



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

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 Japan, 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 Japan, 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 Tokyo from 29 January to 2 February 2024.



Contents

	<i>Page</i>
Abbreviations and acronyms	3
I. Introduction and summary	5
A. Introduction	5
B. Summary.....	5
II. Technical review of the information reported in the eighth national communication and fifth biennial report	7
A. National circumstances relevant to greenhouse gas emissions and removals	7
B. Greenhouse gas inventory information	8
C. Quantified economy-wide emission reduction target and related assumptions, conditions and methodologies.....	11
D. Information on policies and measures	12
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	17
F. Projections	18
G. Provision of financial, technological and capacity-building support to developing country Parties	23
H. Vulnerability assessment, climate change impacts and adaptation measures	30
I. Research and systematic observation.....	32
J. Education, training and public awareness.....	33
III. Conclusions and recommendations	33
Annexes	
I. Assessment of adherence to the reporting guidelines for the eighth national communication of Japan.....	38
II. Assessment of adherence to the reporting guidelines for the fifth biennial report of Japan.....	43
III. Documents and information used during the review	45

Abbreviations and acronyms

AP-PLAT	Asia-Pacific Climate Change Adaptation Information Platform
AR	Assessment Report of the Intergovernmental Panel on Climate Change
ASEAN	Association of Southeast Asian Nations
BR	biennial report
CH ₄	methane
CMIP	Coupled Model Intercomparison Project
CO ₂	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
COP	Conference of the Parties
CTF	common tabular format
DAC	Development Assistance Committee
Decokatsu	National Movement for New and Prosperous Lifestyles toward Decarbonization
ERT	expert review team
FY	fiscal year
GCF	Green Climate Fund
GDP	gross domestic product
GEF	Global Environment Facility
GHG	greenhouse gas
GWP	global warming potential
GWPH	Global Warming Prevention Headquarters
HFC	hydrofluorocarbon
IPCC	Intergovernmental Panel on Climate Change
IPPU	industrial processes and product use
JBIC	Japan Bank for International Cooperation
JCM	Joint Crediting Mechanism
JICA	Japan International Cooperation Agency
JPY	Japanese yen
Kyoto Protocol Supplement	<i>2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol</i>
LULUCF	land use, land-use change and forestry
N ₂ O	nitrous oxide
NA	not applicable
NC	national communication
NDC	nationally determined contribution
NE	not estimated
NEXI	Nippon Export and Investment Insurance
NF ₃	nitrogen trifluoride
NO	not occurring
non-Annex I Party	Party not included in Annex I to the Convention
OECD	Organisation for Economic Co-operation and Development
PaMs	policies and measures
PFC	perfluorocarbon
REDD+	reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks (decision 1/CP.16, para. 70)

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
UNESCO	United Nations Educational, Scientific and Cultural Organization
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’

I. Introduction and summary

A. Introduction

1. This is a report on the in-country technical review of the NC8 and BR5 of Japan. 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 Japan, which provided comments that were considered and incorporated with minor revisions into this final version of the report.

3. The review was conducted from 29 January to 2 February 2024 in Tokyo by the following team of nominated experts from the UNFCCC roster of experts: Kénel Délusca (Haiti), Alexandra Gurgel Valente da Costa (Brazil), Yu’e Li (China), Jenny Mager (Chile), Daniel Perczyk (Argentina), Ioannis Sempos (Greece) and Glen Whitehead (Australia). Yu’e Li and Ioannis Sempos were the lead reviewers. The review was coordinated by Ruta Bubniene and Stefania D’Annibali (secretariat).

B. Summary

4. The ERT conducted a technical review of the information reported in the NC8 of Japan 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 Japan in accordance with the UNFCCC reporting guidelines on BRs.³

1. Timeliness

5. The NC8 was submitted on 23 December 2022, before the deadline of 31 December 2022 mandated by decision 6/CP.25.

6. The BR5 was submitted on 27 December 2022, before the deadline of 31 December 2022 mandated by decision 6/CP.25. The CTF tables were also submitted on 27 December 2022.

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

7. Issues and gaps identified by the ERT related to the information reported by Japan 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. The ERT notes that issue 1 in table I.6 has been identified in three or more successive reviews.

8. The ERT noted that Japan made improvements to the reporting in its NC8 compared with that in its NC7, including by addressing many 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; financial,

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.

technological and capacity-building support; research and systematic observation; and supplementary information related to the Kyoto Protocol.

Table 1

Assessment of completeness and transparency of mandatory information reported by Japan 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	Transparent	–
GHG inventory	Complete	Transparent	–
PaMs	Mostly complete	Transparent	Issue 2 in table I.1
Projections and the total effect of PaMs	Mostly complete	Transparent	Issues 2 and 4 in table I.2
Vulnerability assessment, climate change impacts and adaptation measures	Complete	Transparent	–
Financial resources and transfer of technology	Mostly complete	Transparent	Issue 1 in table I.3
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.

Table 2

Assessment of completeness and transparency of mandatory supplementary information under the Kyoto Protocol reported by Japan 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	Complete	Transparent	–
National registry	Complete	Transparent	–
Supplementarity relating to the mechanisms pursuant to Articles 6, 12 and 17	Complete	Transparent	–
PaMs in accordance with Article 2	Complete	Transparent	–
Domestic and regional programmes and/or arrangements and procedures	Complete	Transparent	–
Information under Article 10 ^a	Complete	Transparent	–
Financial resources	Complete	Transparent	–
Minimization of adverse impacts in accordance with Article 3, paragraph 14	Complete	Transparent	–

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

^a 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 Parties included in Annex II to the Convention 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.

9. Issues and gaps identified by the ERT related to the information reported by Japan in its BR5 are presented in table 3. The information reported mostly adheres to the UNFCCC reporting guidelines on BRs. The ERT notes that issue 2 in table II.2 has been identified in three or more successive reviews.

10. The ERT noted that Japan made improvements to the reporting in its BR5 compared with that in its BR4, by addressing many recommendations and encouragements from the previous review report in the areas of its quantified economy-wide emission reduction target

and related assumptions, conditions and methodologies; projections; and the provision of financial, technological and capacity-building support, as well as funding for research and systematic observation provided to developing country Parties.

Table 3

Summary of completeness and transparency of mandatory information reported by Japan 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	Complete	Transparent	–
Progress in achievement of targets	Mostly complete	Transparent	Issue 2 in table II.2
Provision of support to developing country Parties	Mostly complete	Transparent	Issue 1 in table II.3

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.

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

11. The NC8 contains key data on government structure, population trends, geography and land use, climate and climate change, and economic developments. The report also includes information on the energy, transport and buildings sectors, as well as industry, trade, the services sector, agriculture, forestry, resource efficiency and waste.

12. As at 1 October 2020, Japan’s population stood at approximately 126 million, but projections indicate a decline to around 98–106 million by 2050, along with an increased concentration of people in urban areas. This demographic shift is expected to lead to a reduction in Japan’s energy consumption and its associated CO₂ emissions. Conversely, a rise in the number of single-person households is anticipated to exert upward pressure on emissions, potentially offsetting the declines expected from other factors. The net impact on GHG emissions will be the result of the interplay of these contrasting dynamics. Crucially, the overall effect will be heavily influenced by Japan’s future energy strategy, particularly the composition of its power generation mix and the extent to which it incorporates renewable energy sources and nuclear power.

13. Geographically, Japan extends a considerable distance from north to south, ranging in latitude from approximately 20 degrees north at its southernmost point to 46 degrees north at its northernmost point. This vast stretch results in diverse climate zones, including subarctic, extratropical and subtropical. This geographical and climatic diversity translates into a variety of vulnerabilities to climate change and environmental challenges across the different regions of Japan, requiring region-specific adaptation measures to effectively address these challenges.

14. Japan’s forests cover 70 per cent of its land, split between 30 per cent national and 70 per cent non-national forests. Extensive reforestation from the 1950s to the early 1970s led to over 10 million ha of planted forests. By 2017 Japan’s forests had doubled in volume to 5.2 billion m³ since 1966. Over half of the planted forest area is now mature and suitable for timber, but their ageing has resulted in a decline in growth rate and CO₂ removal efficiency.

15. Economically, Japan's GDP⁴ for FY⁵ 2021 was approximately JPY 541 trillion, with a per capita GDP of about JPY 4.31 million. Japan's substantial GDP indicates its status as one of the world's largest economies. This economic power reflects Japan's potential for technological innovation and industrial capacity, key elements in driving global efforts to combat climate change. Regarding final energy consumption, Japan reported, for FY 2020, 46 per cent attributable to the industry sector (including non-energy use), followed by 32 per cent from the commercial and residential sector and 22 per cent from the transport sector. The distribution of energy consumption across sectors highlights the areas where Japan could focus its efforts towards reducing GHG emissions. The high percentage of energy usage in the industry sector suggests a potential area for increasing the adoption of energy-efficient technologies and practices.

16. Climate change mitigation actions in Japan are being promoted by various ministries and agencies under the direction of GWPH, which was established in 2005 and is led by the Prime Minister. This body coordinates comprehensive strategies for a decarbonized society, integrating efforts across ministries. The budget for FY 2022 allocates JPY 384.4 billion for immediate GHG reductions by 2030, JPY 47.6 billion for longer-term reductions beyond 2030, as well as JPY 201.2 billion for measures that contribute to GHG emission reductions as a co-benefit and JPY 40.3 billion for foundational measures, demonstrating Japan's strategic investment in climate action.

2. Assessment of adherence to the reporting guidelines

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

B. Greenhouse gas inventory information⁶

1. Technical assessment of the reported information

18. Japan 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 Japan's 2023 inventory submission, also using GWP values from the AR4. During the review, Japan mentioned that for future inventory submissions it will use GWP values from the AR5.

19. Total GHG emissions⁷ excluding emissions and removals from LULUCF and including indirect CO₂ decreased by 10.0 per cent between 1990 and 2020, while total GHG emissions including net emissions or removals from LULUCF and indirect CO₂ decreased by 9.6 per cent over the same period. Total emissions increased from 1990 to 2013, primarily due to increased combustion of fossil fuels to generate electricity, particularly after the Great East Japan Earthquake of 2011. Emissions peaked in 2013 and decreased until 2020, primarily due to lower emissions from energy industries as a result of energy efficiency, an increase in the availability of renewable energy and nuclear power plants reinitiating operations. Other factors contributing to the decrease in emissions include the decrease in CO₂ emissions from manufacturing industries and construction owing to reduced solid fuel consumption in the iron and steel industry and reduced emissions from industrial processes

⁴ The GDP values refer to real GDP (2008 System of National Accounts, with a benchmark year of 2015).

⁵ In this section of the report, the years refer to fiscal years (FY), from April to March, rather than calendar years.

⁶ GHG emission data in this section, which use GWP values from the AR4, are based on Japan's 2023 inventory submission, version 4, which has not yet been subject to review. All emission data in subsequent chapters are based on Japan's BR5 CTF tables, which use GWP values from the AR4 unless otherwise noted.

⁷ In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of CO₂ eq excluding LULUCF and including indirect CO₂ emissions, unless otherwise specified.

under the chemical industry. Total emissions excluding emissions and removals from LULUCF in 2021 increased compared with 2020 due to an increase in CO₂ emissions from energy industries, and manufacturing industries and construction as activity increased after the decline due to the coronavirus disease 2019 pandemic, but emissions in 2021 remained below the 2019 level.

20. Table 4 illustrates the emission trends by sector and by gas for Japan. The emissions reported in the 2023 inventory submission differ from those reported in CTF table 1, which is consistent with the 2022 annual submission. In CTF table 1 total emissions for 1990, including indirect CO₂ and excluding LULUCF, are reported as 1,275,449.45 kt CO₂ eq, whereas they amounted to 1,274,815.54 kt CO₂ eq according to the 2023 inventory submission; and in CTF table 1 emissions for 2020 are reported as 1,150,085.52 kt CO₂ eq compared with 1,146,799.18 kt CO₂ eq in the 2023 inventory submission. Recalculations between CTF table 1 and the 2023 inventory submission resulted in a difference of less than 0.3 per cent for all years from 1990 to 2020, with the largest difference occurring in the waste sector. The reasons for the recalculations are described in Japan's 2023 inventory submission and are the result of changes in estimation methods and updates in response to recommendations from previous inventory review teams.

Table 4
Greenhouse gas emissions by sector and by gas for Japan for 1990–2021

	GHG emissions (kt CO ₂ eq)					Change (%)		Share (%)	
	1990	2000	2010	2020	2021	1990–2020	2020–2021	1990	2021
<i>Sector</i>									
1. Energy	1 091 892.23	1 197 823.56	1 163 132.44	994 148.09	1 014 950.14	–9.0	2.1	86.0	86.9
A1. Energy industries	369 878.56	397 370.75	476 188.28	438 246.89	446 619.95	18.5	1.9	29.1	38.2
A2. Manufacturing industries and construction	351 435.23	349 191.10	303 332.49	235 717.02	251 570.71	–32.9	6.7	27.7	21.5
A3. Transport	206 170.68	257 399.77	224 196.78	178 060.32	179 412.07	–13.6	0.8	16.2	15.4
A4. and A5. Other	159 106.03	191 424.73	158 017.57	141 033.26	136 303.17	–11.4	–3.4	12.5	11.7
B. Fugitive emissions from fuels	5 301.74	2 437.21	1 397.33	1 090.59	1 044.24	–79.4	–4.2	0.4	0.1
C. CO ₂ transport and storage	NO, NE	NO, NE	NO, NE	NO, NE	NO, NE	–	–	–	–
2. IPPU	109 935.81	108 272.18	80 646.09	100 710.99	103 258.47	–8.4	2.5	8.7	8.8
3. Agriculture	37 515.64	35 238.81	33 667.46	32 101.38	32 174.35	–14.4	0.2	3.0	2.8
4. LULUCF	–63 272.18	–84 085.52	–70 853.95	–51 593.91	–51 694.59	18.5	–0.2	NA	NA
5. Waste	29 990.35	31 968.86	22 600.75	17 972.04	17 711.50	–40.1	–1.4	2.4	1.5
6. Other ^a	–	–	–	–	–	–	–	–	–
<i>Gas^b</i>									
CO ₂	1 157 195.59	1 263 754.80	1 214 707.54	1 039 795.90	1 062 129.24	–10.1	2.1	91.2	90.9
CH ₄	44 542.03	37 285.68	31 072.99	27 379.89	27 361.36	–38.5	–0.1	3.5	2.3
N ₂ O	32 218.22	30 181.02	22 728.86	19 680.29	19 459.73	–38.9	–1.1	2.5	1.7
HFCs	15 940.02	22 858.36	23 331.82	52 210.28	53 561.04	227.5	2.6	1.3	4.6
PFCs	6 555.48	11 906.44	4 267.68	3 500.84	3 155.54	–46.6	–9.9	0.5	0.3
SF ₆	12 850.07	7 031.36	2 398.14	2 028.31	2 047.45	–84.2	0.9	1.0	0.2
NF ₃	32.61	285.77	1 539.74	336.98	380.11	933.4	12.8	0.0	0.0
Total GHG emissions excluding LULUCF	1 269 334.03	1 373 303.42	1 300 046.75	1 144 932.50	1 168 094.47	–9.8	2.0	100.0	100.0

	GHG emissions (kt CO ₂ eq)					Change (%)		Share (%)	
	1990	2000	2010	2020	2021	1990– 2020	2020– 2021	1990	2021
	Total GHG emissions including LULUCF	1 206 061.85	1 289 217.89	1 229 192.80	1 093 338.59	1 116 399.87	–9.3	2.1	NA
Total GHG emissions excluding LULUCF, including indirect CO₂	1 274 815.54	1 377 536.17	1 302 476.79	1 146 799.18	1 169 966.13	–10.0	2.0	NA	NA
Total GHG emissions including LULUCF, including indirect CO₂	1 211 543.36	1 293 450.65	1 231 622.84	1 095 205.27	1 118 271.54	–9.6	2.1	NA	NA

Source: GHG emission data: Japan's 2023 inventory submission, version 4.

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

^b Emissions by gas without LULUCF and including indirect CO₂.

21. In brief, Japan's national inventory arrangements were established in accordance with the Promotion of Global Warming Countermeasures Act (Act 117 of 1998). The changes in these arrangements since the BR4 include the renaming of the single national entity for GHG inventory preparation from the Low-carbon Society Promotion Office to the Decarbonized Society Promotion Office and the addition of a sub-breakout group on CO₂ capture and utilization under the committee responsible for the GHG emission estimation methods. The Government of Japan is responsible for estimating the national GHG emissions and removals and discloses the results every year, in accordance with article 7 of chapter 1 ("General Provisions") of the Act, which sets out the domestic measures to be implemented under the Convention. The Ministry of the Environment, with the cooperation of relevant ministries, agencies and organizations, prepares Japan's national inventory and compiles the supplementary information to be annually submitted to the UNFCCC pursuant to the Convention and its Kyoto Protocol.

2. Assessment of adherence to the reporting guidelines

22. The ERT assessed the information reported in the NC8 and BR5 of Japan 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

(a) Technical assessment of the reported information

23. Japan 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 all the elements mandated by paragraph 30 of the annex to decision 15/CMP.1. The ERT took note of the review of the changes to the national system reflected in the report on the individual review of the 2022 annual submission of Japan.

(b) Assessment of adherence to the reporting guidelines

24. The ERT assessed the information reported in the NC8 of Japan and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for

supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

4. National registry

(a) Technical assessment of the reported information

25. In its NC8 Japan provided information on how its national registry performs the functions in accordance with the annex to decision 13/CMP.1 in conjunction with decision 3/CMP.11 and the annex to decision 5/CMP.1 and complies with the requirements of the technical standards for data exchange between registry systems.

(b) Assessment of adherence to the reporting guidelines

26. The ERT assessed the information reported in the NC8 of Japan and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

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

1. Technical assessment of the reported information

27. Japan reported information on its economy-wide emission reduction target in its BR5. For Japan the Convention entered into force on 21 March 1994. Under the Convention Japan committed to reducing its GHG emissions by 3.8 per cent or more below the 2005 level by FY 2020. The target includes all GHGs included in the “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories”, namely CO₂, CH₄, N₂O, HFCs, PFCs, SF₆ and NF₃. It also includes all IPCC sources and sectors included in the annual GHG inventory. The GWP values used are from the AR4. Japan reported that it has not used market-based mechanisms for achieving its 2020 target (see para. 63 below). In absolute terms this means that, under the Convention, Japan has to reduce its emissions from 1,382,002.89 kt CO₂ eq (in 2005)⁸ to 1,329,486.78 kt CO₂ eq by 2020.

28. Emissions and removals from the LULUCF sector are included in the 2020 target and are accounted using an activity-based approach in accordance with the rules governing the treatment of LULUCF emissions and removals in the second commitment period of the Kyoto Protocol.⁹ Specifically, for forest carbon sinks (activities afforestation/reforestation, deforestation and forest management), the contribution is the annual average of net removals accounted for during FY 2013–2020, where activities have been implemented since FY 1990 (referred to as the narrow approach, which only considers specific forest management practices undertaken since 1990).

29. Japan applies the narrow approach to interpret the definition of forest management activities in line with the Kyoto Protocol Supplement. The area of forests subject to forest management activities was 16,161.7 kha in FY 2021, which accounts for approximately 65 per cent of the total forest land area. The forest management reference level for these forests is set as zero, which is equivalent to a gross-net accounting approach. The forest area that is not subject to these forest management activities (approximately 35 per cent of the total forest land in FY 2021) is excluded from the accounting framework for the target. In addition, carbon sinks in agricultural soils (including cropland and grazing land management, as well as revegetation) are evaluated using a net-net accounting approach, comparing net emissions and removals in the reference year (FY 1990) and the target year (FY 2020).

30. Japan has developed the JCM to facilitate mitigation actions in developing countries and others; these mitigation actions also contribute to Japan’s emission reduction targets.

⁸ The emission level in 2005 was obtained from CTF table 1s2.

⁹ Decision 16/CMP.1.

However, credits acquired by the Government of Japan through the JCM by the end of 2020 were not utilized towards meeting the 2020 target under the Convention. By 2022, the Government had cancelled approximately 80 kt CO₂ eq emission reduction credits achieved via the JCM. Furthermore, all JCM credits for reductions carried out before 2021 and held in the Government’s account will be cancelled. This decision underscores Japan’s commitment to environmental integrity: it does not plan to use these credits for its NDC.

31. In addition to its 2020 target, Japan has set an emission reduction target for 2030 in its first NDC (submitted in October 2021)¹⁰ and a longer-term goal for 2050. Under the Paris Agreement, Japan’s target is to reduce GHG emissions by 46 per cent by FY 2030 compared with the FY 2013 level, which is aligned with the long-term objective of achieving net zero emissions by 2050. This target may be increased to the more ambitious 50 per cent reduction, depending on the progress of the ongoing mitigation PaMs.

32. Japan’s NDC states that the 2030 target will be accounted for using GWP values from the AR4. The ERT noted that this introduces a potential misalignment with the 2024 and subsequent GHG inventory submissions that will be reported using GWP values from the AR5. During the review, Japan clarified that after the 2024 inventory submission it will consider updating the NDC using the GWP values from the AR5.

33. Through the JCM, Japan aims to contribute to international emission reductions and removals at the level of a cumulative total of approximately 100 Mt CO₂ by FY 2030. Japan will count the acquired credits, as appropriate, towards achieving its NDC.

34. In addition, Japan’s NDC states that for the 2030 target, removals from forests and other carbon sinks will be accounted for in line with the approaches used under the second commitment period of the Kyoto Protocol, as is the case of the 2020 target (see para. 28 above). The ERT noted that estimates of emissions and removals under Article 3, paragraphs 3–4, of the Kyoto Protocol estimated in accordance with the Kyoto Protocol Supplement are to be reported as an annex to the GHG inventory submission of Japan after 2023. Japan has specified that the accounting methodology related to the contribution of LULUCF towards its post-2030 targets is currently under consideration.

2. Assessment of adherence to the reporting guidelines

35. The ERT assessed the information reported in the BR5 of Japan and recognized that the reporting is complete and transparent, and thus adheres to 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.

D. Information on policies and measures

1. Technical assessment of the reported information

36. Japan provided in its NC8 and BR5 information on its PaMs¹¹ implemented and adopted to fulfil its commitments under the Convention. Japan’s set of PaMs is similar to that previously reported, with a few exceptions. Japan reported in NC8 section 3.5 that eight PaMs related to the industry and residential sector included in the NC7 are no longer in place. During the review, Japan clarified and corrected information reported in the NC8 regarding the residential sector (namely on the “Efficient use of lighting devices” measure) and added two other policies related to the same sector that have also been discontinued due to changes in social context since the formulation of the policies, namely the “Promotion of replacement for electric dehumidifier (compression type)” and “Full automatic washing with drying machine”.

¹⁰ Available at https://unfccc.int/sites/default/files/NDC/2022-06/JAPAN_FIRST%20NDC%20%28UPDATED%20SUBMISSION%29.pdf.

¹¹ 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.

37. Japan 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. Japan also indicated that there have been no 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 since December 2019.

38. Japan has had a robust and functional climate governance structure in place since 1997. Japan's climate change policy is governed by GWPH, led by the Prime Minister and with all Cabinet ministers as members, and the Executive Committee of GWPH. This Committee plays a central coordination role with the relevant ministries and agencies. In particular, each year GWPH reviews the status of achieving the targets (assessed by type of GHG and other categories), relevant indicators, and the progress of each policy and measure, taking into account the periodic reviews and examinations conducted by the relevant councils.

39. At the local level, the Regional Energy Council and the Global Warming Mitigation Councils have been established to work with local government to support the implementation of regional efforts on climate change countermeasures in cooperation with relevant government agencies. During the review, Japan emphasized the significance of this governance system, highlighting the importance of the continuous coordination and collaboration among different governmental agencies.

40. Japan's assessment of the economic and social consequences of its response measures was briefly included in the NC8 (section 3.6) by mentioning that actions are taken while considering the importance of making efforts to minimize the adverse impact of response measures. However, Japan provided little information on the economic and social consequences of response measures and explained that it is facing difficulties in accurately assessing specific adverse impacts. Japan also indicated that because there is no internationally established methodology for evaluating efforts related to the minimization of adverse impacts it is impossible to carry out such evaluations. The ERT noted that the information provided in the report is not sufficiently detailed, and additional information to assess the interlinkages between PaMs and their impact on key socioeconomic indicators such as GDP growth, employment and gender, among others, is needed to enhance the readers' understanding of these consequences. During the review the ERT discussed with the Party some examples and ideas on how to address this reporting requirement in future reports, as reflected in table I.1.

41. In its reporting on PaMs, Japan provided the estimated emission reduction impacts for almost all of its PaMs. Where estimated impacts were not provided, the Party explained that the quantitative data and necessary statistical information are not available. In addition, "NE" was reported for some PaMs for certain years. For these cases, Japan clarified during the review that the PaMs for FY 2013 were not estimated because FY 2013 is the base year for those PaMs. Japan also explained that the PaMs reported as "NE" for all reporting years are those for which it is unable to estimate emission reductions.

42. Japan did not describe in its NC8 the methodologies it used for estimating the impacts of its PaMs. During the review, the Party explained that further information on the methodologies used for estimating the impacts of the PaMs is in a document that is only available in Japanese. However, during the review Japan provided a brief explanation of how it estimates the impacts of energy-related CO₂ PaMs on the basis of energy savings. For CO₂ emission reduction estimation for non-energy and non-CO₂ related PaMs, the Party explained that the estimations are made in accordance with the methods used for the GHG inventory: the emissions estimated for the WOM and WEM scenarios are different, so the difference between them is considered as the estimated emission reduction for each of its PaMs.

43. Japan explained in its NC8 that an assessment of progress in terms of the emission reductions of each policy or measure is done on an annual basis by GWPH. The evaluation covers the implementation status, indicators and other factors based on information, periodic reviews and examination from relevant councils, and information from the appropriate ministries and the Cabinet.

44. Japan did not indicate in its NC8 which of its PaMs are innovative or effectively replicable by other Parties. During the review, the ERT agreed with Japan on two policies

that can be classified under those characteristics: Decokatsu, which was presented during the review; and the 100 Decarbonization Leading Areas, which is included in the NC8. Decokatsu aims to incentivize prosperous and sustainable lifestyle changes toward a decarbonized society, supporting citizens and consumers in shifting to such new lifestyles underpinned by cooperation between the national and local governments, companies and other organizations. The purpose of the 100 Decarbonization Leading Areas is to achieve net zero CO₂ emissions from electricity consumption in households and business sectors by FY 2030, and to make efforts to achieve reductions in other GHG emissions, such as from transportation and heat use, by utilizing local resources. The achievements will be made public in order to promote developments in other areas not covered until FY 2030.

45. The Party did not report in its NC8 on the costs of PaMs, or on their non-GHG benefits and interaction with other policies. During the review, the Party provided the information on the costs of PaMs. The details of these costs are in the appendix of the document shared with the ERT, titled *Major Budget Included in the FY2021 Global Warming Countermeasures Budget Bill*, which provides the cost of each countermeasure. The budget is presented in four categories: (1) effective in reducing GHG emissions by 2030 (JPY 377.7 billion); (2) effective in reducing GHG emissions in 2030 and beyond (JPY 47 billion); (3) other items that contribute to reducing GHG emissions (JPY 198.4 billion); and (4) fundamental measures (JPY 39.7 billion). During the review, the Party also provided an example of non-GHG benefits by highlighting the spread of renewable energy technologies such as solar power plants, not only from the perspective of achieving the 2050 net zero goal but also from the perspective of Japan's domestic energy security.

46. The key overarching cross-sectoral policy reported by Japan is the Promotion of Global Warming Countermeasures Act (Act 117 of 1998). In addition, the Plan for Global Warming Countermeasures provides the framework for future climate policy and for Japan meeting its emission reduction target for 2020. Following a holistic approach, Japan defines the scope of global warming countermeasures as actions focused on the integrated improvement of the environment, society and the economy; a green recovery following the pandemic; GHG emission reductions; and compliance with its commitments under the Paris Agreement. The Act and the plan form the framework of Japan's climate action. In 2021 the Act was amended (by Act 54 of 2021) to include the goal of achieving carbon neutrality by 2050.

47. The mitigation effect of the action "improving the efficiency of thermal power generation" is the most significant. It includes a requirement for power generation companies to meet generation efficiency standards under the Energy Conservation Act for newly constructed power generation facilities on a facility-by-facility basis. Other policies that have delivered significant emission reductions are the policy on expanding the use of renewable electricity, which aims to reduce and replace fossil fuel generation, thereby contributing to energy security, and the policy on promoting the JCM, which aims to evaluate the contribution made by Japan towards reducing GHG emissions through the use of decarbonization technologies and products (among other things), as well as the implementation of measures in developing countries. During the review, Japan explained that the JCM has 28 partner countries and has supported more than 240 projects since 2013. Japan will follow the requirements of Article 6 of the Paris Agreement, specifically the guidance on cooperative approaches referred to in Article 6, paragraph 2, for developing the new JCM phase. Japan has also implemented several energy efficiency measures in the industry, housing and other sectors. An important related measure, in the transport sector, is the expansion of the take-up of next-generation vehicles including electric vehicles and improvements to fuel efficiency.

48. Japan did not identify in its NC8 mitigation actions that are planned. During the review, Japan explained that there are PaMs in the planning stage, such as Green Transformation (known as GX), and provided the ERT with details of this measure. GX is a comprehensive policy package that will implement upfront investment support such as GX economic transition bonds and other upfront GX investment incentives through Pro-Growth Carbon Pricing. Pro-Growth Carbon Pricing aims to establish a system based on a carbon credits approach that will benefit companies that are proactive and ambitious in reducing

emissions and encourage private sector GX investment while achieving cost-effective GHG emission reductions.

49. Table 5 provides a summary of the reported information on the PaMs of Japan. Japan presented in its NC8 detailed information on 21 PaMs in different sectors; therefore, the ERT included in table 5 the measures with the highest level of emission reductions in each sector.

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

<i>Sector</i>	<i>Key PaMs^a</i>	<i>Estimated mitigation impact in 2020 (kt CO₂ eq)</i>	<i>Estimated mitigation impact in 2030 (kt CO₂ eq)</i>
Policy framework and cross-sectoral measures	Green Transformation (GX) Promotion of the JCM	NE 7 836 ^b	NE 100 000 ^b
Energy			
Energy efficiency	Introduction of high-efficiency lighting	10 567	6 720
Energy supply and renewable energy	Expand use of renewable electricity	128 895	206 700
Transport	Diffusion of next-generation vehicles, improvement of fuel efficiency, etc.	6 401	26 740
IPPU	Preventing leakage of fluorocarbons from the use of commercial refrigeration and air-conditioning equipment	NE	21 500
Agriculture	CH ₄ emission reductions from rice cultivation	70	1 040
LULUCF	Measures for carbon forest sinks	40 510	38 000
Waste	Promotion of recycling of waste plastics	3 870	6 400
Other	Decokatsu	NE	NE

Note: The estimated mitigation impacts are estimates of emissions of CO₂ eq avoided in a given year as a result of the implementation of mitigation actions.

^a Names of PaMs reproduced as reported in Japan's BR5.

^b The estimated mitigation impact of the Promotion of the JCM is based on the cumulative values until 2020 and 2030 respectively.

50. Japan has a robust and dynamic national system to evaluate progress on the implementation of its PaMs, based on an annual and a three-year cycle. Progress is assessed on the basis of "measure evaluation indicators". During the annual cycle these indicators are collected for each policy or measure and the emission reductions achieved are estimated. Progress of each measure is then assessed on a five-point scale, from A to E (see para. 52 below). Also during the annual cycle, PaMs that are showing low progress are strengthened and new ones are explored. The three-year cycle evaluates the progress of the Plan for Global Warming Countermeasures, PaMs to achieve the NDC are developed, and the criteria of each measure evaluation indicator is set. During the review, Japan highlighted the amount of effort involved in having systems that enhance the implementation of PaMs contributing to NDC achievement, recognizing that coordination among ministries and agencies in gathering information is relevant to prepare and realign PaMs.

51. During the review, Japan explained the criteria for the five-point scale for assessing progress, as follows: A: policy and measure for which the measure evaluation indicator is "expected to exceed the target level if current efforts continue" and where the actual results have already exceeded the target level; B: policy and measure for which the measure evaluation indicator is "expected to exceed the target level if current efforts continue" (excluding PaMs under A); C: policy and measure where the measure evaluation indicator is "expected to be equivalent to the target level if current efforts continue"; D: policy and measure for which the measure evaluation indicator is "expected to fall below the target level if current efforts continue"; and E: other PaMs for which quantitative data cannot be obtained.

52. The progress evaluation in FY 2020 for 115 implemented PaMs is presented in the NC8 using the five-point scale as follows: A, 6 PaMs; B, 15 PaMs; C, 66 PaMs; D, 21 PaMs; and E, 7 PaMs. In summary, the 87 PaMs that are evaluated as A, B or C represented 89 per cent of the emission reductions in 2020. This information was confirmed with the Party during the review.

2. Assessment of adherence to the reporting guidelines

53. The ERT assessed the information reported in the NC8 of Japan 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.1 and II.1.

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

(a) Technical assessment of the reported information

54. In its NC8 Japan reported that the implementation of the Kyoto Protocol is underpinned by GWPH, which was created in 2005 and established under the Cabinet and promoted by various ministries and agencies. GWPH is led by the Prime Minister with the Chief Cabinet Secretary, the Minister of the Environment and the Minister of Economy, Trade and Industry as vice-chairs and with all other ministers as members.

55. Japan does not have an emission reduction target for the second commitment period of the Kyoto Protocol.

(b) Assessment of adherence to the reporting guidelines

56. The ERT assessed the information reported in the NC8 of Japan and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

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

(a) Technical assessment of the reported information

57. In the NC8 Japan reported information 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.

58. The NC8 includes information on how Japan promotes and implements the decisions of the International Civil Aviation Organization and the International Maritime Organization to limit emissions from aviation and marine bunker fuels.

59. Japan is proactively addressing the International Civil Aviation Organization global emission reduction targets by participating in the Carbon Offsetting and Reduction Scheme for International Aviation and implementing comprehensive measures across the aviation sector. These measures include forming committees to promote the use of sustainable aviation fuel, enhancing air navigation services and introducing new technologies in aircraft operations. In addition, Japan is focusing on reducing CO₂ emissions at airports by implementing energy-saving systems and transforming airports into renewable energy hubs. These efforts are supported by a revised Aviation Law and collaborative efforts between the Government, the private sector and other stakeholders to ensure the aviation sector's alignment with long-term decarbonization goals.

60. Japan is also actively implementing the International Maritime Organization GHG reduction strategies in shipping. This includes reviewing its 2018 strategy (by 2023) and introducing efficiency and carbon intensity measures in January 2023 to decarbonize shipping. Aiming for carbon neutrality by 2050, Japan is leading discussions on market mechanisms for GHG reductions. Japan's project on developing next-generation ships, which started in October 2021, focuses on developing hydrogen and ammonia-fuelled zero emissions ships, with demonstration operations beginning in 2026 for ammonia and 2027 for hydrogen.

61. Further information on how Japan strives to implement its commitments under Article 3, paragraph 14, of the Kyoto Protocol in such a way as to minimize adverse social,

environmental and economic impacts on developing country Parties was reported in the 2022 annual submission and updated in the NC8. Japan actively supports sustainable economic growth in developing countries, particularly those in the Middle East and members of ASEAN, by providing technical assistance covering the energy and environmental sectors. This includes the development of energy-saving and renewable energy institutions, human resource development, and the launch, in May 2021, of the Asia Energy Transition Initiative for ASEAN countries' energy transitions. Japan also collaborates with the International Renewable Energy Agency to support climate-vulnerable small island nations. In addition, Japan is focused on advancing CO₂ capture and storage technologies by undertaking demonstration projects and promoting research for cost and safety improvements. In 2021, Japan initiated the Asia Carbon Capture Utilization and Storage Network to foster collaboration and knowledge-sharing on CO₂ capture, utilization and storage in Asia. These measures highlight Japan's comprehensive approach to addressing global warming.

(b) Assessment of adherence to the reporting guidelines

62. The ERT assessed the information reported in the NC8 of Japan and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

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

1. Technical assessment of the reported information

63. On its use of units from LULUCF activities, Japan reported in CTF tables 4 and 4(a) that in 2019 and 2020 it used units to offset 3.8 and 4.2 per cent respectively of its total GHG emissions. Japan reported that it did not use units from market-based mechanisms under the Convention. It reported in CTF tables 4 and 4(b) that it did not use any units from market-based mechanisms in 2019 or 2020. Table 6 illustrates Japan's total GHG emissions, contribution of LULUCF and use of units from market-based mechanisms towards achieving its target.

Table 6
Summary of information on greenhouse gas emissions, use of units from market-based mechanisms and land use, land-use change and forestry by Japan
(kt CO₂ eq)

<i>Year</i>	<i>Emissions excluding LULUCF</i>	<i>Contribution of LULUCF</i>	<i>Use of units from market-based mechanisms</i>	<i>Net emissions including LULUCF and market-based mechanisms</i>
FY 2005 (base year)	1 382 002.89	NA	NA	1 382 002.89
2010	1 303 870.77	NA	NA	1 303 870.77
2011	1 354 551.03	NA	NA	1 354 551.03
2012	1 397 250.73	NA	NA	1 397 250.73
2013	1 409 116.45	-54 330.80	0.0	1 354 785.65
2014	1 360 181.89	-53 569.15	0.0	1 306 612.74
2015	1 321 624.02	-51 987.81	0.0	1 269 636.21
2016	1 304 886.61	-50 057.76	0.0	1 254 828.85
2017	1 291 580.05	-51 361.06	0.0	1 240 218.99
2018	1 247 652.00	-51 143.03	0.0	1 196 508.97
2019	1 212 221.48	-46 625.75	0.0	1 165 595.73
2020	1 150 085.52	-47 946.22	0.0	1 102 139.30
			2020 target ^a	1 329 486.78

Sources: Japan's BR5 and BR5 CTF tables 2(a), 4, 4(a)I, 4(a)II, 4(b) and 6(a), which use GWP values from the AR4.

^a The emission level that corresponds to the 2020 target is calculated on the basis of the GHG emissions excluding LULUCF in the base year and Japan's target (i.e. reduction in emissions compared with the base year).

2. Assessment of adherence to the reporting guidelines

64. The ERT assessed the information reported in the BR5 of Japan and recognized that the reporting is complete and transparent, and thus adheres to 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. Assessment of achievement of the quantified economy-wide emission reduction target

65. In assessing the Party's achievement of its 2020 target on the basis of the information reported in its BR5, the ERT noted that Japan committed to reducing its emissions to 3.8 per cent or more below the 2005 level by 2020 (see para. 27 above). In 2020 Japan's annual total GHG emissions excluding LULUCF were 1,150,085.52 kt CO₂ eq. The ERT noted that Japan did not use units from market-based mechanisms towards the achievement of its 2020 target. The ERT noted that in 2020 the contribution of LULUCF was -47,946.22 kt CO₂ eq, resulting in emissions of 1,102,139.30 kt CO₂ eq, which is 227,347.48 kt CO₂ eq (17.1 per cent) below the emission level corresponding to the 2020 target (see table 6). The ERT concluded that, on the basis of the information reported in the BR5, the total GHG emissions of Japan including the contribution of LULUCF do not exceed the emission level corresponding to the 2020 target, and thus the target has been achieved.

F. Projections

1. Projections overview, methodology and results

(a) Technical assessment of the reported information

66. Japan reported in its BR5 and NC8 updated projections for 2030 relative to actual inventory data for 2020 under the WEM scenario, using GWP values from the AR4. The WEM scenario reported by Japan includes PaMs implemented and adopted in 2013 and policies that will subsequently be implemented by 2030.

67. Japan did not report the WAM or WOM scenarios in its BR5 and NC8 but explained why these scenarios were not estimated. The WAM scenario was not estimated because there are no additional measures planned that are not included in the Plan for Global Warming Countermeasures. The NC8 states that the WOM scenario was not estimated because the energy supply structure without existing emission reduction measures has not been estimated. During the review Japan further clarified that a WOM scenario was not calculated because it is not possible to estimate the indicators used for the projections in the absence of already-implemented PaMs.

68. 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.

69. Japan reported on factors and activities for each sector to help readers understand the projected emission trends. Factors and activities are provided qualitatively and, for some sectors, quantitatively. Key factors and activities contributing to lower projected emissions include the fuel mix for electricity generation in 2030, with renewable energy expected to comprise the largest share, and declining passenger and freight transport. During the review Japan explained that quantitative data for the agriculture and waste sectors could not be disclosed because the information is confidential. The ERT noted that providing quantitative data for these sectors (e.g. for rice cultivation, livestock numbers or the amount of waste incinerated) would provide readers with a better understanding of the emission trends for these sectors.

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

70. The methodology used for the preparation of the projections is different from that used for the preparation of the emission projections for the NC7. Japan provided information on changes since the submission of its NC7 in the assumptions, methodologies, models and approaches used for the projection scenarios. Changes include the use of updated inventory data as the basis of the projections and the adoption of a new methodology for the projection of indirect CO₂ emissions that multiplies projected relevant activity data (e.g. population or transport volume) with the projected emission factor for each emission source.

71. During the review, Japan confirmed that the emission projections for 2030 were undertaken to set the sectoral emission targets included in Japan's NDC. As such, the emission projections were only prepared for 2030 and are aligned with the 2030 target. This alignment means that new PaMs or changes in key underlying assumptions will not necessarily result in a change in the results of the projections. During the review Japan mentioned that it is considering an update to the projections; however, the timing of this update has not been confirmed.

72. To prepare its projections Japan relied on key underlying assumptions relating to population, GDP, transport activity and production of certain products. The assumptions were updated on the basis of the most recent economic developments known at the time of the preparation of the projections. Japan used an energy supply demand model for estimating CO₂ emissions from fuel combustion. The model is made up of a number of submodels, draws on macro inputs and considers a number of factors affecting emissions comprehensively in one model. Projections of emissions from other sectors were estimated using a bottom-up spreadsheet model that is consistent with the national inventory calculations. The model uses projected activity data and emission factors for each source.

73. Sensitivity analyses were not conducted on Japan's emission projections. During the review Japan confirmed that no consideration was made of the sensitivity of the mitigation impact of PaMs to different parameters, so information on the sensitivity of the emission projections was not reported.

(c) Results of projections

74. The projected emission levels under the WEM scenario is presented in table 7 and figure 1.

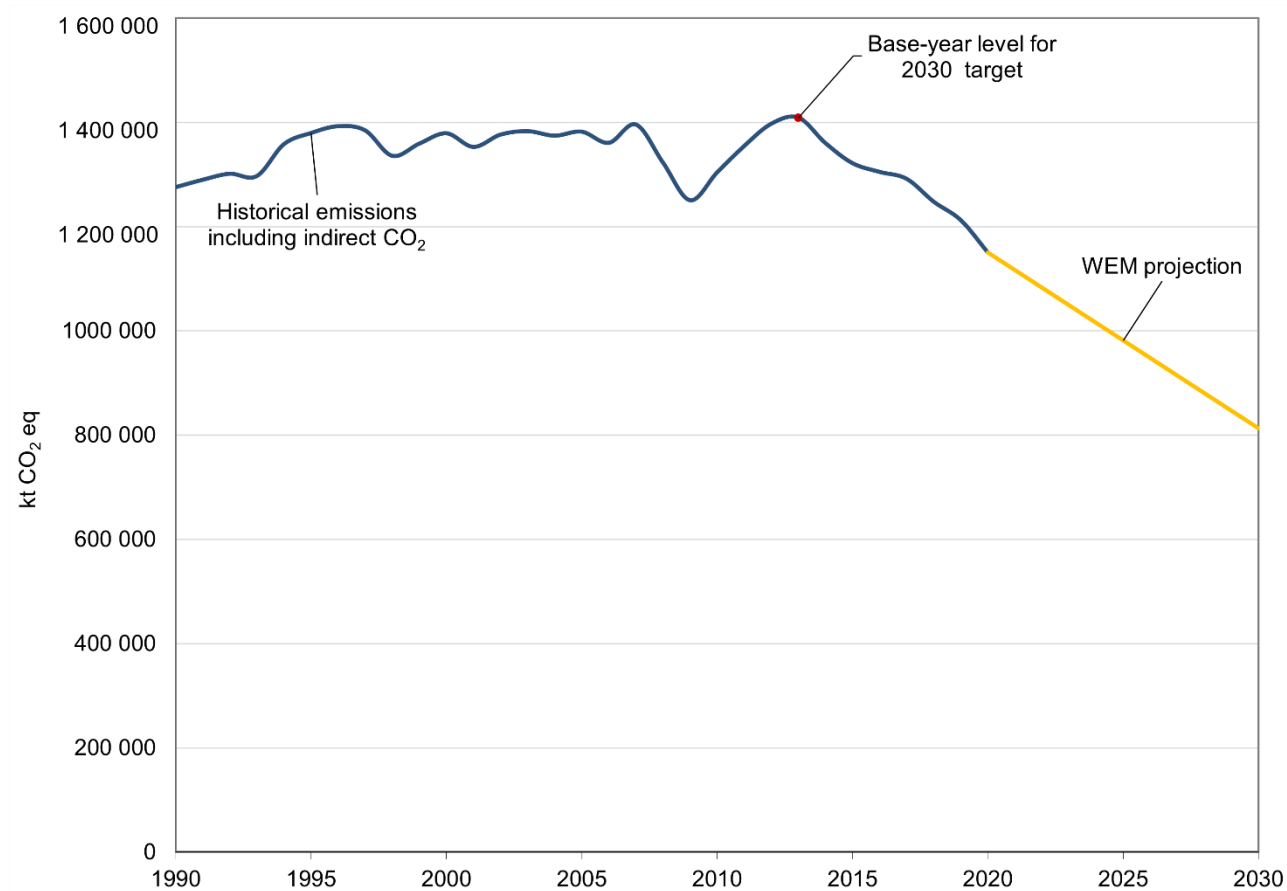
Table 7
Summary of greenhouse gas emission projections for Japan

	<i>GHG emissions (kt CO₂ eq/year)</i>	<i>Change in relation to 1990 level (%)</i>	<i>Change in relation to base- year level (%)</i>	<i>Change in relation to 2020 level (%)</i>
Inventory data 1990	1 210 132.67	NA	NA	NA
Inventory data 2013 (base year for 2030 target)	1 345 131.42	11.2	NA	NA
Inventory data 2020	1 098 075.10	-9.3	-18.4	NA
WEM projections for 2030	774 000.00	-36.0	-42.5	-29.5

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

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

Figure 1
Greenhouse gas emission projections reported by Japan



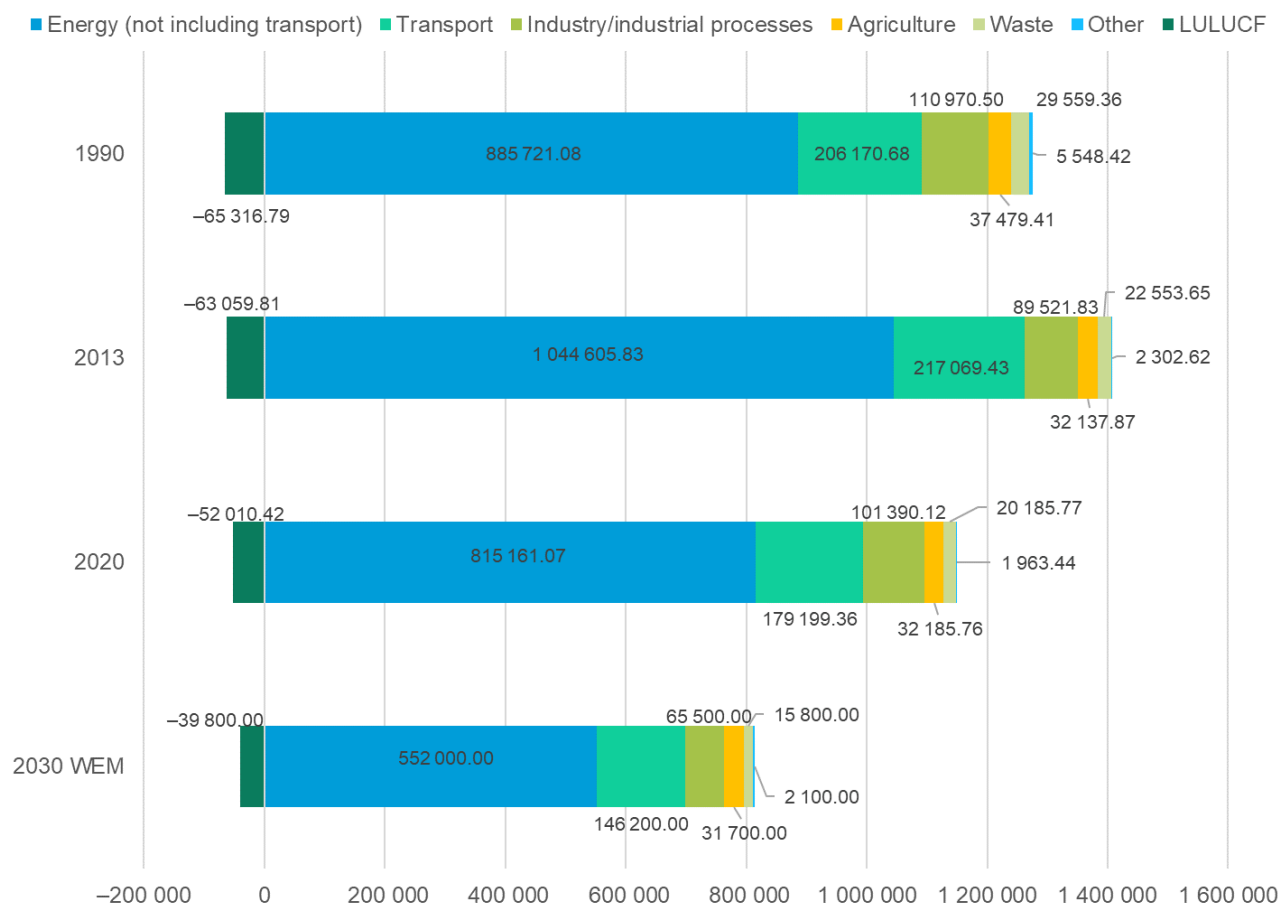
Sources: Japan’s NC8 and BR5 CTF tables 1 and 6 (total GHG emissions excluding LULUCF and including indirect CO₂), which use GWP values from the AR4.

75. Japan’s total GHG emissions excluding LULUCF and including indirect CO₂ are projected under the WEM scenario to decrease by 36.3 per cent below the 1990 level in 2030. When including LULUCF, total GHG emissions including indirect CO₂ are projected under the WEM scenario to decrease by 36.0 per cent below the 1990 level in 2030.

76. Japan also presented the emission projections including LULUCF by applying the LULUCF reporting approach that is used in the preparation of the NDC for accounting against the 2030 target. Total emissions including LULUCF and indirect CO₂ are projected for 2030 to be 45.7 per cent below the 2013 level (the base year for the 2030 target), with a gap towards attaining Japan’s 46.0 per cent emission reduction target that it plans to meet using JCM units.

77. Japan presented the WEM scenario by sector for 2030, as summarized in figure 2 and table 8.

Figure 2
Greenhouse gas emission projections for Japan presented by sector
(kt CO₂ eq)



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

Table 8
Summary of greenhouse gas emission projections for Japan presented by sector

Sector	GHG emissions and removals (kt CO ₂ eq)			Change (%)
	1990	FY 2013 (base year)	2030 WEM	1990–2030 WEM
Energy (not including transport)	885 721.08	1 044 605.83	552 000.00	-37.7
Transport	206 170.68	217 069.43	146 200.00	-29.1
Industry/industrial processes	110 970.50	89 521.83	65 500.00	-41.0
Agriculture	37 479.41	32 137.87	31 700.00	-15.4
LULUCF	-65 316.79	-63 059.81	-39 800.00	39.1
Waste	29 559.36	22 553.65	15 800.00	-46.5
Other	5 548.42	2 302.62	2 100.00	-62.2
Total GHG emissions excluding LULUCF and including indirect CO₂	1 275 449.45	1 408 191.23	813 000.00^a	-36.3
Total GHG emissions including LULUCF and including indirect CO₂	1 210 132.67	1 345 131.42	774 000.00^a	-36.0

Source: Japan's BR5 CTF table 6, which uses GWP values from the AR4.

^a The sum of emissions by sector does not equal the total owing to rounding.

78. According to the projections reported for 2030 under the WEM scenario, the most significant absolute emission reductions are expected to occur in the energy sector, amounting to projected reductions of 37.7 per cent between 1990 and 2030. The reductions are supported by PaMs aimed at reducing the CO₂ emission intensity in power stations.

79. Japan presented the WEM scenario by gas for 2030, as summarized in table 9.

Table 9

Summary of greenhouse gas emission projections for Japan presented by gas

<i>Gas^a</i>	<i>GHG emissions and removals (kt CO₂ eq)</i>			<i>Change (%)</i>
	<i>1990</i>	<i>FY 2013 (base year)</i>	<i>2030 WEM</i>	<i>1990–2030 WEM</i>
CO ₂	1 158 129.44	1 315 342.66	744 900.00	–35.7
CH ₄	44 058.76	30 040.85	26 700.00	–39.4
N ₂ O	32 358.55	21 405.62	17 800.00	–45.0
HFCs	15 932.31	32 120.72	14 500.00	–9.0
PFCs	6 539.30	3 286.27	4 200.00	–35.8
SF ₆	12 850.07	2 075.25	2 700.00	–79.0
NF ₃	32.61	1 617.24	500.00	1 433.3
Indirect CO ₂	5 548.42	2 302.62	2 100.00	–62.2
Total GHG emissions without LULUCF and including indirect CO₂	1 275 449.45	1 408 191.23	813 000.00^b	–36.3
Total GHG emissions with LULUCF and including indirect CO₂	1 210 132.67	1 345 131.42	774 000.00^b	–36.0

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

^a Japan included indirect CO₂ emissions in its projections.

^b The sum of emissions by gas does not equal the total owing to rounding.

80. Projected emissions for 2030 have been updated compared with the projections reported in the NC7 and the BR4, where total projected emissions amounted to 1,079,000 kt CO₂ eq. The updated projections in the NC8 and the BR5 now amount to 813,000.00 kt CO₂ eq for 2030 under the WEM scenario. The reports also include a brief summary of the changes in methodologies used as well as a comparison of the projections by sector and by gas. The ERT noted that additional information, for example describing the primary drivers of the revised outlook for key sectors, would improve the transparency of the reported information. During the review Japan provided additional information on the drivers of the improved outlook, such as updated and new PaMs; a downward revision of key factors such as GDP and steel production; and changes in the projected energy mix.

(d) Assessment of adherence to the reporting guidelines

81. The ERT assessed the information reported in the NC8 and BR5 of Japan 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.2 and II.2.

2. Assessment of the total effect of policies and measures

(a) Technical assessment of the reported information

82. In its NC8 Japan presented the estimated and expected total effect of implemented and adopted PaMs. Information is presented in terms of GHG emissions avoided or sequestered, by gas (on a CO₂ eq basis), in 2030 only.

83. Japan reported that the total estimated effect of its implemented and adopted PaMs is 657,100.00 kt CO₂ eq in 2030. According to the information reported in its NC8, PaMs implemented in the energy sector will deliver the largest emission reductions.

(b) Assessment of adherence to the reporting guidelines

84. The ERT assessed the information reported in the NC8 of Japan and identified an issue relating to completeness and thus adherence to the UNFCCC reporting guidelines on NCs. The finding is described in table I.2.

3. Supplimentarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol

(a) Technical assessment of the reported information

85. As Japan has not established an emission reduction target for the second commitment period of the Kyoto Protocol, it is not required to provide supplementary information pertaining to the utilization of mechanisms under Articles 6, 12, and 17 of the Kyoto Protocol.

(b) Assessment of adherence to the reporting guidelines

86. The ERT assessed the information reported in the NC8 of Japan and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

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

1. Technical assessment of the reported information

(a) Approach and methodologies used to track support provided to non-Annex I Parties

87. In its NC8 and BR5 Japan reported information on its provision of financial, technological and capacity-building support to non-Annex I Parties.

88. Japan has provided support that it considers to be “new and additional”. Its definition of “new and additional” is financial resources newly committed or disbursed during the reporting period in FY 2019 and FY 2020 that are aimed at addressing the impacts of climate change in developing countries. Japan’s process for determining resources to be “new and additional” follows that definition by classifying as new any funding approved by the National Diet (legislative body) or by decisions of the Cabinet or committed through international agreements but not yet disbursed during the reporting period. The Diet approves new funding on an annual (fiscal year) basis. Japan clearly differentiates between committed funds, which are approved in previous years but not entirely disbursed, and disbursed funds, whereby funds or goods have been fully transferred. Japan’s climate change policy is guided by GWPH, which is coordinated by the Cabinet Office of Japan, and which formulates and implements policies and strategies to achieve national climate goals.

89. Japan reported on the support that it has provided to non-Annex I Parties, distinguishing between support for mitigation and adaptation activities and identifying the capacity-building elements of such support. The Party counts projects that contribute to climate change mitigation and adaptation in developing countries using the OECD Rio markers. It applies a coefficient to projects in order to account for their share of climate change objectives: for example, 100 per cent is applied to projects with a main climate change objective and 50 per cent is applied for those with significant climate-specific objectives. For multilateral channels, climate-specific amounts are calculated according to imputed shares of the FY 2019–FY 2020 average calculated by OECD DAC.

90. Japan’s national approach to tracking the provision of support, including information on indicators, delivery mechanisms used and allocation channels tracked is coordinated by the Ministry of Foreign Affairs. The main types of climate change finance provided by Japan are grant aid, concessional loans, technical assistance, contributions to international organizations, other official flows and private finance. The Ministry of Foreign Affairs is responsible for gathering data related to support for developing countries from relevant ministries and institutions. It also compiles information on financial, technological and capacity-building support for climate change, using the Rio markers, which is a change to its approach since the previous report. In that report, projects had to comply with a list of mitigation, adaptation and cross-cutting sector actions in 10 broad socioeconomic sectors in order to be considered climate specific, and the initial evaluation was made by the implementing agencies and subsequently validated by the Ministry of Foreign Affairs.

91. Japan's methodology and underlying assumptions used for collecting and reporting information on financial support involve the application of the coefficient method, as described in para. 89 above. The Party also emphasized in its NC8 and BR5 that its approach to supporting developing countries is based on a mechanism that ensures the effective use of public finance while facilitating the mobilization of private finance. It also highlighted the importance of leveraging private finance, especially for large-scale infrastructure projects with a focus on high energy efficiency and renewable energy installations, as well as electric power transmission facilities. Japan mobilized more than USD 3.8 billion in private finance for developing countries during FY 2019 and FY 2020. The ERT noted the fact that Japan added a new chapter on private finance as another improvement on the previous submission.

92. Japan employs a complex approach to climate finance, which involves utilizing multilateral channels, bilateral/regional initiatives and public-private partnerships. Challenges faced by the Party include balancing resources between mitigation and adaptation, ensuring transparency in financial tracking and continually mobilizing private finance. Although Japan provided a list of projects, to enhance readers' further understanding it could have provided links to each one or to a database compiling this information. During the review the Party explained that the list of projects is too long to provide the requested links, and doing so would be too time-consuming. It also emphasized the institutional collaboration and stakeholder engagement, which suggests a comprehensive approach. In addition, the Party explained that it attempts to ensure that the requests and needs of recipient countries are adequately addressed by working with its institutions abroad, such as embassies or JICA. The need for ongoing efforts to attract private investment and address both mitigation and adaptation needs underscores the dynamic nature of Japan's climate finance strategy.

(b) Financial resources

93. Japan reported in its NC8 and BR5 information on its provision of financial support to non-Annex I Parties as required under the Convention, including on financial support committed and disbursed, allocation channels and annual contributions. Japan specified, for all its annual financial contributions, the amount of financial support provided and committed, the types of support provided, the types of financial instrument used (e.g. grant aid, concessional loans and technical assistance) and the allocation channels. Japan reported that in 2020 it achieved its national climate finance commitment established at COP 21 (i.e. to provide JPY 1.3 trillion annually from both the public and private sectors).

94. Japan described how it seeks to ensure that the resources it provides to non-Annex I Parties effectively address their adaptation and mitigation needs. Japan implemented projects in approximately 150 countries globally during the reporting period. The NC8 and BR5 highlight the use of targeted support for vulnerable nations, explaining that Japan's support strategy is cooperative and demand-driven. The needs of developing countries are identified during close consultations with national governments, using official channels such as Japanese embassies. The Party collaborates closely with recipient countries and international partners to tailor projects that help overcome specific challenges and promote sustainable development. The diversity of channels of assistance ensures flexibility, which means accommodating local economic situations. An example of this is the Just Energy Transition Partnership, through which Japan supported decarbonization efforts involving the introduction of renewable energy projects in countries such as Indonesia and Viet Nam. Another example is the support provided on adaptation to small island developing States, owing to their increased vulnerability to the negative impacts of climate change, which also helps to meet the adaptation and mitigation needs of non-Annex I Parties. Table 10 summarizes the information reported by Japan on its provision of financial support.

Table 10
Summary of information on provision of financial support by Japan in 2019–2020
(Millions of United States dollars)

<i>Allocation channel of public financial support</i>	<i>Disbursement in 2019–2020</i>
Official development assistance	25 380.37
Climate-specific contributions through multilateral channels, including:	1 881.80
GEF	364.32
GCF	725.83
Trust Fund for Supplementary Activities	2.41
Other multinational climate change funds	0.00
Financial institutions, including regional development banks	744.40
United Nations bodies	44.84
Climate-specific contributions through bilateral, regional and other channels	18 934.89

Sources: Japan’s BR5 CTF tables and Query Wizard for International Development Statistics, available at <http://stats.oecd.org/qwids/>.

95. Japan’s climate-specific public financial support¹² totalled USD 20.8 billion in 2019–2020, representing a decrease of 0.99 per cent since the BR4 (2017–2018) due to currency fluctuations.¹³ With regard to future financial pledges aimed at enhancing the implementation of the Convention by developing countries, Japan has committed to providing USD 69.63 billion during 2021–2025. During the review Japan shared its announcement, made during COP 28, that it pledged to contribute USD 10 million to commence the operationalization of the Loss and Damage Fund.¹⁴

96. Japan contributed through multilateral channels USD 1,881 million in 2019–2020: USD 950 million (JPY 103.2 billion) in FY 2019 and USD 930 million (JPY 99.8 billion) in FY 2020. The contributions were made to specialized multilateral climate change funds, such as the GEF, the GCF and the UNFCCC Trust Fund for Supplementary Activities. This represents an increase of climate-specific multilateral support since the BR4. Japan announced, at COP 26, that it would double support for adaptation as part of its strategy to fulfil the developed countries climate finance mobilization goal. In addition, during the review, Japan highlighted the regular dialogues held with the GCF to help align priorities and conditions related to its disbursement to the GCF. The Party also shared that Mitsubishi UFJ Financial Group was reaccredited as a GCF accredited entity in October 2023. This institution is leading the Project GAIA, a blended finance platform for adaptation and mitigation investments in 19 of the most vulnerable countries in the world.

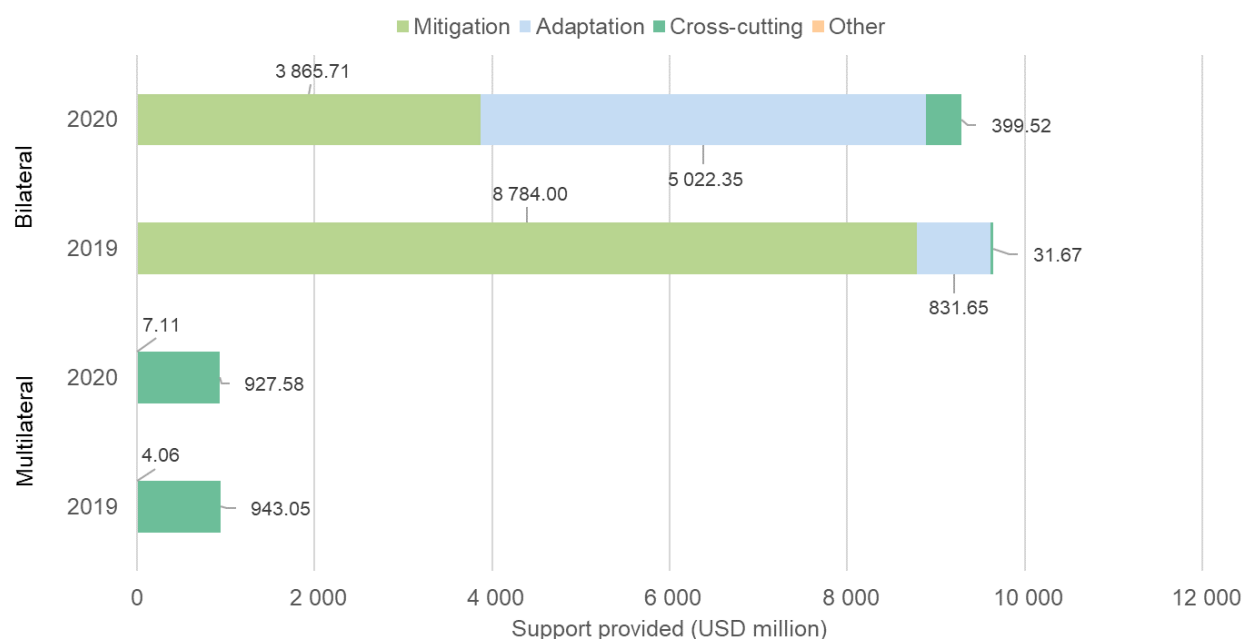
97. Information on financial support from the public sector provided through multilateral and bilateral channels and the allocation of that support by target area is presented in figure 3 and table 11.

¹² For the remainder of this chapter, the term “financial support” means climate-specific financial support, unless otherwise noted.

¹³ Comparisons with data from previous years have been calculated directly without adjusting for inflation, which implies that the nominal exchange rate does not include inflation.

¹⁴ See https://www.mofa.go.jp/ic/ch/pageite_000001_00021.html.

Figure 3
Provision of support by Japan in 2019–2020



Sources: Japan's BR5 CTF tables 7, 7(a) and 7(b).

Table 11
Summary of information on channels of financial support reported by Japan
(Millions of United States dollars)

Allocation channel of public financial support	Amount disbursed in 2019–2020	Amount disbursed in 2017–2018	Change (%) ^a	Share of total (2019–2020) (%)
Detailed information by type of channel				
Multilateral channels				
Mitigation	11.17	49.58	–77.5	0.6
Adaptation	0.00	1.19	–	–
Cross-cutting	1 870.63	398.06	369.9	99.4
Other	0.00	0.00	–	–
Total multilateral	1 881.80	448.83	319.3	100.0
Bilateral channels				
Mitigation	12 649.70	17 589.25	–28.1	66.8
Adaptation	5 854.00	2 105.83	178.0	30.9
Cross-cutting	431.19	681.36	–36.7	2.3
Other	0.00	0.00	–	–
Total bilateral	18 934.89	20 376.44	–7.1	100.0
Total multilateral and bilateral	20 816.69	20 825.27	–0.04	100.0

Sources: Japan's BR5 CTF tables 7, 7(a) and 7(b), and the report on the technical review of the BR4 of Japan for 2017–2018 data.

^a Note that variances in contribution amounts from year to year can occur that are not reflective of trends, owing to factors such as the biennial or triennial contribution cycles of some multilateral funds, the timing of approvals for individual bilateral projects or changes in exchange rates.

98. Japan reported detailed information on the total financial support provided through bilateral and regional channels in 2019 (USD 9.6 billion) and 2020 (USD 9.3 billion), amounting to a total of USD 18.9 billion in 2019–2020. During the reporting period, Japan placed a particular focus on bilateral cooperation, supporting projects in countries such as Mozambique, the Niger and Pakistan, to which it allocated USD 93.2 million.

99. The NC8 and the BR5 provide information on the types, sectors and instruments of support provided. The information reported shows that in 2019–2020 the average shares of bilateral and regional financial support allocated to mitigation, adaptation and cross-cutting

projects were 66.8, 30.9 and 2.3 per cent respectively. In 2019–2020 the majority of financial contributions through bilateral and regional channels were allocated to the energy, transport, agriculture, industry, forestry, water and sanitation, and cross-cutting sectors, mostly in the Asia-Pacific region, although there were projects in Africa and Latin America and the Caribbean. Most of the bilateral support (approximately 80 per cent) is concentrated in Central Asia, Asia and the Pacific, and South Asia. Cooperation focuses on promoting renewable energy and establishing early warning systems to improve countries' capacities to prevent or recover from natural disasters. Japan works closely with partners in Asia, through regional activities and guided by the ASEAN working group on climate change.

100. Japan explained that private finance is mainly mobilized for exporting goods, technologies and services in the environment and energy sectors, encompassing commercial activities and other relevant areas. It also reported on how it uses public funds to promote private sector financial support for developing countries to increase mitigation and adaptation efforts in developing countries by leveraging mechanisms such as co-financing with the private sector, exemplified by initiatives such as the JBIC co-financing and trade insurance provided by NEXI. However, Japan reported on the difficulty of collecting information and reporting on private financial flows leveraged by bilateral climate finance for mitigation and adaptation activities in non-Annex I Parties. This challenge arises because of the lack of information on initiatives undertaken by the private sector, which has an impact on the comprehensive reporting of such financial flows.

101. Policies aimed at scaling up private investment include co-financing initiatives and providing trade insurance to mitigate risks associated with climate-related projects. Japan has implemented co-financing arrangements with the private sector through entities such as JBIC and NEXI. The provision by JBIC of a USD 100 million loan, for the project Credit Line for Vietcombank under GREEN Operations, exemplifies Japan's success in mobilizing private finance for sustainability projects. Another example of Japan's support is a project that installed solar panels and batteries for the theatre, laboratory and maternity ward of Metoro Health Centre, in Mozambique, as an exclusive and sustainable electricity supply. Japan also carried out a project in Bangladesh to enhance disaster risk reduction capacity in schools and communities in the Dhaka North City region.

(c) Technology development and transfer

102. Japan reported on its measures and activities related to technology transfer, access and deployment benefiting developing countries, including activities undertaken by the public and private sector. It has actively engaged in quantitatively evaluating its contributions to GHG emission reductions in collaboration with 22 partner countries and supporting over 200 projects in areas such as renewable energy, waste management and environmental infrastructure. This collaborative effort not only facilitates the diffusion of technologies but also fosters the development of local capacities and expertise within the recipient countries. Although Japan's efforts in supporting technology transfer and capacity-building are evident in its NC8 and BR5, the ERT noted that there is a lack of specific information regarding the enhancement of endogenous capacities and technologies. For example, Japan may wish to include more detailed insights into the support it offers to strengthen domestic capacities, including examples of successful initiatives and methodologies for reporting such efforts. Furthermore, information regarding endogenous technology development in developing countries might be improved by including more details on the Party's approach to and understanding of supporting endogenous technology development and how it is developed in developing countries; for example, Japan may wish to develop strategies to identify local technology in partner countries and develop it.

103. Japan focused the provision of its technology transfer support on the countries located in Asia, Africa and South America through mitigation and adaptation projects focused on the energy and transportation sectors. Of the 61 activities reported, 41 were focused on energy, while the others were distributed among cross-cutting activities to address disaster prevention, as well as mitigation in the agriculture and transport sectors. In addition, 53 activities have already been implemented and 8 are reported as planned. Reported activities by Japan were supported mostly by public funding and were carried out by both the public and private sectors. Relevant projects highlighted during the review include the installation of a 29 MW

binary power generation plant at the Palayan Geothermal Power Plant (a JCM model project) and the installation of early warning systems in countries such as Pakistan. These initiatives help to promote human well-being and are aligned with the broader objectives of the Sustainable Development Goals.

104. Since its previous NC and BR, Japan has implemented additional measures and activities, demonstrating its ongoing commitment to addressing climate change. Japan also described success stories in relation to technology transfer, and in particular measures taken to promote, facilitate and finance the transfer and deployment of climate-friendly technologies. In addition, the Initiative on Fluorocarbons Life Cycle Management described in the report focuses on strengthening and promoting capacity-building in developing countries by promoting an understanding of the importance of life cycle management of fluorocarbons. Another success highlighted by the Party is the Partnership to Strengthen Transparency for Co-Innovation (known as PaSTI), which supports the development of domestic legislation on GHG monitoring and reporting systems in Asia-Pacific countries and is complemented by the Japan ASEAN Integration Fund regional activities. Japan emphasized the positive impact of workshops on green finance and the strengthening of knowledge about and capacity to implement reporting methodologies in partner countries. The ERT noted that PaSTI is offered in conjunction with the JCM. During the review Japan shared details on another example of a successful project launched in 2019, namely AP-PLAT, which promotes climate change adaptation at a regional level by means of providing scientific information and tools, as well as encouraging capacity-building.

105. Japan's experience in promoting technology transfer involves a mix of innovative strategies, collaboration and international engagement. For example, the JCM is a public and private sector effort established in 2013 that encompasses collaboration with 22 partner countries and support for over 200 projects. In particular, during the reporting period, more than 70 registered projects, with 31 projects issued JCM credits. By facilitating international cooperation and knowledge exchange, the JCM contributes to the effective implementation of decarbonization technologies, as well as the implementation of emission reduction projects in developing countries. Partner countries include Azerbaijan, Chile, Kenya, Saudi Arabia and Viet Nam. Project sectors include energy efficiency, REDD+, waste handling and disposal, and the transportation sector. JCM projects also include knowledge-sharing, training programmes and workshops for strengthening institutional arrangements and preparing measurement, reporting and verification systems, aimed at enhancing the partner countries' institutional capacity, as well as their capacity under the enhanced transparency framework to implement and monitor climate change mitigation projects effectively. The Party is currently adjusting its JCM strategy to align it with Article 6, paragraph 2, of the Paris Agreement, which provides guidance on cooperative approaches.

106. Japan identified some information gaps, such as those between State and non-State actors, which underscores the need for continued efforts to overcome barriers and ensure the successful transfer and deployment of climate-friendly technologies in developing countries.

(d) Capacity-building

107. Japan reported on its capacity-building support for mitigation, adaptation and technology that responds to the existing and emerging needs identified by non-Annex I Parties. It described individual measures and activities related to capacity-building support in textual and tabular format. Japan's capacity-building support responds to the existing and emerging needs of non-Annex I Parties through country-driven approaches and needs assessments conducted in collaboration with partner nations.

108. Japan has supported climate-related capacity development activities relating to technology transfer, mitigation, climate finance and resilience. Since the BR4, the focus of support has remained the same, targeting mainly climate risk evaluation methods, institutional arrangements for climate action planning and improvements for more accurate GHG inventory reporting. Japan's support has responded to the existing and emerging capacity-building needs of non-Annex I Parties by emphasizing national ownership and country-driven demand, promoting stakeholder participation and cooperation between donors and across programmes, and ensuring impact assessment and monitoring. Relevant priorities, approaches and programmes implemented include promoting technology

innovation, strengthening climate-resilient infrastructure, enhancing financial mechanisms and addressing sector-specific challenges. Through the Paris Agreement Article 6 Implementation Partnership, Japan promotes capacity-building by developing tools for authorization, reporting, tracking and disseminating good practices and delivering mutual learning initiatives. During COP 28, Japan announced a capacity-building support package on the implementation of Article 6 of the Paris Agreement to enhance understanding of Article 6, including its objectives, benefits and contribution to NDCs, help in establishing legal frameworks in partner countries, support reporting efforts and provide assistance for tracking emission reduction credits and the use of registries.

109. Japan's approach involves identifying the capacity-building needs of non-Annex I Parties through a collaborative process that emphasizes national ownership, stakeholder participation and country-driven demand. Adaptability to evolving needs and ongoing monitoring helps to ensure the effectiveness of programmes. An example of a successful collaboration is the AP-PLAT initiative, which was established to support climate change adaptation in the Asia-Pacific region by enhancing participants' decision-making capacity and providing stakeholders with a range of support tools.

2. Assessment of adherence to the reporting guidelines

110. The ERT assessed the information reported in the BR5 and NC8 of Japan and identified issues relating to completeness 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.3.

3. Reporting on finance, capacity-building and technology transfer information related to the Kyoto Protocol

(a) Technical assessment of the reported information

111. In its NC8 Japan reported its activities, actions and programmes undertaken in fulfilment of its commitments under Article 10 of the Kyoto Protocol. Japan provided information on steps taken to promote, facilitate and finance the transfer of technology to developing countries and to build their capacity in order to facilitate implementation of Article 10 of the Kyoto Protocol.

112. Japan's Actions for Cool Earth initiative, launched in November 2013, represents a comprehensive effort to combat global climate change. This initiative encompasses the development and global dissemination of environmental and energy technologies, supported by proactive diplomatic engagement and a focus on innovation. Key to this approach is Japan's collaboration with developing countries, where it leverages its technological expertise to design projects addressing specific local needs, thereby contributing to global GHG emission reductions. The Innovation for Cool Earth Forum further facilitates this effort, serving as a global platform for cross-sectoral collaboration. Japan's commitment extends to both climate change adaptation and mitigation in developing countries. Financial support for adaptation projects is diversified by involving entities such as JICA, JBIC and NEXI, and includes enhancing climate risk assessments and helping to establish national adaptation plans. For mitigation, Japan promotes low-carbon technologies globally, utilizing mechanisms such as the JCM, which has already facilitated over 200 emission reduction projects. Moreover, Japan assists with building institutional capacities in developing countries by offering support to develop and evaluate climate action plans, drawing on its own experience and collaborations with specialized organizations.

113. Japan provided information on its implementation of Article 11 of the Kyoto Protocol, detailing projects undertaken in about 150 countries during 2019–2020. These initiatives, coordinated through Japanese embassies and JICA offices, were developed in response to the specific needs of developing countries. Japan's support encompasses grant aid, concessional loans and technical assistance adapted to local economic contexts and project requirements. The Party described how its contributions are "new and additional" (see para. 88 above).

(b) **Assessment of adherence to the reporting guidelines**

114. The ERT assessed the information reported in the NC8 of Japan and recognized that the reporting is complete and transparent, and thus adheres to the reporting guidelines for supplementary information. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

H. Vulnerability assessment, climate change impacts and adaptation measures

1. Technical assessment of the reported information

115. In its NC8 Japan 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. Japan provided a description of climate change vulnerability and impacts for 71 subcategories across the seven sectors: agriculture, forestry and fisheries; water environment and water resources; natural ecosystems; natural disasters and coastal areas; human health; industrial and economic activities; and life of citizenry and urban life, and highlighted the adaptation response actions taken and planned at different levels of government. For around 30 per cent (20/71) of subcategories, the significance of the impacts and/or urgency for adaptation have been revised upward since the NC7 and BR4. The Party also reported 11 climate change vulnerabilities for the first time in the NC8. Japan highlighted a large number of adaptation actions related to specific national circumstances, namely the country’s large diversity of climate zones resulting from the vast stretch from north to south. However, the information on methodologies for assessment was not provided and the structure of the Party’s reporting in its NC8 did not fully follow the structure outlined in paragraph 47 of the UNFCCC reporting guidelines on NCs when reporting information on (a) climate modelling, projections and scenarios; (b) assessment of risks and vulnerability to climate change; (c) climate change impacts; (d) domestic adaptation policies and strategies; (e) monitoring and evaluation framework; and (f) progress and outcomes of adaptation action. In this regard, Japan may wish to include in its next NC information on the methodologies and guidelines used for assessing vulnerabilities and the impacts of adaptation measures, as well as information on climate modelling, projections and scenarios used and on the progress of adaptation action.

116. Japan has established well-organized institutional arrangements to address climate risks and vulnerabilities. These arrangements integrate governmental institutions at all levels, as well as cooperation between the public and private sectors and scientific institutes.

117. Japan has addressed adaptation matters through the adoption of the Climate Change Adaptation Act (Act 50 of 2018) together with the implementation of the Climate Change Adaptation Plan (2021), the organization of the Climate Change Adaptation Promotion Council, the formulation of local climate change adaptation plans and the establishment of local climate change adaptation centres. Japan published the second *Assessment Report on Climate Change Impacts in Japan* in 2020, which will be updated approximately every five years. This assessment provided further direction to government agencies on enhancing preparedness for climate change. During the review, Japan highlighted its efforts on combating heat-related illness, tackling weather-related disasters and promoting international cooperation. Table 12 summarizes the information on vulnerability and adaptation to climate change presented in the NC8 of Japan.

Table 12
Summary of information on vulnerability and adaptation to climate change reported by Japan

<i>Vulnerable area</i>	<i>Examples/comments/adaptation measures reported</i>
Agriculture and food security	<i>Vulnerability:</i> decrease in yields and decline in quality of major crops due to high temperatures, changes in precipitation and increase in outbreaks of pests and diseases; shortage of irrigation water in early spring; decrease in milk yields and decline in the quality of beef.

Vulnerable area	Examples/comments/adaptation measures reported
Biodiversity and natural ecosystems	<p><i>Adaptation:</i> development and dissemination of heat-tolerant cultivars; shifting the rice-planting season; soil and water management of rice paddies; using plant growth regulators; using water sprinklers; installing reflective sheets to reduce the occurrence of peel puffing, poor colouring and sunburn of fruits; improving the barn environment for livestock.</p> <p><i>Vulnerability:</i> changes in distribution, plant community types and species composition; earlier and shorter flowering seasons in alpine/subalpine zones; northward and upward expansion of distribution of some animal and plant species; reduction in or local disappearance of suitable habitats for some species of bird, fish etc.; reduced supply of ecosystem services; transition from seaweed bed ecosystems to coral reefs in temperate zones and possible disappearance of suitable areas for the growth of coral reefs.</p> <p><i>Adaptation:</i> promotion of the establishment and management of natural sites under the “other effective area-based conservation measures” (OECMs) approach; promotion of conservation and management of virgin forest and biodiversity conservation; creation of ecological networks; monitoring and investigation of climate change impacts on coastal ecosystems.</p>
Drought	<p><i>Vulnerability:</i> more severe droughts due to an increase in rainless days and a growing tendency for polarization of drought risk and flood risk.</p> <p><i>Adaptation:</i> optimal use of existing facilities; use of rainwater and reclaimed wastewater; assessments of drought risks and formulation of drought response action plans.</p>
Fisheries	<p><i>Vulnerability:</i> change in the distribution areas of migratory species; increase in the risk of fish and shellfish mortality due to the increased water temperatures in summer; decrease in habitat and distribution densities of some fish species.</p> <p><i>Adaptation:</i> improve projections of fish stock abundance and resource management; research and development of technologies for prediction and control of harmful algal blooms; development of high-water-temperature-tolerant fish breeding.</p>
Human health	<p><i>Vulnerability:</i> increase in mortality and the number of patients suffering heat-related illnesses.</p> <p><i>Adaptation:</i> dissemination of heat stroke alert information to older people and other targeted populations; designation and utilization of heat evacuation facilities; establishment of a Heat Illness Prevention Council; implementation of a heat illness action plan.</p>
Infrastructure and economy	<p><i>Vulnerability:</i> increase impact of extreme weather events on infrastructure and critical services including electricity, water supply, transportation, communication and waste treatment.</p> <p><i>Adaptation:</i> improvement of the resilience of facilities and systems; use of green infrastructure.</p>
Natural disasters and coastal areas	<p><i>Vulnerability:</i> increase in frequency and intensity of water-related disasters such as floods, combined sediment and storm surges; increase in damage, insurance payments and population affected, owing to increases in the frequency and strength of heavy rain; extreme storm surges and high waves.</p> <p><i>Adaptation:</i> implementation of the River Basin Disaster Resilience and Sustainability by All initiative; installation of flood and sediment control dams; strengthening the function of existing facilities; distribution of information on local flood disaster risks; strengthening weather observation systems and early warning systems.</p>
Water environment and water resources	<p><i>Vulnerability:</i> increase of water temperatures in water bodies; extension of the saltwater intrusion period; water shortages associated with less rain and lack of irrigation water in spring due to earlier snow melt; increased agricultural and urban water demand.</p> <p><i>Adaptation:</i> reduction of inflow loads; implementation of water quality conservation measures; monitoring of water quality; assessments of water supply safety levels.</p>

118. Japan provided a detailed description of international adaptation activities, including a doubling of its assistance for adaptation to climate change (to approximately USD 14.8 billion) announced at COP 26. Japan also mentioned the establishment of the AP-PLAT initiative, which aims to support climate change adaptation in collaboration with countries and relevant institutions in the Asia-Pacific region, promoting technical cooperation in the observation, monitoring, projection and assessment of climate change impacts and adaptation

and disaster risk recovery. Japan also provided information on bilateral cooperation with developing countries on adaptation, such as supporting Micronesia (Federated States of) and Samoa on the development of climate risk information related to storm surges and high tides, and supporting Indonesia and Viet Nam to conduct risk assessments on the impact of climate change on rice production.

2. Assessment of adherence to the reporting guidelines

119. The ERT assessed the information reported in the NC8 of Japan and identified issues relating to completeness and thus adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table I.4.

I. Research and systematic observation

1. Technical assessment of the reported information

120. In its NC8 Japan provided information on its general policy and funding relating to research and systematic observation and both domestic and international activities, including contributions to the World Climate Programme, the International Geosphere–Biosphere Programme, the Global Climate Observing System and the IPCC.

121. Japan has implemented and planned 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. Japan has led, in the context of the Group on Earth Observation, the formulation of the post-2025 strategy, Earth Intelligence for All. This concept of Earth Intelligence has been introduced for the first time by Japan. Regarding research activities, these include projects on understanding and making projections of global warming; assessing the impacts of global warming on the environment, society and economy; and identifying adaptation measures as well as actions to reduce GHG emissions. In addition, regarding collaboration with the IPCC, Japan’s key contributions to the preparation of the AR6 consisted of reducing the level of uncertainties in the climate models, notably those related to the indirect effect of aerosols, and conducting an experiment using the CMIP6 model.

122. However, although Japan presented information on funding for research and systematic observation in the NC8 the information provided is not sufficiently detailed as there are no financial details on the research and systematic observation actions undertaken, and additional information would therefore enhance the completeness of this topic. During the review, Japan also indicated, in response to a question raised by the ERT, that there are no identified barriers to free and open international exchange of data and information and therefore no additional actions have been explored.

123. In terms of activities related to systematic observation, Japan reported on national plans, programmes and support for ground- and space-based climate observing systems, including satellite and non-satellite climate observation. Japan also reported on challenges, such as those related to the maintenance and methods used in international observation and monitoring projects, that are likely to jeopardize a consistent and comprehensive observation system. The Implementation Policy of Earth Observations for 10 years (which is based on the Earth observation strategy and the sixth Science, Technology and Innovation Basic Plan) is among the national policies contributing to global observation systems and data management efforts. These national policies, strategies and plans cover activities relating to atmospheric and climate observation systems, and ocean, terrestrial and cryosphere observation systems for climate.

124. The NC8 reflects actions taken to support capacity-building and the establishment and maintenance of observation systems and related data and monitoring systems in developing countries. Japan provided funding for scientists from developing countries working on global climate change research. Japan has conducted joint research on global environmental observation and promoted technical transfer with the aim of building observation networks in Asia, notably in areas lacking such facilities. Regarding the use of satellite data for

improving the transparency of GHG emissions reporting, Japan is supporting efforts to use data from its Greenhouse Gases Observing Satellite (GOSAT) series. From this perspective, Japan has provided support to the Government of Mongolia regarding the estimation of CO₂ emissions for the energy sector in the context of the country's second biennial update report. Furthermore, through the Data Integration and Analysis System, Japan is providing global monitoring information likely to inform decision-making based on global observation information.

2. Assessment of adherence to the reporting guidelines

125. The ERT assessed the information reported in the NC8 of Japan and identified issues relating to completeness and thus adherence to the UNFCCC reporting guidelines on NCs. The findings are described in table I.5.

J. Education, training and public awareness

1. Technical assessment of the reported information

126. In its NC8 Japan provided information on its actions relating to education, training and public awareness at the domestic and international level. 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 non-governmental organizations; and its participation in international activities. On the basis of the information provided, the ERT concluded that environmental topics, including climate change, are well integrated in the education system of Japan, notably in the public school system.

127. Japan reported information on a diverse array of activities relating to education and training, such as the promotion of environmental education and learning in schools and at the community level, as well as the promotion of Education for Sustainable Development activities through the UNESCO Future Co-Creation Platform programme. This programme is a joint platform for UNESCO activities carried out in Japan with the aim of connecting stakeholders from different backgrounds, communities and generations. This programme also promotes mutual exchange with UNESCO activities overseas.

128. On public awareness, Japan reported summary information on the development of national campaigns, promotion of global warming countermeasures and green procurement, provision of information related to nuclear power, and information on the current status and predictions of global warming activities through UNESCO-associated schools. Regarding nuclear energy, Japan is focusing on improving public understanding of the resources as well as on improving the related policy.

129. On public participation, Japan encourages the participation of women in climate policy formulation processes and provides support to non-governmental organizations involved in environmental protection, including those campaigning on climate change.

2. Assessment of adherence to the reporting guidelines

130. The ERT assessed the information reported in the NC8 of Japan and identified an issue relating to completeness and thus adherence to the UNFCCC reporting guidelines on NCs. The finding is described in table I.6.

III. Conclusions and recommendations

131. The ERT conducted a technical review of the information reported in the NC8 of Japan 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 Japan.

132. The information provided in the NC8 includes all of the elements of the supplementary information under Article 7, paragraph 2, of the Kyoto Protocol. Japan

reported on the national system, the national registry, complementarity relating to the mechanisms pursuant to Articles 6, 12 and 17 of the Kyoto Protocol, PaMs in accordance with Article 2 of the Kyoto Protocol, domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures, information under Article 10 of the Kyoto Protocol, and financial resources provided to developing country Parties. Supplementary information under Article 7, paragraph 1, of the Kyoto Protocol on the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol was provided by Japan in its 2022 annual submission.

133. The ERT conducted a technical review of the information reported in the BR5 and the BR5 CTF tables of Japan 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 emissions and removals related to the Party's quantified economy-wide emission reduction target; assumptions, conditions and methodologies related to the attainment of the target; the progress of Japan towards achieving its target; and the Party's provision of support to developing country Parties.

134. Japan's population is projected to decline from approximately 126 million in 2020 to around 98–106 million by 2050, affecting energy consumption and associated CO₂ emissions. However, urbanization and the increase in single-person households might also influence the GHG dynamics. Geographically, Japan's diverse climate zones from north to south require region-specific climate adaptation strategies. Its forests, covering 70 per cent of the land, have grown significantly but face ageing challenges affecting CO₂ removal capacity. Economically, with a FY 2021 GDP of JPY 541 trillion, Japan stands as a major global economy, consuming significant energy across the industry, commercial and transport sectors. This presents opportunities for reducing emissions through the adoption of energy-efficient technologies and innovations in renewable energy and CO₂ capture. Japan's economic strength also indicates its capability to lead in developing and implementing ground-breaking technologies for climate change mitigation. Japan's climate change efforts are led by the Prime Minister through GWPH, which oversees coordination across ministries. The budget for FY 2022 allocates JPY 384.4 billion for immediate GHG reductions by 2030 and further funds for long-term and foundational climate measures.

135. Japan's total GHG emissions excluding LULUCF and including indirect CO₂ covered by its quantified economy-wide emission reduction target were estimated to be 10.0 per cent below the 1990 level for 2020, which equates to 18.5 per cent below the 2013 level, using GWP values from the AR4. Emissions peaked in 2013 and have overall decreased thereafter. The changes in total emissions were driven mainly by factors such as the decrease in CO₂ emissions from manufacturing industries and construction owing to reduced solid fuel consumption in the iron and steel industry and reduced emissions from industrial processes under the chemical industry. Since 2013 emissions from the electricity generation sector have also declined as a result of energy efficiency, renewable energy and nuclear power plants reinitiating operations.

136. As reported in the BR5, under the Convention Japan committed to achieving a quantified economy-wide emission reduction target of 3.8 per cent below the 2005 level by 2020. The target covered CO₂, CH₄, N₂O, HFCs, PFCs, SF₆ and NF₃, expressed using GWP values from the AR4, and covered all sources and sectors included in the annual GHG inventory. Emissions and removals from the LULUCF sector were included in the target by applying the rules for the second commitment period of the Kyoto Protocol. Japan reported that it did not use market-based mechanisms for achieving its 2020 target. In absolute terms, this means that, under the Convention, Japan has to reduce its emissions from 1,382,002.89 kt CO₂ eq (in 2005) to 1,329,486.78 kt CO₂ eq by 2020.

137. In addition to its 2020 target, Japan has set an emission reduction target for 2030 as reported in its NDC and a longer-term goal for 2050. These targets are supported by Japan's comprehensive and holistic Plan for Global Warming Countermeasures, which aims at creating a society that is decarbonized in the mid to long term. Under the Paris Agreement, Japan's target is to reduce GHG emissions by 46 per cent by FY 2030 compared with the FY 2013 level, which is aligned with the long-term objective of achieving net zero emissions by 2050. This target may be increased to the more ambitious 50 per cent reduction, depending

on the effectiveness of current PaMs. Through the JCM, Japan aims to contribute to international emission reductions and removals at the level of a cumulative total of approximately 100 Mt CO₂ by FY 2030. Japan's NDC states that these acquired credits will be counted, as appropriate, towards achieving the 2030 target.

138. Japan's annual total GHG emissions excluding LULUCF and including indirect CO₂ in 2020 were 16.8 per cent (231,917.37 kt CO₂ eq) below the base-year level. Japan reported that the contribution of LULUCF was –47,946.22 kt CO₂ eq in 2020, resulting in net emissions of 1,102,139.30 kt CO₂ eq, or 227,347.48 kt CO₂ eq (17.1 per cent) below the 2020 target. Japan did not use units from market-based mechanisms towards the achievement of its 2020 target. The ERT concluded that the total GHG emissions of Japan including the contribution of LULUCF do not exceed the emission level corresponding to the 2020 target, and therefore that the target has been achieved. The ERT further noted that the achievement of the emission reduction target was already successfully met in the years preceding the pandemic (e.g. 2018) and was further enhanced during the pandemic as well as in the post-pandemic period (2021), indicating that the target attainment was due to sustained efforts rather than the transient impact of the pandemic.

139. The GHG emission projections provided by Japan in its NC8 and BR5 correspond to the WEM scenario. Under the WEM scenario, emissions excluding LULUCF in 2030 are projected to be 36.3 per cent below the 1990 level and 29.3 per cent below the 2020 level. Under the WEM scenario, emissions including LULUCF in 2030 are projected to be 36.0 per cent below the 1990 level and 29.5 per cent below the 2020 level.

140. Using Japan's 2030 target accounting approach, the emissions are projected to be 45.7 per cent below the 2013 level in 2030, with a gap towards attaining Japan's 46 per cent emission reduction target that it plans to meet using JCM units. The projected decreases are supported by Japan's PaMs, in particular the policy on reducing the CO₂ emission intensity in the power sector.

141. Japan's main policy framework relating to energy and climate change is the Plan for Global Warming Countermeasures, which has a strong high-level governance through GWPH, with the Prime Minister as a director and all ministers as members, and systemic institutional arrangements for implementing and monitoring the national policies. The plan provides for periodic review and update of the climate change actions to meet the economy-wide 2030 target. The plan includes a robust monitoring system that is managed by GWPH and is based on an evaluation and implementation cycle (annual and three-year cycle). During the evaluation, PaMs are aligned with NDC targets; those showing slow progress are strengthened and new ones are explored. The most relevant PaMs considered by Japan to achieve its targets are renewable energy expansion, energy conservation policies, decarbonized logistic systems such as electric vehicles in transportation, measures in the industry sector, and management of forest sinks. Japan adopted innovative measures looking at enhancing awareness and behavioural changes related to climate action among the public, local governments and businesses, such as Decokatsu and 100 Decarbonization Leading Areas. Another remarkable initiative is the JCM, which has the objective of contributing to GHG mitigation in developing countries while also promoting decarbonization technologies, products, services and infrastructures. This system is due for revision and Japan will follow the requirements of Article 6 of the Paris Agreement to help it to comply with its NDC.

142. Japan continued to provide climate financing to developing countries in line with its climate finance programmes. Japan's public financial support in 2019–2020 totalled USD 20.8 billion, 0.99 per cent lower compared with the BR4 due to currency fluctuations. In 2020, Japan achieved its national climate commitment, established at COP 21, to provide JPY 1.3 trillion annually from both the public and private sectors. It is important to note that the GEF and the GCF have benefited from consistent and significant contributions from Japan. In particular, support for the GCF was highlighted in the Party's presentations during the review.

143. In 2019–2020 Japan provided more support for mitigation, totalling USD 12,649.70 million. The biggest share of support went to bilateral projects in the energy, transport, agriculture, industry, forestry, water and sanitation, and cross-cutting sectors, especially in Asia. An example of Japan's support is the Just Energy Transition Partnership, through which

Japan supported decarbonization efforts through the introduction of renewable energy-related projects in countries such as Indonesia and Viet Nam. The Party highlighted the trend towards balancing funding for both adaptation and mitigation, which is aligned with the announcement made at COP 26 that Japan would double its support for adaptation. In line with this pledge, Japan contributed over USD 120 million to small island developing States for adaptation during the reporting period. Japan also highlighted the use of public funds to promote private sector financial support for developing countries, by leveraging mechanisms such as co-financing with the private sector.

144. Japan continued to provide support for technology development and transfer and capacity-building. Priority for technological support was given to projects relating to technology transfer, mitigation, climate finance and resilience sectors in Asian countries. Over time, the focus has remained the same. One example highlighted by the Party during the review was the installation of early warning systems in countries such as Pakistan. Priority for capacity-building support was given to projects and programmes promoting technology innovation, strengthening climate-resilient infrastructure, enhancing financial mechanisms and addressing sector-specific challenges in Asian countries. Another example highlighted by the Party during the review is the AP-PLAT initiative, which is aiming to enhance participants' decision-making capacity.

145. In its NC8 Japan 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. Japan published the second *Assessment Report on Climate Change Impacts in Japan* in 2020 and its National Climate Change Adaptation Plan in 2021, which are the basis for NC8 chapter 5. More vulnerability subcategories were reported for the first time and the significance of the impacts and/or urgency for adaptation have been revised upward for around 30 per cent (20/71) of the subcategories assessed. Japan also highlighted adaptation actions such as the establishment and management of natural sites under the "other effective area-based conservation measures" (OECMs) approach and implementation of a heat illness action plan to respond to cases of heat stroke.

146. In its NC8 Japan provided a thorough description of the basic principles considered in support of research and systematic observation-related initiatives, as well as the various measures, priority fields and the content of the activities undertaken. Japan is among the world leaders in climate modelling research and is making substantial contributions to reducing climate model uncertainties. This contribution and the results of the CMIP6 experiment supported by Japan were used in the AR6. In the context of the Group on Earth Observation, Japan led the formulation of the post-2025 strategy, Earth Intelligence for All.

147. In its NC8 Japan provided information on its actions relating to education, training and public awareness. Japan places great emphasis on educating young people through a wide range of activities and contributes to promoting sustainable development at the community level. In addition, through UNESCO-associated schools and the UNESCO Future Co-Creation Platform programme, Japan is also contributing towards bringing heritage to classrooms and promoting cooperation and exchange between different stakeholders, communities and generations on different topics, including climate change.

148. In the course of the review, the ERT formulated the following recommendations for Japan to improve its adherence to the UNFCCC reporting guidelines on NCs in its next NC, namely to improve the completeness of its reporting by:

(a) Providing information on the methods used for estimating the mitigation impacts of its PaMs (see issue 2 in table I.1);

(b) Estimating and reporting separately, to the extent possible, the emission projections related to fuel sold to ships and aircraft engaged in international transport (see issue 2 in table I.2);

(c) Presenting an estimate of the total effect of PaMs for 2025 and 2035 in addition to 2030 (see issue 4 in table I.2);

(d) Including information on the support provided for developing and enhancing the endogenous capacities and technologies of non-Annex I Parties (see issue 1 in table I.3).

149. In the course of the review of Japan's BR5, the ERT formulated the following recommendations relating to adherence to the UNFCCC reporting guidelines on BRs, namely to improve the completeness of its reporting by:

(a) Estimating and reporting separately, to the extent possible, the emission projections related to fuel sold to ships and aircraft engaged in international transport (see issue 2 in table II.2);

(b) Including information on the support provided for the development and enhancement of the endogenous capacities and technologies of non-Annex I Parties (see issue 1 in table II.3).

Annex I

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

Tables I.1–I.6 summarize the ERT assessment of adherence to the UNFCCC reporting guidelines on NCs for Japan’s NC8.

Table I.1

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

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 13 Issue type: transparency Assessment: encouragement	<p>The Party included in its NC8 (section 3.6.1) a brief assessment of the economic and social consequences of response measures. However, additional information to assess the interlinkages between PaMs and their impact on key socioeconomic indicators such as GDP growth, employment and gender, among others, is needed to enhance the readers’ understanding of these consequences.</p> <p>During the review, the Party asked for clarifications and examples from the ERT to enhance its understanding of this provision in order to provide examples of the assessment of these consequences in future reports.</p> <p>The ERT encourages the Party to provide in its next submission, to the extent possible, detailed information on the assessment of the economic and social consequences of response measures to enhance transparency. The Party may consider assessing the impacts of PaMs on key indicators such as GDP growth, employment and gender.</p>
2	Reporting requirement specified in paragraph 20 Issue type: completeness Assessment: recommendation	<p>The Party did not include a brief description of the methods used for estimating the mitigation impacts of its PaMs.</p> <p>During the review, the Party briefly explained the methods used for estimating the mitigation impacts of PaMs; specifically, that further details on the estimation method for each of its PaMs for all sectors are available in the Plan for Global Warming Countermeasure, which is available only in Japanese.</p> <p>These methods can be separated into two main categories:</p> <p>(a) Emission reduction estimations of energy-related CO₂ PaMs on the basis of energy savings are estimated using the following equation: (evaluation indicator for countermeasure) × (energy savings per evaluation indicator for countermeasure) × (CO₂ emission factor);</p> <p>(b) Emission reduction estimations of non-energy-related CO₂ and non-CO₂ PaMs, which are calculated in accordance with the methods used in the GHG inventory where, because the WOM and WEM emission scenarios are different, the difference is considered to be the quantity of emission reductions.</p> <p>The ERT reiterates the recommendation from the previous review report that Japan include in its next NC a brief description of the methods used for estimating the mitigation impacts of its PaMs to enhance the completeness of its reporting. The ERT noted that because the Party prepares this information for each of its PaMs in Japanese, it may wish to include in its next report a brief explanation in English on which are the approaches used.</p>
3	Reporting requirement specified in paragraph 21 Issue type: completeness Assessment: encouragement	<p>The Party did not report on costs of PaMs nor on the non-GHG benefits and the interaction with other PaMs at the national level.</p> <p>During the review, the Party provided information on the costs for each of its PaMs. The Party also provided an example of non-GHG benefits, namely that the deployment of renewable energy systems such as solar power not only contributes towards achieving the 2050 net zero goal but also supports Japan’s energy security.</p> <p>The ERT encourages the Party to provide information on the costs, non-GHG benefits and interactions with other PaMs, for each of the PaMs reported in its next NC to enhance the completeness of its reporting.</p>

<i>No.</i>	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
4	Reporting requirement specified in paragraph 23 Issue type: completeness Assessment: encouragement	The Party reported on PaMs that are no longer in place in its NC8 (section 3.5). However, the Party did not explain why these PaMs have been discontinued. During the review, Japan clarified and corrected the information reported in the NC8 regarding the residential sector (namely on the “Efficient use of lighting devices” measure) and added two other policies related to the same sector that have also been discontinued, namely the “Promotion of replacement for electric dehumidifier (compression type)” and “Full automatic washing with drying machine”. The ERT encourages the Party to explain, for PaMs listed in the previous NC that are no longer in place, why this is so.

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 projections including aggregate effects of policies and measures reported in the eighth national communication of Japan

<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 31 Issue type: transparency Assessment: encouragement	In its NC8 Japan reported CO ₂ emissions from electricity consumption in railways under the energy sector for 1990–2020 and under the transport sector for the projection of 2030 emissions. The different sector allocations makes it difficult to evaluate the projected trend in emissions from the energy and transport sectors between 2020 and 2030. During the review, Japan confirmed that it is not able to provide the emission estimates from electricity consumption in railways in 2030 separately because they are based on data that are not publicly available. The ERT encourages Japan to enhance transparency by presenting the emission projections using sector categories that are consistent with those used in the inventory to the extent possible.
2	Reporting requirement specified in paragraph 33 Issue type: completeness Assessment: recommendation	The Party did not report emission projections related to fuel sold to ships and aircraft engaged in international transport. During the review, Japan confirmed that the emission projections related to international maritime and aviation transport were not prepared because it does not have relevant data relating to demand for international transport, projected energy consumption and the future fuel mix. The ERT reiterates the recommendation from the previous review report that in its next submission Japan estimate and report separately, to the extent possible, the emission projections related to fuel sold to ships and aircraft engaged in international transport to enhance the completeness of its reporting.
3	Reporting requirement specified in paragraph 34 Issue type: completeness Assessment: encouragement	Japan reported emission projections on a quantitative basis for 2030. However, the Party did not report emission projections in tabular or graphical format for subsequent years that end in either a zero or a five, extending at least 15 years from the most recent inventory year (e.g. 2025 or 2035). During the review, Japan confirmed that it did not estimate projections for 2025 or 2035 because its projections mimic the emission reduction targets set in the NDC, which has FY 2030 as the target year. The ERT encourages Japan to present emission projections in tabular and graphical format for 2025 and 2035 in addition to 2030 in its next submission to enhance the completeness of its reporting.
4	Reporting requirement specified in paragraph 37 Issue type: completeness Assessment: recommendation	Japan reported an estimate of the total effect of its PaMs for 2030. Japan did not report the total effect of these PaMs for 2025 or 2035. During the review, Japan confirmed that it did not estimate projections for 2025 or 2035 because its projections mimic the emission reduction targets set in the NDC, which has FY 2030 as the target year.

<i>No.</i>	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
		The ERT recommends that Japan present an estimate of the total effect of PaMs for 2025 and 2035 in addition to 2030 in its next submission to enhance the completeness of its reporting.
5	Reporting requirement specified in paragraph 43 Issue type: completeness Assessment: encouragement	Japan did not report on the sensitivity of the projections to underlying assumptions either qualitatively or quantitatively. During the review, Japan confirmed that it has not considered the sensitivity of the projections to underlying assumptions because of the lack of an appropriate methodology. The ERT encourages Japan to report on the sensitivity of the projections to underlying assumptions qualitatively and where possible quantitatively in its next submission to enhance completeness.

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 financial, technological and capacity-building support from the review of the eighth national communication of Japan

<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 57 Issue type: completeness Assessment: recommendation	The Party provided information on the measures taken to promote, facilitate and finance the transfer of, access to and deployment of climate-friendly technologies for the benefit of non-Annex I Parties. However, there was no reference on the support provided for the development and enhancement of the endogenous capacities and technologies of non-Annex I Parties. During the review, the Party shared the example of the JCM, which provides support for domestic capacity-building focused mainly on preparing measurement, reporting and verification systems and developing institutional arrangements for the implementation of projects. Japan also mentioned that the support provided on technology is focused on technology transfer, not on endogenous development. The ERT recommends that Japan include information on the support provided for developing and enhancing the endogenous capacities and technologies of non-Annex I Parties to enhance the completeness of its reporting.

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.4

Findings on vulnerability assessment, climate change impacts and adaptation measures from the review of the eighth national communication of Japan

<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 46 Issue type: completeness Assessment: encouragement	Japan reported information on its assessment of climate change impacts and vulnerability for seven sectors. However, the Party did not provide information on or references to methodologies and guidance used for the assessment. During the review, Japan provided detailed information on the three methodological approaches used for the climate change impact assessment which addressed the magnitude and possibility of impact (significance), the timing of impacts and necessary adaptation measures, as well as critical decision-making (urgency) and the certainty of projections (confidence). The ERT encourages Japan to reference in its next NC the methodologies and guidance used for assessing climate change impacts, vulnerability and adaptation measures to enhance the completeness of its reporting.

<i>No.</i>	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
2	Reporting requirement specified in paragraph 47 Issue type: completeness Assessment: encouragement	Japan did not include information on climate modelling, climate projections and scenarios, or on progress of adaptation action in accordance with paragraph 47(a) and (f) of the UNFCCC reporting guidelines on NCs respectively. During the review, the Party provided additional information on climate modelling, climate projections and scenarios, explaining the process followed for managing the progress of adaptation measures, and provided information on the progress of adaptation measures in the form of key performance indicators for sector-specific measures and fundamental measures. The ERT encourages Japan to include in its next NC the information on climate modelling, projections and scenarios and the information on the progress of adaptation action to enhance the completeness of its reporting.

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.5

Findings on research and systematic observation from the review of the eighth national communication of Japan

<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 64 Issue type: completeness Assessment: encouragement	Japan provided information on its general policy on research and systematic observation but did not report information on funding of research and systematic observation. During the review, Japan explained that it is difficult to identify funding that corresponds only to research and systematic observation initiatives because they are not earmarked. Different ministries manage each project individually by requesting funding from the Ministry of Finance, and some budgets are not directly related to research and systematic observation but are included in the budgets of the specific entities that are mandated to undertake research and observation activities. The ERT reiterates the encouragement from the previous review report for the Party to provide information on the funding of research and systematic observation. For example, Japan can explore the possibility of presenting information on the magnitude and the evolution of the funding provided.
2	Reporting requirement specified in paragraph 65 Issue type: completeness Assessment: encouragement	Japan did not identify opportunities for free and open international exchange of data and did not include information on any specific barriers faced related to the international sharing of data and information nor on the actions taken to overcome such barriers. During the review, Japan indicated that no barriers have been identified regarding free and open international exchange of data and information. The ERT reiterates the encouragement from the previous review report for the Party to improve the completeness of its reporting on opportunities and barriers relating to the international sharing of data and information, for example by providing examples of such opportunities and confirming whether any barriers were identified and, if so, how they were addressed.

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.6

Findings on education, training and public awareness from the review of the eighth national communication of Japan

<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 68 Issue type: completeness	Japan did not report information on the extent of public participation in the preparation or domestic review of the NC. The NC8 notes that there is no formal monitoring, review and evaluation process specific to the implementation of Article 6 of the Convention. During the review, Japan confirmed that there is no public participation in the preparation or domestic review process of NCs. However, the ERT is of the view that various sections of the NC8 are informed by stakeholder consultation processes that can

<i>No.</i>	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
	Assessment: encouragement	<p>be regarded as a degree of public participation in the preparation and review of NCs. Therefore, in its next report, Japan may wish to provide, in an explicit manner, further details on these processes to improve the completeness of this topic.</p> <p>The ERT reiterates the encouragement from the previous review report for Japan to improve the completeness of its reporting by providing information on the extent of public participation in the preparation or domestic review of NCs.</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 Japan

The BR5 of Japan 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. Tables II.1–II.3 summarize the ERT assessment of adherence to the UNFCCC reporting guidelines on BRs for Japan’s BR5.

Table II.1

Findings on mitigation actions and their effects from the review of the fifth biennial report of Japan

No.	Reporting requirement and issue type	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 8 Issue type: completeness Assessment: encouragement	The Party included a brief assessment of the economic and social consequences of response measures. Nevertheless, additional information to assess the interlinkages between PaMs and their impact on key socioeconomic indicators, such as GDP growth, employment and gender, among others, would be needed to fully understand the consequences of the response measures. During the review, the Party asked for clarifications and examples from the ERT to enhance its understanding of this provision in order to provide examples of the assessment of these consequences in future reports. The ERT encourages the Party to provide, to the extent possible, detailed information on the assessment of the economic and social consequences of response measures. The Party may consider assessing the impacts of PaMs on key indicators such as GDP growth, employment and gender.

Note: Item listed under reporting requirement refers to the relevant paragraph 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 BRs.

Table II.2

Findings on projections reported in the fifth biennial report of Japan

No.	Reporting requirement and issue type	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 31 Issue type: transparency Assessment: encouragement	Japan reported CO ₂ emissions from electricity consumption in railways under the energy sector for 1990–2020 and under the transport sector for the projection of 2030 emissions. This different allocation makes it difficult to evaluate the projected trend in emissions from the energy and transport sectors between 2020 and 2030. During the review, Japan confirmed that it is not able to provide 2030 emission estimates from electricity consumption in railways separately due to the confidentiality of the raw data used for the estimation. The ERT encourages Japan to present, to the extent possible, emission projections using the same sector categories as those used in the inventory.
2	Reporting requirement specified in paragraph 33	Japan did not report emission projections related to fuel sold to ships and aircraft engaged in international transport. During the review, Japan confirmed that it does not have relevant data relating to demand for international transport, projected energy consumption and the future fuel mix, and

¹ The COP, 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.

<i>No.</i>	<i>Reporting requirement and issue type</i>	<i>Description of the finding with recommendation or encouragement</i>
	Issue type: completeness	therefore cannot prepare emission projections related to international maritime and aviation transport.
	Assessment: recommendation	The ERT reiterates the recommendation from the previous review report that Japan estimate and report separately, to the extent possible, the emission projections related to fuel sold to ships and aircraft engaged in international transport.
3	Reporting requirement specified in paragraph 34	Japan reported emission projections on a quantitative basis for 2030 only, and did not include emission projections in tabular or graphical format for subsequent years that end in either a zero or a five, extending at least 15 years from the most recent inventory year (e.g. 2025 or 2035).
	Issue type: completeness	During the review, Japan confirmed that it did not estimate projections for 2025 or 2035 because its projections mimic the emission reduction targets set in the NDC, which has FY 2030 as the target year.
	Assessment: encouragement	The ERT encourages Japan to present emission projections in tabular or graphical format for 2025 and 2035 in addition to 2030.
4	Reporting requirement specified in paragraph 43	Japan did not report on the sensitivity of the projections to underlying assumptions either qualitatively or quantitatively.
	Issue type: completeness	During the review, Japan confirmed that it has not considered the sensitivity of the projections to underlying assumptions because of the lack of an appropriate methodology.
	Assessment: encouragement	The ERT encourages Japan to enhance completeness by reporting on the sensitivity of the projections to underlying assumptions qualitatively and where possible quantitatively.

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.

Table II.3

Findings on provision of financial, technological and capacity-building support to developing country Parties from the review of the fifth biennial report of Japan

<i>No.</i>	<i>Reporting requirement and issue type</i>	<i>Description of the finding with recommendation or encouragement</i>
1	Reporting requirement specified in paragraph 21	The Party included information on the measures taken to promote, facilitate and finance the transfer of, access to and deployment of climate-friendly technologies for the benefit of non-Annex I Parties. However, no information or explanation for the lack of information was included on the support provided for the development and enhancement of the endogenous capacities and technologies of non-Annex I Parties.
	Issue type: completeness	
	Assessment: recommendation	During the review, the Party mentioned that the support provided on technology is focused on technology transfer, not on endogenous development.
		The ERT recommends that Japan include information on the support provided for developing and enhancing the endogenous capacities and technologies of non-Annex I Parties.

Note: Item listed under reporting requirement refers to the relevant paragraph 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 BRs.

Annex III

Documents and information used during the review

A. Reference documents

2022 GHG inventory submission of Japan.

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

2023 GHG inventory submission of Japan.

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

BR4 of Japan. Available at <https://unfccc.int/BR4>.

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

BR5 of Japan. 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>.

IPCC. 2014. *2013 Revised Supplementary Methods and Good Practice Guidance Arising from the Kyoto Protocol*. T Hiraishi, T Krug, K Tanabe, et al. (eds.). Hayama, Japan:

Institute for Global Environmental Strategies. Available at

<https://www.ipcc.ch/publication/2013-revised-supplementary-methods-and-good-practice-guidance-arising-from-the-kyoto-protocol/>.

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

Report on the individual review of the annual submission of Japan submitted in 2022.

FCCC/ARR/2022/JPN. Available at <https://unfccc.int/documents/627054>.

Report on the technical review of the BR4 of Japan. FCCC/TRR.4/JPN. Available at

<https://unfccc.int/documents/268441>.

“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 Kae Murakami (Ministry of the Environment of Japan), including additional material. The following references were provided by Japan and may not conform to UNFCCC editorial style as some have been reproduced as received:

- Ministry of the Environment, presentation delivered during Review Week “Overview of Climate Change Policy in Japan”.
- Ministry of the Environment, presentation delivered during Review Week “GHG inventory + National Circumstances”.
- Ministry of the Environment, presentation delivered during Review Week “Projections”.
- Ministry of Economy, Trade and Industry, presentation delivered during Review Week “Projections on energy mix”.
- Ministry of the Environment, presentation delivered during Review Week “Mitigation Actions Overview”.
- Ministry of Economy, Trade and Industry, presentation delivered during Review Week “Japan’s Policies towards Achieving Green Transformation”.
- Ministry of the Environment, presentation delivered during Review Week “Hydrofluorocarbon (HFCs)”.
- Ministry of the Environment, presentation delivered during Review Week “Mitigation Actions Waste”.
- Ministry of the Environment, presentation delivered during Review Week “The Joint Crediting Mechanism (JCM)”.
- Ministry of the Agriculture, Forestry and Fisheries, presentation delivered during Review Week “Mitigation Actions AFOLU”.
- Ministry of Foreign Affairs, presentation delivered during Review Week “Financial Support”.
- Ministry of the Environment, presentation delivered during Review Week “Technological and capacity-building support”.
- Ministry of the Environment, presentation delivered during Review Week “Vulnerability Assessment Climate Change Impacts Adaptation Measures”.
- Ministry of the Environment, presentation delivered during Review Week “Education Training & Public awareness”.
- Ministry of the Environment, presentation delivered during Review Week “Research and Systematic Observation”.
- Ministry of the Environment, presentation delivered during Review Week “National movement of DECOKATSU”.
- Global Warming Prevention Headquarters, *Major Budget Included in the FY2021 Global Warming Countermeasures Budget Bill*.
- Global Warming Prevention Headquarters, presentation (Overview) Progress of the Plan for Global Warming Countermeasures in FY2021.
- Global Warming Prevention Headquarters, Progress of the Plan for Global Warming Countermeasures in FY2021.
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