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Report on the technical review of the eighth national communication and the technical review of the fifth biennial report of Türkiye

Parties included in Annex I to the Convention were requested by decision 6/CP.25 to submit their eighth national communication to the secretariat by no later than 31 December 2022. According to decision 15/CMP.1, Parties included in Annex I to the Convention that are also Parties to the Kyoto Protocol are required to include in their national communications supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. This report presents the results of the technical review of the eighth national communication and relevant supplementary information under the Kyoto Protocol of Türkiye, conducted by an expert review team in accordance with the “Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention” and the “Guidelines for review under Article 8 of the Kyoto Protocol”.

Developed country Parties were requested by decision 6/CP.25 to submit their fifth biennial report to the secretariat by no later than 31 December 2022. This report presents the results of the technical review of the fifth biennial report of Türkiye, conducted by an expert review team in accordance with the “Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”.

The review of these submissions took place in Ankara from 18 to 22 March 2024.



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Abbreviations and acronyms

Annex II Party	Party included in Annex II to the Convention
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BR	biennial report
CH ₄	methane
CO ₂	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
CTF	common tabular format
DOCC	Directorate of Climate Change of Türkiye
ERT	expert review team
GDP	gross domestic product
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
INDC	intended nationally determined contribution
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
MoEUCC	Ministry of Environment, Urbanization and Climate Change of Türkiye
N ₂ O	nitrous oxide
NA	not applicable
NC	national communication
NDC	nationally determined contribution
NE	not estimated
NF ₃	nitrogen trifluoride
NGO	non-governmental organization
NO	not occurring
PaMs	policies and measures
PFC	perfluorocarbon
reporting guidelines for supplementary information	“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol. Part II: Reporting of supplementary information under Article 7, paragraph 2”
SF ₆	sulfur hexafluoride
TIMES-MACRO	The Integrated Market Allocation–Energy Flow Optimization Model System with macroeconomic model
TurkStat	Turkish Statistical Institute
UNFCCC reporting guidelines on BRs	“UNFCCC biennial reporting guidelines for developed country Parties”
UNFCCC reporting guidelines on NCs	“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications”
WAM	‘with additional measures’
WEM	‘with measures’
WOM	‘without measures’
YEKAs	renewable energy resource areas
YEKDEM	renewable energy sources support mechanism

I. Introduction and summary

A. Introduction

1. This is a report on the in-country technical review of the NC8 and BR5 of Türkiye. The review was organized by the secretariat in accordance with the “Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”, particularly “Part IV: UNFCCC guidelines for the technical review of biennial reports from Parties included in Annex I to the Convention” and “Part V: UNFCCC guidelines for the technical review of national communications from Parties included in Annex I to the Convention” (annex to decision 13/CP.20), and the “Guidelines for review under Article 8 of the Kyoto Protocol” (annex to decision 22/CMP.1 and annex I to decision 4/CMP.1).
2. In accordance with decision 13/CP.20, a draft version of this report was transmitted to the Government of Türkiye, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.
3. The review was conducted from 18 to 22 March 2024 in Ankara by the following team of nominated experts from the UNFCCC roster of experts: Ijaz Ahmad (Pakistan), Fernando Farias (Chile), Veronika Ginzburg (Russian Federation), Victoria Novikova (Belarus), Elizabeth Adobi Okwuosa (Kenya) and Kelsey van Maris (Belgium). Fernando Farias and Veronika Ginzburg were the lead reviewers. The review was coordinated by Roman Payo (secretariat).

B. Summary

4. The ERT conducted a technical review of the information reported in the NC8 of Türkiye in accordance with the UNFCCC reporting guidelines on NCs,¹ the reporting guidelines for supplementary information, in particular the supplementary information required under Article 7, paragraph 2, and on the minimization of adverse impacts under Article 3, paragraph 14, of the Kyoto Protocol² and of the information reported in the BR5 of Türkiye in accordance with the UNFCCC reporting guidelines on BRs.³
5. As a Party included in Annex I to the Convention with no commitments inscribed in Annex B to the Kyoto Protocol, Türkiye has no obligation to report on its national system in accordance with Article 5, paragraph 1, of the Kyoto Protocol; its national registry; supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol; or the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol. The information provided in the NC8 includes all of the elements of the supplementary information under Article 7 of the Kyoto Protocol that are applicable to Türkiye.

1. Timeliness

6. The NC8 was submitted on 23 May 2023, after the deadline of 31 December 2022 mandated by decision 6/CP.25. The NC8 was resubmitted on 6 May 2024 to address issues raised during the review. Detailed information on improvements related to the resubmission is provided in paragraph 15 below. Unless otherwise specified, the information and values from the latest submission are used in this report.
7. Türkiye informed the secretariat on 24 October 2022 about its difficulties with making a timely NC8 submission. In accordance with decision 13/CP.20, a Party should inform the secretariat thereof by the due date of the submission in order to facilitate the arrangement of

¹ Decision 6/CP.25, annex.

² Decision 15/CMP.1, annex, and decision 3/CMP.11, annex III.

³ Decision 2/CP.17, annex.

the review process. The ERT noted with great concern the delay in the submission and recommended that Türkiye make its next submission on time.

8. The BR5 was submitted on 23 May 2023, after the deadline of 31 December 2022 mandated by decision 6/CP.25. The CTF tables were submitted on 30 May 2023. The BR5 and CTF tables were resubmitted on 6 May 2024 and 18 April 2024 respectively to address issues raised during the review. Detailed information on improvements related to the resubmission is provided in paragraph 15 below. Unless otherwise specified, the information and values from the latest submission are used in this report.

9. Türkiye informed the secretariat on 24 October 2022 about its difficulties with making a timely BR5 submission. In accordance with decision 13/CP.20, a Party should inform the secretariat thereof by the due date of the submission in order to facilitate the arrangement of the review process. The ERT noted with great concern the delay in the submission.

10. During the review, Türkiye explained that the delay in its submission of the NC8 and BR5 was caused by lack of receipt of expected financial support from the Global Environment Facility; changes to institutional arrangements and responsibilities for reporting activities, namely the establishment of MoEUCC and DOCC thereunder in October 2021 and further restructuring of the Government in 2022; and disruption following the earthquake disaster of 6 February 2023.

2. Completeness, transparency of reporting and adherence to the reporting guidelines

11. Issues and gaps identified by the ERT related to the information reported by Türkiye in its NC8 are presented in tables 1–2. The information reported, including the supplementary information under the Kyoto Protocol, mostly adheres to the UNFCCC reporting guidelines on NCs.

12. The ERT noted that Türkiye made improvements to the reporting in its NC8 compared with that in its NC7, including by addressing some recommendations and encouragements from the previous review report in the areas of national circumstances relevant to GHG emissions and removals; PaMs; projections and the total effects of PaMs; vulnerability assessment, climate change impacts and adaptation measures; research and systematic observation; and education, training and public awareness.

Table 1

Assessment of completeness and transparency of mandatory information reported by Türkiye in its eighth national communication

<i>Section of NC</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of recommendation</i>
Executive summary	Complete	Transparent	–
National circumstances relevant to GHG emissions and removals	Complete	Mostly transparent	Issue 1 in table I.1
GHG inventory	Complete	Transparent	–
PaMs	Partially complete	Transparent	Issues 3, 5 and 8 in table I.2
Projections and the total effect of PaMs	Partially complete	Mostly transparent	Issues 2, 6, 8, 10 and 16 in table I.3
Vulnerability assessment, climate change impacts and adaptation measures	Complete	Transparent	–
Financial resources and transfer of technology ^a	NA	NA	–
Research and systematic observation	Complete	Transparent	–
Education, training and public awareness	Complete	Transparent	–

Note: A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in annex I. The assessment of completeness and transparency by the ERT in this table is based only on the “shall” reporting requirements.

^a Türkiye is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paras. 3–5, of the Convention.

Table 2

Assessment of completeness and transparency of mandatory supplementary information under the Kyoto Protocol reported by Türkiye in its eighth national communication

<i>Supplementary information under the Kyoto Protocol</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of recommendation</i>
National system ^a	NA	NA	–
National registry ^a	NA	NA	–
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 ^a	NA	NA	–
PaMs in accordance with Article 2	Complete	Transparent	–
Domestic and regional programmes and/or arrangements and procedures	NA	NA	–
Information under Article 10 ^b	NA	NA	–
Financial resources ^c	NA	NA	–
Minimization of adverse impacts in accordance with Article 3, paragraph 14 ^a	NA	NA	–

Note: The assessment of completeness and transparency by the ERT in this table is based only on the “shall” reporting requirements.

^a As a Party included in Annex I to the Convention with no commitments inscribed in Annex B to the Kyoto Protocol, Türkiye has no obligation to report on its national system in accordance with Article 5, para. 1, of the Kyoto Protocol; its national registry; supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol; or the minimization of adverse impacts in accordance with Article 3, para. 14, of the Kyoto Protocol.

^b The assessment refers to information provided by the Party on the provisions contained in Article 4, paras. 3, 5 and 7, of the Convention, as reported under Article 10 of the Kyoto Protocol, which is relevant to Annex II Parties only. An assessment of the information on the other provisions of Article 10 of the Kyoto Protocol is provided under the relevant substantive headings under the Convention, for example research and systematic observation.

^c Türkiye is not an Annex II Party and is therefore not obliged to provide information on financial resources under Article 11 of the Kyoto Protocol, including on “new and additional” resources.

13. Issues and gaps identified by the ERT related to the information reported by Türkiye in its BR5 are presented in table 3. The information reported mostly adheres to the UNFCCC reporting guidelines on BRs. The ERT notes that issues 2, 6 and 13 in table II.1 have been identified in three or more successive reviews.

14. The ERT noted that Türkiye made improvements to the reporting in its BR5 compared with that in its BR4, by addressing a recommendation from the previous review report to include correct and consistent inventory and projection emission data.

Table 3

Summary of completeness and transparency of mandatory information reported by Türkiye in its fifth biennial report

<i>Section of BR</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of recommendation</i>
GHG emissions and removals	Complete	Transparent	–
Quantified economy-wide emission reduction target and related assumptions, conditions and methodologies ^a	NA	NA	–
Progress in achievement of targets	Mostly complete	Mostly transparent	Issues 2, 6 and 13 in table II.1
Provision of support to developing country Parties ^b	NA	NA	–

Note: A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in annex II. The assessment of completeness and transparency by the ERT in this table is based only on the “shall” reporting requirements.

^a Türkiye is a Party to the Convention with no target contained in document FCCC/SB/2011/INF.1/Rev.1 or any subsequent update thereto (FCCC/TP/2012/5 and FCCC/SBSTA/2014/INF.6). Therefore, in its BR5, Türkiye did not include information on a quantified economy-wide emission reduction target and related conditions and assumptions in CTF tables 2(a–f), or information on

progress towards the target in CTF tables 3, 4, 4(a)I, 4(a)II and 4(b). Türkiye reported in its BR5 and CTF tables 6(a–b) projections for 2020 and 2030 under the WEM and WOM scenarios.

^b Türkiye is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paras. 3–5, of the Convention.

15. The NC8, BR5 and CTF table resubmissions made during the review improved:

(a) The information reported on national circumstances relevant to GHG emissions and removals by explaining the impact on total national GHG emissions of the energy mix for electricity production, the agriculture sector and LULUCF sector;

(b) The GHG inventory information reported by including details on the drivers of emissions for the energy and LULUCF sectors and on inventory preparation arrangements;

(c) The information reported on its quantified economy-wide emission reduction target and related assumptions, conditions and methodologies by removing all entries in CTF tables 2(a–b) to clarify that the Party does not have such a target (see para. 32 below);

(d) The information reported on PaMs by describing how the Party prioritizes the PaMs with the most significant impact on GHG emissions and removals; identifying innovative and/or replicable PaMs and PaMs that lead to greater levels of emissions; discussing the economic and social consequences of response measures; and completing the information on objective, type, status and timeline for every policy or measure;

(e) The information reported on projections and the total effects of PaMs by correcting the values for emissions reported in some tables;

(f) The information reported on vulnerability assessment, climate change impacts and adaptation measures by including more details on the variation in the seasonal and annual precipitation patterns and on projects in the areas of water resources, flood forecasting and early warning, and agriculture;

(g) The information reported on research and systematic observation by including more details on the sources of funding for projects;

(h) The information reported on education, training and public awareness by explaining in more detail the climate change action plan of the Ministry of National Education and public participation in the Climate Council.

II. Technical review of the information reported in the eighth national communication and fifth biennial report

A. National circumstances relevant to greenhouse gas emissions and removals

1. Technical assessment of the reported information

16. The NC8 contains key data on legislation, population trends, geography and land use, climate and climate change, economic developments, energy, transport, the buildings sector, industry, trade, the services sector, agriculture, forestry, resource efficiency and wastewater.

17. The governmental structure of Türkiye has changed since the NC7. In 2021, MoEUCC replaced the Ministry of Environment and Urbanization as the authority responsible for climate action. Preparation of the NC8 was led by DOCC in collaboration with the 22 members (governmental organizations and NGOs) that are represented on the Climate Change and Adaptation Coordination Board. Other NGOs and institutions were also involved in preparing the NC8.

18. Türkiye provided information on how its national circumstances affect GHG emissions and removals. Population growth and economic growth were indicated as the main drivers of the increase in GHG emissions seen in 1990–2020. The total population increased by 28.3 million people (51.3 per cent) in that period, reaching 83.4 million in 2020. The urban

population also increased between 1990 and 2020, by 37.5 per cent, reaching 77.7 million. The increases in population and GDP resulted in a significant increase in total primary energy supply (by 203.0 per cent) in the same period.

19. Türkiye’s GHG emission trends are highly correlated with GDP growth. The Party reported that during 1990–2020 its GDP per capita increased by 209.9 per cent and its GHG emissions per capita by 58.0 per cent. In the same period, GHG intensity per GDP unit decreased by 50.3 per cent. Although GHG emissions per GDP unit decreased notably between 1990 and 2020, the ERT noted a slight continuous increase in GHG emissions per GDP unit starting from 2015 (see figure 38 of the NC8). From additional information provided by the Party during the review, the ERT determined that GHG emissions per GDP unit increased by 51.3 per cent between 2014 and 2020.

20. The sector with the largest increase in emissions between 1990 and 2020 was the energy sector, in particular energy industries (290.8 per cent increase) and transportation (203.5 per cent increase), followed by the IPPU sector (172.7 per cent increase). In Türkiye, a strong link remains between growth in the economy and increase in GHG emissions, particularly those from the energy and IPPU sectors.

21. The ERT noted that the Party improved the completeness of its reporting by providing information on installed capacity for electricity production by primary energy sources. The share of renewable energy in the primary energy supply has been increasing significantly since 1990. Hydropower comprised the highest share in gross electricity production in 2020, at 25.5 per cent, followed by natural gas (23.1 per cent), other bituminous coal (22.1 per cent), Turkish lignite (12.4 per cent), other renewables and waste (16.8 per cent) and oil (0.1 per cent).

22. The coronavirus disease 2019 pandemic had a significant impact on Türkiye. Various measures implemented as a result of the pandemic had adverse impacts on the economy, particularly on the tourism sector. Rapid growth occurred in 2021 and 2022, with the economy growing by 11.4 per cent in 2021 and 5.6 per cent in 2022.

23. The Party reported information in the NC8 on its special circumstances. For Türkiye the Convention entered into force on 24 May 2004. In accordance with paragraph 3 of decision 26/CP.7, Türkiye is recognized as having national circumstances that are different from Parties included in Annex I to the Convention and therefore it has access to finance, technology and capacity-building opportunities to develop its ability to apply the provisions of the Convention more effectively.

2. Assessment of adherence to the reporting guidelines

24. The ERT assessed the information reported in the NC8 of Türkiye and identified an issue relating to completeness and thus adherence to the UNFCCC reporting guidelines on NCs. The finding is described in table I.1.

B. Greenhouse gas inventory information⁴

1. Technical assessment of the reported information

25. Türkiye reported information in its BR5 and NC8 on its historical GHG emissions and inventory arrangements using GWP values from the AR4. More recent information on GHG emissions was reported in Türkiye’s 2023 inventory submission. The inventory presented in the NC8 is the same as that in the 2022 annual submission, in which the 1990–2020 time series was reported. Total GHG emissions⁵ excluding emissions and removals from LULUCF increased by 138.7 per cent between 1990 and 2020, while total GHG emissions including

⁴ GHG emission data in this section, which use GWP values from the AR4, are based on Türkiye’s 2023 inventory submission, version 1, which has not yet been subject to review. All emission data in subsequent chapters are based on Türkiye’s BR5 CTF tables, which use GWP values from the AR4 unless otherwise noted.

⁵ In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions expressed in terms of CO₂ eq excluding LULUCF, unless otherwise specified.

net emissions or removals from LULUCF increased by 205.2 per cent over the same period. Emissions excluding emissions and removals from LULUCF in 2021 increased compared with 2020. The changes in total emissions were driven mainly by factors such as GDP growth, population trends, changes in the share of primary energy sources and the impacts of the pandemic.

26. Table 4 illustrates the emission trends by sector and by gas for Türkiye. The emissions reported in the 2023 inventory submission for 1990–2020 for the LULUCF sector differ from the data reported in CTF table 1 in that the emissions for 2020 are slightly increased.

Table 4

Greenhouse gas emissions by sector and by gas for Türkiye for 1990–2021

	<i>GHG emissions (kt CO₂ eq)</i>					<i>Change (%)</i>		<i>Share (%)</i>	
	<i>1990</i>	<i>2000</i>	<i>2010</i>	<i>2020</i>	<i>2021</i>	<i>1990–2020</i>	<i>2020–2021</i>	<i>1990</i>	<i>2021</i>
<i>Sector</i>									
1. Energy	139 535.55	216 044.85	287 877.78	366 566.98	402 480.49	162.7	9.8	63.6	71.3
A1. Energy industries	37 187.50	77 725.47	114 153.36	141 894.16	159 506.24	281.6	12.4	16.9	28.3
A2. Manufacturing industries and construction	37 161.74	57 944.53	52 333.45	60 186.50	66 235.98	62.0	10.1	16.9	11.7
A3. Transport	26 968.90	36 464.87	45 391.99	80 680.30	91 200.25	199.2	13.0	12.3	16.2
A4. and A5. Other	33 707.42	37 764.47	67 772.80	75 224.56	75 349.66	123.2	0.2	15.4	13.4
B. Fugitive emissions from fuels	4 509.85	6 145.39	8 226.06	8 581.34	10 188.23	90.3	18.7	2.1	1.8
C. CO ₂ transport and storage	0.13	0.13	0.13	0.13	0.13	–	–	0.00006	0.00002
2. IPPU	22 856.10	26 198.50	49 059.96	67 962.30	75 135.77	197.3	10.6	10.4	13.3
3. Agriculture	46 053.68	42 332.13	44 409.31	73 153.50	72 075.48	58.8	–1.5	21.0	12.8
4. LULUCF	–66 510.96	–68 051.66	–71 880.48	–56 947.61	–47 145.76	14.4	17.2	NA	NA
5. Waste	11 080.83	14 341.27	17 446.12	16 308.03	14 698.01	47.2	–9.9	5.0	2.6
6. Other ^a	–	–	–	–	–	–	–	–	–
<i>Gas^b</i>									
CO ₂	151 614.98	229 936.66	316 193.04	412 926.87	452 702.79	172.4	9.6	69.1	80.2
CH ₄	42 487.54	43 667.29	51 645.28	63 893.76	64 020.23	50.4	0.2	19.4	11.3
N ₂ O	24 950.82	24 774.57	27 447.36	40 490.57	40 306.09	62.3	–0.5	11.4	7.1
HFCs	NO	115.66	3 054.43	6 497.73	7 209.80	NA	11.0	NA	1.3
PFCs	472.80	409.25	387.57	10.38	6.79	–97.8	–34.6	0.2	0.001
SF ₆	NO	13.34	65.48	171.50	144.05	NA	–16.0	NA	0.03
NF ₃	NO	NO	NO	NO	NO	NA	NA	NA	NA
Total GHG emissions excluding LULUCF	219 526.15	298 916.75	398 793.16	523 990.82	564 389.75	138.7	7.7	100.0	100.0
Total GHG emissions including LULUCF	153 015.20	230 865.09	326 912.69	467 043.21	517 243.99	205.2	10.7	NA	NA

Source: GHG emission data: Türkiye's 2023 inventory submission, version 1.

^a Emissions and removals reported under the sector other (sector 6) are not included in total GHG emissions.

^b Emissions by gas without LULUCF. The Party did not report indirect CO₂ emissions.

27. In brief, Türkiye's latest national inventory arrangements were established in accordance with presidential decree 85 of 29 October 2021. TurkStat is responsible for coordinating and implementing national inventory activities – from planning to management – by decision 2009/1 of the Coordination Board on Climate Change. The legal basis of the national inventory system is currently provided by the Statistics Law of Türkiye through the Official Statistics Programme. The national GHG inventory is compiled by GHG emissions inventory working groups under the coordination of TurkStat. The entities included in the

working groups are the Ministry of Agriculture and Forestry, the Ministry of Energy and Natural Resources, the Ministry of Transport and Infrastructure, MoEUCC and TurkStat. The national GHG inventory is subject to an official consideration and approval procedure by MoEUCC before its submission to the UNFCCC. There have been no changes in these arrangements since the BR4.

2. Assessment of adherence to the reporting guidelines

28. The ERT assessed the information reported in the NC8 and BR5 of Türkiye and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs and the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

3. National system for the estimation of anthropogenic emissions by sources and removals by sinks

Technical assessment of the reported information

29. As a Party included in Annex I to the Convention with no commitments inscribed in Annex B to the Kyoto Protocol, Türkiye has no obligation to report on its national system in accordance with Article 5, paragraph 1, of the Kyoto Protocol.

30. However, Türkiye provided in the NC8 a description of how its national system for the estimation of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol is performing the general and specific functions defined in the annex to decision 19/CMP.1 in conjunction with decisions 3/CMP.11 and 4/CMP.11. The description includes most of the elements mandated by paragraph 30 of the annex to decision 15/CMP.1. The ERT commends Türkiye for including information on its national system in its NC8. The ERT took note of the review of the changes to the national system reflected in the report on the individual review of the 2021 annual submission of Türkiye.

4. National registry

Technical assessment of the reported information

31. As a Party included in Annex I to the Convention with no commitments inscribed in Annex B to the Kyoto Protocol, Türkiye has no obligation to report on its national registry.

C. Quantified economy-wide emission reduction target and related assumptions, conditions and methodologies

Technical assessment of the reported information

32. Türkiye is a Party to the Convention with no quantified economy-wide emission reduction target contained in document FCCC/SB/2011/INF.1/Rev.1 or any subsequent update thereto (FCCC/TP/2012/5 and FCCC/SBSTA/2014/INF.6). Therefore, the Party is not obliged to report on a quantified economy-wide emission reduction target and related conditions and assumptions in its BR5 and CTF tables.

D. Information on policies and measures

1. Technical assessment of the reported information

33. Türkiye provided in its NC8 and BR5 information on its PaMs⁶ implemented, adopted and planned to fulfil its commitments under the Convention. Türkiye's set of PaMs is similar to that previously reported, with a few exceptions. Türkiye indicated in its NC8 that the

⁶ The UNFCCC reporting guidelines on BRs use the term "mitigation actions", whereas the UNFCCC reporting guidelines on NCs use the term "policies and measures". The terms are used interchangeably in this report to refer to the relevant information in either the NC or BR.

measure included in the NC7 on promoting the phase-out of old vehicles is no longer in place. The Party reported on new PaMs introduced since the previous submission. Furthermore, Türkiye reported on its formulation in 2021 of the objective to achieve net zero emissions by 2053; its plan to update its first NDC; its adoption in 2021 of the national Green Deal Action Plan, which includes actions to address climate change and which will guide the green transformation of Türkiye's industries and adoption of measures for harmonizing its policy framework with the Green Deal of the European Union; its adoption in 2022 of the Türkiye National Energy Plan until 2035; its development of a new energy efficiency strategy for 2030 and the Second National Energy Efficiency Action Plan 2024–2030; its preparation of the Twelfth Development Plan of Türkiye 2024–2028; and its development of a long-term strategy towards 2053, which will accommodate the increasing climate ambition of Türkiye by harmonizing climate targets and economic growth and streamlining sustainable development across the economic sectors of Türkiye.

34. Türkiye reported on its policy context and legal and institutional arrangements in place for implementing its commitments and monitoring and evaluating the effectiveness of its PaMs. Türkiye also provided information on changes to its institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of progress towards its target. Overall responsibility for implementation of national climate change commitments continues to lie with MoEUCC, which also coordinates the Climate Change and Adaptation Coordination Board. Senior representatives of ministries and relevant institutions are members of the Board, whose responsibilities cover reporting under the Convention.

35. The Climate Change and Adaptation Coordination Board is also the main entity for developing and streamlining Türkiye's climate change policies, including the NDC and the National Climate Change Strategy (2010–2023) and its associated action plan (2011–2023). During the review, the Party explained that it has developed the Climate Mitigation Strategy and Action Plan (2024–2030). The Board is structured to ensure it has a high degree of technical and political expertise in different sectors, as well as the widest possible representation of relevant institutions and stakeholders. It has several working groups and is tasked with making decisions and developing measures to tackle climate change. MoEUCC serves as the national focal point to the UNFCCC, while TurkStat is responsible for collecting data from relevant ministries and then preparing and submitting the national GHG inventory.

36. Türkiye reported using a participatory approach for developing its climate change policy. The Climate Council held in 2022 on the theme of the 2053 net zero emission goal and Türkiye's 'green development revolution' contributed to developing Türkiye's new climate change vision and improving stakeholder understanding of its green transformation. The outcome of the Climate Council was published as a guidance document on combating climate change. The document includes 217 adopted decisions, which relevant government institutions may use as the basis for national policymaking and legislation on climate change in the future.

37. Municipalities play a role as decision makers and implementing entities of PaMs to tackle climate change, including cross-cutting PaMs, such as the one promoting the development of local climate change action plans in all 30 metropolitan municipalities of Türkiye, and sectoral PaMs, such as those in the waste, transport and buildings sectors.

38. Türkiye's assessment of the economic and social consequences of its response measures includes the integration of climate change considerations into cross-sectoral development plans, as well as mandatory regulatory and environmental assessments. Türkiye reported that its actions to identify and review its own policies and practices that encourage activities that lead to greater levels of emissions are incorporated in the policymaking process with the aim of identifying alternatives to such PaMs or clarifying why they are necessary. However, the Party did not identify any of these PaMs in the NC8.

39. In its reporting on PaMs, Türkiye did not provide the estimated emission reduction impacts for any of its PaMs. The Party did not supply an explanation for not providing the estimated impacts. The Party explained during the review that estimated impacts were not provided for any PaMs because of capacity constraints of relevant entities. To overcome this challenge, DOCC plans to implement a capacity-building project in the fourth quarter of 2024

to enable relevant Turkish institutions to prepare information on impacts of PaMs as part of national reporting under the enhanced transparency framework under the Paris Agreement. The project will be co-financed by the Turkish Government and the Capacity-building Initiative for Transparency of the Global Environment Facility.

40. The key overarching cross-sectoral policy reported by Türkiye is the Eleventh Development Plan of Türkiye for 2019–2023, which includes mitigation-related targets. During the review, the Party informed the ERT that when compiling the NC8 an attempt was made to classify PaMs in each sector according to their impacts with the intention of identifying and prioritizing PaMs with significant GHG emission reduction potential. However, this strategy faced limitations because the quantitative impacts of the PaMs, that is, their GHG emission reduction potential, could not be accurately calculated.

41. Türkiye highlighted the mitigation actions that are under development, such as establishing an emissions trading system that covers CO₂, N₂O and PFC emissions. Table 5 provides a summary of the reported information on the PaMs of Türkiye.

Table 5
Summary of information on policies and measures reported by Türkiye

Sector	Key PaMs ^a	Estimated mitigation impact in 2020 (kt CO ₂ eq)	
Policy framework and cross-sectoral measures	Establishment of an emission trading system	NE	
	Establishment of voluntary carbon market	NE	
	Eco-design and energy labelling and environmental labelling	NE	
	Promotion of local climate change action plans	NE	
Energy	Energy efficiency	Public lighting	NE
		Increasing energy performance of new buildings	NE
		Increasing energy performance of public buildings and building complexes	NE
		Promotion of thermal insulation standard	NE
		Reducing heating-related direct GHG emissions in buildings	NE
	Energy supply and renewable energy	YEKDEM ^b	NE
		YEKAs ^b	NE
		Electricity generation from nuclear energy	NE
		Cogeneration and trigeneration	NE
		Promotion of renewable electricity use in industry	NE
Transport	Promotion of waste-derived fuels	NE	
	Modal shift to public transport	NE	
	Strengthening railway	NE	
	Blending ethanol to gasoline types	NE	
	Blending biodiesel in diesel types	NE	
	Promotion of electric and hybrid vehicles	NE	
IPPU	Electric vehicles fast charging stations support program	NE	
	Reducing fluorinated gas emissions	NE	
Agriculture	Control of nitrate use	NE	
	Extending analysis-based fertilizer use	NE	
	Environmentally based agricultural land protection programme	NE	
	Program of supporting rural development investments	NE	
LULUCF	Expanding forest areas	NE	
	Effective protection of forests	NE	
Waste	Zero waste policy	NE	
	Power generation from sanitary landfills	NE	
	Actions implemented under wastewater treatment action plan	NE	
	Establishment of deposit return scheme	NE	

^a Names of PaMs reproduced as reported in Türkiye’s BR5.

^b Acronym used in Türkiye’s NC8 and BR5.

42. Although Türkiye has been a Party to the Convention since 2004, it does not have commitments inscribed in Annex B to the Kyoto Protocol. As such, it does not have a quantified economy-wide emission reduction target or any obligation to report on associated mitigation actions. The Party therefore left CTF table 3 blank. However, the Party reported PaMs in the NC8 and BR5 and provided some information relevant to mitigation actions and their effects during the review.

2. Assessment of adherence to the reporting guidelines

43. The ERT assessed the information reported in the NC8 and BR5 of Türkiye and identified issues relating to completeness and transparency, and thus adherence to the UNFCCC reporting guidelines on NCs and the UNFCCC reporting guidelines on BRs. The findings are described in tables I.3 and II.1.

3. Domestic and regional programmes and legislative arrangements and procedures related to the Kyoto Protocol

Technical assessment of the reported information

44. As a Party included in Annex I to the Convention with no commitments inscribed in Annex B to the Kyoto Protocol, Türkiye has no obligation to report on institutional arrangements and decision-making procedures relating to commitments, including those relating to participation in the Kyoto Protocol mechanisms. However, Türkiye reported in its NC8 some information on legislative arrangements and procedures related to the Kyoto Protocol.

45. DOCC, under MoEUCC, is the key entity for climate change policymaking in Türkiye. DOCC is responsible for coordinating the preparatory work carried out by relevant ministries for climate change negotiations and coordinates activities to develop Türkiye's policy in the field of climate change.

46. Türkiye has implemented various national awareness-raising campaigns and projects aimed at increasing public knowledge about climate change, such as the Raising Awareness Project for Climate Change, the Voice of Meteorology Radio, the Family Education Program, the Technical Assistance for Water Ambassadors Education and Awareness Raising Project and the Young Climate Envoys Movement, which supports young climate envoys from universities across Türkiye in their work to increase public awareness of climate change and encourage studies on sustainability and climate change. In Türkiye, many organizations act as resource and information centres for the public on the topic of climate change. These organizations provide information through means such as television and radio broadcasts, newspapers and other news publications, web pages, social media channels, journals, seminars, workshops and conferences.

4. Policies and measures in accordance with Article 2 and minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol

Technical assessment of the reported information

47. As a Party included in Annex I to the Convention with no commitments inscribed in Annex B to the Kyoto Protocol, Türkiye has no obligation to report on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol.

48. However, Türkiye provided brief information in the NC8 (section 4.2.9.4) on how it strives to implement PaMs under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change and effects on international trade and social, environmental and economic impacts on other Parties, especially developing country Parties. The ERT noted that this is an improvement in the Party's reporting since the NC7.

E. Estimates of emission reductions and removals and the use of units from market-based mechanisms and land use, land-use change and forestry and progress in achieving the quantified economy-wide emission reduction target

Technical assessment of the reported information

49. Türkiye is a Party to the Convention with no quantified economy-wide emission reduction target contained in document FCCC/SB/2011/INF.1/Rev.1 or any subsequent update thereto (FCCC/TP/2012/5 and FCCC/SBSTA/2014/INF.6). Therefore, the Party is not obliged to report on a quantified economy-wide emission reduction target and related conditions and assumptions in its BR5 and CTF tables. Because Türkiye does not have a quantified economy-wide emission reduction target, the reporting of information in CTF tables 4, 4(a)I, 4(a)II and 4(b) is not applicable.

50. However, Türkiye provided brief information in the NC8 (section 4.2.1) and BR5 (section 3.2). The Party aims to use carbon credits from international market mechanisms to achieve its 2030 mitigation target. It also aims to establish a domestic emissions trading system that is consistent with its national circumstances. The Climate Law, which will be the legal basis for introducing the system, is under development.

F. Projections

1. Projections overview, methodology and results

(a) Technical assessment of the reported information

51. Türkiye reported in its BR5 and NC8 projections for 2030 relative to actual inventory data for 1990, 1995, 2000, 2005, 2010, 2015 and 2020 under the WEM scenario, using GWP values from the AR4. In the NC8 and BR5 and during the review, the Party clarified that this scenario represents the results of activities listed in the INDC of Türkiye, which was submitted in 2015. The projections have not been updated since the INDC submission and hence are not aligned with the PaMs included in the NC8 and BR5. Türkiye did not report projections for indirect GHG emissions from fuel sold to ships and aircraft engaged in international transport.

52. In addition to the WEM scenario, Türkiye reported the WOM scenario. The WOM scenario excludes all PaMs implemented, adopted or planned after 2012. Türkiye did not provide any definition of its scenarios, other than to call its WEM scenario the ‘mitigation’ scenario and its WOM scenario the ‘business as usual’ scenario.

53. The projections are presented on a sectoral basis, using the same sectoral categories as those used in the reporting on mitigation actions, and on a gas-by-gas basis for CO₂, CH₄, N₂O, PFCs, HFCs and SF₆ (treating PFCs and HFCs collectively in each case) as well as NF₃ for 2030. The projections are also provided in an aggregated format for each sector and for a Party total using GWP values from the AR4. Türkiye did not report on factors and activities affecting emissions for each sector, other than population, population growth and GDP growth.

(b) Methodology, assumptions and changes since the previous submission

54. The methodology used for the preparation of the projections is identical to that used for the preparation of the emission projections for the NC7. As a result, the Party did not report information on changes since the submission of its NC7 in the assumptions, methodologies, models and approaches used for the projection scenarios. Türkiye reported that TIMES-MACRO was used for the projections of energy consumption in the energy and IPPU sectors (“energy emissions”). For the remaining sectors (“non-energy emissions”), Türkiye reported that different national models and studies were used, without providing any details.

55. To prepare its projections, Türkiye relied on key underlying assumptions relating to population and economic development indicators. The assumptions were not updated on the basis of the most recent economic developments known at the time of the preparation of the projections. The Party has not updated the emission projections since the INDC (2015), for which 2012 was used as the base year, and the assumptions used for preparing the INDC are no longer accurate. Türkiye reported that updated assumptions will be used for preparing the projections for the NC9 and reported therein. During the review, the Party provided the ERT with projections for population and GDP growth for 2012–2030. Population is projected to increase from 75.6 million in 2012 to 88.4 million in 2030; however, the annual growth rate is projected to decrease from 1.38 per cent in 2012 to 0.60 per cent in 2030. Annual GDP growth is projected to increase from 2.10 per cent in 2012 to 4.12 per cent in 2030.

56. During the review, the Party explained that it did not conduct a sensitivity analysis but indicated that GDP and population are important assumptions relevant to its GHG emission projections.

(c) Results of projections

57. The projected emission levels under different scenarios are presented in table 6 and figure 1.

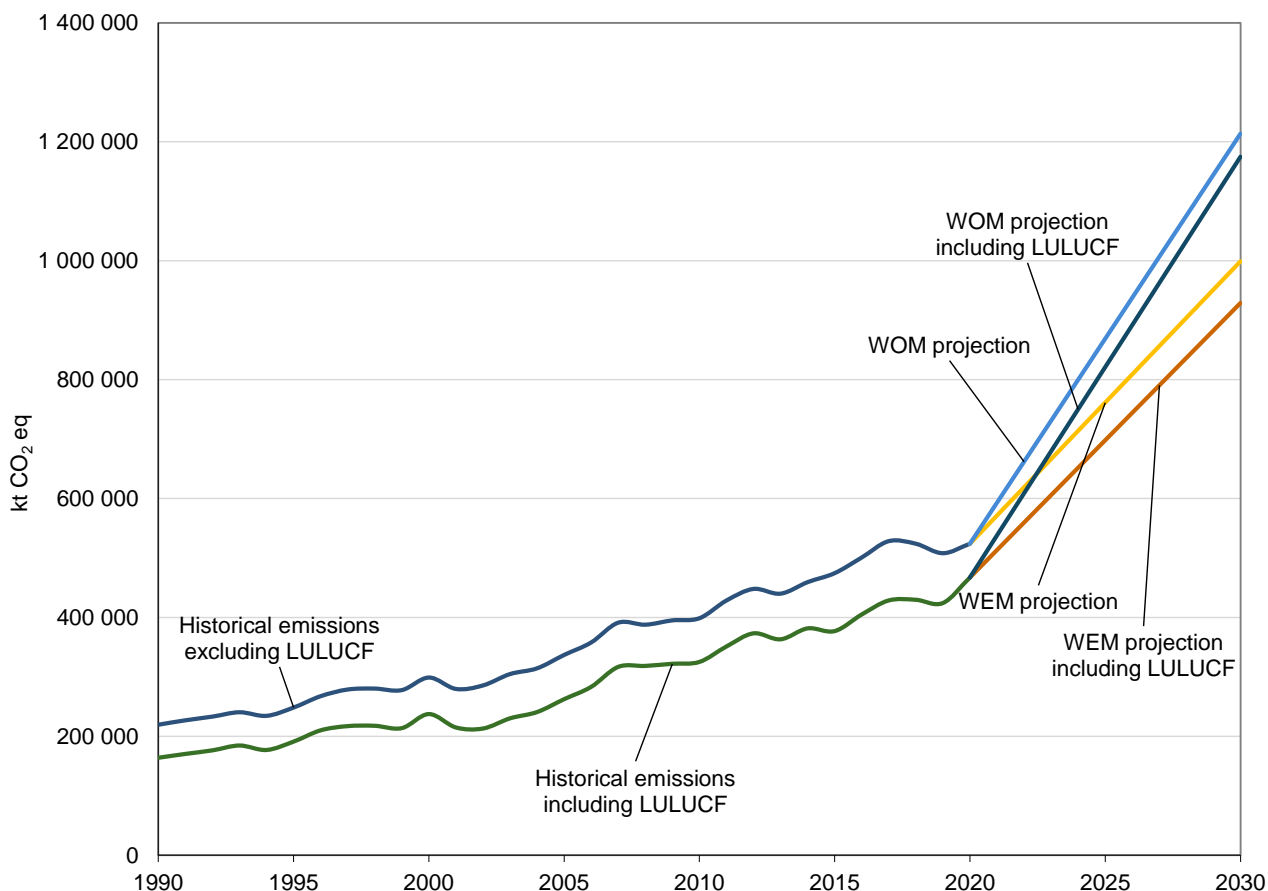
Table 6
Summary of greenhouse gas emission projections for Türkiye

	<i>GHG emissions (kt CO₂ eq/year)</i>	<i>Change in relation to 1990 level (%)</i>	<i>Change in relation to 2020 level (%)</i>
Inventory data 1990	163 984.01	NA	NA
Inventory data 2020	466 949.58	184.8	NA
WOM projections for 2030	1 174 780.58	616.4	151.6
WEM projections for 2030	928 987.17	466.5	98.9

Sources: Türkiye's NC8 and BR5 CTF table 6, which use GWP values from the AR4.

Note: The projections are of GHG emissions including LULUCF and excluding indirect CO₂.

Figure 1
Greenhouse gas emission projections reported by Türkiye



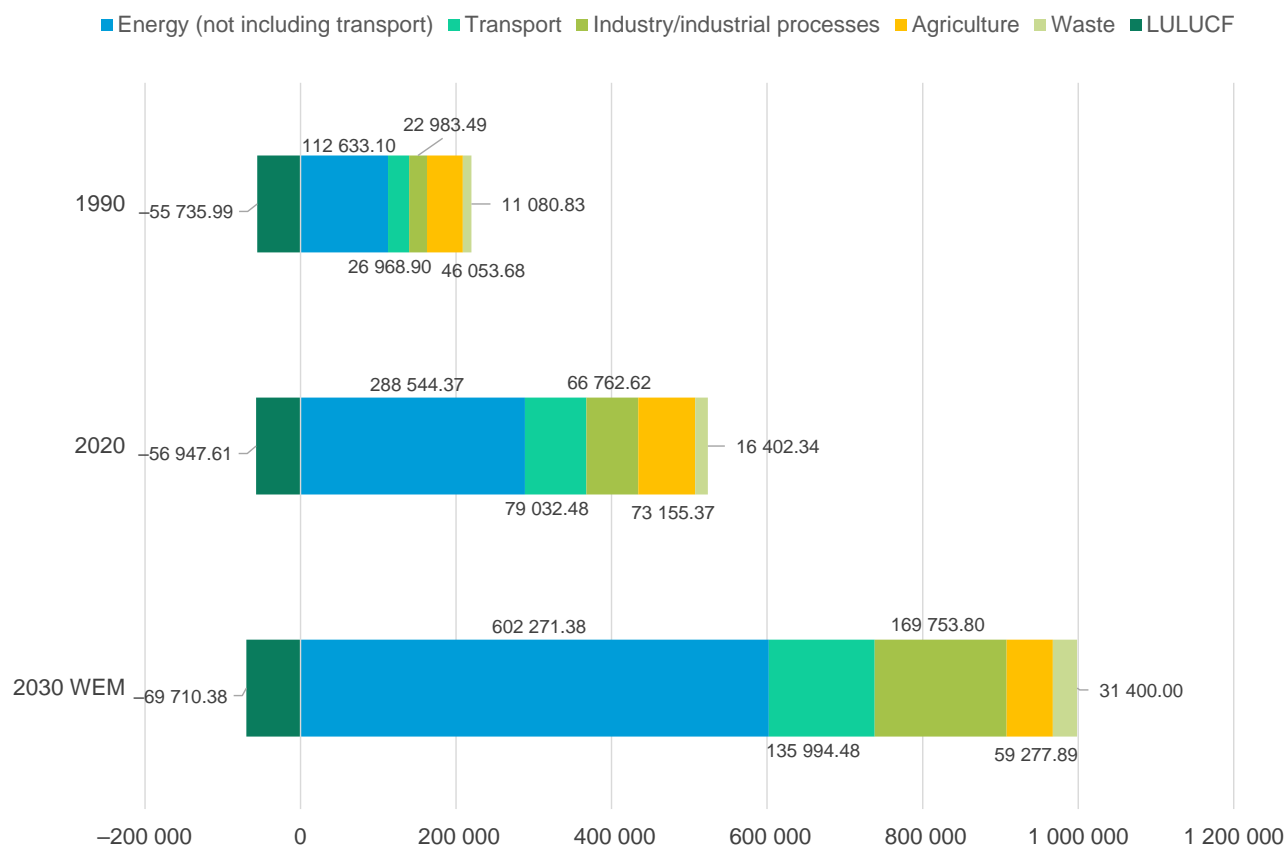
Sources: Türkiye’s NC8 and BR5 CTF tables 1 and 6 (total GHG emissions including LULUCF and total GHG emissions excluding LULUCF), which use GWP values from the AR4.

58. Türkiye’s total GHG emissions excluding LULUCF are projected under the WEM scenario to increase by 354.5 per cent above the 1990 level in 2030 (reaching 998.73 Mt CO₂ eq). When including LULUCF, total GHG emissions are projected under the WEM scenario to increase by 466.5 per cent above the 1990 level in 2030 (reaching 928.98 Mt CO₂ eq). The Party indicated in the NC8 and BR5 that emissions are expected to peak in 2038. The ERT noted that the projected trend in emissions differs significantly from the trend in historical emissions. However, Türkiye indicated in the NC8 and BR5 that the assumptions used in these projections are outdated (see para. 55 above).

59. Türkiye presented the WEM scenario by sector for 2030, as summarized in figure 2 and table 7.

Figure 2
Greenhouse gas emission projections for Türkiye presented by sector

(kt CO₂ eq)



Sources: Türkiye's NC8 and BR5 CTF tables 1 and 6, which use GWP values from the AR4.

Table 7
Summary of greenhouse gas emission projections for Türkiye presented by sector

Sector	GHG emissions and removals (kt CO ₂ eq)		Change (%)
	1990	2030 WEM	1990–2030 WEM
Energy (not including transport)	139 602.00	738 265.86	428.8
Transport	26 968.90	135 994.48	404.3
Industry/industrial processes	22 983.49	169 753.80	638.6
Agriculture	46 053.68	59 277.89	28.7
LULUCF	-55 735.99	-69 710.38	-25.1
Waste	11 080.83	31 400.00	183.4
Other	NO	NO	NA
Total GHG emissions excluding LULUCF	219 720.00	998 733.55	354.5

Sources: Türkiye's NC8 and BR5 CTF table 6, which use GWP values from the AR4.

60. According to the projections reported for 2030 under the WEM scenario, emissions are expected to increase, especially in the energy, transport and IPPU sectors. The most significant increase in emissions is expected to occur in the IPPU sector, amounting to a projected increase of 638.6 per cent between 1990 and 2030. Net removals from the LULUCF sector are expected to increase by 25.1 per cent by 2030.

61. Türkiye presented the WEM scenario by gas for 2030, as summarized in table 8.

Table 8
Summary of greenhouse gas emission projections for Türkiye presented by gas

Gas ^a	GHG emissions and removals (kt CO ₂ eq)		Change (%)
	1990	2030 WEM	1990–2030 WEM
CO ₂	151 664.53	860 048.81	467.1
CH ₄	42 479.30	91 824.92	116.2
N ₂ O	24 950.87	31 140.62	24.8
HFCs	NO	13 444.50	NA
PFCs	625.30	NE	NA
SF ₆	NO	2 274.70	NA
NF ₃	NO	NE	NA
Total GHG emissions without LULUCF	219 720.00	998 733.55	354.5

Sources: Türkiye's NC8 and BR5 CTF table 6, which use GWP values from the AR4.

^a Türkiye did not include indirect CO₂ emissions in its projections.

(d) Assessment of adherence to the reporting guidelines

62. The ERT assessed the information reported in the NC8 and BR5 of Türkiye and identified issues relating to completeness and transparency, and thus adherence to the UNFCCC reporting guidelines on NCs and the UNFCCC reporting guidelines on BRs. The findings are in tables I.3 and II.1.

2. Assessment of the total effect of policies and measures

(a) Technical assessment of the reported information

63. Türkiye did not report the estimated and expected total effect of implemented and adopted PaMs in its NC8. The PaMs under the WEM scenario are those included in the INDC (2015), which do not fully align with the PaMs included in the NC8. However, by comparing projected emissions under the WOM scenario for 2020 with actual emissions for the same year, during the review Türkiye reported that the total estimated effect of its implemented and adopted PaMs is 205.95 Mt CO₂ eq in 2020, including LULUCF. For 2030, the difference between the WOM and WEM scenarios amounts to 245.79 Mt CO₂ eq, including LULUCF. The ERT noted that for the IPPU and agriculture sectors, the projections for 2030 are the same under both the WEM and the WOM scenarios.

64. Table 9 provides an overview of the total effect of PaMs as reported by Türkiye.

Table 9
Projected effects of Türkiye's planned, implemented and adopted policies and measures in 2030
(kt CO₂ eq)

Sector	2030	
	Effect of implemented and adopted measures	Effect of planned measures
Energy (not including transport)	205 281.16	NE
Transport	518.12	NE
Industry/industrial processes	NA	NA
Agriculture	NA	NA
Land-use change and forestry	-31 012.25	NE
Waste management	9 500.00	NE
Total	245 793.41	NE

Sources: Türkiye's NC8 and BR5, which use GWP values from the AR4.

Note: The total effect of implemented and adopted PaMs is defined as the difference between the WOM and the WEM scenarios.

(b) Assessment of adherence to the reporting guidelines

65. The ERT assessed the information reported in the NC8 of Türkiye and identified issues relating to completeness and transparency, and thus adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table I.3.

3. Supplementary reporting relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol**Technical assessment of the reported information**

66. As a Party included in Annex I to the Convention with no commitments inscribed in Annex B to the Kyoto Protocol, Türkiye has no obligation to report on supplementary reporting relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol.

G. Provision of financial, technological and capacity-building support to developing country Parties

67. Türkiye is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3–5, of the Convention. However, it provided information in its BR5 and NC8 on its provision of support to developing country Parties.

H. Vulnerability assessment, climate change impacts and adaptation measures**1. Technical assessment of the reported information**

68. In its NC8 Türkiye provided information on the expected impacts of climate change in the country; the adaptation policies covering regional, sectoral and cross-sectoral vulnerabilities and considerations; and an outline of the action taken to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation. Türkiye provided a description of climate change vulnerability and impacts on agriculture and food security, biodiversity and natural ecosystems, coastal zones, disaster risk reduction and water resources management and highlighted the adaptation response actions taken and planned at different levels of government. Droughts, heavy precipitation events and windstorms are identified climate hazards across Türkiye, and increases in their frequency and intensity have already impacted most sectors. The country has experienced an increase in the number of extreme meteorological events, with 2022 seeing a record number.

69. During the review, the Party provided information on variation in precipitation patterns and highlighted the anomalies in seasonal and annual precipitation compared with long-term averages.

70. Türkiye has addressed adaptation matters through the adoption of the National Climate Change Adaptation Strategy and Action Plan (2011–2023) and the Eleventh Development Plan of Türkiye (2019–2023). Türkiye has also adopted relevant legislation, including the Environment Law, the Law on Soil Conservation and Land Use, the Energy Efficiency Law and the Law on Utilization of Renewable Energy Sources for the Purpose of Generating Electrical Energy, all of which have provisions for emission reduction and indirectly refer to climate change adaptation. The policies provided further direction to government agencies on enhancing preparedness for climate change. Table 10 summarizes the information on vulnerability and adaptation to climate change presented in the NC8 of Türkiye.

Table 10

Summary of information on vulnerability and adaptation to climate change reported by Türkiye

<i>Vulnerable area</i>	<i>Examples/comments/adaptation measures reported</i>
Agriculture and food security	<p>Vulnerability: The increased frequency and intensity of droughts, heavy precipitation events and windstorms across the country will have a direct impact on the agriculture sector. Droughts are expected to steadily increase in number – mainly in the eastern Aegean Region but also throughout the southern part of the country. Crop yields are at a high to very high risk from drought while livestock, in areas of the country where livestock farming is concentrated, are at a high risk.</p> <p>Adaptation: Türkiye has produced management plans to guide sectoral actions aimed at combating drought in the agriculture sector, improving the adaptation to climate change of local farms and, eventually, reducing GHG emissions from agriculture. The plans include capacity-building initiatives to raise public awareness of the risk of water scarcity, develop environmentally sustainable water use planning for agriculture, and establish an institutional structure involving all stakeholders and with sufficient capacity to implement policies on water resource management. Türkiye has also implemented a number of activities and studies, including those relating to ecosystem-based adaptation, good agricultural practices, organic agriculture, the recovery of abandoned fishing gear, and means of protecting and compensating producers for losses arising from various risks to their crops and livestock.</p>
Biodiversity and natural ecosystems	<p>Vulnerability: Drought poses a very high risk to species diversity in the eastern Mediterranean Region, the southern Central Anatolia Region, the western Southeastern Anatolia Region and the northern Eastern Anatolia Region. Regarding the risk of drought to carbon storage ecosystem services, it is high in the eastern Black Sea Region, the western Marmara Region and the western Mediterranean Region; medium to high in the northern provinces of the country owing to their large amount of forest resources and high output of wood products; and growing and projected to reach very high in the future in the western Black Sea Region. Regarding the risk of drought in wetlands, it is high to very high in the Central Anatolia Region, the Eastern Anatolia Region and the Southeastern Anatolia Region and it is expected that the risk will increase and reach an extremely high level during the next few years, particularly in the Eastern Anatolia Region. In the north-west Marmara Region, the risk of drought is high.</p> <p>Adaptation: To protect its biodiversity and ecosystem services, Türkiye has implemented several projects and plans to manage lakes and wetlands, address the threat of invasive alien species and study soil water erosion. As part of its efforts to minimize the impacts of climate change on biodiversity, the Party supports nature-based solutions and ecosystem-based approaches. It plans to update the National Biological Diversity Strategy and Action Plan to reflect current policy commitments and ensure the effective implementation of the Convention on Biological Diversity. Türkiye has also established the National Biodiversity Coordination Council.</p>
Coastal zones	<p>Vulnerability: Coastal cities and tourism sites are especially vulnerable to climate change given that deltas are predicted to lose large amounts of land as sea level rises. Climate change impacts on coastal areas will include higher temperature and acidification and lower oxygen content of seawater. Climate change has impacts on marine ecosystems that include a decrease in the number of seagrass, coral, phytoplankton and other oxygen-rich organisms; the movement of invasive species; and the disruption of reproduction of species. The need for water in coastal zones is frequently addressed through utilizing subsurface reserves; however, overconsumption can lead to saltwater intrusion and significantly reduce the water resources available to agriculture.</p> <p>Adaptation: Türkiye has implemented a number of policies and initiatives for coastal zones, including marine protected zones. The studies and projects related to climate change adaptation that have been carried out in coastal regions include the “Determination and Classification of Sea and Coastal Waters Project (2011–2014)” and the “Management of Urban Sewage on the Coasts of Türkiye Project”. The Party has also prepared integrated coastal zone management plans to guide the management and conservation of its coastal areas.</p>
Disaster risk reduction	<p>Vulnerability: Floods, storms, wildfires and precipitation-triggered landslides have been identified as climate-related hazards for Türkiye. Approximately 60 per cent of the country’s forest land is vulnerable to forest fires, but the Antalya and Muğla provinces experience more frequent and severe forest fires, which affect local residents and</p>

Vulnerable area	Examples/comments/adaptation measures reported
Water resources management	<p>ecosystems, than other parts of the country. In recent years, other climate-related hazards, such as heatwaves, windstorms and heavy precipitation events leading to coastal flooding, have increased in occurrence.</p> <p>Adaptation: Türkiye has developed a national Disaster Risk Reduction Plan to manage disaster risks and ensure that risks are mainstreamed in national development goals and projects, mitigate the impacts of hazards, and guide the prioritization of and coordinate activities at both the national and the local level. Disaster risk reduction activities include reinforcing building stock to decrease disaster risk, creating awareness about risk reduction, and establishing disaster management centres. Türkiye has improved its meteorological and hydrometeorological observation network to better monitor meteorological conditions in real time, and it has implemented measures related to railway line risks, flood dynamics, flood forecasting and early warning systems.</p> <p>Vulnerability: The risk to water resources posed by drought ranges from moderate in coastal provinces of the Aegean Region to high to very high in most of the other regions of the country. Regarding heavy precipitation events, water resources are at high risk in the eastern Mediterranean Region and coastal provinces of the western and eastern Black Sea Region; significant risk in the coastal provinces of the north-eastern Marmara Region, the Mediterranean Region, the Aegean Region and the western provinces of the Southeastern Anatolia Region; and moderate risk in the central Black Sea Region and low-lying areas in the interior of the country.</p> <p>Adaptation: Türkiye has implemented many initiatives related to water resources management in many sectors, including residential and agriculture, and it has undertaken cost and technical feasibility studies, and sustainability evaluations of rainwater gathering and greywater reuse that include water pricing scenarios. It has also developed water allocation plans for 25 river basins in the country, and wastewater reuse plans aimed at combating water scarcity and preventing waste. As well as policy instruments, Türkiye has implemented nature-based solutions in the water sector, namely, it has built underground dams to increase water storage. With a total capacity of 50 million m³, these dams have the potential to provide 750,000 people with clean drinking water or irrigate 8,000 hectares of land (and, as a result, increase annual net income by 60 million Turkish liras). The Party has implemented efficient irrigation systems, including piped and closed networks, and installed flow meters to detect and manage water usage, resulting in significant water savings of 18 per cent in tube irrigation networks and 38 per cent in volume-based irrigation facilities.</p>

71. Türkiye provided a detailed description of international adaptation activities, including the Building Bridges between Turkey and Africa’s Great Green Wall programme, implemented jointly by the Food and Agriculture Organization of the United Nations and the Türkiye Forestry Partnership programme. Boosting Restoration, Income, Development, Generating Ecosystem Services (‘BRIDGES’), the first project launched under this programme, aims to support forest restoration activities, develop non-wood forest products, and establish forest monitoring systems in three African countries (Eritrea, Mauritania and Sudan).

2. Assessment of adherence to the reporting guidelines

72. The ERT assessed the information reported in the NC8 of Türkiye and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

I. Research and systematic observation

1. Technical assessment of the reported information

73. In its NC8 Türkiye provided information on the cooperation of the Turkish State Meteorological Service with the World Meteorological Organization and on Türkiye’s participation in all World Meteorological Organization programmes, including the Global Observing System, the Global Climate Observing System, the Baseline Surface Radiation Network and the Global Atmospheric Watch Programme.

74. Türkiye has implemented international and domestic policies and programmes on climate change research, systematic observation and climate modelling that aim to advance capabilities to predict and observe the physical, chemical, biological and human components of the Earth's system over space and time. Türkiye has prioritized areas of research and development and innovation in line with its target for net zero emissions by 2053 and its Green Deal Action Plan and, as such, focuses on five themes: climate change, environment and biodiversity; clean and circular economy; clean, accessible and secure energy supply; green and sustainable agriculture; and sustainable smart transportation. The Scientific and Technological Research Council of Türkiye prioritizes projects in those five areas, as well as projects that address knowledge gaps and human resource limitations. Projects focusing on green technologies include those under the Advanced Materials High Technology Platform, the aim of which is to develop advanced material technologies for cleaner production, and the Turkish Photovoltaic Technologies Platform, the aim of which is to develop highly efficient and cost-effective solar cell technologies, including new generation solar energy technologies. Furthermore, the Party reported on a project on combating mucilage in the Sea of Marmara.

75. In terms of activities related to systematic observation, Türkiye reported on national plans, programmes and support for ground- and space-based climate observing systems, including satellite and non-satellite climate observation. The meteorological observation network has expanded across the country and has been provided with more instrumentation and improved capabilities, namely, automated weather observing system stations, handheld automatic weather stations, lightning detection and tracking systems, a meteorological radar network and dust observation systems. Furthermore, the meteorological observation network now receives real-time and near-real-time data from three geostationary orbit satellites and two polar orbit satellites.

76. The NC8 reflects actions taken to support capacity-building in developing countries. Türkiye reported in its NC8 under the section on international cooperation that as at the end of 2022, the Turkish State Meteorological Service had trained more than 1,900 participants from more than 150 countries on meteorology and related fields. During the review, the Party shared a map indicating countries from which the participants were from, which included developing countries.

2. Assessment of adherence to the reporting guidelines

77. The ERT assessed the information reported in the NC8 of Türkiye and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

J. Education, training and public awareness

1. Technical assessment of the reported information

78. In its NC8 Türkiye provided information on its actions relating to education, training and public awareness. The Party provided information on the general policy on education, training and public awareness; primary, secondary and higher education; public information campaigns; training programmes; education materials; resource or information centres; the involvement of the public and NGOs; and its participation in international activities.

79. Türkiye reported that its Ministry of National Education has developed a climate change action plan that includes 31 activities under six topics: disaster prevention, environmental education, sustainable development target update, resilience, energy and zero waste. The plan is a mechanism for mainstreaming climate change concepts and actions in the education system. Türkiye also reported that it engaged with stakeholders at the Climate Council held in 2022, where it promoted stakeholder discussion on all aspects of climate change and invited views and suggestions thereon from stakeholders. The Council also established working groups on climate change and contributed to setting medium- and long-term strategic targets. The outcomes from the Council will inform national climate change

legislation. The Ministry of National Education trained 339,639 teachers and principals in topics including energy efficiency, zero waste and climate change between 2017 and 2022.

2. Assessment of adherence to the reporting guidelines

80. The ERT assessed the information reported in the NC8 of Türkiye and recognized that the reporting is complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

III. Conclusions and recommendations

81. The ERT conducted a technical review of the information reported in the NC8 of Türkiye in accordance with the UNFCCC reporting guidelines on NCs. The ERT concluded that the reported information mostly adheres to the UNFCCC reporting guidelines on NCs and that the NC8 provides an overview of the national climate policy of Türkiye.

82. As a Party included in Annex I to the Convention with no commitments inscribed in Annex B to the Kyoto Protocol, Türkiye has no obligation to report on its national system in accordance with Article 5, paragraph 1, of the Kyoto Protocol; its national registry; supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol; or the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol. The information provided in the NC8 includes all of the elements of the supplementary information under Article 7 of the Kyoto Protocol that are applicable to the Party.

83. The ERT conducted a technical review of the information reported in the BR5 and BR5 CTF tables of Türkiye in accordance with the UNFCCC reporting guidelines on BRs. The ERT concluded that the reported information mostly adheres to the UNFCCC reporting guidelines on BRs and that the BR5 and its CTF tables provide an overview of the Party's emissions and removals.

84. In its NC8 Türkiye reported on its key national circumstances related to GHG emissions and removals, including the significant increases in population and GDP per capita (by 51.3 and by 209.9 per cent respectively) between 1990 and 2020, which were described as the main drivers of emissions. The increases in population and GDP resulted in a significant increase in total primary energy supply (by 203.0 per cent) in the same period.

85. Türkiye's total GHG emissions excluding LULUCF were estimated to be 138.7 per cent above its 1990 level. Emissions continue to show an upward trend but the Party expects them to peak in 2038. The changes in total emissions were driven mainly by factors such as increases in population and urbanization of the population and in GDP.

86. For Türkiye the Convention entered into force on 24 May 2004. Türkiye is a Party to the Convention with no quantified economy-wide emission reduction target contained in document FCCC/SB/2011/INF.1/Rev.1 or any subsequent update thereto (FCCC/TP/2012/5 and FCCC/SBSTA/2014/INF.6). Therefore, the Party is not obliged to report on a quantified economy-wide emission reduction target and related conditions and assumptions in its BR5 and CTF tables. Türkiye announced in 2021 its objective to achieve net zero emissions by 2053.

87. The GHG emission projections provided by Türkiye in its NC8 and BR5 correspond to the WEM and WOM scenarios. Under the WEM scenario, emissions excluding LULUCF in 2030 are projected to be 466.5 per cent above the 1990 level and 98.9 per cent above the 2020 level.

88. Türkiye's main policy framework relating to energy and climate change are its NDC, Green Deal Action Plan and National Energy Plan. The Party described the mitigation actions that it has implemented to help it achieve its longer-term targets, which include mainstreaming climate change in all new legislation (sectoral and general). The domestic emissions trading system, which will fall under the Climate Law that is currently under development, and support for more capacity in renewable energy sources are two key PaMs

expected to have a significant impact on emissions in the future. In addition, the Green Deal Action Plan is expected to guide the adoption of measures for harmonizing the Party’s policy framework with the Green Deal of the European Union and the green transformation of Türkiye’s industry.

89. Türkiye is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3–5, of the Convention.

90. In its NC8 Türkiye provided information on the expected impacts of climate change in the country; the adaptation policies covering regional, sectoral and cross-sectoral vulnerabilities and considerations; and an outline of the action taken to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation. Türkiye has a medium to high risk for climate change impacts, therefore, it sees the need to conduct studies related to climate monitoring, undertake climate change vulnerability and risk assessments, and implement adaptation measures. The country has witnessed an increase in the number of extreme meteorological events, with 2022 seeing a record number.

91. In its NC8 Türkiye provided information on its activities relating to research and systematic observation. Türkiye has prioritized five themes for research and development and innovation: climate change, environment and biodiversity; clean and circular economy; clean, accessible and secure energy supply; green and sustainable agriculture; and sustainable smart transportation. The Scientific and Technological Research Council of Türkiye prioritizes projects in those five areas, as well as projects that address knowledge gaps and human resource limitations.

92. In its NC8 Türkiye provided information on its actions relating to education, training and public awareness. The Ministry of National Education trained 339,639 teachers and principals in topics including energy efficiency, zero waste and climate change between 2017 and 2022. The Young Climate Envoys Movement supports young climate envoys from universities across Türkiye in their work to increase public awareness of climate change and encourage studies on sustainability and climate change.

93. In the course of the review, the ERT formulated the following recommendations for Türkiye to improve its adherence to the UNFCCC reporting guidelines on NCs in its next NC:

- (a) To improve the completeness of its reporting by:
 - (i) Reporting the estimated mitigation impact of each of its reported PaMs (see issue 3 in table I.2);
 - (ii) Providing either quantitative estimates of the impacts of individual PaMs or groups of PaMs and a brief description of estimation methods or a clear explanation as to why this may not be possible owing to its national circumstances (see issue 5 in table I.2);
 - (iii) Providing information on how PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals in line with the objective of the Convention (see issue 8 in table I.2);
 - (iv) Reporting separately and without including in the totals, to the extent possible, emission projections related to fuel sold to ships and aircraft engaged in international transport (see issue 6 in table I.3);
 - (v) Providing the estimated and expected total effect of implemented and adopted PaMs (see issue 8 in table I.3);
 - (vi) Reporting the total effect of its PaMs, in accordance with the WEM definition, compared with a situation without such PaMs, presented in terms of GHG emissions avoided or sequestered, by gas (in CO₂ eq), in the most recent inventory year and in subsequent years that end in either a zero or a five, extending at least 15 years from the most recent inventory year (not cumulative savings) (see issue 10 in table I.3);
 - (vii) Providing information on factors and activities driving emission trends for each sector from 1990 to at least 15 years from the most recent inventory year (see issue 16 in table I.3);

- (b) To improve the transparency of its reporting by:
 - (i) Providing information on the effects of national circumstances on emissions from the forestry and tourism sectors (see issue 1 in table I.1);
 - (ii) Specifying which implemented and adopted PaMs it included in its WEM scenario and whether the WEM scenario also includes planned PaMs (see issue 2 in table I.3);
 - (c) To improve the timeliness of its reporting by submitting its next NC on time (see para. 6 above).
94. In the course of the review of Türkiye's BR5, the ERT formulated the following recommendations relating to adherence to the UNFCCC reporting guidelines on BRs:
- (a) To improve the completeness of its reporting by:
 - (i) Reporting separately and without including in the totals, to the extent possible, emission projections related to fuel sold to ships and aircraft engaged in international transport (see issue 6 in table II.1);
 - (ii) Providing information on factors and activities driving emission trends for each sector from 1990 to at least 15 years from the most recent inventory year (see issue 13 in table II.1);
 - (b) To improve the transparency of its reporting by specifying which implemented and adopted PaMs it included in its WEM scenario and whether the WEM scenario also includes planned PaMs (see issue 2 in table II.1);
 - (c) To improve timeliness of its reporting (see para. 8 above).

Annex I

Assessment of adherence to the reporting guidelines for the eighth national communication of Türkiye

Tables I.1–I.3 summarize the ERT assessment of adherence to the UNFCCC reporting guidelines on NCs for Türkiye’s NC8.

Table I.1

Findings on national circumstances relevant to greenhouse gas emissions and removals from the review of the eighth national communication of Türkiye

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 3 Issue type: transparency Assessment: recommendation	<p>The Party provided information on the general effects of its national circumstances on GHG emission trends by sector, including agriculture. However, the Party did not address the part of the recommendation from the previous review report on including the effects of its national circumstances on GHG emissions from the forestry and tourism sectors.</p> <p>During the review, the Party explained that this information was not reported in the NC8 because the focus of the main institutions dealing with the forestry and tourism sectors is adaptation. The ERT welcomed the information provided by the Party during the review that DOCC plans to implement a capacity-building project in the fourth quarter of 2024 to enable relevant Turkish institutions to prepare this information and include it in future submissions.</p> <p>The ERT reiterates the recommendation made in the previous review report that Türkiye improve the transparency of its reporting by including in its next NC information on the effects of national circumstances on emissions from the forestry and tourism sectors.</p>

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. The reporting on the requirements not included in this table is considered to be complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs.

Table I.2

Findings on policies and measures from the review of the eighth national communication of Türkiye

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 12 Issue type: transparency Assessment: encouragement	<p>The Party did not report any specific information on PaMs that encourage activities that lead to greater levels of anthropogenic GHG emissions. In its NC8 Türkiye indicated that its policymaking process helps to identify alternative PaMs to the ones that lead to greater levels of anthropogenic GHG emissions or clarify why these PaMs are necessary.</p> <p>During the review, the Party did not provide any additional information on this issue.</p> <p>The ERT encourages Türkiye to improve the transparency of its reporting by including in its next NC information on whether any PaMs and practices in the country encourage activities that lead to greater levels of anthropogenic GHG emissions than would otherwise occur and, if such PaMs or practices exist, provide the rationale for implementing them.</p>
2	Reporting requirement specified in paragraph 14 Issue type: transparency Assessment: encouragement	<p>In the NC8 Türkiye’s PaMs that influence GHG emissions from international transport were not reported under “Transport” (section 4.2.4) but under “Policies and measures in accordance with Article 2” (section 4.2.9).</p> <p>During the review, the Party explained its preference to present the PaMs targeting international transport emissions separately from the PaMs targeting transportation emissions included in the national GHG inventory, similar to the reporting in the NC7.</p> <p>The ERT encourages Türkiye to report PaMs influencing GHG emissions from international transport under the transport section in its next NC.</p>

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
3	<p>Reporting requirement specified in paragraph 19</p> <p>Issue type: completeness</p> <p>Assessment: recommendation</p>	<p>The Party did not report estimates of the mitigation impact of the PaMs included in its NC8.</p> <p>During the review, Türkiye explained that the impacts could not be estimated owing to the capacity constraints of relevant entities. The Party informed the ERT that DOCC plans to implement a capacity-building project in the fourth quarter of 2024 to enable relevant Turkish institutions to prepare this information and include it in future submissions.</p> <p>The ERT recommends that Türkiye report in its next NC the estimated mitigation impact of each of its reported PaMs.</p>
4	<p>Reporting requirement specified in paragraph 19</p> <p>Issue type: completeness</p> <p>Assessment: encouragement</p>	<p>The Party did not provide information on the funds already provided or the future budget allocated for the adopted and implemented PaMs included in its NC8.</p> <p>During the review, Türkiye explained that this information could not be compiled owing to the capacity constraints of relevant entities.</p> <p>The ERT encourages Türkiye to improve the completeness of its reporting by including in its next NC information on the funds already provided and the future budget allocated for each of its adopted and implemented PaMs.</p>
5	<p>Reporting requirement specified in paragraph 20</p> <p>Issue type: completeness</p> <p>Assessment: recommendation</p>	<p>Türkiye did not include quantitative estimates of the impacts of PaMs for 2030 in its NC8.</p> <p>During the review, Türkiye explained that the impacts could not be estimated owing to the capacity constraints of relevant entities. The Party informed the ERT that DOCC plans to implement a capacity-building project in the fourth quarter of 2024 to enable relevant Turkish institutions to prepare this information and include it in future submissions.</p> <p>The ERT reiterates the recommendation from the previous review report for Türkiye to improve the completeness of its reporting by either including in its next NC quantitative estimates of the impacts of individual PaMs or groups of PaMs and a brief description of estimation methods or clearly explaining why this may not be possible owing to its national circumstances.</p>
6	<p>Reporting requirement specified in paragraph 20</p> <p>Issue type: completeness</p> <p>Assessment: encouragement</p>	<p>Türkiye did not include quantitative estimates of the impacts of PaMs in CO₂ eq for 2025 or 2030 in its NC8 (tables 19–27).</p> <p>During the review, Türkiye explained that the impacts could not be estimated owing to the capacity constraints of relevant entities. The Party informed the ERT that DOCC plans to implement a capacity-building project in the fourth quarter of 2024 to enable relevant Turkish institutions to prepare this information and include it in future submissions.</p> <p>The ERT encourages Türkiye to provide quantitative estimates of the impacts of PaMs in CO₂ eq for a particular year ending in either a zero or a five following the most recent inventory year.</p>
7	<p>Reporting requirement specified in paragraph 21</p> <p>Issue type: completeness</p> <p>Assessment: encouragement</p>	<p>Türkiye reported information on some non-GHG mitigation benefits; however, it did not report information on the costs of its PaMs or a definition of ‘cost’ in this context. Türkiye also did not report information on the interaction of PaMs at the national level, such as how PaMs complement each other to enhance overall GHG mitigation.</p> <p>During the review, the Party informed the ERT that owing to the capacity constraints of relevant entities, the costs of PaMs and the interaction of PaMs at the national level could not be determined. The Party also informed the ERT that DOCC plans to implement a capacity-building project in the fourth quarter of 2024 to enable relevant Turkish institutions to prepare this information and include it in future submissions.</p> <p>The ERT reiterates the encouragement from the previous review report for Türkiye to improve the completeness of its reporting by either including in its next NC information on the cost of the PaMs reported, accompanied by a brief definition of ‘cost’, and information on how PaMs complement each other to enhance overall GHG mitigation or clearly explaining why this may not be possible owing to its national circumstances.</p>

<i>No.</i>	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
8	Reporting requirement specified in paragraph 22 Issue type: completeness Assessment: recommendation	Although the Party provided information on its objective to achieve net zero emissions by 2053 and action plans for addressing future emissions, it did not provide information on how it believes that its PaMs are modifying longer-term trends in GHG emissions and removals in line with the objective of the Convention. During the review, the Party highlighted that all of its PaMs ultimately, as a whole, aim to decrease total GHG emissions of the country. The Party indicated that it does not have the capacity to calculate how PaMs are modifying longer-term trends in GHG emissions. The ERT reiterates the recommendation from the previous review report for Türkiye to include in its next NC information on how it believes PaMs are modifying longer-term trends in anthropogenic GHG emissions and removals in line with the objective of the Convention.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. The reporting on the requirements not included in this table is considered to be complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs.

Table I.3

Findings on projections including aggregate effects of policies and measures reported in the eighth national communication of Türkiye

<i>No.</i>	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
1	Reporting requirement specified in paragraph 25 Issue type: completeness Assessment: encouragement	The Party did not report projections for a WAM scenario in its NC8. During the review, Türkiye explained that it has not been possible for it to create a WAM scenario, but that a WAM scenario might be developed under the framework of its NDC update and be included in the next NC. The ERT encourages Türkiye to include a WAM scenario in its next NC.
2	Reporting requirement specified in paragraph 26 Issue type: transparency Assessment: recommendation	In the NC8 it is not clear which PaMs are included under the WEM scenario and whether the WEM scenario also includes planned PaMs. During the review, Türkiye explained that the PaMs included in the WEM projections were those reported in its INDC and, therefore, they do not fully align with the PaMs reported in the NC8 (chap. 4). If the Party is able to obtain information on the emission reduction potential of PaMs from relevant ministries in future reporting cycles, it will include projections based on those PaMs in the next available NC. The ERT reiterates the recommendation from the previous review report for Türkiye to specify in its next NC which implemented and adopted PaMs it included in its WEM scenario and whether the WEM scenario also includes planned PaMs.
3	Reporting requirement specified in paragraph 27 Issue type: completeness Assessment: encouragement	Türkiye did not report a sensitivity analysis for its projections in the NC8. During the review, the Party explained that it did not conduct a sensitivity analysis but indicated that GDP and population are important assumptions relevant to its GHG emission projections. The ERT reiterates the encouragement from the previous review report for Türkiye to improve the completeness of its reporting by including in its next NC a sensitivity analysis for its projections.
4	Reporting requirement specified in paragraph 29 Issue type: transparency Assessment: encouragement	Türkiye reported a WEM scenario for 2030 and stated that the projections were from its INDC, which was submitted in 2015. The projections have not been updated since then, so the base year for the projections is still 2012 rather than the latest year for which inventory data are available (2020 for the NC8). During the review, the Party confirmed that the starting year for the projections is 2012 and informed the ERT that it is updating its projections under the framework of its NDC update. The ERT reiterates the encouragement from the previous review report for Türkiye to use the latest year for which inventory data are available as the starting year for its projection scenarios.

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
5	Reporting requirement specified in paragraph 32 Issue type: completeness Assessment: encouragement	Türkiye did not report in its NC8 projections of indirect GHGs (carbon monoxide, nitrogen oxides, non-methane volatile organic compounds or sulfur oxides). During the review, the Party indicated that emissions of indirect GHGs were not included in the national GHG inventory submitted in 2022 and that projections of indirect GHGs are not available. The ERT reiterates the encouragement from the previous review report for Türkiye to report projections of indirect GHGs in its next NC.
6	Reporting requirement specified in paragraph 33 Issue type: completeness Assessment: recommendation	Türkiye did not report in its NC8 emission projections related to fuel sold to ships and aircraft engaged in international transport. During the review, the Party clarified that owing to capacity constraints, it did not prepare projections of these emissions. The ERT reiterates the recommendation from the previous review report for Türkiye to improve its reporting by reporting separately and without including in the totals, to the extent possible, emission projections related to fuel sold to ships and aircraft engaged in international transport.
7	Reporting requirement specified in paragraph 34 Issue type: completeness Assessment: encouragement	Türkiye provided projections for 2030. The ERT noted that this is not 15 years from the most recent inventory year (2020) available at the time of submitting the NC8 and BR5, that is, the Party should have prepared projections for at least 2035. During the review, the Party indicated that the NC8 projections are the same as the NDC projections; as the NDC includes projections up until 2030, the NC8 does too. Türkiye intends to improve its modelling of GHG emission projections and may provide an extended timespan in the NC9. The ERT encourages Türkiye to include in its next NC projections extending at least 15 years from the most recent inventory year.
8	Reporting requirement specified in paragraph 36 Issue type: completeness Assessment: recommendation	Türkiye did not report the estimated and expected total effect of implemented and adopted PaMs in its NC8. The Party reported WEM and WOM scenarios, but the PaMs included under the WEM scenario are those in the INDC submitted in 2015 and the Party reported additional PaMs in its NC8. As a result, the PaMs under the WEM scenario are outdated and the difference between the WEM and the WOM scenarios does not correspond to the expected total effect of implemented and adopted PaMs. During the review, the Party explained that it plans to improve its capacity and thus be able to determine the expected effects of implemented and adopted PaMs and communicate them in its NC9. The ERT reiterates the recommendation from the previous review report for Türkiye to include in its next NC the estimated and expected total effect of implemented and adopted PaMs.
9	Reporting requirement specified in paragraph 36 Issue type: completeness Assessment: encouragement	Türkiye did not report the estimated and expected total effect of planned PaMs in its NC8. During the review, the Party explained that it was not able to calculate the total effect of planned PaMs but that it plans to improve its capacity and thus be able to determine this estimate and communicate it in its NC9. The ERT reiterates the encouragement from the previous review report for Türkiye to include in its next NC the total expected effect of planned PaMs.
10	Reporting requirement specified in paragraph 37 Issue type: completeness Assessment: recommendation	Türkiye reported estimates of the total effect of all PaMs for the most recent inventory year (2020) in its NC8, which it calculated by comparing actual emissions by gas with WEM and WOM projections for 2020. However, estimates for at least 15 years from the most recent inventory year, that is, 2035, were not reported. During the review, the Party explained that a new mitigation scenario will be included in the NC9. The ERT recommends that Türkiye report in its next NC the total effect of its PaMs, in accordance with the WEM definition, compared with a situation without such PaMs, presented in terms of GHG emissions avoided or sequestered, by gas (in CO ₂ eq), in the most recent inventory year and in subsequent years that end in either a zero or a five, extending at least 15 years from the most recent inventory year (not cumulative savings).

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
11	<p>Reporting requirement specified in paragraph 39</p> <p>Issue type: completeness</p> <p>Assessment: encouragement</p>	<p>Türkiye reported that it used TIMES-MACRO for preparing projections for the energy and IPPU sectors. For other sectors (i.e. non-energy emissions), various national models were used. However, the Party did not provide sufficient information in the NC8 to enable a basic understanding of the models and approaches used to project the GHG emissions and removals.</p> <p>During the review, Türkiye explained that for its NC8 it used the projections from the INDC and that the model for projecting emissions was developed during the INDC preparation process in 2015. The Party indicated that it plans to improve its GHG projection models and that it will be able to provide more detailed information on the models and approaches used in its GHG projections in future submissions.</p> <p>The ERT reiterates the encouragement from the previous review report for Türkiye to include in its next NC information that enables the reader to obtain a basic understanding of the models and approaches used to project GHG emissions and removals.</p>
12	<p>Reporting requirement specified in paragraph 40</p> <p>Issue type: completeness</p> <p>Assessment: encouragement</p>	<p>For each model or approach used for preparing projections, Türkiye did not (1) describe its type and characteristics (e.g. top-down model, bottom-up model, accounting model, expert judgment); (2) describe the original purpose it was designed for and, if applicable, how it was modified for climate change purposes; (3) summarize its strengths and weaknesses; and (4) explain how it accounted for any overlaps or synergies that may exist between different PaMs.</p> <p>During the review, the Party provided the above-mentioned information for the TIMES-MACRO approach it used for preparing the GHG projections for the energy and IPPU sectors.</p> <p>The ERT reiterates the encouragement from the previous review report for Türkiye to include in its next NC complete information for each model or approach used for preparing its projections.</p>
13	<p>Reporting requirement specified in paragraph 41</p> <p>Issue type: completeness</p> <p>Assessment: encouragement</p>	<p>Türkiye did not provide in the NC8 references to more detailed information for any of the models or approaches used for preparing the emission projections.</p> <p>During the review, the Party explained that it intends to improve both the modelling of GHG emission projections and the completeness and transparency of the information reported on projections in the relevant section of the NC9.</p> <p>The ERT reiterates the encouragement from the previous review report for Türkiye to include in its next NC references to more detailed information on the models or approaches used for preparing its emission projections.</p>
14	<p>Reporting requirement specified in paragraph 43</p> <p>Issue type: completeness</p> <p>Assessment: encouragement</p>	<p>In its NC8 Türkiye provided a qualitative description, based on trends, of the correlation between GHG emissions and both GDP and population growth. However, a quantitative sensitivity analysis of GDP and population growth rates, or of other key assumptions (including energy demand and share of renewable energy), was not reported.</p> <p>During the review, the Party explained that it did not conduct a sensitivity analysis but indicated that GDP and population are important assumptions relevant to its GHG emissions.</p> <p>The ERT reiterates the encouragement from the previous review report for Türkiye to discuss quantitatively, where possible, in its next NC the sensitivity of the projections to the underlying assumptions.</p>
15	<p>Reporting requirement specified in paragraph 44</p> <p>Issue type: transparency</p> <p>Assessment: encouragement</p>	<p>Türkiye reported information on population growth, however, the Party did not provide in the NC8 or in CTF table 5 information on other key underlying assumptions and values of variables, including GDP growth, fuel prices, energy demand and tax levels.</p> <p>During the review, the Party provided projections for population and GDP growth for 2012–2030. The Party explained that owing to institutional confidentiality reasons, some sectoral parameters used in the projections cannot be shared.</p> <p>The ERT reiterates the encouragement from the previous review report for Türkiye to include in its next NC information on key underlying assumptions and values of variables beyond population growth, such as GDP growth, tax levels and international fuel prices, by making use of table 5 in the UNFCCC reporting guidelines on NCs.</p>

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
16	<p>Reporting requirement specified in paragraph 45</p> <p>Issue type: completeness</p> <p>Assessment: recommendation</p>	<p>Türkiye did not provide in its NC8 information on factors and activities for each sector that would provide the reader with an understanding of the emission trends from 1990 to 2035.</p> <p>During the review, the Party provided the ERT with the assumptions for population and GDP growth in 2012–2030 used in preparing the projections. Population is expected to reach 82.1 million, 85.6 million and 88.4 million in 2020, 2025 and 2030 respectively. Annual GDP growth is expected to be 4.15, 4.25 and 4.12 per cent in the same years respectively.</p> <p>The ERT reiterates the recommendation from the previous review report for Türkiye to include in its next NC information on factors and activities driving emission trends for each sector from 1990 to at least 15 years from the most recent inventory year.</p>

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs. The reporting on the requirements not included in this table is considered to be complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs.

Annex II

Assessment of adherence to the reporting guidelines for the fifth biennial report of Türkiye

The BR5 of Türkiye is the final BR under the measurement, reporting and verification system established under the Convention.¹ Nevertheless, ERTs continue to provide recommendations and encouragements to the Parties on completeness, transparency and adherence to the UNFCCC reporting guidelines on BRs. Parties may find these recommendations and encouragements relevant, as appropriate, when preparing their initial biennial transparency report under the enhanced transparency framework of the Paris Agreement. Table II.1 summarizes the ERT assessment of adherence to the UNFCCC reporting guidelines on BRs for Türkiye's BR5.

Table II.1

Findings on projections reported in the fifth biennial report of Türkiye

No.	Reporting requirement and issue type	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 25 Issue type: completeness Assessment: encouragement	The Party did not report projections for a WAM scenario in its BR5. During the review, Türkiye explained that it has not been possible for it to create a WAM scenario, but that a WAM scenario might be developed under the framework of its NDC update and be included in the next submission. The ERT encourages Türkiye to include a WAM scenario in its next submission.
2	Reporting requirement specified in paragraph 26 Issue type: transparency Assessment: recommendation	In the BR5 it is not clear which PaMs are included under the WEM scenario and whether the WEM scenario also includes planned PaMs. During the review, Türkiye explained that the PaMs included in the WEM projections were those reported in its INDC and, therefore, they do not fully align with the PaMs reported in the NC8 (chap. 4). If the Party is able to obtain information on the emission reduction potential of PaMs from relevant ministries in future reporting cycles, it will include projections based on those PaMs in future reporting. The ERT reiterates the recommendation from the previous review report for Türkiye to specify in its next submission which implemented and adopted PaMs it included in its WEM scenario and whether the WEM scenario also includes planned PaMs.
3	Reporting requirement specified in paragraph 27 Issue type: completeness Assessment: encouragement	Türkiye did not report a sensitivity analysis for its projections in the BR5. During the review, the Party explained that it did not conduct a sensitivity analysis but indicated that GDP and population are important assumptions relevant to its GHG emission projections. The ERT reiterates the encouragement from the previous review report for Türkiye to improve the completeness of its reporting by including in its next submission a sensitivity analysis for its projections.
4	Reporting requirement specified in paragraph 29 Issue type: transparency Assessment: encouragement	Türkiye reported a WEM scenario for 2030 and stated that the projections are the same as in its INDC, which was submitted in 2015. The projections have not been updated since then, so the base year for the projections is still 2012 rather than the latest year for which inventory data are available (2020 for the NC8). During the review, the Party confirmed that the starting year for the projections is 2012 and informed the ERT that it is updating its projections under the framework of its NDC update.

¹ The Conference of the Parties, by decision 1/CP.24, decided that the final BRs shall be those submitted to the secretariat no later than 31 December 2022 and reaffirmed that, for Parties to the Paris Agreement, following the submission of the final BR, the modalities, procedures and guidelines contained in the annex to decision 18/CMA.1 will supersede the measurement, reporting and verification system established under decision 1/CP.16, paras. 40–47 and 60–64, and decision 2/CP.17, paras. 12–62.

No.	<i>Reporting requirement and issue type</i>	<i>Description of the finding with recommendation or encouragement</i>
		<p>The ERT reiterates the encouragement from the previous review report for Türkiye to use the latest year for which inventory data are available as the starting year for its projection scenarios.</p>
5	<p>Reporting requirement specified in paragraph 32 Issue type: completeness Assessment: encouragement</p>	<p>Türkiye did not report in its BR5 projections of indirect GHGs (carbon monoxide, nitrogen oxides, non-methane volatile organic compounds or sulfur oxides). During the review, the Party indicated that emissions of indirect GHGs were not included in the national GHG inventory submitted in 2022 and that the BR5 used emission data from that submission. The ERT reiterates the encouragement from the previous review report for Türkiye to report projections of indirect GHGs in its next submission.</p>
6	<p>Reporting requirement specified in paragraph 33 Issue type: completeness Assessment: recommendation</p>	<p>Türkiye did not report in its BR5 emission projections related to fuel sold to ships and aircraft engaged in international transport. During the review, the Party clarified that owing to capacity constraints, it did not prepare projections of these emissions. The ERT reiterates the recommendation from the previous review report for Türkiye to improve its reporting by reporting separately and without including in the totals, to the extent possible, emission projections related to fuel sold to ships and aircraft engaged in international transport.</p>
7	<p>Reporting requirement specified in paragraph 34 Issue type: completeness Assessment: encouragement</p>	<p>Türkiye provided projections for 2030. The ERT noted that this is not 15 years from the most recent inventory year (2020) available at the time of submitting the NC8 and BR5, that is, the Party should have prepared projections for at least 2035. During the review, the Party indicated that the NC8 projections are the same as the NDC projections; as the NDC includes projections up until 2030, the NC8 does too. Türkiye intends to improve its modelling of GHG emission projections and may provide an extended timespan in the NC9. The ERT encourages Türkiye to include in its next submission projections extending at least 15 years from the most recent inventory year.</p>
8	<p>Reporting requirement specified in paragraph 39 Issue type: completeness Assessment: encouragement</p>	<p>Türkiye reported that it used TIMES-MACRO for preparing projections for the energy and IPPU sectors. For other sectors (i.e. non-energy emissions), various national models were used. However, the Party did not provide sufficient information in the NC8 to enable a basic understanding of the models and approaches used to project the GHG emissions and removals. During the review, Türkiye explained that for its NC8 it used the projections from the INDC and that the model for projecting emissions was developed during the INDC preparation process in 2015. The Party indicated that it plans to improve its GHG projection models and that it will be able to provide more detailed information on the models and approaches used in its GHG projections in future submissions. The ERT reiterates the encouragement from the previous review report for Türkiye to include in its next submission information that enables the reader to obtain a basic understanding of the models and approaches used to project GHG emissions and removals.</p>
9	<p>Reporting requirement specified in paragraph 40 Issue type: completeness Assessment: encouragement</p>	<p>For each model or approach used for preparing projections, Türkiye did not (1) describe its type and characteristics (e.g. top-down model, bottom-up model, accounting model, expert judgment); (2) describe the original purpose it was designed for and, if applicable, how it was modified for climate change purposes; (3) summarize its strengths and weaknesses; and (4) explain how it accounted for any overlaps or synergies that may exist between different PaMs. During the review, the Party provided the above-mentioned information for the TIMES-MACRO approach it used for preparing the GHG projections for the energy and IPPU sectors. The ERT reiterates the encouragement from the previous review report for Türkiye to include in its next submission complete information for each model or approach used for preparing its projections.</p>

No.	<i>Reporting requirement and issue type</i>	<i>Description of the finding with recommendation or encouragement</i>
10	Reporting requirement specified in paragraph 41 Issue type: completeness Assessment: encouragement	Türkiye did not provide in the BR5 references to more detailed information for any of the models or approaches used for preparing the emission projections. During the review, the Party explained that it intends to improve both the modelling of GHG emission projections and the completeness and transparency of the information reported on projections in its next submission. The ERT reiterates the encouragement from the previous review report for Türkiye to include in its next submission references to more detailed information on the models or approaches used for preparing its emission projections.
11	Reporting requirement specified in paragraph 43 Issue type: completeness Assessment: encouragement	In its BR5 Türkiye provided a qualitative description, based on trends, of the correlation between GHG emissions and both GDP and population growth. However, a quantitative sensitivity analysis of GDP and population growth rates, or of other key assumptions (including energy demand and share of renewable energy), was not reported. During the review, the Party explained that it did not conduct a sensitivity analysis but indicated that GDP and population are important assumptions relevant to its GHG emissions. The ERT reiterates the encouragement from the previous review report for Türkiye to discuss in its next submission qualitatively and, where possible, quantitatively the sensitivity of the projections to the underlying assumptions.
12	Reporting requirement specified in paragraph 44 Issue type: transparency Assessment: encouragement	Türkiye reported information on population growth, however, the Party did not provide in the BR5 or in CTF table 5 information on other key underlying assumptions and values of variables, including GDP growth, fuel prices, energy demand and tax levels. During the review, the Party provided projections for population and GDP growth for 2012–2030. The Party explained that owing to institutional confidentiality reasons, some sectoral parameters used in the projections cannot be shared. The ERT reiterates the encouragement from the previous review report for Türkiye to include in its next submission information on key underlying assumptions and values of variables beyond population growth such as GDP growth, tax levels and international fuel prices, by making use of table 5 in the UNFCCC reporting guidelines on NCs.
13	Reporting requirement specified in paragraph 45 Issue type: completeness Assessment: recommendation	Türkiye did not provide in its BR5 information on factors and activities for each sector that would provide the reader with an understanding of the emission trends from 1990 to 2035. During the review, the Party provided the ERT with the assumptions for population and GDP growth in 2012–2030 used in preparing the projections. Population is expected to reach 82.1 million, 85.6 million and 88.4 million in 2020, 2025 and 2030 respectively. Annual GDP growth is expected to be 4.15, 4.25 and 4.12 per cent in the same years respectively. The ERT reiterates the recommendation from the previous review report for Türkiye to include in its next submission information on factors and activities driving emission trends for each sector from 1990 to at least 15 years from the most recent inventory year.

Note: Item listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs, as per para. 11 of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete and transparent, and thus adheres to the UNFCCC reporting guidelines on NCs and on BRs.

Annex III

Documents and information used during the review

A. Reference documents

2022 GHG inventory submission of Türkiye.

Available at <https://unfccc.int/ghg-inventories-annex-i-parties/2022>.

2023 GHG inventory submission of Türkiye.

Available at <https://unfccc.int/ghg-inventories-annex-i-parties/2023>.

BR5 CTF tables of Türkiye. Available at <https://unfccc.int/BR5>.

BR5 of Türkiye. Available at <https://unfccc.int/BR5>.

“Common tabular format for ‘UNFCCC biennial reporting guidelines for developed country Parties’”. Annex to decision 19/CP.18. Available at <https://unfccc.int/resource/docs/2012/cop18/eng/08a03.pdf>.

“Compilation of economy-wide emission reduction targets to be implemented by Parties included in Annex I to the Convention”. FCCC/SBSTA/2014/INF.6. Available at <http://unfccc.int/resource/docs/2014/sbsta/eng/inf06.pdf>.

“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications”. FCCC/CP/2019/13/Add.1. Available at <https://unfccc.int/documents/210471>.

“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol”. Annex to decision 15/CMP.1. Available at <https://unfccc.int/documents/4253>.

“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol”. Annex III to decision 3/CMP.11. Available at <https://unfccc.int/documents/9101>.

“Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”. Annex to decision 13/CP.20. Available at <http://unfccc.int/resource/docs/2014/cop20/eng/10a03.pdf>.

NC8 of Türkiye. Available at <https://unfccc.int/NC8>.

Report on the individual review of the 2021 annual submission of Türkiye.

FCCC/ARR/2021/TUR. Available at

https://unfccc.int/sites/default/files/resource/arr2021_TUR.pdf.

Report on the technical review of the BR4 of Türkiye. FCCC/TRR.4/TUR. Available at

<https://unfccc.int/fourth-biennial-reports>.

Report on the technical review of the NC7 of Türkiye. FCCC/IDR.7/TUR. Available at

https://unfccc.int/review-reports-BR3_and_NC7.

“UNFCCC biennial reporting guidelines for developed country Parties”. Annex I to decision 2/CP.17. Available at <http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf>.

B. Additional information provided by the Party

Responses to questions during the review were received from Hakan Aydoğan (MoEUCC), including additional material.