragraph 3, of the Convention. South Africa categorized the capacity-building needs referred to in paragraph 66(a–i) above as immediate, high-priority needs and that referred to in paragraph 66(j) above as a low-priority need.

Annex I

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

Table 1
Identification of the extent to which the elements of information on greenhouse gases are included in the second biennial update report of South Africa

Decision	*Provision of the reporting guidelines*	*Yes/partly/no/NA*	*Comments on the extent of the information provided*
Decision 2/CP.17, paragraph 41(g)	The first BUR shall cover, at a minimum, the inventory for the calendar year no more than four years prior to the date of the submission, or more recent years if information is available, and subsequent BURs shall cover a calendar year that does not precede the submission date by more than four years.	No	South Africa submitted its second BUR in December 2017; the GHG inventory reported is for 2012.
Decision 2/CP.17, annex III, paragraph 4	Non-Annex I Parties should use the methodologies established by 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	South Africa used the 2006 IPCC Guidelines.
Decision 2/CP.17, annex III, paragraph 5	The updates of the sections on the national inventories of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol should contain updated data on activity levels based on the best information available using the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF; any change to the EF may be made in the subsequent full NC.	Yes	
Decision 2/CP.17, annex III, paragraph 6	Non-Annex I Parties are encouraged to include, as appropriate and to the extent that capacities permit, in the inventory section of the BUR:		
	(a) The tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF;	Yes	Comparable information was provided.
	(b) The sectoral report tables annexed to the Revised 1996 IPCC Guidelines.	Yes	Comparable information was provided.
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 the previous NCs.	Partly	The time series 2000–2012 was provided. The GHG emissions for 2000 reported in the NC2 were recalculated and included. An inventory for 1990 and 1994 was reported in the initial NC. The time series reported in the second BUR did not include 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	Partly	The inventory for 1994, which is the inventory year in the initial NC, was not reported.

Decision	*Provision of the reporting guidelines*	*Yes/partly/no/NA*	*Comments on the extent of the information provided*
	of inventories for previous submission years (e.g. for 1994 and 2000).		
Decision 2/CP.17, annex III, paragraph 9	The inventory section of the BUR should consist of an NIR as a summary or as an update of the information contained in decision 17/CP.8, annex, chapter III (National greenhouse gas inventories), including:		
	(a) Table 1 (National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors);	Partly	A table with a similar structure was reported in appendix A to the NIR. However, emissions were not provided in the unit of mass.
	(b) Table 2 (National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF_6).	Partly	A table with a similar structure was reported in appendix A to the NIR. However, HFC and PFC emissions were not provided on a gas-by-gas basis and in units of mass.
Decision 2/CP.17, annex III, paragraph 10	Additional or supporting information, including sector-specific information, may be supplied in a technical annex.	Yes	The Party submitted with its BUR an NIR as a stand-alone document.
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	In the trends section of the NIR, South Africa reported emissions on a gas-by-gas basis in units of mass and in CO_2 eq in graphical format without presenting the underlying numerical data in tabular format.
	(b) CH_4;	Partly	In the trends section of the NIR, South Africa reported emissions on a gas-by-gas basis in units of mass and in CO_2 eq in graphical format without presenting the underlying numerical data in tabular format.
	(c) N_2O.	Partly	In the trends section of the NIR, South Africa reported emissions on a gas-by-gas

Decision	*Provision of the reporting guidelines*	*Yes/partly/no/NA*	*Comments on the extent of the information provided*
			basis in units of mass and in CO_2 eq in graphical format without presenting the underlying numerical data in tabular format.
Decision 17/CP.8, annex, paragraph 15	Non-Annex I Parties are encouraged, as appropriate, to provide information on anthropogenic emissions by sources of:	Yes	
	(a) HFCs;	Yes	
	(b) PFCs;	Yes	
	(c) SF_6.	No	
Decision 17/CP.8, annex, paragraph 16	Non-Annex I Parties are encouraged, as appropriate, to report on anthropogenic emissions by sources of other GHGs, such as:		
	(a) CO;	Partly	CO was reported for biomass only.
	(b) NO_X;	Partly	NO_X was reported for biomass only.
	(c) NMVOCs.	No	
Decision 17/CP.8, annex, paragraph 17	Other gases not controlled by the Montreal Protocol, such as SO_X, 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.	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.	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	The Party used the GWP values provided in the AR3.
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		

Decision	*Provision of the reporting guidelines*	*Yes/partly/no/NA*	*Comments on the extent of the information provided*
	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	South Africa used a combination of tier 1, tier 2 and tier 3 methods from the 2006 IPCC Guidelines.
	(b) Explanation of the sources of EFs;	Yes	South Africa used default EFs from the 2006 IPCC Guidelines and country-specific EFs across all sectors of the inventory.
	(c) Explanation of the sources of AD;	Yes	
	(d) If non-Annex I Parties estimate anthropogenic emissions and removals from country-specific sources and/or sinks that are not part of the Revised 1996 IPCC Guidelines, they should explicitly describe:		
	(i) Source and/or sink categories;	Yes	Manufacture of solid fuels and other energy industries (synthetic fuels from coal and natural gas) is reported in the NIR as category 1.B.3 under the 2006 IPCC Guidelines.
	(ii) Methodologies;	Yes	Mass balance analysis was used.
	(iii) EFs;	Yes	Mass balance analysis was used.
	(iv) AD;	No	Not presented for confidentiality reasons.
	(e) Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building.	Yes	
Decision 17/CP.8, annex, paragraph 22	Each non-Annex I Party is encouraged to use tables 1 and 2 of the guidelines annexed to decision 17/CP.8 in reporting its national GHG inventory, taking into account the provisions established in paragraphs 14–17. In preparing those tables, Parties should strive to present information that is as complete as possible. Where numerical data are not provided, Parties should use the notation keys as indicated.	No	No notation keys were used in the sectoral tables.
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	

Decision	*Provision of the reporting guidelines*	*Yes/partly/no/NA*	*Comments on the extent of the information provided*
	(b) Underlying assumptions;	Yes	
	(c) Methodologies used, if any, for estimating these uncertainties.	Yes	

Note: The parts of the UNFCCC reporting guidelines on BURs on reporting information on GHG emissions by sources and removals by sinks in BURs are contained in decision 2/CP.17, paragraphs 3–10 and 41(g). Further, as per paragraph 3 of those guidelines, non-Annex I Parties are to submit updates of their national GHG inventories in accordance with 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. 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 2
Identification of the extent to which the elements of information on mitigation actions are included in the second biennial update report of South Africa

Decision	*Provision of the reporting guidelines*	*Yes/partly/no*	*Comments on the extent of the information provided*
Decision 2/CP.17, annex III, paragraph 11	Non-Annex I Parties should provide information, in a tabular format, on actions to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol.	Yes	
Decision 2/CP.17, annex III, paragraph 12	For each mitigation action or group of mitigation actions, including, as appropriate, those listed in document FCCC/AWGLCA/2011/INF.1, developing country Parties shall provide the following information, to the extent possible:		
	(a) Name and description of the mitigation action, including information on the nature of the action, coverage (i.e. sectors and gases), quantitative goals and progress indicators;	Partly	The progress indicators were not explicitly reported.
	(b) Information on:		
	(i) Methodologies;	Yes	
	(ii) Assumptions;	Yes	
	(c) Information on:		
	(i) Objectives of the action;	Yes	
	(ii) Steps taken or envisaged to achieve that action;	Yes	
	(d) Information on:		
	(i) Progress of implementation of the mitigation actions;	Partly	Information on the progress of implementation of the mitigation actions was provided for the first and second groups but not for the third group of mitigation actions (tables 27–30). South Africa indicated that information

Decision	*Provision of the reporting guidelines*	*Yes/partly/no*	*Comments on the extent of the information provided*
			for the third group will be reported in its next BUR.
	(ii) Progress of implementation of the underlying steps taken or envisaged;	Partly	Information on the progress of implementation of the underlying steps taken or envisaged was provided for the first and second groups of mitigation actions but not for the third group (tables 27–30).
	(iii) Results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions, to the extent possible;	Yes	South Africa included information on quantified emission reductions and co-benefits for the first group of mitigation actions and for some actions in the third group. For the second group and other actions in the third group, information on co-benefits was provided.
	(e) Information on international market mechanisms.	Yes	
Decision 2/CP.17, annex III, paragraph 13	Parties should provide information on the description of 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, paragraphs 11–13.

Table 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 South Africa

Decision	*Provision of the reporting requirements*	*Yes/partly/no*	*Comments on the extent of the information provided*
Decision 2/CP.17, annex III, paragraph 14	Non-Annex I Parties should provide updated information on:		
	(a) Constraints and gaps;	Partly	South Africa reported constraints and gaps in relation to mitigation actions. It indicated in the BUR capacity-related challenges within DEA that hindered submitting the BUR on time, but did not elaborate further.
	(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 Parties, the Green Climate Fund and multilateral institutions for activities relating to climate change, including for the preparation of the current BUR.	Yes	
Decision 2/CP.17, annex III, paragraph 16	With regard to the development and transfer of technology, non-Annex I Parties should provide information on:		
	(a) Technology needs, which are nationally determined;	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, paragraphs 14–16.

Annex II

Documents and information used during the technical analysis

Reference documents

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

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

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

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

"Composition, modalities and procedures of the team of technical experts for undertaking the technical analysis of biennial update reports from Parties not included in Annex I to the Convention". Annex to decision 20/CP.19. Available at http://unfccc.int/resource/docs/2013/cop19/eng/10a02.pdf#page=12.

"Modalities and guidelines for international consultation and analysis". Annex IV to decision 2/CP.17. Available at http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf.

"UNFCCC biennial update reporting guidelines for Parties not included in Annex I to the Convention". Annex III to decision 2/CP.17. Available at http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf.

"Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention". Annex to decision 17/CP.8. Available at http://unfccc.int/resource/docs/cop8/07a02.pdf#page=2.

Second biennial update report of South Africa. Available at http://unfccc.int/8722.php.

First, second and third national communications of South Africa. Available at https://unfccc.int/process/transparency-and-reporting/reporting-and-review-under-the-convention/national-communications-and-biennial-update-reports-non-annex-i-parties/national-communications-submissions/national-communications-submissions.

Summary report on the technical analysis of the first biennial update report of South Africa. Available at http://unfccc.int/national_reports/non-annex_i_parties/ica/technical_analysis_of_burs/items/10054.php.