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Technical analysis of the second biennial update report of Israel submitted on 6 March 2023

Summary report by the team of technical experts

Summary

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



Abbreviations and acronyms

2006 IPCC Guidelines	<i>2006 IPCC Guidelines for National Greenhouse Gas Inventories</i>
AD	activity data
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BTR	biennial transparency report
BUR	biennial update report
CH ₄	methane
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
EF	emission factor
ETF	enhanced transparency framework under the Paris Agreement
F-gas	fluorinated gas
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
ICA	international consultation and analysis
ILS	new Israeli shekel
IPCC	Intergovernmental Panel on Climate Change
IPCC good practice guidance	<i>Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories</i>
IPCC good practice guidance for LULUCF	<i>Good Practice Guidance for Land Use, Land-Use Change and Forestry</i>
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
MRV	measurement, reporting and verification
N ₂ O	nitrous oxide
NA	not applicable
NC	national communication
NDC	nationally determined contribution
NE	not estimated
NIR	national inventory report
NMVO	non-methane volatile organic compound
NO	not occurring
non-Annex I Party	Party not included in Annex I to the Convention
NO _x	nitrogen oxides
PFC	perfluorocarbon
Revised 1996 IPCC Guidelines	<i>Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories</i>
SF ₆	sulfur hexafluoride
SO _x	sulfur oxides
TTE	team of technical experts
UNFCCC guidelines for the preparation of NCs from non-Annex I Parties	“Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention”
UNFCCC reporting guidelines on BURs	“UNFCCC biennial update reporting guidelines for Parties not included in Annex I to the Convention”

I. Introduction and process overview

A. Introduction

1. The process of ICA consists of two steps: a technical analysis of the submitted BUR and a facilitative sharing of views under the Subsidiary Body for Implementation, resulting in a summary report and a record respectively.
2. According to decision 2/CP.17, paragraph 41(a), non-Annex I Parties, consistently with their capabilities and the level of support provided for reporting, were to submit their first BUR by December 2014. In addition, paragraph 41(f) of that decision states that non-Annex I Parties shall submit a BUR every two years, either as a summary of parts of their NC in the year in which the NC is submitted or as a stand-alone update report.
3. Further, according to paragraph 58(a) of the same decision, the first round of ICA is to commence for non-Annex I Parties within six months of the submission of the Parties' first BUR. The frequency of developing country Parties' participation in subsequent rounds of ICA, depending on their respective capabilities and national circumstances, and the special flexibility for small island developing States and the least developed country Parties, will be determined by the frequency of the submission of BURs.
4. Israel submitted its first BUR on 18 April 2016, which was analysed by a TTE in the first round of technical analysis of BURs from non-Annex I Parties, conducted from 19 to 23 September 2016. After the publication of its summary report, Israel participated in the third workshop for the facilitative sharing of views, convened in Bonn on 15 May 2017.
5. This summary report presents the results of the technical analysis of the second BUR of Israel, undertaken by a TTE in accordance with the provisions on the composition, modalities and procedures of the TTE under ICA contained in the annex to decision 20/CP.19.

B. Process overview

6. In accordance with the mandate referred to in paragraph 2 above, Israel submitted its second BUR on 6 March 2023 as a stand-alone update report. The submission was made six years and 11 months after the submission of the first BUR. During the technical analysis, the Party explained that the reason for submitting the BUR more than two years after the submission of the last BUR was insufficient human resources for preparing the report.
7. The technical analysis of Israel's BUR was conducted from 14 to 18 May 2023 in Jerusalem 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: Carlos Fuller (former member of the Consultative Group of Experts from Belize), Nicolo Macaluso (Canada), Helen Joan Plume (New Zealand) and Marcelo Theoto Rocha (member of the Consultative Group of Experts from Brazil). Carlos Fuller and Helen Plume were the co-leads. The technical analysis was coordinated by Davor Vesligaj and Xuehong Wang (secretariat).
8. During the technical analysis, in addition to the written exchange, in the virtual team room, to provide technical clarifications on the information reported in the BUR, the TTE and Israel engaged in consultation on the identification of capacity-building needs for the preparation of BURs and participation in the ICA process. Following the technical analysis of Israel's second BUR, the TTE prepared and shared a draft summary report with Israel on 19 July 2023 for its review and comment. Israel, in turn, provided its feedback on the draft summary report on 15 August 2023.
9. The TTE responded to and incorporated Israel's comments referred to in paragraph 8 above and finalized the summary report in consultation with the Party on 31 August 2023.

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 Israel'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.

14. The current TTE noted some improvements in the reporting in Israel's second BUR compared with that in its previous BUR. These include the Party improving the information on the GHG inventory (use of methodological tiers and format of the reporting tables); reporting on mitigation actions and their effects (information on quantitative goals, estimated reduction impacts for most measures and progress of implementation and underlying steps taken or envisaged); and describing its institutional arrangements. These improvements in the Party's second BUR demonstrate that it has taken into consideration some of the areas for enhancing the transparency of the extent of the information reported noted by the previous TTE in the summary report on the technical analysis of the Party's first BUR.

15. Regarding the areas for enhancing understanding of the extent of the information reported in the BUR noted by the previous TTE in the summary report on the technical analysis of the Party's previous BUR, Israel identified areas that were not addressed in its current BUR. They include a number of aspects of the GHG inventory, such as information on methodologies, AD and EFs; sectoral reporting and background data tables; and recalculations that will be covered in the upcoming NIR, expected to be published by the end of 2023; and some are potential areas for enhancing national capacity.

C. Technical analysis of the information reported

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

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

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

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

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

20. In its second BUR, Israel provided an update of its NC, including a description of its national circumstances, such as features of geography, climate and economy that might affect the Party's ability to deal with mitigating and adapting to climate change, as well as information on national circumstances and constraints in relation to specific needs and concerns arising from the adverse effects of climate change as referred to in Article 4, paragraph 8, and, as appropriate, paragraphs 9–10, of the Convention.

21. Israel is a relatively small country with an area of 22,072 km² and has one of the highest annual population growth rates among member countries of the Organisation for Economic Co-operation and Development, averaging 1.95 per cent per annum since 2000. Economic growth has been strong, with an annual GDP growth rate of 4.5 per cent between 2010 and 2019. Installed power generation capacity has increased by 16 per cent since 2016, but use of coal and petroleum fuel is declining in favour of natural gas. Israel has limited sources of renewable energy as it has no potential for hydropower or electricity generation from wind and very little land on which to deploy solar panels. The country has experienced several extreme weather events in recent years, including intense rainfall and heatwaves. As a result of its growing population, water consumption rose in 2015–2019, though per capita water consumption decreased. The resulting water scarcity has led to the development of advanced technologies for seawater desalination.

22. In addition, Israel provided a summary of relevant information regarding its national circumstances in graphical format in its second BUR to illustrate the evolution in the country in relation to water consumption, water desalination, wastewater treatment, the decline in rainfall and water levels, population growth, immigration, trends in per capita and gross domestic product, the building stock, agricultural indices, the energy mix, including for electricity generation, natural gas supply and consumption, and the vehicle stock.

23. Israel transparently reported in its second BUR an update on its institutional arrangements relevant to the preparation of NCs and BURs on a continuous basis. The Ministry of Environmental Protection is responsible for preparing NCs and BURs, including compiling the requisite data. The Israel Central Bureau of Statistics prepares the national GHG inventory annually and has the legal mandate to collect data from stakeholders.

24. Israel has an interministerial steering committee for reducing GHG emissions, comprising representatives of the Ministry of Energy and Infrastructure, Electricity Authority, National Economic Council in the Prime Minister's Office, Ministry of Finance, Ministry of Economy and Industry, Ministry of Transport and Road Safety, Ministry of

Interior, Ministry of Construction and Housing, Ministry of Foreign Affairs, Ministry of Health and Ministry of Agriculture and Rural Development. This ensures that the necessary data are provided for preparing NCs and BURs and facilitates the assessment of the effectiveness of the measures in place for meeting the country's emission reduction targets. The institutional arrangements require the ministries represented on the steering committee to provide the data required for preparing NCs and BURs. These arrangements were formalized in 2016 through government decision 1403, the National Plan for the Implementation of the Greenhouse Gas Emissions Reduction Targets and for Energy Efficiency.

25. Information on the process for acquiring and managing the data and tools used was not clearly reported in Israel's BUR. During the technical analysis, the Party clarified that national experts were contracted to prepare the mitigation section of the second BUR.

26. The TTE noted that the transparency of the information reported on institutional arrangements could be enhanced by addressing the area noted in paragraph 25 above, which could facilitate a better understanding of the information reported on institutional arrangements since the submission of Israel's first BUR.

27. In paragraph 25 of the summary report on the technical analysis of Israel's first BUR, the previous TTE noted that the transparency of the reporting on institutional arrangements could be further enhanced through the provision of adequate resources for preparing national inventories on a continuous basis. The current TTE noted that this improvement has not been implemented and reiterates the finding.

28. Israel reported in its second BUR an update on its domestic MRV arrangements. The description covers key aspects of the institutional arrangements, including the agencies responsible for preparing NCs and BURs and the interministerial steering committee. The newly established MRV arrangements are designed at the national level and cover the BUR preparation process, the GHG inventory system and the preparation of nationally appropriate mitigation actions.

29. Israel clarified its current initiatives for enhancing its institutional arrangements for compliance with requirements under the ETF during the technical analysis. The initiatives relate to enhancing its capacity to prepare annual inventories and emission projections, and including additional information, such as on cooperative initiatives, technology development and support provided. The TTE commends the Party on its proactive approach to preparing for ETF implementation.

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

30. As indicated in table I.1, Israel 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.

31. Israel submitted its second BUR in 2023 and the GHG inventory reported is for 1996, 2000 and 2005–2020. The GHG inventory is consistent with the requirements for the reporting time frame.

32. Israel did not submit an NIR and therefore did not include any reference to it in its BUR. During the technical analysis, the Party clarified that the NIR is under development and expected to be finalized by the end of 2023. The TTE stressed that submitting an NIR with the BUR would have enhanced the transparency of the GHG emission estimates provided in the second BUR.

33. GHG emissions and removals for the BUR covering all years of the inventory time series (1996, 2000 and 2005–2020) in the energy, industrial processes and LULUCF sectors were estimated using mainly tier 1 methodology from the Revised 1996 IPCC Guidelines. Further detail is captured in the sector-specific paragraphs below. The BUR states that, in addition to the Revised 1996 IPCC Guidelines, the IPCC good practice guidance was used for preparing the inventory. The BUR also states that, for the agriculture and waste sectors, methodologies from the 2006 IPCC Guidelines were used for estimating GHG emissions for 2011 onward. During the technical analysis, the TTE was informed that emissions from solid

waste were recalculated for 1996 onward using the 2006 IPCC Guidelines and EFs from the Revised 1996 IPCC Guidelines. The TTE commends Israel for using the 2006 IPCC Guidelines for the agriculture and waste sectors.

34. Information on AD and EFs used and their sources was not clearly reported in Israel's BUR. During the technical analysis, the Party clarified that this information will be included in its NIR, which is due for completion by the end of 2023.

35. Information on the Party's total GHG emissions by gas for 2020 is outlined in table 1 in Gg CO₂ eq. It shows an increase in emissions of 34.7 per cent without LULUCF since 1996 (57,653.30 Gg CO₂ eq).

Table 1
Greenhouse gas emissions by gas of Israel for 2020

<i>Gas</i>	<i>GHG emissions (Gg CO₂ eq) including LULUCF</i>	<i>% change 1996–2020</i>	<i>GHG emissions (Gg CO₂ eq) excluding LULUCF</i>	<i>% change 1996–2020</i>
CO ₂	62 414.07	20.3	62 674.23	20.2
CH ₄	7 387.06	109.7	7 387.06	109.7
N ₂ O	1 760.66	–7.2	1 760.66	–7.2
HFCs	5 540.35	NA	5 540.35	NA
PFCs	176.42	NA	176.42	NA
SF ₆	136.12	NA	136.12	NA
Other	NA	NA	NA	NA
Total	77 414.68	35.1	77 674.84	34.7

36. Information on other emissions was clearly reported, including 77.30 Gg NO_x, 122.1 Gg CO, 81.72 Gg NMVOCs and 28.59 Gg SO_x reported for 2020.

37. Israel did not apply notation keys in tables where numerical data were not provided; instead, cells were left blank or filled with a dash, which is not consistent with UNFCCC or IPCC guidelines. As such, it was not possible for the TTE to assess whether all GHG emissions were estimated for categories for which emissions occur and IPCC methodologies exist. The information reported was also unclear for categories for which emissions were not estimated (e.g. owing to lack of data), meaning that “NE” should have been reported, and for which emissions do not occur, meaning that “NO” should have been reported. During the technical analysis, the Party presented additional tables that contain notation keys, and clarified which categories were not estimated owing to lack of AD. The TTE stressed the importance of including notation keys and corresponding explanations in all tables in future reports in accordance with UNFCCC guidelines.

38. 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 Israel's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that such information will be included in the upcoming NIR. The TTE stressed the importance of including these background tables in future reports.

39. The shares of emissions that different sectors contributed to the Party's total GHG emissions excluding LULUCF, as calculated by the TTE using information from the BUR, in 2020 are reflected in table 2.

Table 2
Shares of greenhouse gas emissions by sector of Israel for 2020

<i>Sector</i>	<i>GHG emissions (Gg CO₂ eq)</i>	<i>% share^a</i>	<i>% change 1996–2020</i>
Energy	61 084.46	78.6	20.7
IPPU	7 826.18	10.1	222.6
Agriculture	2 296.77	3.0	10.8
LULUCF	–260.16	NA	–29.7

<i>Sector</i>	<i>GHG emissions (Gg CO₂ eq)</i>	<i>% share^a</i>	<i>% change 1996–2020</i>
Waste	6 467.43	8.3	152.8

^a Share of total emissions without LULUCF.

40. Israel reported information for CO₂, CH₄ and N₂O using GWP values consistent with those provided by the IPCC in its AR2 based on the effects over a 100-year time-horizon of GHGs.

41. Israel did not provide information on GWP values for some F-gases and the reason for this was not clear to the TTE. During the technical analysis, Israel clarified that, for the F-gases for which no values were available, GWPs were provided by the manufacturer or taken from the specifications published on the gas manufacturers' websites. A complete list of the GWPs used was provided to the TTE. The Party is preparing to calculate F-gas emissions using GWPs from the AR5. The TTE noted that this improvement would enhance the extent of information and transparency of the reporting and assist with the transition to the ETF.

42. For the energy sector, information was clearly reported on GHG emissions from fuel combustion. The BUR states that, primarily, tier 1 methodology was applied, with the notable exception of the application of tier 2 methodology using country-specific information, such as calorific values for primary energy sources (coal, natural gas and oil shale). CO₂ emissions from the combustion of fossil fuels in energy industries and transport account for 88.9 per cent of the emissions in this sector.

43. Detailed information on the EFs and AD used for the emission calculations along with the methodologies applied was not reported in Israel's BUR for the energy sector and the reason for this was not clear to the TTE. Notation keys were not used; hence, it was not possible for the TTE to analyse the extent of the information reported. For example, in table 17, cells are blank for fugitive emissions from fuels. During the technical analysis, the Party provided additional information on the methodological tiers used and the sources of AD and clarified that fugitive emission estimates are being finalized for inclusion in the upcoming NIR. In addition, during the technical analysis, Israel shared tables with the TTE that include notation keys, which improved their completeness. Information shared with the TTE during the technical analysis shows that energy industries (1.A.1), transportation (1.A.3) and manufacturing (1.A.2) are key categories.

44. For the industrial processes sector, information was clearly reported on GHG emissions from cement production, lime production, soda ash use, container glass production, nitric acid production, sulfuric acid production and consumption of halocarbons and SF₆. The BUR states that, primarily, a tier 1 method was applied, except for estimating emissions from some sources for which tier 3 EFs specific to Israeli industry were used. For estimating emissions of F-gases, the BUR states that an adapted tier 3 method was applied. According to information shared during the technical analysis, products used as substitutes for ozone-depleting substances (2.F) and mineral products (2.A) are key categories.

45. Detailed information on the EFs and AD used for the emission calculations along with the methodologies applied was not reported in Israel's BUR for the industrial processes sector and the reason for this was not clear to the TTE. Notation keys were not used; hence it was not possible for the TTE to analyse the extent of information reported. For example, in table 17, cells are blank for emissions from metal production and for production of halocarbons and SF₆. During the technical analysis, the Party shared tables that include notation keys, and described the methodology used for estimating F-gas emissions, which improved the extent of the information presented.

46. Information on the solvent and other product use sector from the Revised 1996 IPCC Guidelines was not clearly reported in Israel's BUR and notation keys were not used. The BUR states that emissions occur in the sector but have not been calculated, and preparations are being made to collect data and develop a methodology for this. During the technical analysis, the Party clarified that emissions from the sector are considered negligible, that methodologies are still underdeveloped and that assistance with calculating emission estimates for the sector would be welcome. The TTE noted that in the 2006 IPCC Guidelines

the IPPU sector now encompasses both the solvent and other product use and the industrial processes sectors and that those Guidelines should serve as the basis for future improvements under the IPPU sector, given that using the 2006 IPCC Guidelines is mandatory under the ETF and the first BTR is due by 31 December 2024.

47. For the agriculture sector, agricultural soils (N₂O) and enteric fermentation (CH₄) were the most relevant emissions sources. Nevertheless, none of the agriculture sector categories were identified as key categories in the analysis that was presented during the technical analysis. Emissions from the agriculture sector amounted to 2.3 Mt CO₂ eq in 2020, equating to a 2.3 per cent increase from the 2015 level.

48. Israel did not specify the tier method used to estimate emissions from the agriculture sector. During the technical analysis, Israel clarified that it used country-specific enteric fermentation EFs for cattle, other cattle and sheep, and country-specific manure management EFs for swine for all years of the time series. Default EFs from the 2006 IPCC Guidelines were used for other animal categories for 2011–2020, while for 2003–2010 default EFs from the Revised 1996 IPCC Guidelines were used. The TTE noted that providing estimates for other animal categories using only default EFs from the 2006 IPCC Guidelines would ensure a consistent time series, unless the Party can demonstrate that the EFs from the Revised 1996 IPCC Guidelines are more appropriate for the national circumstances for 2003–2010.

49. Israel did not specify the AD used for estimating emissions from the agriculture sector (e.g. number of livestock, amount of fertilizer used and distribution of animal manure management systems). During the technical analysis, Israel provided the TTE with a distribution of animal manure management systems for 2003–2010 and 2011–2020, which shows a significant emission reduction between the two periods. Israel clarified that both distributions are based on expert judgment. The TTE noted that providing more information about the distribution of animal manure management systems would enhance the transparency of the inventory and allow a better understanding of the trend in emissions for this sector. The TTE also noted the importance of providing actual AD in future reports to facilitate a better understanding of the information reported.

50. For the LULUCF sector, emissions were reported for categories 5.A (changes in forest and other woody biomass stocks) and 5.D (CO₂ emissions and removals from soils) only and notation keys were not used for the missing categories. Israel reported annual GHG emissions and removals for 2003–2020. Overall, the net removals from the LULUCF sector fluctuated between a minimum of 141 kt CO₂ eq in 2015 and a maximum of 414 kt CO₂ eq in 2011.

51. Israel did not include complete information on the AD used to estimate emissions and removals from the LULUCF sector. Information on area of forests (hectares) was reported only for 2018. The TTE noted that providing a complete time series of AD (e.g. for the areas of forests, commercial harvest and intensively managed organic soils) in the BUR could have facilitated a better understanding of the information reported. During the technical analysis, Israel confirmed that such AD will be provided in its upcoming NIR.

52. For the waste sector, information was reported on GHG emissions from solid waste disposal on land (tier 2), biological treatment of solid waste (tier 2) and wastewater handling (tier 1), using methodologies from the 2006 IPCC Guidelines. During the technical analysis, Israel clarified that emissions from the waste sector were recalculated for 2003 onward using the 2006 IPCC Guidelines, except for emissions from solid waste, which were recalculated for 1996 onward. The BUR reports that total emissions from the waste sector increased by 3.1 per cent between 2015 and 2020, from 6.3 to 6.4 Mt CO₂ eq. Some AD for the sector were included in the BUR, including amount of municipal solid waste generated in Israel in 2016 and 2019.

53. Information on sources of AD, EFs, key categories and notation keys was not reported for the waste sector in Israel's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party shared tables that include notation keys and the results of the key category analysis, in which solid waste disposal (5.A) was identified as a key category.

54. Prior to the second BUR, the most recently reported GHG inventory was included in Israel's NC3 (published in 2018), which addresses anthropogenic emissions and removals for 1996, 2000 and 2007–2015. Israel's second BUR provides an update to the GHG

inventories reported in the Party's previous NC and BUR, with the addition of five more years (2016–2020) to the time series. The second BUR reports emissions and removals for 1996, 2000 and 2005–2020 using mainly methodologies from the Revised 1996 IPCC Guidelines together with those from the 2006 IPCC Guidelines for the agriculture and waste sectors for 2011 onward. During the technical analysis, Israel provided further information on the use of the 2006 IPCC Guidelines for the waste sector, clarifying that the 2006 IPCC Guidelines were used for 2003 onward, except for solid waste, for which the Guidelines were applied for 1996 onward.

55. A continuous 16-year time series was generated, but it is not completely consistent (see para. 56 below). Israel did not report any recalculations in its BUR. During the technical analysis, the TTE was informed that recalculations will be performed for the next inventory. In addition, the Party clarified that some data for historical years are unavailable, which would prevent reporting of recalculations.

56. The GHG inventories for 2005–2020 reported in the BUR are not consistent owing to the use of different IPCC guidelines. For example, for the agriculture sector Israel used EFs from the 2006 IPCC Guidelines for 2011–2020 and EFs from the Revised 1996 IPCC Guidelines for 2003–2010. Similarly, for the waste sector, Israel used methodologies from the 2006 IPCC Guidelines for 2003 onward, except for emissions from solid waste, for which methodologies from the 2006 IPCC Guidelines were used for 1996 onward. For earlier years of the time series, the Revised 1996 IPCC Guidelines were applied. The TTE stressed the importance of a consistent time series, noting that the 2006 IPCC Guidelines provide techniques for resolving data gaps where historical data are not available. The Party identified areas for improvement of the information reported, such as the distribution of fuel consumption in households and businesses; filling gaps in AD for the agriculture sector (i.e. on agricultural residues and lime and urea application); calculating emissions from solvent and other product use; and updating data on the composition of landfilled waste.

57. Israel described in its BUR the institutional framework for the preparation of its GHG inventory. The Party reported that the Ministry of Environmental Protection is Israel's key institution in relation to climate change issues and responsible for preparing NCs and BURs, including compiling the requisite data from government ministries and agencies. The Israel Central Bureau of Statistics prepares the national GHG inventory annually and has a legal mandate to collect data from stakeholders; however, information on procedures and arrangements for collecting and archiving data and efforts to make this a continuous process was not clearly reported in the BUR. During the technical analysis, Israel provided the TTE with further information on the ministries and other entities that provide data to the Israel Central Bureau of Statistics to enable preparation of the GHG inventory, with the Ministry of Environmental Protection, Ministry of Energy and Infrastructure, Ministry of Economy and Industry, Ministry of Agriculture and Rural Development, Israel Natural Gas Lines Limited, Jewish National Fund and national parks and nature reserves all playing a role. The TTE noted the importance of including such information in future reports. The Party did not identify specific improvements in the information reported since its last GHG inventory but did list areas in which data may be further improved.

58. Information on the key category analysis was not reported in the BUR. However, the Party explained in its BUR that the key category analysis was partially conducted but not published. Israel reported in the BUR its interest in capacity-building for data analysis. During the technical analysis, the Party provided the TTE with the results of its key category analysis (level and trend) and clarified that the key category analysis will be included in its upcoming NIR. The TTE stressed the importance of providing information on the key category analysis in future reports.

59. Israel clearly reported information on CO₂ fuel combustion emissions using only the sectoral approach. Information on the reference approach was not reported in Israel's BUR. However, the Party explained in its BUR that this is due to lack of resources and data gaps. During the technical analysis, the Party presented the results of the reference approach to the TTE and clarified that they will be included in the upcoming NIR. The TTE stressed the importance of including the reference approach in future reports.

60. Information was clearly reported on international aviation and marine bunker fuels for all years of the time series (1996, 2000 and 2005–2020). As per UNFCCC reporting guidelines, the relevant emissions were reported as memo items and not included in the national total. According to the BUR, in 2020 emissions from international bunker fuels decreased by 46 per cent relative to the 2019 level owing to the pandemic and related travel restrictions.

61. Information on uncertainty assessment was not reported in Israel's BUR. The Party explained in its BUR that it encountered challenges in conducting the uncertainty analysis owing to the combination of lack of resources and knowledge gaps. During the technical analysis, the Party clarified that capacity-building in uncertainty assessment would be welcome. The TTE stressed the importance of providing information on inventory uncertainty in future reports.

62. The TTE noted that the transparency of the information reported on GHG inventories could be enhanced by addressing the areas noted in paragraphs 37, 38, 41, 57, 58 and 59 above, which could facilitate a better understanding of the information reported on GHG inventories.

63. In paragraphs 28, 31–35 and 38–40 of the summary report on the technical analysis of the Israel's first BUR, the previous TTE noted areas where the transparency of the reporting on GHG inventories could be enhanced. The current TTE noted the improvements referred to in paragraph 33 above and commends the Party for enhancing the transparency of its reporting. However, the TTE also noted that most of the areas for enhancement of transparency identified by the previous TTE were not addressed in the second BUR. During the technical analysis, Israel informed the TTE that many of the areas will be addressed in the upcoming NIR.

64. Israel reported in its BUR information on its areas for improvement for future GHG inventory reporting, such as conducting the uncertainty analysis and estimating emissions using the reference approach. During the technical analysis, Israel shared further information on planned improvements for each inventory sector, including for compliance with requirements under the ETF. The initiatives relate to improving estimation of fuel consumption by sector; finalizing the methodology for estimating fugitive emissions from fuels; improving the allocation and calculation of F-gases, including for missing sources under non-energy fuel use and use of solvents (under IPPU); updating emission coefficients and completing emissions sources in the agriculture sector; and updating waste composition and landfill gas data in the waste sector. The TTE commends the Party for its proactive approach to preparing for ETF implementation. The TTE stressed the importance of Israel factoring in the need to fully move to using the 2006 IPCC Guidelines for the first BTR in order to meet the requirements of the ETF. The TTE also stressed the need for Israel to familiarize itself with the full requirements of the ETF given that the first BTR is due by 31 December 2024, with which the Party agreed.

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

65. As indicated in table I.2, Israel 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.

66. The information reported provides a comprehensive overview of the Party's mitigation actions and their effects. In its BUR Israel reported information on its national context and framed its national mitigation planning and actions in the context of its NDC and national emission reduction targets for 2020, 2025 and 2030 (i.e. the national GHG emission reduction plan for 2016–2021 and the national action plan on climate change for 2022–2026). Most of the mitigation actions are in the energy sector, including phasing out coal-fired electricity generation, increasing energy generation from renewables and energy efficiency, and fuel switching in buildings, transport and industry. The implemented mitigation actions contributed to estimated emission reductions of 8.4 Mt CO₂ eq in 2019, from 87.9 to 79.5 Mt CO₂ eq, with the energy sector (i.e. electricity generation with the energy sector) being the main source of emission reductions. Israel reported that, if all activities are sustained, the

anticipated minimum annual GHG emission reduction is expected to be 38.9 Mt CO₂ eq by 2030. This estimate is based on the sum of the estimated reductions in 2030 and may not capture interactions among the mitigation actions.

67. Israel reported information on its NDC target and on mitigation actions for achieving the target. In July 2021, Israel submitted an updated NDC that includes an unconditional absolute GHG emission reduction goal of 27 per cent relative to the 2015 level by 2030 (i.e. reducing emissions to 58 Mt CO₂ eq) and 85 per cent relative to the 2015 level by 2050 (i.e. reducing emissions to 12 Mt CO₂ eq). The updated NDC demonstrates Israel's increased ambition, as a previous per capita target was expected to correspond to 81 Mt CO₂ eq emissions in 2030, which is 40 per cent higher than the updated target. At the United Nations Climate Change Conference in Glasgow, Israel announced a net zero carbon emission target for 2050. During the technical analysis, Israel provided a more comprehensive list of mitigation actions that are being considered for policy development, including implementing a carbon price and introducing a climate law.

68. Furthermore, at sector level, mitigation actions under consideration include introducing net zero buildings and the obligation to install solar panels on newly constructed buildings; promoting hydrogen fuel and nuclear energy; promoting new technologies, such as solar power, wind power, hydrogen fuel, carbon capture, utilization and storage, nuclear power, and biological and synthetic fuels; implementing innovative solutions to make transport more efficient; increasing use of public transport; limiting licences for new taxis to electric cars only; and supplying electricity for sea vessels at docks.

69. Israel reported a summary of its mitigation actions in tabular format in accordance with decision 2/CP.17, annex III, paragraph 11. It also reported information on its mitigation actions in narrative format.

70. Consistently with decision 2/CP.17, annex III, paragraph 12(a), Israel reported the names of mitigation actions or groups of actions, coverage (i.e. sector) and progress indicators in the BUR. A description of mitigation actions and information on quantitative goals for most mitigation actions was provided in the BUR.

71. Information on coverage by gas (i.e. estimated emission reductions by gas) and quantitative goals for mitigation actions related to emission reduction in buildings, government grants for sustainable energy, and natural gas fuel switching in industry was not reported in Israel's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that the reason for not including these data was that they were not modelled for the BUR, but noted that reporting these data would be taken into consideration for the next report. Israel also clarified that, with respect to estimated emission reductions by gas, the emission reductions related to avoided landfilling of municipal solid waste are entirely reductions of CH₄, while the measures related to the Kigali Amendment to the Montreal Protocol are entirely for reduction of HFCs. The remaining mitigation actions affect primarily CO₂ emissions. With respect to government grants for sustainable energy, Israel clarified that a regulation required all new buildings to meet the Israeli green building standard by 2022. As the mitigation action itself is the goal, there are no other additional quantitative goals. For natural gas fuel switching in industry, the Party clarified that the annual fuel oil consumption among relevant consumers in accordance with government decision 3080 is equal to zero. At the end of a successful switch to natural gas, the total displaced quantity of fuel oil consumption of those specific consumers would be 128,000 tonnes of oil equivalent.

72. Israel reported information on the objectives of the actions and steps taken or envisaged to achieve those actions for all mitigation actions in the energy, transport, IPPU and waste sectors.

73. Information on the methodologies and assumptions underlying the mitigation actions was not reported in Israel's BUR and the reason for this was not clear to the TTE. During the technical analysis, Israel noted that it was not clear from the UNFCCC reporting guidelines on BURs and other supporting material that an in-depth description of the underlying methodologies and assumptions was required for the BUR, and this was the main reason why this information was not included. Since this information was available, Israel provided information showing the key assumptions for each sector included in the MRV system.

Information was also provided on methodologies, including the modelling approach for GHG emission projections. The information provided described the MRV model, noting that it is an Excel-based model that comprises an ex post model and a forecast model. The ex post model calculates ex post emissions using collected data reflecting the country's actual activities and emissions; assesses the impacts and measures the effectiveness of specific policy measures by estimating the emission reductions and the externality costs associated with these mitigation measures; and monitors indicators in the national action plan on climate change for 2022–2026. The forecast model, which is an Excel-based model developed for Israel, generates forecasts from the latest reported year up to 2030 (and if desired to 2050) and evaluates progress towards achieving the emission reduction target approved in government decisions. The information provided mentions that the MRV system is being revised and a full methodology document will be provided in the next report. The TTE stressed the importance of providing information on the methodologies and assumptions underlying the mitigation actions in future reports.

74. Israel provided information on its approach to facilitating measurement of progress towards achieving its mitigation goals and emission forecasts through the development of scenarios or projections. The approach includes a baseline scenario, which assumes the continuation of the GHG emission level in 2015 with no government action to reduce emissions; a full policy implementation scenario, which assumes compliance with government policy during the target years; and a current or realistic implementation scenario, which is used to estimate the emissions and emission reductions resulting from the implementation of measures in the reporting year using predictions for the target years (i.e. the achievement or not of the targets and measures). The TTE stressed the importance of providing information on estimated emission reductions for all mitigation actions, as well as information on the cost of each action, in future reports.

75. Furthermore, during the technical analysis, Israel provided information on how the MRV Excel model is used to track progress towards its NDC target. Using the projection capacity of the model and on the basis of the current status of implementation of mitigation actions, emissions are projected to be 69.4 Mt in 2030. Therefore, in order to achieve Israel's NDC target of 57.7 Mt, additional effort will be required. These additional efforts could include actions such as putting in place a comprehensive implementation plan and internal monitoring of progress and updating mitigation actions as needed in order to ensure that Israel is on track to achieving its NDC. The TTE acknowledged the information presented in this summary report as contextual without assessing its completeness and transparency.

76. Israel's mitigation actions pertaining to electricity generation focus mainly on phasing out coal-fired electricity generation and increasing electricity generation from renewables. These mitigation actions were reported as ongoing. Israel reported information on the objectives of the actions, steps taken or envisaged to achieve them and progress of implementation; results achieved, such as a reduction in the use of electricity, the amount of renewable or non-coal electricity generation in megawatt-hours and fuel saved; and estimated emission reductions for most of its reported mitigation actions. The Party also reported the results of implementing its mitigation actions, as estimated outcomes and emission reductions by 2019 and estimated reductions for 2030, for most of its listed mitigation actions.

77. Israel reported that its mitigation actions related to phasing out coal-fired electricity generation had achieved, by 2019, an estimated reduction of 7.4 Mt CO₂ eq. By 2030, the estimated reductions for these mitigation actions are expected to reach 17 Mt CO₂ eq. These emission reductions are expected to result from closing four coal units with a capacity of 1,440 MW by 2022 and replacing them with natural gas combined cycle units and phasing out coal-fired generation by 2026. The generation capacity lost due to phasing out coal-fired plants is expected to be replaced by generation using natural gas (70 per cent), with the remainder generated using renewables. The mitigation actions related to increased electricity generation using renewables achieved an estimated reduction of 0.8 Mt CO₂ eq by 2019 and this is expected to reach 10.7 Mt CO₂ eq by 2030. The contribution from generation using renewables is expected to be facilitated by a mixture of market-based mitigation actions (i.e. approving and updating renewable energy feed-in tariffs) and removing financial, regulatory and statutory barriers (e.g. distributed generation on dual-use structures in built-up areas,

promoting energy storage in planning and regulations, formulating an updated electricity grid development plan and experimenting with agrovoltaic systems that integrate solar electricity generation with farming). Israel has negotiated an arrangement with Jordan whereby Israel will receive 600 MW solar energy from Jordan in return for 200 million m³ desalinated water.

78. The mitigation actions targeting energy efficiency and sustainable energy focus mainly on reducing emissions related to buildings and introducing grants for sustainable energy. These mitigation actions are reported as ongoing and are estimated to reduce emissions by some 0.8 Mt CO₂ eq by 2030. To achieve these reductions Israel has budgeted ILS 450 million (approximately USD 145 million) for 2022–2026, ILS 350 million of which will be allocated to industry and ILS 100 million of which will be allocated to the business sector and local authorities. In addition, the Government has budgeted ILS 145 million (approximately USD 46.7 million) for 2022–2024 for local authorities to promote sustainable energy and climate change adaptation. The green building standard and the planning and building regulation (sustainable buildings), which were approved and published in August 2020, require all new construction in Israel to meet at least the first level of the Israeli green building standard. The regulation has been taking effect gradually from March 2022, in accordance with the type of building (e.g. residential buildings under construction that are not adjacent to the land, offices and hotels). While the aim of government decision 171 of 2021 was to determine targets for zero energy construction of new buildings by mid-2022, Israel is considering mandating solar panels on new buildings in conjunction with the Israeli green building standard as an alternative to zero-energy building mandates.

79. Information on estimated reductions of GHG emissions by 2030 due to government grants for sustainable energy was not reported in Israel's BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that, since the MRV system uses projected electricity consumption in 2030 as a basis for forecasts of emissions and since the emission model is a top-down model (the MRV Excel model), future emission reductions due to government grants are not estimated owing to the difficulty of accurately integrating top-down electricity consumption and bottom-up electricity saving measures. Israel mentioned the challenge of modelling mitigation actions that involve economic instruments (e.g. carbon price, grants and information for consumers) owing to the static nature of the MRV Excel model.

80. The ongoing mitigation actions in the transport sector focus on the transition from private vehicle use to sustainable transport and the transition to zero-emission vehicles. Israel's national transport plan and transport sector mitigation measures are expected to reduce emissions in 2030 by 2.2 and 2.5 Mt CO₂ eq respectively. These reductions are expected to be achieved through mitigation measures promoted by Israel's Ministry of Transport and Road Safety (e.g. the strategic plan for the development of a national rail network for 2040 and the strategic plan for public transport systems in the Tel Aviv, Jerusalem and Haifa metropolitan areas). When fully implemented, the strategic plans are expected to result in a 10 per cent reduction in private travel by 2025 and a 15 per cent reduction by 2030, relative to the reference scenario. Israel has budgeted ILS 250 billion for the period up to 2035 (approximately USD 80.6 billion) for developing mass transport infrastructure in metropolitan areas. A budget of ILS 6 billion (approximately USD 1.9 billion) has been allocated to promote lanes for urban public transport by 2026 and a budget of ILS 400 million (approximately USD 128.9 million) has been allocated for developing 2,000 km cycling infrastructure. An additional budget of ILS 2.5 billion (approximately USD 0.8 billion) for up to 2026 has been allocated to improve public bus services. Israel is supporting the transition to zero-emission vehicles by allocating ILS 60 million (approximately USD 19.3 million) for installing charging infrastructure for electric vehicles and supporting the purchase of zero-emission buses and charging infrastructure for them.

81. The mitigation actions in the industry sector focus on reducing use of fossil fuels (i.e. switching to natural gas) and transitioning to green refrigerants (i.e. reducing the use of HFCs in accordance with the Kigali Amendment to the Montreal Protocol). These actions are reported as ongoing and are expected to reduce emissions in 2030 by 0.4 and 5.3 Mt CO₂ eq respectively.

82. The mitigation actions in the waste sector focus on supporting waste sorting and organic waste treatment facilities, supporting at-source separation of organic waste, revising

the landfill levy and banning landfilling of untreated organic waste, paper and cardboard by 2030. These mitigation actions were reported as ongoing. To support 2.5 Mt CO₂ eq emission reductions by 2030 in the waste sector, Israel has budgeted ILS 2.4 billion (approximately USD 0.7 billion) to support waste sorting and organic waste treatment facilities and ILS 850 million (approximately USD 274 million) to support at-source separation of organic waste. Israel has also allocated ILS 1.2 billion (approximately USD 0.4 billion) for waste-to-energy infrastructure to treat residual waste.

83. Israel did not provide information in its second BUR on its involvement in international market mechanisms, whereas in its first BUR it reported participation in 31 clean development mechanism projects. During the technical analysis, Israel provided the information that, of the 31 registered clean development mechanism projects, only 6 have active crediting periods and for all but 1 the crediting period will end in the coming year. Additionally, none of the six active projects ever issued certified emission reductions. As such, it was considered that Israel does not have a material role in existing international market mechanisms and the Party considered that it was not relevant to mention its involvement in its second BUR. The TTE stressed the importance of providing information on involvement in international market mechanisms, or otherwise clarifying the situation in future reports.

84. Israel reported information on its domestic MRV arrangements in accordance with decision 2/CP.17, annex III, paragraph 13. The information reported indicates that MRV is undertaken by the Ministry of Environmental Protection in cooperation with other government ministries and statutory bodies. The MRV system is based on the guiding principles of the Convention and on methodologies developed taking into consideration the characteristics of the Israeli economy. Israel reported information consistently with the voluntary general guidelines for domestic MRV of domestically supported mitigation actions, contained in the annex to decision 21/CP.19. The MRV system was established in 2016 and has been operational since 2018.

85. The Party reported that the MRV system facilitates measurement of national progress towards achieving mitigation goals; measurement of the effectiveness of specific government emission reduction policies and actions; revision and expansion of policy actions to maximize achieved economic and environmental benefits; fulfilment of reporting obligations to the UNFCCC on mitigation actions taken by Israel and their effects; and transparency of information on Israel's progress towards achieving its emission reduction goals. Under the national MRV system, Israel monitors emission reductions at both the national and policy level. During the technical analysis, Israel provided additional information regarding its MRV system, namely that it uses sectoral monitored parameters to assess the progress of implementation of the main mitigation measures (e.g. percentage of total electricity generation from renewable energy; percentage reduction of the distance of private car mileage relative to the reference scenario; and share of zero-emission buses in the total number of urban buses purchased). The domestic MRV system enables the calculation of avoided externality costs due to GHG emissions associated with specific mitigation measures. Other pollutants, such as particulate matter 2.5, NO_x and NMVOCs, are included as well in the analysis of the external costs of the electricity generation and transport measures.

86. The TTE noted that the transparency of the information reported on mitigation actions could be enhanced by addressing the areas noted in paragraphs 73, 74 and 83 above, which could facilitate a better understanding of the information reported on mitigation actions.

87. In paragraphs 44–51 of the summary report on the technical analysis of Israel's first BUR, the previous TTE noted areas where the transparency of the reporting on mitigation actions could be enhanced. The current TTE noted the improvements to the information provided on quantitative goals and estimated emission reductions for most of the mitigation actions; however, the transparency issues for methodologies and assumptions were not addressed. The current TTE commends Israel for its efforts to enhance the transparency of its reporting.

88. During the technical analysis, the TTE stressed the importance of the Party continuing to improve its reporting and enhance its capacity to respond to the requirements of the ETF

related to information on mitigation actions and their effects and ensure the transparency and completeness of its reporting.

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

89. As indicated in table I.3, Israel 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.

90. Israel reported information on constraints and gaps, and related technical and enhanced capacity needs in accordance with decision 2/CP.17, annex III, paragraph 14. These include insufficient capacity to prepare the NIR, including conducting uncertainty analysis and estimating emissions from fuel combustion using the reference approach and comparing with the sectoral approach; gaps in data on agricultural residues; estimating the distribution of fuel consumption; and lack of a calculation methodology for estimating emissions from the solvent and other product use sector. In its BUR, Israel identified its small size and lack of renewable energy potential as constraints. During the technical analysis, Israel further clarified that it does not require financial, technical or capacity-building support from external sources and that it will use its own resources and collaborate with local and external institutions.

91. Israel reported that it has not required, requested or received support for preparing its NCs or BURs. However, during the technical analysis, Israel clarified that it received capacity-building and technical support through a multi-country workshop on sustainable water reuse, which took place in Jordan, and the European Union Clima-Med project, which involved enhancing the capacity of 40 local government authorities in relation to Israel's GHG inventory and climate change mitigation actions.

92. Information on technology needs was not clearly reported in Israel's BUR. During the technical analysis, the Party clarified that its technology needs were assessed using both a top-down and bottom-up approach, but this assessment has not been formalized.

93. During the technical analysis, Israel informed the TTE that it carries out international technical cooperation programmes for other developing countries. The TTE commends Israel for its activities. The TTE noted that this information could be useful for understanding the circumstances of Israel regarding support needed and provided.

94. The TTE noted that the transparency of the information reported on technology needs could be enhanced by addressing the area noted in paragraph 92 above, which could facilitate a better understanding of the information reported on technology needs assessment.

95. Israel clarified during the technical analysis its current initiatives for enhancing its existing MRV system for compliance with requirements under the ETF. The initiatives relate to reporting its technology needs assessment, cooperation programmes with other developing countries and providing support. The TTE commends the Party for its proactive approach to preparing for ETF implementation.

5. Any other information

96. During the technical analysis, Israel provided information on the preparation of its national and local adaptation plans by each ministry and local government, respectively, by the end of 2023. National adaptation plans will include a cost–benefit analysis and risk assessment, and will be subject to international review.

D. Identification of capacity-building needs

97. In consultation with Israel, the TTE identified the following areas for improvement and enhancement of capacity that could facilitate the preparation of BTRs under the ETF:

(a) Any strengthening of national capacity needed for Israel to familiarize itself with the full extent, scope and requirements of the ETF given that the first BTR is due by 31 December 2024;

(b) Any strengthening of institutional and human capacity needed to fully move to using the 2006 IPCC Guidelines for the first BTR in order to meet the GHG inventory requirements under the ETF;

(c) Enhancing national capacity to report comprehensive information on methodologies and assumptions used for estimating the quantitative impacts of mitigation actions;

(d) Enhancing national capacity to report estimated emission reductions for all mitigation actions;

(e) Strengthening institution and human capacity to explore options for enhancing the MRV Excel model;

(f) Strengthening institutional and human capacity to develop projection scenarios that are linked to mitigation actions and that could be used for tracking progress in achieving the NDC target and supporting targets;

(g) Increasing the size of the MRV team to ensure the fulfilment of reporting requirements under the ETF.

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

(a) Addressing knowledge gaps and enhancing national capacity to prepare the GHG inventory and the NIR, including developing methodologies and conducting the uncertainty analysis;

(b) Improving data analysis capabilities.

III. Conclusions

99. The TTE conducted a technical analysis of the information reported in the second BUR of Israel in accordance with the UNFCCC reporting guidelines on BURs and concludes that the information reported is partially consistent. It provides an overview of national circumstances and institutional arrangements relevant to the preparation of NCs on a continuous basis; the national inventory of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol; mitigation actions and their effects, including associated methodologies and assumptions; constraints and gaps, and related capacity-building needs; and domestic MRV. During the technical analysis, additional information was provided by Israel on the national GHG inventory, including on preparing the NIR, on mitigation actions and their effects and on the MRV Excel model that is used for estimating emission reductions and developing emission scenarios. The TTE concludes that the information analysed is partially transparent.

100. Israel reported an update on the institutional arrangements relevant to the preparation of its BURs. The Ministry of Environmental Protection is responsible for preparing the NCs and BURs, the Israel Central Bureau of Statistics is responsible for preparing the NIR annually and an interministerial steering committee provides oversight. These arrangements are formalized in government decision 1403. The Party has taken steps to establish institutional arrangements that enable sustainable preparation of its BURs, such as making organizational improvements and establishing knowledge-sharing procedures to facilitate sectoral information transfer.

101. In its second BUR, submitted in 2023, Israel reported information on its national GHG inventory for 1996, 2000 and 2005–2020. This included GHG emissions and removals of CO₂, CH₄ and N₂O for all relevant sources and sinks as well as the precursor gases. The inventory was developed on the basis of the Revised 1996 IPCC Guidelines and the IPCC good practice guidance, although specific EFs from the 2006 IPCC Guidelines were applied for the agriculture and waste sectors. The total GHG emissions for 2020 were reported as 77,674.84 Gg CO₂ eq (excluding LULUCF) and 77,414.68 Gg CO₂ eq (including LULUCF).

Estimates for the solvent and other product use sector were not provided owing to difficulties in obtaining the necessary data, as clarified by the Party in the BUR.

102. Israel reported information on mitigation actions and their effects in both tabular and narrative format, including its national context, and framed its national mitigation planning and actions in the context of the national emission reduction targets for 2020, 2025 and 2030 (i.e. the national GHG emission reduction plan for 2016–2021 and the national action plan on climate change for 2022–2026). Israel reported its mitigation actions for the energy, transport, industry and waste sectors as ongoing. The mitigation actions focus on increasing use of renewable and lower-emitting energy sources (e.g. natural gas) and energy efficiency. They focus mainly on the electricity generation sector (phasing out coal-fired generation and increasing use of renewables for electricity generation), the buildings sector (e.g. increasing energy efficiency by providing incentives and through regulations) and the transport sector (e.g. promoting electric vehicles and use of public transport). The Party reported the progress of implementation of its mitigation actions and the results achieved, including emission reductions and estimated outcomes, for most of its mitigation actions. The highest emission reduction and estimated outcome was reported for the electricity sector, with 8.2 Gg CO₂ eq in 2019 and 27.7 Gg CO₂ eq in 2030. Israel reported that, if the mitigation actions reported in its BUR are implemented, the cumulative GHG emission reductions achieved will be 38.9 Mt CO₂ eq by 2030. The Party also reported information on its MRV arrangements but did not report information on its involvement in international market mechanisms. It did not report information on methodologies and assumptions used for estimating emission reductions or report estimates of emission reductions for selected measures (e.g. government grants for sustainable energy) owing to the modelling difficulties regarding accurately integrating top-down electricity consumption and bottom-up electricity saving measures.

103. Israel reported information on key constraints, gaps and related needs, including the need for enhanced capacity to address aspects in its NIR, such as capacity for conducting the uncertainty analysis and improving its data analysis capabilities. Israel also reported that it does not require external support to prepare its BUR or build its technical capacity.

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

105. The TTE, in consultation with Israel, identified the seven areas for the improvement and enhancement of capacity listed in chapter II.D above that aim to facilitate the preparation of BTRs under the ETF. Israel prioritized all the areas referred to in paragraph 97 above.

Annex I

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

Table I.1

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

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Assessment of whether the information was reported</i>	<i>Comments on the extent of the information provided</i>
Decision 2/CP.17, paragraph 41(g)	The first BUR shall cover, at a minimum, the inventory for the calendar year no more than four years prior to the date of the submission, or more recent years if information is available, and subsequent BURs shall cover a calendar year that does not precede the submission date by more than four years.	Yes	Israel submitted its second BUR in March 2023; the GHG inventories reported are for 1996, 2000 and 2005–2020.
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	Israel used a combination of the Revised 1996 IPCC Guidelines and 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.	Partly	Very little information was reported on updated AD used in compiling the inventory.
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	Reported time series cover 1996, 2000 and 2005–2020. There are methodological inconsistencies in the time series and recalculations were not reported.
Decision 2/CP.17, annex III, paragraph 8	Non-Annex I Parties that have previously reported on their national GHG inventories contained in their NCs are encouraged to submit summary information tables of inventories for previous submission years (e.g. for 1994 and 2000).	Yes	This information was reported in table 17 of the BUR for 1996, 2000, 2005, 2010 and 2015.
	The inventory section of the BUR should consist of an NIR as a summary or as an update of the information contained in decision	Yes	

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Assessment of whether the information was reported</i>	<i>Comments on the extent of the information provided</i>
Decision 2/CP.17, annex III, paragraph 9	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	This information was reported in table 17 of the BUR. However, no emissions were reported for the solvent and other product use sector and notation keys were not used.
	(b) Table 2 (National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF ₆).	Partly	Information on F-gases was reported in tables 15 and 17 of the BUR. HFC and PFC emissions were reported as totals using CO ₂ eq, rather than on a gas-by-gas basis 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.	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.	Partly	Information on procedures and arrangements for collecting and archiving data and efforts to make this a continuous process was not reported.
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	Some cells were left blank and notation keys were not used.
	(b) CH ₄ ;	Partly	Some cells were left blank and notation keys were not used.
	(c) N ₂ O.	Partly	Some cells were left blank and 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:	Partly	Information on production of halocarbons and SF ₆ was not reported. Cells were left blank and notation keys were not used.
	(a) HFCs;	Partly	As above.
	(b) PFCs;	Partly	As above.
	(c) SF ₆ .	Partly	As above.
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:		

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Assessment of whether the information was reported</i>	<i>Comments on the extent of the information provided</i>
	(a) CO ₂ ;	Partly	Emissions from the solvent and other product use sector were not reported and notation keys were not used.
	(b) NO _x ;	Partly	As above.
	(c) NMVOCs.	Partly	As above.
Decision 17/CP.8, annex, paragraph 17	Other gases not controlled by the Montreal Protocol, such as SO _x , and included in the Revised 1996 IPCC Guidelines may be included at the discretion of Parties.	Yes	Israel reported some information on SO _x .
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;	Yes	
	(b) Marine bunker fuels.	Yes	
Decision 17/CP.8, annex, paragraph 20	Non-Annex I Parties wishing to report on aggregated GHG emissions and removals expressed in CO ₂ eq should use the GWP provided by the IPCC in its AR2 based on the effects of GHGs over a 100-year time-horizon.	Partly	Israel used the GWPs provided in the AR2, with exceptions for some F-gases, but this was not explicitly reported in the BUR.
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;	Partly	Israel used mostly tier 1 methodology from the Revised 1996 IPCC Guidelines for energy, industrial processes and LULUCF. The 2006 IPCC Guidelines were used for agriculture (tier 1 and 2 methodologies) and waste (tier 2 methodology for solid waste disposal on land; tier 1 methodology for wastewater).

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Assessment of whether the information was reported</i>	<i>Comments on the extent of the information provided</i>
			Tier 3 methodology was used for some specific categories in the industrial processes sector, but the actual methodologies used were not explicitly described.
	(b) Explanation of the sources of EFs;	No	The BUR contains very little specific information about the sources of EFs, including where country-specific EFs were used.
	(c) Explanation of the sources of AD;	No	The BUR contains very little specific information about the AD used for estimating emissions.
	(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.	Partly	Notation keys were not used.
Decision 17/CP.8, annex, paragraph 24	Non-Annex I Parties are encouraged to provide information on the level of uncertainty associated with inventory data and their underlying assumptions, and to describe the methodologies used, if any, for estimating these uncertainties:		
	(a) Level of uncertainty associated with inventory data;	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 second biennial update report of Israel

<i>Decision</i>	<i>Provision of the reporting guidelines</i>	<i>Assessment of whether the information was reported</i>	<i>Comments on the extent of the information provided</i>
Decision 2/CP.17, annex III, paragraph 11	Non-Annex I Parties should provide information, in tabular format, on actions to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol.	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	Information on quantitative goals was not reported for some of the mitigation actions in the energy and industry sectors.
	(b) Information on:		
	(i) Methodologies;	No	
	(ii) Assumptions;	No	
	(c) Information on:		
	(i) Objectives of the action;	Yes	
	(ii) Steps taken or envisaged to achieve that action;	Yes	
	(d) Information on:		
	(i) Progress of implementation of the mitigation actions;	Yes	
	(ii) Progress of implementation of the underlying steps taken or envisaged;	Yes	
	(iii) Results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions, to the extent possible;	Partly	The Party did not report on emission reductions for some of the mitigation actions in the energy sector.
	(e) Information on international market mechanisms.	No	
Decision 2/CP.17, annex III, paragraph 13	Parties should provide information on domestic MRV arrangements.	Yes	

Note: The parts of the UNFCCC reporting guidelines on BURs on the reporting of information on mitigation actions in BURs are contained in decision 2/CP.17, annex III, paras. 11–13.

Table I.3

Identification of the extent to which the elements of information on finance, technology and capacity-building needs and support received are included in the second biennial update report of Israel

<i>Decision</i>	<i>Provision of the reporting requirements</i>	<i>Assessment of whether the information was reported</i>	<i>Comments on the extent of the information provided</i>
Decision /CP.17, annex III, paragraph 14	Non-Annex I Parties should provide updated information on:		
	(a) Constraints and gaps;	Partly	Information was provided only for the GHG inventory.
	(b) Related financial, technical and capacity-building needs.	Partly	Information on financial needs was not reported.
Decision /CP.17, annex III, paragraph 15	Non-Annex I Parties should provide:		
	(a) Information on financial resources, technology transfer and capacity-building 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	
	(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 /CP.17, annex III, paragraph 16	With regard to the development and transfer of technology, non-Annex I Parties should provide information on:		
	(a) Nationally determined technology needs;	No	
	(b) Technology support received.	No	

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

Annex II

Reference documents

A. Reports of the Intergovernmental Panel on Climate Change

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

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

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

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

B. UNFCCC documents

NC3 of Israel. Available at <https://unfccc.int/non-annex-I-NCs>.

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

Summary report on the technical analysis of the first BUR of Israel, contained in document FCCC/SBI/ICA/2016/TASR.1/ISR. Available at <https://unfccc.int/ICA-reports>.

C. Other documents

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

Overview of mitigation policies and domestic MRV (presentation), Ministry of Environmental Protection.

Mitigation actions in energy sector (presentation), Ministry of Energy and Infrastructure.

The road to sustainable industry, Ministry of Economy and Industry.

GHG mitigation in transport sector, Ministry of Transport and Road Safety.

GHG inventory overview, Israel Central Bureau of Statistics.

Data sources for calculating the inventory of GHG emissions in Israel, Israel Central Bureau of Statistics.

CH₄ EFs for manure management and entering fermentation, Israel Central Bureau of Statistics.

Israel's monitoring, reporting and verification system, Ministry of Environmental Protection, EcoTraders.

Israel's monitoring, reporting and verification system – MRV model, scenarios and projections, Ministry of Environmental Protection, EcoTraders.

Excerpts from the climate law.

Towards climate resilient cities in Israel, Ministry of Environmental Protection.