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Report on the technical review of the fourth biennial report of Japan

Developed country Parties were requested by decision 2/CP.17 to submit their fourth biennial report to the secretariat by 1 January 2020. This report presents the results of the technical review of the fourth 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 took place from 26 to 30 October 2020 remotely.



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Abbreviations and acronyms

AR	Assessment Report of the Intergovernmental Panel on Climate Change
BR	biennial report
CH ₄	methane
CO ₂	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
CTF	common tabular format
ERT	expert review team
F-gas	fluorinated gas
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
IPPU	industrial processes and product use
JPY	Japanese yen
LULUCF	land use, land-use change and forestry
NA	not applicable
NC	national communication
NE	not estimated
NF ₃	nitrogen trifluoride
NO	not occurring
non-Annex I Party	Party not included in Annex I to the Convention
N ₂ O	nitrous oxide
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)
SF ₆	sulfur hexafluoride
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”
WEM	‘with measures’

I. Introduction and summary

A. Introduction

1. This is a report on the centralized technical review of the BR4¹ 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” (annex to decision 13/CP.20).

2. In accordance with the same decision, a draft version of this report was transmitted to the Government of Japan, which provided comments that were considered and incorporated, as appropriate, with revisions into this final version of the report.

3. The review was conducted together with the review of three other Parties included in Annex I to the Convention from 26 to 30 October 2020 remotely² by the following team of nominated experts from the UNFCCC roster of experts: Roberto Acosta Moreno (Cuba), Oksana Butrym (Ukraine), Gilles Croquette (France), Lawrence Ibhafidon (Nigeria), Theodore Kasanda Kalonji (Democratic Republic of the Congo), Roman Kazakov (Russian Federation), Mahendra Kumar (Marshall Islands), Philippe Missi Missi (Cameroon), Valentyna Slivinska (Ukraine) and Christoph Streissler (Austria). Mr. Acosta Moreno and Mr. Streissler were the lead reviewers. The review was coordinated by Karin Simonson and Nalin Srivastava (secretariat).

B. Summary

4. The ERT conducted a technical review of the information reported in the BR4 of Japan in accordance with the UNFCCC reporting guidelines on BRs (annex I to decision 2/CP.17).

1. Timeliness

5. The BR4 was submitted on 27 December 2019, before the deadline of 1 January 2020 mandated by decision 2/CP.17. The BR4 CTF tables were also submitted on 27 December 2019. The CTF tables were resubmitted on 1 October 2020 to include a missing documentation box to CTF table 7. Unless otherwise specified, the information and values from the latest submission are used in this report.

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

6. Issues and gaps identified by the ERT related to the reported information are presented in table 1. The information reported by Japan in its BR4 mostly adheres to the UNFCCC reporting guidelines on BRs.

Table 1

Summary of completeness and transparency of mandatory information reported by Japan in its fourth biennial report

<i>Section of BR</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of recommendation(s)</i>
GHG emissions and removals	Complete	Transparent	–
Quantified economy-wide emission reduction target and related assumptions, conditions and methodologies	Complete	Mostly transparent	Issue 1 in table 3

¹ The BR submission comprises the text of the report and the CTF tables, which are both subject to the technical review.

² Owing to the circumstances related to the coronavirus disease 2019, the technical review of the BR submitted by Japan had to be conducted remotely.

<i>Section of BR</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of recommendation(s)</i>
Progress in achievement of targets	Mostly complete	Mostly transparent	Issues 1–2 in table 5 Issues 1 and 3 in table 10
Provision of support to developing country Parties	Mostly complete	Mostly transparent	Issues 1–3 in table 13

Note: A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in chap. III below. 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 fourth biennial report

A. Information on greenhouse gas emissions and removals related to the quantified economy-wide emission reduction target

1. Technical assessment of the reported information

7. Total GHG emissions³ excluding emissions and removals from LULUCF decreased by 2.8 per cent between fiscal year 1990 and fiscal year 2018, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 2.5 per cent over the same period. Emissions peaked in 2013 and decreased thereafter. The changes in total emissions were driven mainly by the decrease in CO₂ emissions from manufacturing industries and construction, which was offset to a large extent by increases in emissions from energy industries. Emissions from energy industries increased between 1990 and 2014 owing to an increase in solid fuel consumption for electricity power generation, stemming from an increase in electricity demand and a shift from petroleum to coal. The increase in emissions from transport stems from an increased number of passenger vehicles. However, emissions from energy industries have decreased since fiscal year 2014 as a result of measures promoting energy efficiency and renewable energy as well as nuclear power plants reinitiating operations following their shutdown after the Great East Japan Earthquake of 2011.

8. Table 2 illustrates the emission trends by sector and by gas for Japan. Note that information in this paragraph and table 2 is based on Japan’s 2020 annual submission, version 1, which has not yet been subject to review. All emission data in subsequent chapters are based on Japan’s BR4 CTF tables unless otherwise noted. There are minor differences between the emission estimates reported in the 2020 annual submission and those reported in CTF table 1.

Table 2

Greenhouse gas emissions by sector and by gas for Japan for 1990–2018

<i>Sector</i>	<i>GHG emissions (kt CO₂ eq)</i>					<i>Change (%)</i>		<i>Share (%)</i>	
	<i>1990</i>	<i>2000</i>	<i>2010</i>	<i>2017</i>	<i>2018</i>	<i>1990–2017–</i>		<i>1990</i>	<i>2018</i>
						<i>2018</i>	<i>2018</i>		
1. Energy	1 091 949.91	1 197 996.46	1 162 557.71	1 137 005.95	1 085 718.54	–0.6	–4.5	86.0	87.7
A1. Energy industries	369 877.43	397 371.80	476 191.11	511 306.28	474 853.98	28.4	–7.1	29.1	38.3
A2. Manufacturing industries and construction	351 321.33	348 884.33	302 635.74	271 979.57	264 928.85	–24.6	–2.6	27.7	21.4

³ 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.

	GHG emissions (kt CO ₂ eq)					Change (%)		Share (%)	
	1990	2000	2010	2017	2018	1990–2018	2017–2018	1990	2018
	A3. Transport	205 016.19	256 965.62	224 194.71	207 202.31	204 710.47	-0.1	-1.2	16.1
A4. and A5. Other	160 570.11	192 427.25	158 176.77	145 281.30	140 070.41	-12.8	-3.6	12.6	11.3
B. Fugitive emissions from fuels	5 164.84	2 347.45	1 359.39	1 236.50	1 154.83	-77.6	-6.6	0.4	0.1
C. CO ₂ transport and storage	NO, NE	NO, NE	NO, NE	NO, NE, NA	NO, NE, NA	-	-	-	-
2. IPPU	110 945.37	109 030.04	80 749.63	98 979.42	100 105.03	-9.8	1.1	8.7	8.1
3. Agriculture	37 412.70	35 265.03	35 897.79	33 381.37	33 252.43	-11.1	-0.4	2.9	2.7
4. LULUCF	-62 218.63	-87 757.78	-70 447.60	-58 539.93	-57 390.07	-7.8	-2.0	NA	NA
5. Waste	29 731.99	32 482.50	23 344.83	19 872.79	19 266.71	-35.2	-3.0	2.3	1.6
6. Other ^a	NA	NA	NA	NA	NA	-	-	-	-
<i>Gas^b</i>									
CO ₂ (without LULUCF)	1 158 391.31	1 264 844.26	1 214 068.56	1 187 661.45	1 135 688.00	-2.0	-4.4	91.2	91.7
CH ₄ (without LULUCF)	44 418.49	37 981.98	34 783.60	30 237.19	29 854.90	-32.8	-1.3	3.5	2.4
N ₂ O (without LULUCF)	31 875.88	29 905.55	22 195.35	20 417.80	19 999.98	-37.3	-2.0	2.5	1.6
HFCs	15 932.31	22 852.00	23 315.04	44 891.10	46 987.67	194.9	4.7	1.3	3.8
PFCs	6 539.30	11 873.11	4 249.54	3 512.15	3 486.79	-46.7	-0.7	0.5	0.3
SF ₆	12 850.07	7 031.36	2 398.14	2 070.07	2 042.88	-84.1	-1.3	1.0	0.2
NF ₃	32.61	285.77	1 539.74	449.78	282.50	766.3	-37.2	0.0	0.0
Total GHG emissions excluding LULUCF	1 270 039.97	1 374 774.03	1 302 549.97	1 289 239.53	1 238 342.71	-2.5	-3.9	100.0	100.0
Total GHG emissions including LULUCF	1 207 821.34	1 287 016.25	1 232 102.37	1 230 699.60	1 180 952.64	-2.2	-4.0	NA	NA
Total GHG emissions excluding LULUCF, including indirect CO₂	1 275 522.27	1 379 006.96	1 304 959.61	1 291 316.16	1 240 405.73	-2.8	-3.9	100.0	100.0
Total GHG emissions including LULUCF, including indirect CO₂	1 213 303.65	1 291 249.18	1 234 512.01	1 232 776.23	1 183 015.66	-2.5	-4.0	NA	NA

Source: GHG emission data: Japan's 2020 annual submission, version 1.

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

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

9. In brief, Japan's national inventory arrangements were established in accordance with the Act on Promotion of Global Warming Countermeasures, adopted in October 1998 and last amended on 13 June 2018. There have been no changes to these arrangements since the BR3. 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 and its Kyoto Protocol. The Ministry of the Environment, with the cooperation of relevant ministries, agencies and organizations, prepares Japan's national inventory and compiles the supplementary information required to be annually submitted to the UNFCCC pursuant to the Convention and its Kyoto Protocol.

2. Assessment of adherence to the reporting guidelines

10. The ERT assessed the information reported in the BR4 of Japan and recognized that the reporting is complete, transparent and thus adhering 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.

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

1. Technical assessment of the reported information

11. 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 fiscal year 2005 level by fiscal year 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 Intergovernmental Panel on Climate Change sources and sectors included in the annual GHG inventory. The GWP values used are from the AR4. Emissions and removals from the LULUCF sector are included in the 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. Japan reported that it does not plan to make use of market-based mechanisms for achieving its target (see para. 41 below). In absolute terms, this means that, under the Convention, Japan has to reduce its emissions from 1,382,144.50 kt CO₂ eq in fiscal year 2005 to 1,329,623.00 kt CO₂ eq by fiscal year 2020.

12. In addition to its 2020 target, Japan also has a mid-term target for fiscal year 2030 of a 26 per cent emission reduction (approximately 1,042,000 kt CO₂ eq) compared with the fiscal year 2013 level under the Paris Agreement. As noted by Japan in its BR4, this was set as a feasible reduction target using bottom-up calculations and considering technological and cost constraints, and was based on the domestic emission reductions and removals expected with its energy mix. The ERT notes that Japan submitted an updated version of its first nationally determined contribution containing the above-mentioned target in March 2020 after the submission of its BR4. According to its long-term low GHG emission development strategy submitted to the secretariat in accordance with Article 4, paragraph 19, of the Paris Agreement, Japan has also set a long-term carbon-neutrality target of achieving a decarbonized society as early as possible in the second half of the twenty-first century.

2. Assessment of adherence to the reporting guidelines

13. The ERT assessed the information reported in the BR4 of Japan and identified an issue relating to transparency and thus adherence to the UNFCCC reporting guidelines on BRs. The finding is described in table 3.

Table 3

Findings on the assumptions, conditions and methodologies related to the quantified economy-wide emission reduction target from the review of the fourth biennial report of Japan

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation
1	Reporting requirement specified in paragraph 5 Issue type: transparency Assessment: recommendation	Japan reported the possible scale of contributions from market-based mechanisms under the Convention and those from other market-based mechanisms in CTF tables 2(e)I and 2(e)II, respectively, as “NE”, and defined this notation key in the BR (p.220) as “not estimated”. However, Japan did not clearly explain in the BR why this notation key was used or whether it intends to use units from market-based mechanisms to achieve its 2020 target. During the review, Japan explained that the possible scale of contributions from units from market-based mechanisms to be reported in CTF table 2(e)I was not estimated because such units will not be used to achieve its target for fiscal year 2020. The Party further explained that the possible scale of contributions from other market-based mechanisms to be reported in CTF table 2(e)II was not estimated because it does not currently specify the amount of Joint Crediting Mechanism credits to be used to achieve its fiscal year 2020 target.

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation
		The ERT recommends that Japan improve the transparency of its reporting on the possible scale of contributions from market-based mechanisms under the Convention and those from other market-based mechanisms in CTF tables 2(e)I and 2(e)II, respectively, by explaining the notation keys used in the textual part of the BR and/or in the CTF tables, clarifying whether it intends to use units from market-based mechanisms to achieve its 2020 target.

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, transparent and thus adhering to the UNFCCC reporting guidelines on BRs.

C. Progress made towards achievement of the quantified economy-wide emission reduction target

1. Mitigation actions and their effects

(a) Technical assessment of the reported information

14. Japan provided information on its package of PaMs implemented in order to fulfil its commitments under the Convention. The Party 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. It organized the information on its mitigation actions by sector and by gas only for mitigation actions addressing CO₂ emissions from the energy sector and did not indicate the sectors and gases targeted for other actions.

15. Japan’s set of PaMs is identical to that previously reported in its BR3. The Party indicated that there have been no changes since its previous submission to its institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of progress towards its target. In order to give a better idea of progress, in addition to including the information on PaMs reported in the BR3, the Party presented in its BR4 recent results in terms of the mitigation impacts obtained for its key PaMs and an evaluation of its progress in reducing emissions.

16. Japan has developed the Plan for Global Warming Countermeasures for monitoring and evaluating the effectiveness of its PaMs. The implementation of PaMs is assessed annually by a high-level entity called the Global Warming Prevention Headquarters, which has the Prime Minister as its Chairperson and in which all ministers serve as members and its executive committee. The Global Warming Prevention Headquarters considers improving and reinforcing any measures that are being implemented too slowly and exploring the adoption of new PaMs. This monitoring and evaluation system provides for the revision of mitigation targets and measures every three years, as necessary, using the most recent GHG emission data.

17. In its reporting on its PaMs, Japan provided the estimated emission reduction impacts for most of its PaMs for 2020 and for almost all of its PaMs for 2030. The ERT notes that the estimates for 2020 and 2030 are almost identical to the estimates given in the BR3 (the only exception is a minor revision to the estimate for 2030 for energy efficiency improvement in vessels). Where estimated impacts were not provided, the Party did not supply an explanation. For some PaMs (e.g. public awareness campaigns, a measure aimed at increasing the use of blended cement), the mitigation impacts reported for past years were negative. Japan indicated during the review that this was because results for those measures were lower than expected.

18. Japan’s self-assessment of compliance with its emission reduction targets and establishment of national rules for taking action against non-compliance are in line with the Plan for Global Warming Countermeasures. Japan reported that the Global Warming Prevention Headquarters conducts annual monitoring of progress towards its 2020 target on the basis of stringent rules and regular evaluation by relevant councils. The Cabinet of Japan reviews and revises, as necessary, the Plan for Global Warming Countermeasures on the basis of this monitoring. During the review, Japan explained that the Plan has not been revised

since its adoption in 2016. The Party also reported that on 1 September 2020, at a joint meeting, the Central Environment Council and the Industrial Structure Council initiated discussion of long- and mid-term climate change policies, including reviewing the Plan. The ERT noted that providing information on the status of the periodic revision of the Plan for Global Warming Countermeasures would enhance the transparency of the reporting.

19. The key overarching cross-sectoral policies reported by Japan are the Act on Promotion of Global Warming Countermeasures and the Plan for Global Warming Countermeasures, which provide the legislative and policy frameworks that enable national Government, local government, businesses and individuals to reduce GHG emissions in a comprehensive and strategic manner. Other cross-sectoral policies include initiatives to encourage business operators to voluntarily reduce GHG emissions, the introduction of mandatory GHG accounting, a domestic credit scheme (called the J-Credit Scheme), a tax for climate change action introduced in 2012 and the development of green finance. The PaMs promoting the introduction and distribution of highly energy-efficient equipment and devices in various sectors have the most significant expected mitigation effect. Other policies that are expected to deliver significant emission reductions are those aimed at distributing next-generation vehicles and improving fuel efficiency in transport, reducing emissions of F-gases and promoting forest sinks.

20. Japan did not identify any domestic mitigation actions that are planned. In addition to the measures listed above, measures aimed at reducing CO₂ emissions in the power sector by improving the efficiency of thermal power generation, generating nuclear power and ensuring the maximum possible use of renewable energy are expected to have a significant mitigation impact in 2030. Table 4 provides a summary of the reported information on the PaMs of Japan.

Table 4

Summary of information on policies and measures reported by Japan

<i>Sector</i>	<i>Key PaMs</i>	<i>Estimate of mitigation impact in 2020 (kt CO₂ eq)</i>	<i>Estimate of mitigation impact in 2030 (kt CO₂ eq)</i>	
Policy framework and cross-sectoral measures	Plan for Global Warming Countermeasures	NE	NE	
	J-Credit Scheme	3 210	6 510	
Energy				
Energy efficiency	Promoting the introduction and distribution of highly energy-efficient equipment and devices in:			
		• the industrial sector;	42 981 ^a	72 420 ^a
		• the commercial and other sector;	9 086 ^b	11 484 ^b
		• the residential sector;	9 389 ^c	15 279 ^c
		• the energy sector	7 810 ^d	13 080 ^d
Energy supply and renewables	Improving efficiency of thermal power generation, generating nuclear power and ensuring the maximum possible use of renewable energy	NE	188 000	
Transport	Diffusion of next-generation vehicles and improvements to fuel efficiency	7 025	23 790	
IPPU	Measures related to F-gases	18 450 ^e	48 220 ^e	
Agriculture	Measures to reduce CH ₄ emissions associated with rice cultivation	330–920	640–2 430	
LULUCF	Strategies for enhancing forest sinks	38 000	27 800	
	Measures to promote sinks in agricultural soils	7 080–8 280	6 960–8 900	
	Promoting urban greening	1 190	1 240	
Waste	Promoting advanced combustion in sewage sludge incineration facilities	500	780	
	Reducing the amount of waste for final disposal	180	520	

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

^a Estimated by the ERT as the sum of the mitigation impacts of all individual activities included under the mitigation action “promotion of introduction of highly energy-efficient equipment and devices (cross industrial)” and in other sectors (except “improvement of the efficiency of thermal power generation, use of nuclear power generations where safety is approved and full use of renewable energy”, which is included under the mitigation actions listed under energy supply and renewables in this table) in CTF table 3.

^b Estimated by the ERT as the sum of the mitigation impacts of all individual activities included under the mitigation action “diffusion of highly energy-efficient equipment and devices (commercial and other sector)” in CTF table 3.

^c Estimated by the ERT as the sum of the mitigation impacts of all individual activities included in the mitigation action “diffusion of highly energy-efficient equipment and devices (residential sector)” in CTF table 3.

^d Estimated by the ERT as the sum of the mitigation impacts of “persuasion of high efficiency in thermal power generation” included in “reduction of CO₂ emission intensity in the power sector” and “promotion of introduction of highly energy-efficient equipment and devices (oil product manufacturing sector)” in CTF table 3.

^e Estimated by the ERT as the sum of the mitigation impacts of all legal instruments aimed at reducing emissions of F-gases (excluding the impact of voluntary initiatives in industry).

21. Japan indicated in its BR4 that it is carefully considering a domestic emissions trading scheme, taking into account, among other factors, the burden on domestic industries and associated impacts on employment, in addition to ongoing developments in respect of international emissions trading schemes.

22. Japan promotes research, development and demonstration of innovative technologies based on the Innovation Plan for Environmental Technology under the National Energy and Environment Strategy for Technological Innovation towards 2050. Japan’s goal of becoming a “hydrogen society” is an example of such innovation, whereby it conducts research, development and testing in relation to the basic technologies necessary to expand the use of hydrogen for energy purposes in society.

23. The ERT noted that the Party reported two mitigation measures related to using renewable energy for power generation (one on expanding the use of renewable energy for electricity and the other on improving thermal power efficiency, generating nuclear power and ensuring maximum use of renewable energy). However, the brief description provided by the Party in CTF table 3 does not sufficiently explain either the coverage of the different submeasures included in these two measures or any potential overlap between the two measures. During the review, in the context of the mitigation action “expanding use of electricity generated by renewable energy”, Japan provided information on the shares of various sources of renewable energy included in the mitigation action, namely, hydropower, solar energy, wind energy, geothermal energy and biomass, in fiscal year 2018 and fiscal year 2030, and on their mitigation effects in 2030. Regarding the measure “improving efficiency of thermal power generation, generating nuclear power and ensuring maximum possible use of renewable energy”, Japan indicated the mitigation impact by type of energy source (thermal power, nuclear power and renewables) has not been estimated and there is no difference between the mitigation actions “full use of renewable energy” and “expanding use of electricity generated by renewable energy” referred to in the Fifth Basic Energy Plan.

24. The ERT notes that, in line with information provided during the review, the Party may wish to provide more detailed information on the scope of the measures “expanding the use of renewable energy” and “improving the efficiency of thermal power generation, generating nuclear power and ensuring maximum use of renewable energy” in the BR and a brief description in the CTF table column, including by disaggregating the mitigation effects expected from the different sources of renewable energy (hydro, solar, wind, etc.) for the first measure, and those expected from the three subactions included in the second measure.

(b) Policies and measures in the energy sector

25. **Energy efficiency.** Japan promotes comprehensive energy management and use of energy-efficient equipment and devices on the basis of the Act on the Rational Use of Energy, which entered into force in 1979. The Act has been amended several times with a view to enhancing energy efficiency in various sectors.

26. Japan promotes energy efficiency in various sectors, including energy, transport and waste, through a diverse portfolio of instruments tailored to the individual requirements of

each sector. Energy efficiency programmes specific to the sectors listed below are included in the descriptions for those sectors.

27. **Energy supply and renewables.** Japan's mitigation measures relating to energy supply and renewables are aimed at achieving the maximum possible use of renewable energy, improving the efficiency of thermal power generation, generating nuclear power when safety is guaranteed and diversifying the fuel mix in different categories by shifting to natural gas, on the basis of the policies in the Strategic Energy Plan. In 2015, the electricity industry voluntarily agreed to work towards achieving an emission factor of 0.37 kg CO₂/kWh in 2030 for power generation. The measures in place to achieve this are monitored and evaluated annually and will be revised in order to achieve the goal. The Party noted during the review that the emission factor for power generation decreased to 0.51 kg CO₂/kWh in 2017 and 0.49 kg CO₂/kWh in 2018.

28. Japan supports the development of renewable energy through a feed-in tariff scheme (implemented under the Act on Special Measures Concerning Procurement of Electricity from Renewable Energy Sources by Electricity Utilities of 2011), tax reductions, subsidies, loans and technology developments. The Party explained during the review that the share of renewable energy in the total energy supply is projected to increase from 16.8 per cent in 2018 to 22.2–23.6 per cent in 2030.

29. Japan will restart operations at nuclear power plants contingent on the Nuclear Regulation Authority confirming their conformance with new regulatory requirements. This is expected to further reduce emissions by reducing the share of more emission-intensive fuels in the energy supply.

30. Japan has been implementing large-scale demonstration projects with a view to deploying carbon capture and storage by 2020. It indicated during the review that carbon capture and storage is not included in the Plan for Global Warming Countermeasures and that its mitigation impact for 2030 cannot be calculated at present.

31. **Residential and commercial sectors.** Mitigation measures in these sectors focus on accelerating development of energy efficiency technologies, promoting renovation of existing housing and improving building or home energy management systems. Japan promotes the development of net zero energy buildings and housing. The Government of Japan has a target to achieve the average of newly constructed buildings and housing to become net zero energy buildings and net zero energy housing. The scope of implementation of energy conservation standards for new construction was extended to medium-scale buildings in 2019.

32. Japan also promotes moving to a decarbonized society through lifestyle changes by running public campaigns that encourage citizens to take energy-saving measures like ensuring proper temperature controls for cooling and heating systems.

33. **Transport sector.** Japan's comprehensive approach to reducing emissions from the transport sector focuses on improving fuel efficiency in cars; promoting modal shift to more environmentally friendly modes of transport and combined transportation of goods; increasing the use of public transport and cycling; improving traffic flow by promoting autonomous vehicles; and promoting intelligent transport systems (e.g. centrally controlled signals). The mitigation effect of promoting use of public transport and bicycles is about a 0.5 per cent reduction in passenger transport emissions.

34. **Industrial sector.** Mitigation efforts in this sector are based on voluntary action plans implemented by the Japan Business Federation and industries. The action plans focus on promoting maximum potential use of best available technologies and committing to being proactive about energy conservation, including by continuously re-evaluating targets and adopting more ambitious targets as technologies improve. Among the 54 measures relating to the industrial sector, 47 are expected to exceed the established targets by 2030. In 19 cases, the actual performance in 2017 has already exceeded the target levels for fiscal year 2030.

(c) **Policies and measures in other sectors**

35. **Industrial processes.** Reducing HFC emissions is the focus of mitigation efforts in this sector given their high and growing share in the Party's total GHG emissions. This is

because HFCs are increasingly being used to replace the chlorofluorocarbons and hydrochlorofluorocarbons controlled by the Montreal Protocol since 2000. PaMs addressing F-gas emissions include eliminating the use of fluorocarbons and using gases with lower GWP in product manufacturing, preventing leakage from equipment and promoting recovery. The effects of measures relating to F-gases is estimated to be 784 kt CO₂ eq in 2017. To bridge the gap between the progress made by 2017 in reducing F-gas emissions and the targeted emission reductions for 2020 and 2030 (18,450 and 48,220 kt CO₂ eq, respectively), Japan is undertaking comprehensive efforts, including expanding the number of designated products under the Act on Rational Use and Proper Management of Fluorocarbons and supporting the development of next-generation refrigerants and risk assessment methods, while annually monitoring the efforts of manufacturers of fluorocarbons and the production of designated or specified products.

36. **Agriculture.** The main PaMs in this sector include promoting application of compost in paddy fields as an alternative to ploughing in rice straw to reduce CH₄ emissions and improving application techniques for chemical fertilizers to reduce N₂O emissions from soils. These activities are supported by direct payments for environmentally friendly agriculture and are carried out within the framework of the Act on Multi-Functionality of Agriculture (2014), which supports agricultural activities that are effective in protecting the environment, including by limiting global warming and preserving biodiversity, in addition to reducing by more than 50 per cent the amount of synthetic fertilizers and pesticides used compared with conventional farming practices.

37. **LULUCF.** Japan promotes carbon sequestration through mandatory (afforestation, reforestation, deforestation and forest management) and elected (cropland management, grazing land management and revegetation) activities under the Kyoto Protocol, including urban greening (e.g. building parks in cities, increasing green areas around roads and harbours). The legislative framework underpinning mitigation actions in the LULUCF sector includes the Act on Special Measures Concerning the Promotion of Forest Thinning (2008), which sets out the key mitigation measures established by the Ministry of Agriculture, Forestry and Fisheries to promote carbon sequestration in forests in Japan. Japan also fosters carbon storage in cropland and grassland soils by promoting incorporation of organic matter such as compost and green manure.

38. **Waste management.** The main measures targeting this sector focus on reducing the amount of waste for final disposal, reducing the amount of waste incineration, reducing N₂O emissions from incineration of sludge generated from wastewater treatment and supporting widespread use of biomass plastics in order to replace the plastic made from petroleum used in products. Among the important laws targeting waste management, the Sewerage Act, which was revised in 2015, provides non-binding obligations related to the recycling of sludge as fuel and fertilizer that are applicable to managers of sewage treatment facilities.

(d) Response measures

39. Japan's assessment of the economic and social consequences of its response measures focuses on contributing continually to the sustainable and needs-based economic growth of developing countries by providing technical assistance in the fields of energy and the environment throughout the world and by cooperating in project formulation and human resource development, such as by inviting trainees from and sending experts to developing countries, including in the Middle East. Japan actively implemented information exchanges with stakeholders in European countries and the United States of America regarding carbon capture and storage, renewable energy, improving energy access, disaster preparedness and job creation through the development of new industries. The Party assessed the results of its support, which include innovation in developing countries worth JPY 1.3 trillion in 2020. Japan noted difficulties in accurately assessing specific adverse impacts of the implementation of response measures to address climate change.

(e) Assessment of adherence to the reporting guidelines

40. The ERT assessed the information reported in the BR4 of Japan and identified issues relating to transparency and thus adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 5.

Table 5

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

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
1	Reporting requirement specified in paragraph 6 Issue type: transparency Assessment: recommendation	<p>Japan organized the information on its mitigation actions by sector and by gas only for actions addressing CO₂ emissions for the energy sector. In addition, the Party reported other types of actions related to climate change, such as cross-sectoral measures, fundamental measures, initiatives by public organizations and development of public campaigns, but did not clearly explain how these actions are different from one another. Moreover, the Party did not provide a clear explanation at the beginning of the section (BR4 section 3.2) on how the information on mitigation actions is organized, which makes the section difficult to understand.</p> <p>During the review, Japan explained that the organization of the information on PaMs reported in BR4 section 3.2.3 follows the organization of the PaMs described in the Plan for Global Warming Countermeasures.</p> <p>The ERT recommends that, in order to improve the transparency of its reporting, the Party organize the reporting of its mitigation actions, to the extent appropriate, by sector and by gas. The ERT notes that Japan could greatly enhance the transparency of its reporting by clearly explaining the differences between the other activities aimed at addressing climate change, namely, cross-sectoral measures, fundamental measures, initiatives by public organizations and development of public campaigns, and clearly describing the organization of the information at the beginning of the section.</p>
2	Reporting requirement specified in CTF table 3 Issue type: transparency Assessment: recommendation	<p>Japan reported estimates of the impacts of many of its mitigation actions in CTF table 3 as “NE” and zero, without providing any relevant explanations in CTF table 3 or in the textual part of the BR.</p> <p>During the review, the Party explained that it reported “NE” when information was unavailable and that it reported the mitigation effect as zero for some years for measures where the relevant technology is being researched and developed or is under consideration. Japan indicated that, although some of those measures are expected to be introduced after 2020, they do not presently have any practical applications.</p> <p>The ERT recommends that the Party improve the transparency of its reporting by explaining the reporting of “NE” and zero in CTF table 3 in a footnote to CTF table 3 and/or in the textual part of the BR.</p>

Note: Item listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs or to the CTF table number from the “Common tabular format for ‘UNFCCC biennial reporting guidelines for developed country Parties’”. The reporting on the requirements not included in this table is considered to be complete, transparent and thus adhering to the UNFCCC reporting guidelines on BRs.

2. Estimates of emission reductions and removals and the use of units from market-based mechanisms and land use, land-use change and forestry

(a) Technical assessment of the reported information

41. On its use of units from LULUCF activities, Japan reported in CTF tables 4 and 4(a) that in 2016 and 2017 it used units to offset 4.1 and 4.2 per cent of its total GHG emissions, respectively. During the review, Japan explained that it does not intend to 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 2016 or 2017. 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 the use of units from market-based mechanisms and land use, land-use change and forestry by Japan for achieving its target

<i>Year</i>	<i>Emissions excluding LULUCF (kt CO₂ eq)</i>	<i>Contribution of LULUCF (kt CO₂ eq)</i>	<i>Use of units from market-based mechanisms (kt CO₂ eq)</i>	<i>Net emissions including LULUCF and market-based mechanisms (kt CO₂ eq)</i>
Fiscal year 2005 (base year)	1 382 144.50	NA	0	1 382 144.50
2010	1 305 137.18	NA	0	1 305 137.18
2011	1 356 111.13	NA	0	1 356 111.13
2012	1 398 842.61	NA	0	1 398 842.61
2013	1 410 297.94	-59 557.44	0	1 350 740.50
2014	1 362 236.88	-58 981.49	0	1 303 255.39
2015	1 323 617.68	-56 640.92	0	1 316 976.76
2016	1 307 853.92	-53 702.80	0	1 254 151.12
2017	1 291 748.43	-53 933.93	0	1 237 814.50
2020 target	NA	NA	NA	1 329 623.00

Sources: Japan's BR4 and BR4 CTF tables 2(a), 4, 4(a)I, 4(a)II, 4(b) and 6(a).

42. In assessing the Party's progress towards achieving its 2020 target, the ERT noted that Japan's emission reduction target under the Convention is 3.8 per cent or more below the fiscal year 2005 level (see para. 11 above). In 2017, Japan's annual total GHG emissions excluding LULUCF were 6.5 per cent (90,396.07 kt CO₂ eq) below the base-year level. In addition, the ERT noted that in 2017 the contribution of LULUCF was 53,933.93 kt CO₂ eq, resulting in net emissions of 1,237,814.50 kt CO₂ eq, or 91,807.50 kt CO₂ eq (6.9 per cent) below the 2020 target.

43. The ERT noted that Japan is making progress towards its emission reduction target by implementing mitigation actions that are delivering emission reductions and through the contribution of LULUCF.

(b) Assessment of adherence to the reporting guidelines

44. The ERT assessed the information reported in the BR4 of Japan and recognized that the reporting is complete, transparent and thus adhering 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. Projections overview, methodology and results**(a) Technical assessment of the reported information**

45. Japan reported projections for 2020 and 2030 relative to actual inventory data for 2017 under the WEM scenario. The projections have not been updated since the Party's BR3. The WEM scenario reported by Japan includes PaMs implemented and adopted until 2016.

46. 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 2020 and 2030. The projections are also provided in an aggregated format for each sector and for a Party total using GWP values from the AR4. Japan reported on factors and activities affecting emissions for each sector.

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

47. The methodology used for the preparation of the projections is identical to that used for the preparation of the emission projections for the NC7. Japan reported additional key parameters in the BR4 (table 4-10), as well as in CTF table 5, such as passenger and freight transport volumes, in order to improve transparency. In addition, the Party reported different

figures for cement production in the BR4 than those reported in the BR3 for some years (e.g. 70 and 74 Mt for 2005, respectively) in order to correct the values reported previously. However, as explained by Japan during the review, these revisions do not influence the projections reported.

48. To prepare its projections, Japan relied on key underlying assumptions relating to real gross domestic product, population and number of households. The assumptions were not updated on the basis of the most recent economic developments known at the time of the preparation of the projections. Japan constructed the WEM scenario using two different approaches, one for energy-related CO₂ emissions and the other for emissions from other sectors. For energy-related CO₂ emission projections, Japan used a complex energy supply and demand model composed of a range of submodels, including a macroeconomic model, a secondary energy price model, an optimum generation planning model and an elements bottom-up model. For the projections of GHG emissions from other sectors, the Party used a bottom-up spreadsheet-based model. This model applies the GHG inventory calculation methods to future years by using the projected activity data (e.g. clinker production, number of domestic animals, amount of municipal waste, etc.) and the projected emission factor for each emissions source.

49. Sensitivity analyses were conducted for energy-related CO₂ emissions and the cost of power generation based on assumptions relating to the energy mix used for power generation. The results of the sensitivity analysis show that, when power supply resources change by 1.0 per cent, accompanied by a 1.0 per cent decrease and 1.0 per cent increase in coal-fired and nuclear power, respectively, energy-related CO₂ emissions decrease by 8.4 Mt CO₂ and power generation cost decreases by JPY 34 billion.

(c) Results of projections

50. The projected emission levels under the WEM scenario and information on the quantified economy-wide emission reduction target are presented in table 7 and figure 1.

Table 7

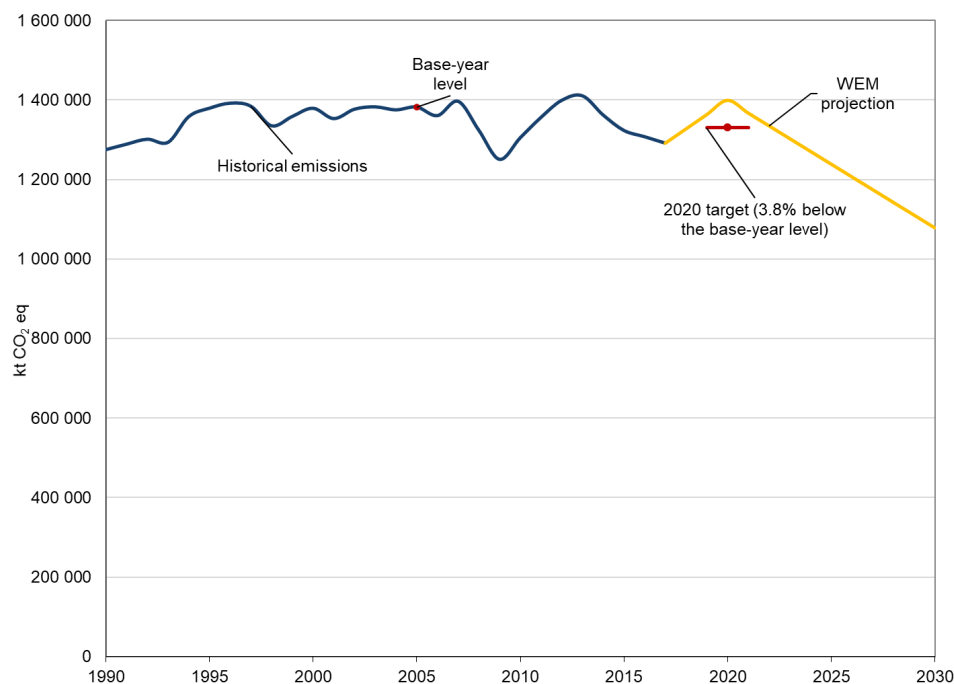
Summary of greenhouse gas emission projections for Japan

	<i>GHG emissions (kt CO₂ eq/year)</i>	<i>Change in relation to base-year level (%)</i>	<i>Change in relation to 1990 level (%)</i>
Quantified economy-wide emission reduction target under the Convention	1 329 623.00	-3.8	4.2
Inventory data 1990	1 275 477.36	-7.7	0.0
Inventory data fiscal year 2005 (base year)	1 382 144.50	0.0	8.4
Inventory data 2017	1 291 748.43	-6.5	1.5
WEM projections for 2020	1 399 565.40	1.3	9.7
WEM projections for 2030	1 079 000.00	-21.9	-15.4

Sources: Japan's BR4 and BR4 CTF table 6.

Note: The projections are for GHG emissions without LULUCF and including indirect CO₂.

Figure 1
Greenhouse gas emission projections reported by Japan



Sources: Japan's BR4 and BR4 CTF tables 1 and 6 (total GHG emissions excluding LULUCF and including indirect CO₂).

51. Japan's total GHG emissions excluding LULUCF are projected under the WEM scenario to increase by 1.3 per cent by 2020 and to decrease by 21.9 per cent by 2030 relative to the base-year (fiscal year 2005) level.

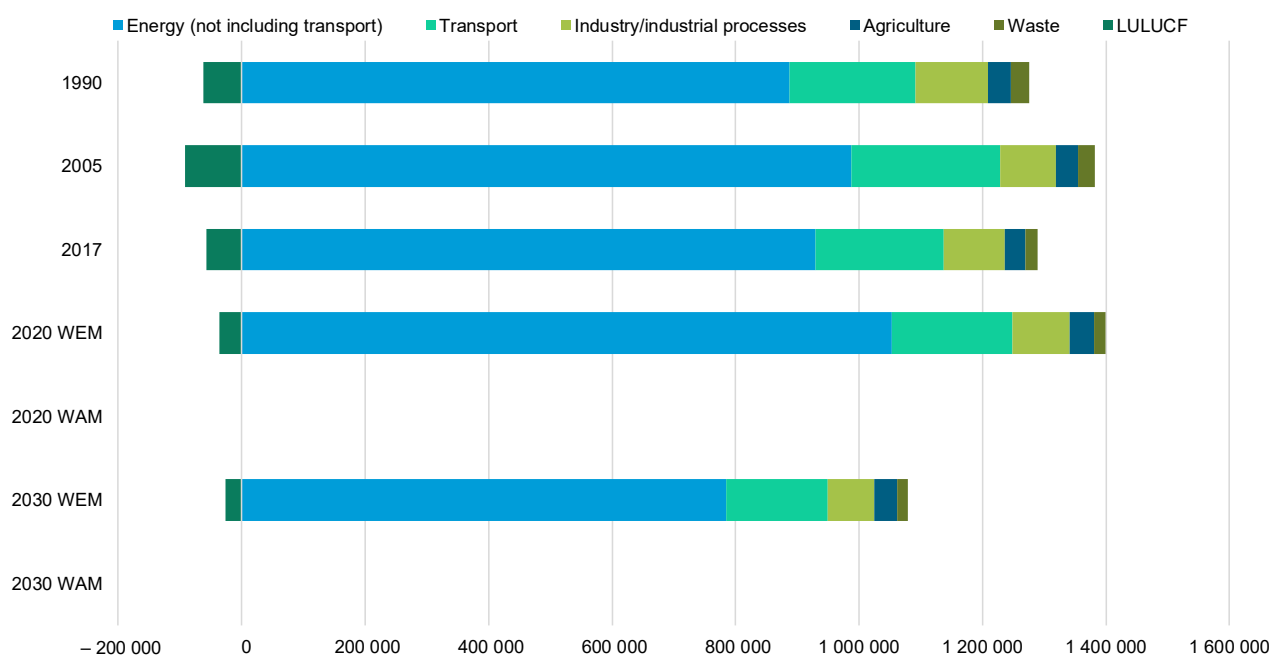
52. Japan's economy-wide target under the Convention is to reduce its total emissions by 3.8 per cent or more below the fiscal year 2005 level by fiscal year 2020 (see para. 11 above). The 2020 projections suggest that Japan may face challenges in achieving its 2020 target under the Convention. Japan aims to achieve the 2020 target by implementing additional mitigation measures and accounting removals from the LULUCF sector.

53. Japan presented the WEM scenario by sector for 2020 and 2030, as summarized in figure 2 and table 8.

54. According to the projections reported for 2020 under the WEM scenario, the most significant absolute emission reductions are expected to occur in the transport and waste sectors, amounting to projected reductions of 19.1 and 30.1 per cent between 2005 and 2020, respectively. The pattern of projected emissions reported for 2030 under the same scenario slightly changes owing to the projected emission reductions in the energy sector. According to the projections reported for 2030 under the WEM scenario, the most significant absolute emission reductions are expected to occur in the energy and transport sectors, amounting to projected reductions of 20.6 and 31.3 per cent between 2005 and 2030, respectively. The largest emission reductions in the energy sector by 2030 will be achieved by improving the efficiency of thermal power, generating nuclear power and ensuring maximum possible use of renewable energy. Regarding emission reductions in the transport sector, the largest mitigation impact will be achieved by expanding distribution of next-generation vehicles and improving fuel efficiency.

Figure 2
Greenhouse gas emission projections for Japan presented by sector

(kt CO₂ eq)



Source: Japan's BR4 CTF table 6.

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

Sector	GHG emissions and removals (kt CO ₂ eq)			Change (%)	
	Fiscal year 2005	2020 WEM	2030 WEM	Fiscal year 2005–2020 WEM	Fiscal year 2005–2030 WEM
Energy (not including transport)	987 664.88	1 053 578.32	784 200.00	6.7	–20.6
Transport	240 841.29	194 840.61	165 500.00	–19.1	–31.3
Industry/industrial processes	90 861.74	93 001.43	74 800.00	2.4	–17.7
Agriculture	35 152.76	38 723.08	37 500.00	10.2	6.7
LULUCF	–91 339.53	–36 404.03	–25 900.00	–60.1	–71.6
Waste	27 623.82	19 321.96	17 300.00	–30.1	–37.4
Other	–	–	–	–	–
Total GHG emissions excluding LULUCF	1 382 144.50	1 399 565.40	1 079 000.00	1.3	–21.9

Source: Japan's BR4 CTF table 6.

55. Japan presented the WEM scenario by gas for 2020 and 2030, as summarized in table 9.

Table 9
Summary of greenhouse gas emission projections for Japan presented by gas

Gas	GHG emissions and removals (kt CO ₂ eq)			Change (%)	
	Fiscal year 2005	2020 WEM	2030 WEM	Fiscal year 2005–2020 WEM	Fiscal year 2005–2030 WEM
CO ₂ ^a	1 293 497.30	1 298 375.21	997 800.00	0.4	–22.9
CH ₄	35 665.64	33 932.91	31 600.00	–4.9	–11.4
N ₂ O	25 049.43	21 557.28	21 100.00	–13.9	–15.8
HFCs	12 784.02	38 300.00	21 600.00	199.6	69.0
PFCs	8 623.35	4 000.00	4 200.00	–53.6	–51.3

Gas	GHG emissions and removals (kt CO ₂ eq)			Change (%)	
	Fiscal year 2005	2020 WEM	2030 WEM	Fiscal year 2005–2020 WEM	Fiscal year 2005–2030 WEM
	SF ₆	5 053.01	2 400.00	2 700.00	–52.5
NF ₃	1 471.75	1 000.00	500.00	–32.1	–66.0
Total GHG emissions without LULUCF	1 382 144.50	1 399 565.40	1 079 500.00	1.3	–21.9

Source: Japan's BR4 CTF table 6.

^a Japan included indirect CO₂ emissions in its projections.

56. For 2020, the most significant absolute reductions are projected for PFC, N₂O and SF₆ emissions, amounting to 53.6, 13.9 and 52.5 per cent between fiscal year 2005 and 2020, respectively.

57. For 2030, the most significant absolute reductions are projected for CO₂, HFC and CH₄ emissions, amounting to 22.9, 69.0 and 11.4 per cent between fiscal year 2005 and 2030, respectively. The reduction in CO₂ emissions will be achieved by improving the efficiency of thermal power, generating nuclear power and ensuring maximum possible use of renewable energy, as well as expanding distribution of next-generation vehicles and increasing energy efficiency in the transport sector. The HFC emission reduction by 2030 will be achieved through PaMs such as preventing leakage of fluorocarbons from the use of refrigeration and air-conditioning equipment for business use and promoting the recovery of fluorocarbons from such equipment during disposal.

(d) Assessment of adherence to the reporting guidelines

58. The ERT assessed the information reported in the BR4 of Japan and identified issues relating to completeness, transparency and thus adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 10.

Table 10

Findings on greenhouse gas emission projections reported in the fourth biennial report of Japan

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 31 Issue type: transparency Assessment: recommendation	The estimated GHG emissions reported in CTF table 6(a) on industry/industrial processes for 2000, 2005, 2010 and 2017 are higher than those reported in CTF tables 1s2 and 1s3, which present data from the Party's annual GHG inventory. Emission estimates for other sectors are consistent across both sets of tables. The Party explained in a footnote to CTF table 6(a) that indirect CO ₂ emissions are included in the industry/industrial processes sector. However, this is not consistent with the UNFCCC reporting guidelines on NCs (para. 31), which require Parties to present emission projections relative to actual inventory data for the preceding years. During the review, Japan explained that the estimated emissions for industry/industrial processes reported in CTF table 6(a) include all indirect CO ₂ emissions, while the sectoral estimated emissions reported in CTF tables 1s1, 1s2 and 1s3 do not include indirect CO ₂ emissions. The ERT recommends that Japan improve the transparency of its reporting by including the indirect CO ₂ emissions for each sector in the historical and projected emissions reported for them or in "Other"; maintaining consistency with the annual GHG inventory, rather than including the indirect CO ₂ emissions in the industry/industrial processes sector; and including a description of its approach in the BR and/or CTF table 6.
2	Reporting requirement specified in paragraph 35 Issue type: completeness	The Party did not provide projections of indirect GHG emissions, such as carbon monoxide, nitrogen oxides, non-methane volatile organic compounds and sulfur oxides in its BR4. However, the ERT noted that Japan reports emissions of indirect GHGs in its annual GHG inventory submission.

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
	Assessment: encouragement	During the review, the Party explained that indirect GHG emissions are not included in the projections. The ERT encourages Japan to improve the completeness of its reporting by providing projections of indirect emissions of carbon monoxide, nitrogen oxides, non-methane volatile organic compounds and sulfur oxides, or clearly explaining why it did not report such information.
3	Reporting requirement specified in paragraph 36 Issue type: completeness Assessment: recommendation	The Party did not report separately emission projections related to fuel sold to ships and aircraft engaged in international transport. During the review, Japan explained that it did not provide separately the relevant emission projections because it does not have the necessary information on projections of future demand, energy consumption and the fuel mix for ships and aircraft engaged in international transport. The ERT reiterates the recommendation from the previous review report for the Party to report separately, to the extent possible, emission projections related to fuel sold to ships and aircraft engaged in international transport rather than including them in the total emissions.
4	Reporting requirement specified in paragraph 43 Issue type: transparency Assessment: encouragement	In its BR4, the Party reported that synergies and overlaps are taken into account, but it provided no additional information explaining how the model or approach used to calculate emission projections accounts for any overlap or synergies that may exist between different PaMs. During the review, Japan provided an example of how it avoids double counting reduction effects. The Party explained that, in estimating the CO ₂ emission reductions resulting from the mitigation action “maximum introduction of renewable energy”, those from “reduction of CO ₂ emission intensity in the power sector”, which has a potential overlap with the former, are not included. To clarify the approach to accounting for synergies among PaMs, Japan provided the example of how reducing synthetic fertilization reduces not only direct but also indirect emissions of N ₂ O. The ERT noted that this information was useful in enhancing transparency. The ERT encourages Japan to improve the transparency of its reporting by providing a more detailed explanation of how the models or approaches used account for any overlap or synergies. The ERT noted that including some examples in line with the information provided during the review could enhance the transparency of the Party’s reporting.
5	Reporting requirement specified in paragraph 46 Issue type: transparency Assessment: encouragement	In the BR4 (chapter 4.4), Japan reported the sensitivity of projections of energy-related CO ₂ emissions to the changes in the energy mix used for power generation quantitatively without discussing the results of the analysis qualitatively. During the review, Japan explained that only the changes in the energy mix affecting costs and CO ₂ emissions were analysed when establishing the energy mix target for 2030 and that it did not have any additional sensitivity analysis to share with the ERT. The ERT encourages Japan to improve the transparency of its reporting by qualitatively discussing the sensitivity of the projections to underlying assumptions.
6	Reporting requirement specified in paragraph 47 Issue type: transparency Assessment: encouragement	Japan reported projected values for a few key parameters and assumptions in CTF table 5 (e.g. amounts of crude steel, cement and ethylene production for 2020) as “NE”. However, the Party provided no explanation for its reporting of “NE” in CTF table 5 or the BR4. During the review, the Party explained that for some parameters, such as crude steel production, only the projected values for 2030 are used in the projections, and no projected values for 2020 from official sources are available. The ERT encourages Japan to improve the transparency of its reporting by either providing in CTF table 5 values for all key parameters reported for the entire time series or explaining in CTF table 5 and/or the BR why “NE” was reported.

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, transparent and thus adhering to the UNFCCC reporting guidelines on NCs and on BRs.

D. 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

59. In its BR4 Japan reported information on its provision of financial, technological and capacity-building support to non-Annex I Parties.

60. Japan has provided support that it considers to be “new and additional”. The Party defines “new and additional” support as climate finance for developing countries in each reporting period that is newly committed or disbursed with respect to the previous one. The parliament approves new funding for climate change on an annual basis. Climate finance reported by Japan in the BR4 is the newly committed or disbursed (“new and additional”) finance in 2017–2018. In order to avoid double counting, Japan does not include previously committed or disbursed climate finance in a given reporting period. Japan explained that funds reported as committed are those that have been appropriated by parliamentary or cabinet decisions, or for which a commitment has been made through a diplomatic agreement, but whose payment has not been completed during the reporting period. Funds reported as disbursed are those that have actually been transferred to the recipient countries.

61. Japan reported the support that it has provided to non-Annex I Parties, clearly distinguishing between support for mitigation and adaptation activities and recognizing the capacity-building elements of such support. The Party also reported information on its national approach to tracking the provision of support to non-Annex I Parties, which involves using the Rio markers as a reference (see para. 62 below).

62. Japan considers funds that have been assessed as specifically supporting climate change measures (mitigation, adaptation and cross-cutting) as being climate-specific. To this end, regarding financial support through bilateral, regional and other channels, Japan made a list of examples of projects that it had funded and which contribute to climate change action in developing countries using the Rio markers as a reference. On the basis of that list, Japan reports on projects contributing to climate change action supported through bilateral and regional channels. In response to a request during the review, Japan provided the ERT with a translation of this list of projects. The list describes possible mitigation, adaptation and cross-cutting actions in 10 broad socioeconomic sectors that a given project needs to include in order to be considered climate-specific. Japan explained that, on the basis of these criteria relating to specific actions to address mitigation, adaptation and cross-cutting areas, the implementing agencies identify projects in their respective socioeconomic sectors and submit a list of the identified projects to the Ministry of Foreign Affairs, which compiles the information submitted and verifies its adequacy. Regarding multilateral channels, the contribution to organizations that engage in climate change activities is designated as climate-specific.

63. Japan’s national approach to tracking the provision of support includes tracking the main types of climate finance, financial mechanisms used, allocation channels and implementing agencies. The main types of climate change finance provided by Japan are grant aid, loans, technical assistance, contributions to international organizations, other official flows and private finance. Japan did not report on the use of indicators to track the provision of support in its national approach. During the review, Japan explained that it does not use specific indicators to track the provision of support, but reiterated that it used the list referred to in paragraph 62 above to track financial support through bilateral and regional channels.

64. The Ministry of Foreign Affairs, the Ministry of Finance, the Ministry of Agriculture, Forestry and Fisheries, the Ministry of Economy, Trade and Industry, the Ministry of the Environment and the Japan International Cooperation Agency are the implementing agencies of the Party’s support. The Global Environment Facility, the Green Climate Fund, the United Nations Development Programme and the World Bank are the implementing agencies of Japan’s contributions to international organizations, such as environment-related funds and development organizations. The relevant Japanese ministries and the Japan Bank for

International Cooperation are the main implementing agencies of contributions in the form of other official flows, while the Japan Bank for International Cooperation and Nippon Export and Investment Insurance are the main implementing agencies of the private finance mobilized by co-finance and trade insurance, respectively. The Ministry of Foreign Affairs gathers information from the relevant ministries and institutions and compiles information on Japan's climate change finance.

(b) Financial resources

65. Japan reported information on its provision of financial support to non-Annex I Parties as required under the Convention. 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 (including grants, concessional and non-concessional loans and equity) and the allocation channels.

66. Japan allocates its resources to address the adaptation and mitigation needs of non-Annex I Parties by implementing numerous support projects to assist developing countries, especially those making efforts to reduce GHG emissions as well as those vulnerable to the negative impacts of climate change. Japan has been providing assistance through various channels, including grant aid, concessional loans and technical assistance, taking into account local economic situations and project objectives. As at December 2018, Japan had implemented projects in as many as 125 countries. Through its embassies and the overseas offices of the Japan International Cooperation Agency, the Japanese Government has been developing projects that respond to the needs of recipient countries in close consultation with the Governments of those countries and international organizations.

67. During the review, Japan explained that, in order to identify the needs of developing countries, it establishes a country assistance policy for each country and implements projects that are based on requests received from recipient countries. Projects are identified and formulated through discussions with the Government of the recipient country and information-gathering preparatory surveys conducted by Japan's overseas offices, such as embassies. During the preparatory survey, the Japan International Cooperation Agency evaluates whether the proposed project is consistent with the country's nationally determined contribution, estimates the GHG emission reduction to be achieved through the project, assesses potential climate change impacts, evaluates the country's climate change vulnerability and identifies necessary adaptation measures, to the extent possible. The ERT noted that the inclusion of this explanation in the next BR would enhance the transparency of the reporting on how Japan seeks to ensure that the resources it provides effectively address the needs of non-Annex I Parties with regard to climate change action.

68. In November 2015, at the twenty-first session of the Conference of the Parties, Japan announced its plan to support developing countries, called the Actions for Cool Earth 2.0, by which it committed to providing approximately JPY 1.3 trillion in public and private climate finance to developing countries by 2020. Japan continues its efforts towards fulfilling the Actions for Cool Earth 2.0. As per its long-term strategy under the Paris Agreement approved by the Cabinet of Japan in June 2019, Japan also intends to generate synergy in terms of mobilizing private finance. In accordance with developed countries' commitment to a goal of jointly mobilizing USD 100 billion per year by 2020, Japan provided some USD 25 billion in 2017–2018, comprising approximately USD 20.5 billion in public finance and USD 4.5 billion in private finance.

69. This total financial contribution of USD 25 billion provided in 2017–2018 was aimed at enhancing implementation of the Convention by developing countries by addressing mitigation, adaptation (both individually and jointly) and REDD+. The financial support for mitigation activities (USD 22.2 billion) focused on assisting developing countries in promoting renewable energy, including solar, biomass and geothermal energy, as well as introducing facilities with high energy efficiency. The support for adaptation (USD 2.1 billion) was aimed at strengthening developing countries' capacity to cope with natural disasters caused by climate change and providing them with the necessary equipment and facilities to implement precautionary measures against and for recovery from natural disasters, including floods and droughts. The financial support for activities targeting both mitigation and adaptation (USD 0.7 million) was to assist developing countries in both

mitigation and adaptation. Japan's financial support for REDD+ implementation in developing countries (USD 117 million) was to assist them in conducting surveys of forest resources, formulating forest management plans and facilitating afforestation, including by providing equipment.

70. Table 11 summarizes the information reported by Japan on its provision of financial support.

Table 11

Summary of information on provision of financial support by Japan in 2017–2018

(Millions of United States dollars)

<i>Allocation channel of public financial support</i>	<i>Year of disbursement</i>	
	<i>2017</i>	<i>2018</i>
Official development assistance	11 462.29	10 064.27
Climate-specific contributions through multilateral channels, including:	246.12	202.70
Green Climate Fund	214.22	171.57
Trust Fund for Supplementary Activities	1.27	1.36
Other multinational climate change funds	25.76	25.01
United Nations bodies	4.87	4.76
Climate-specific contributions through bilateral, regional and other channels	9 554.28	10 822.16

Sources: BR4 CTF tables and Query Wizard for International Development Statistics, available at <http://stats.oecd.org/qwids/>.

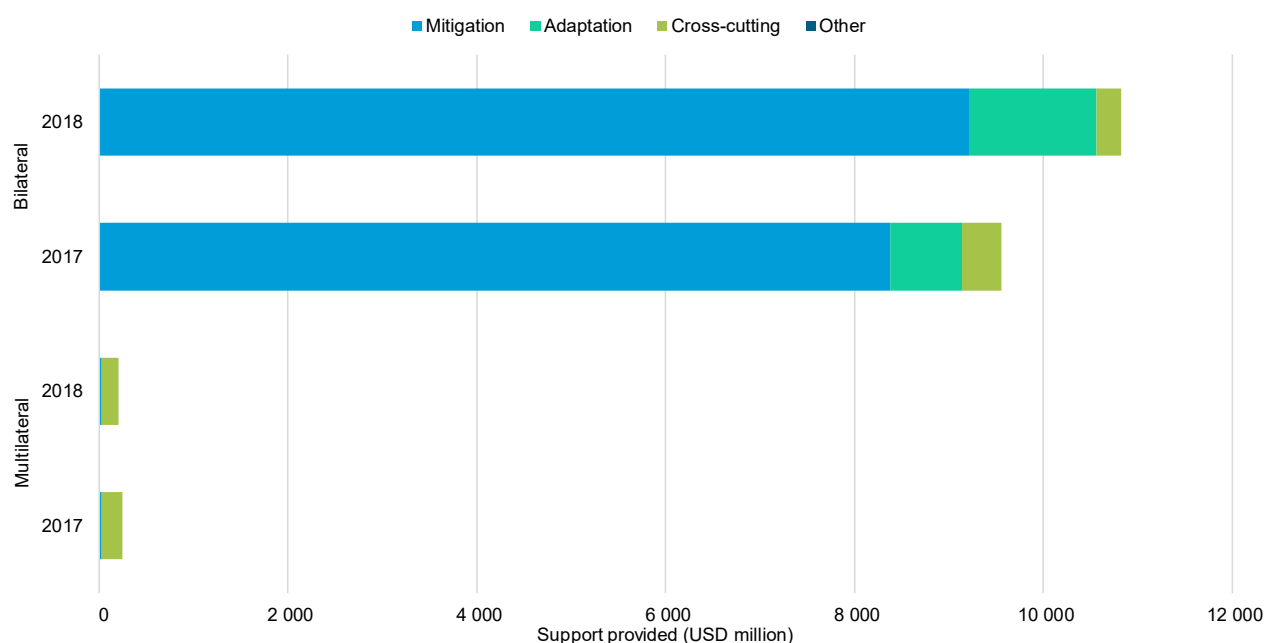
71. Japan's climate-specific public financial support⁴ totalled USD 20,825 million in 2017–2018. It has slightly increased its contributions, by 1.5 per cent, since the BR3 (2015–2016), as reported in its local currency.

72. During the reporting period, Japan placed a particular focus on supporting mitigation and adaptation actions in developing country Parties in Asia. The nine countries that were allocated the most direct financial contributions through bilateral channels during the reported biennium are Indonesia, Thailand, India, Viet Nam, Myanmar, the Philippines, Nepal, Sri Lanka and Mongolia. The greatest direct bilateral financial allocations were made to India (USD 8 billion), Indonesia (USD 4.8 billion) and the Philippines (USD 1.2 billion), mainly in the form of concessional loans.

73. 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 12. 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, timing of approval of individual bilateral projects or changes in exchange rates.

⁴ For the remainder of this chapter, the term “financial support” means climate-specific financial support, unless otherwise noted.

Figure 3
Provision of financial support by Japan in 2017–2018



Source: Japan's BR4 CTF tables 7, 7(a) and 7(b).

Table 12
Summary of information on channels of financial support used in 2017–2018 by Japan

(Millions of United States dollars)

Allocation channel of public financial support	Year of disbursement				Share (%)	
	2017	2018	Difference	Change (%)	2017	2018
Detailed information by type of channel						
Multilateral channels						
Mitigation	25.17	24.41	-0.77	-3.0	10.2	12.0
Adaptation	0.59	0.60	0.01	1.6	0.2	0.3
Cross-cutting	220.36	177.70	-42.66	-19.4	89.5	87.7
Other	0.00	0.00	-	-	-	-
Total multilateral	246.12	202.70	-43.42	-17.6	100.0	100.0
Bilateral channels						
Mitigation	8 378.22	9 211.03	832.81	9.9	87.7	85.1
Adaptation	756.85	1 348.98	592.13	78.2	7.9	12.5
Cross-cutting	419.21	262.15	-157.07	-37.5	4.4	2.4
Other	-	-	-	-	-	-
Total bilateral	9 554.28	10 822.16	1 267.87	13.3	100.0	100.0
Total multilateral and bilateral	9 800.41	11 024.86	1 224.45	12.5	100.0	100.0

Source: Japan's BR4 CTF tables 7, 7(a) and 7(b).

74. Japan contributed through climate-specific multilateral channels USD 246.1 million and 202.7 million in 2017 and 2018, respectively, for a total of USD 448.8 million for the biennium 2017–2018. This represents 2.4 per cent of its total financial support to developing countries in the biennium. The contributions were made to specialized multilateral climate change funds, mainly to the Green Climate Fund (USD 385.9 million, representing 86 per cent of its total contribution to multilateral climate funds). The rest of Japan's contributions via multilateral channels were made to other multilateral climate change funds (e.g.

Multilateral Fund for the Implementation of the Montreal Protocol, UNFCCC Trust Fund for Supplementary Activities). Japan reported that it does not contribute to the Least Developed Countries Fund or the Special Climate Change Fund of the Global Environment Facility, or to the Adaptation Fund.

75. The Party reported detailed information on the total financial support provided through bilateral and regional channels in 2017 (USD 9,554.28 million) and 2018 (USD 10,822.16 million). In 2017–2018, 97.6 per cent of the total public financial support was allocated through bilateral, regional and other channels, equating to 204 and 254 financial contributions in 2017 and 2018, respectively. These financial contributions were made to more than 125 countries in Asia, Africa, Oceania, and Latin America and the Caribbean. The largest share of financial resources was allocated to Asia, with India receiving the greatest allocation.

76. The BR4 provides information on the types of support provided. In terms of the focus of public financial support, as reported in CTF table 7, in 2017, the shares of the total public financial support allocated to mitigation, adaptation and cross-cutting projects were 85.7, 7.7 and 6.5 per cent, respectively. In 2018, the shares of total public financial support allocated to mitigation, adaptation and cross-cutting projects were 83.8, 12.2 and 4.0 per cent, respectively. The share of financial contributions for adaptation projects increased from 7.7 to 12.2 per cent between 2017 and 2018. During the review, Japan explained that although it does not plan to further increase the relative share of financial resources allocated to adaptation, it will proactively continue to provide resources for adaptation.

77. The ERT noted that in 2017–2018 the majority of financial contributions through bilateral channels were allocated to supporting mitigation in the energy and water and sanitation sectors and, in the area of adaptation, to projects supporting disaster prevention and recovery and cross-cutting projects. Examples include a geothermal power plant planning project in Indonesia (USD 190 million) and water supply improvement projects in India and Iraq (USD 670 million). In the case of financial contributions made through multilateral channels, these were allocated to multiple sectors (e.g. energy, transport, water and sanitation), but in the CTF tables they are classified as support for cross-cutting sectors because it is not possible to disaggregate the data to show which sectors receive this support.

78. CTF tables 7(a) and 7(b) include information on the types of financial instrument used for providing assistance to developing countries, which include grants and concessional and non-concessional loans. The ERT noted that, while a majority of the reported projects were supported by grants in 2017 and 2018, concessional loans accounted for most of the total public financial support.

79. Japan reported that private finance also plays an increasingly important role in its climate change response, with the total amount exceeding USD 4.5 billion in 2017–2018. Japan reported that it has been working to establish a mechanism for leveraging private investment by using public finance to support climate change action in non-Annex I Parties, including through co-financing by the Japan Bank for International Cooperation and the private sector and the provision of trade insurance by Nippon Export and Investment Insurance. For example, in 2018, the Japan Bank for International Cooperation launched a new facility, the Japan Bank for International Cooperation Global Facility to Promote Quality Infrastructure Investment for Environmental Preservation and Sustainable Growth, which expanded the scope of projects eligible for support and diversified the financial tools available to support them. In addition, as part of its Global action for Reconciling Economic growth and ENvironmental preservation operations, the Japan Bank for International Cooperation has set up credit lines to support projects on energy efficiency and renewable energy in countries in Central America and in Chile, Ecuador and Viet Nam.

80. Japan also reported several examples of its support through bilateral collaboration. For example, the Party provides grant aid for adaptation projects related to water supply, including projects to construct and repair water supply facilities in countries, such as Vanuatu, experiencing drought caused by climate change. Such activities ensure access to safe water and contribute to improving the quality of life of urban residents, including immigrants. Japan also provides loans to support mitigation projects aimed at improving energy access in developing countries. Japan has been cooperating with developing countries

to reduce GHG emissions through electrification of local areas, improving transmission efficiency and transitioning to clean energy. For example, in Cambodia, Japan supported increasing the number of substations and expanding the transmission and distribution network in Phnom Penh to stabilize the power supply in the metropolitan region.

81. The ERT notes that, in order to address a recommendation from the previous review, Japan resubmitted the CTF tables to include the documentation box to CTF table 7, which was omitted in the original submission because of a technical issue with the CTF Reporter software and provides information on financial support provided to non-Annex I Parties. However, the ERT also notes that, in this documentation box, Japan provided only part of the explanation provided in the BR as to the consideration of its financial support as “new and additional” (see para. 60 above). The ERT further notes that including in the documentation box of the CTF table 7 the full explanation provided in the textual part of the BR would enhance the transparency of the reporting.

(c) Technology development and transfer

82. Japan provided information on the steps, measures and activities related to technology transfer, access and deployment benefiting developing countries, including on activities undertaken by the public and private sectors. Japan provided examples of support provided for the deployment and enhancement of the endogenous capacities of non-Annex I Parties. As an example of such support, the Party described how it has been promoting the global introduction of existing low-carbon and decarbonizing technologies and their dissemination in developing countries through the Joint Crediting Mechanism. Japan has established partnerships with 17 partner countries and supported more than 160 projects, for example, the Party introduced energy-saving technologies and renewable energies in the city of Mandalay in Myanmar.

83. The ERT took note of the detailed information provided on recipient countries, target areas, measures and focus sectors of technology transfer activities and programmes in CTF table 8. Of the 128 activities reported, 91 are focused on Asia, with the others distributed throughout Africa, Latin America and small island developing States around the world. Most of the mitigation activities mainly address the energy (42) and transport (20) sectors and of the 26 adaptation activities, a majority (17) address disaster protection and recovery. All reported activities are supported by public funding but are carried out jointly by the public and private sectors; 45 of these projects have already been implemented, while 83 are planned.

84. Japan reported on its measures and activities as well as success and failure stories in relation to technology transfer, and in particular on measures taken to promote, facilitate and finance the transfer and deployment of climate-friendly technologies. One success story relates to a Joint Crediting Mechanism project involving technology transfer: a waste-to-energy plant was established in Yangon city, Myanmar, which provides a new source of power generation and helps prevent landfill gas emissions through combustion of municipal solid waste. The plant has been operating successfully since 2017. The aim of the project was to implement an appropriate waste treatment process while reducing GHG emissions by incinerating waste that would otherwise cause CH₄ emissions from a landfill disposal site and increasing power generation to alleviate an electricity shortage in the area. The project was successful owing to close communication with stakeholders, meeting local needs and the transfer of operational skills through training project participants.

85. The ERT notes that in CTF table 8 Japan reported detailed additional information on technology transfer projects in the relevant column, as per footnote (d) to the table, but did not include information on financing and co-financing arrangements related to the projects, which, for example, may be included therein. The ERT also notes that providing this information, at least for the projects requiring the largest amounts of financial support, would enhance the transparency of the reporting.

(d) Capacity-building

86. Japan has provided capacity-building support for mitigation, adaptation and technology that responds to the existing and emerging capacity-building needs identified by

non-Annex I Parties (see para. 87 below). It described individual measures and activities related to capacity-building support in textual and tabular format.

87. Japan has supported 250 climate-related capacity-building activities. Of these, 126 are related to adaptation, 90 to mitigation and 34 to multiple areas. While most of these activities (102) are at the global level or involve multiple regions, 93 target only Asian countries and 55 target developing countries in other regions. The Party’s support has responded to the existing and emerging capacity-building needs of non-Annex I Parties following the principles of stakeholder participation, country-driven demand, cooperation between donors and across programmes, and impact assessment and monitoring. The Party provided detailed evidence that the projects respond to the capacity-building needs of non-Annex I Parties. However, in the BR4 Japan did not explain in detail how it interacts with the beneficiary countries before reaching an agreement to carry out the projects. During the review, Japan explained that it identified the projects to be supported in close consultation with the partner countries through a “request-based approach” and has established a country assistance policy for each country on the basis of requests from recipient countries (see para. 67 above).

88. Successful capacity-building projects relating to adaptation include establishing long-term risk evaluation methods for storm tides for use in the event of cyclones and developing a system of analysis and mapping of climate change impacts to implement adaptation and food security measures. Successful capacity-building projects relating to mitigation include developing, implementing and managing progress of nationally determined contributions and developing and disseminating monitoring methods by using information and communication technology to measure countries’ progress towards achieving their emission reduction targets in preparation for the first global stocktake in 2023.

89. The ERT notes that in CTF table 9 Japan reported detailed information in the column for description of the programme or project. The ERT also notes that providing information on co-financing arrangements, for example, for at least the projects requiring the largest amounts of financial support would enhance the transparency of the reporting.

2. Assessment of adherence to the reporting guidelines

90. The ERT assessed the information reported in the BR4 of Japan and identified issues relating to completeness, transparency and thus adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 13.

Table 13

Findings on provision of support to developing country Parties from the review of the fourth biennial report of Japan

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
1	Reporting requirement specified in paragraph 14 Issue type: transparency Assessment: recommendation	<p>Japan provided a general description of its national approach to tracking the financial, technological and capacity-building support provided to non-Annex I Parties. However, the Party did not provide a transparent explanation in the BR of how it defines climate-specific funds. In its BR4, Japan reported that it identifies projects that contribute to climate change mitigation and adaptation using a list of examples of such projects in developing countries. This list is prepared using the Rio markers as a reference. However, Japan did not include this list in the BR4 or provide a detailed description thereof.</p> <p>During the review, in response to a request from the ERT, Japan provided the list of projects contributing to climate change mitigation and adaptation in developing countries that it uses to define funds as climate-specific.</p> <p>The ERT reiterates the recommendation from the previous review report for the Party to enhance the transparency of its reporting on its national approach to tracking financial, technological and capacity-building support provided to non-Annex I Parties by providing more detailed information on how it defines funds as climate-specific. The ERT notes that the Party could include a link to the list of projects provided during the review or a more detailed description of the list in the next BR to address this issue.</p>

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
2	<p>Reporting requirement specified in paragraph 17</p> <p>Issue type: completeness</p> <p>Assessment: recommendation</p>	<p>In its BR4, Japan did not provide information on the financial support provided to non-Annex I Parties for adapting to any economic or social consequences of response measures.</p> <p>During the review, Japan explained that it does not provide support to non-Annex I Parties for adapting to any economic or social consequences of response measures.</p> <p>The ERT reiterates the recommendation from the previous review report for Japan to improve the completeness of its reporting by including information on the financial support it has provided, committed and/or pledged for assisting non-Annex I Parties to adapt to economic and social consequences of response measures, as appropriate, or explaining that it does not provide such support.</p>
3	<p>Reporting requirement specified in paragraph 17</p> <p>Issue type: transparency</p> <p>Assessment: recommendation</p>	<p>The ERT noted that in CTF tables 7 and 7(a) the Party left some cells blank and reported “NE” in others without providing any explanation for this reporting.</p> <p>During the review, Japan explained that cells were left blank when there is no need to report the corresponding information and that “NE” was reported when it did not have information to report or the information depended on external organizations that did not provide the information needed.</p> <p>The ERT recommends that the Party improve the transparency of its reporting by including in the BR and/or CTF tables 7 and 7(a) relevant explanations for its use of notation keys. The ERT notes that the Party could include the explanation provided during the review in footnotes to CTF tables 7 and 7(a) to address this recommendation.</p>
4	<p>Reporting requirement specified in paragraph 18</p> <p>Issue type: transparency</p> <p>Assessment: encouragement</p>	<p>In CTF table 7, Japan did not provide information on the methodology used to convert local currency (yen) to United States dollars, as indicated in footnote (b) to the table, providing only the exchange rates used. Further, in CTF tables 7(a) and 7(b), Japan did not report information on implementing agencies in the column for additional information as indicated in footnote (e) to that table.</p> <p>Regarding the methodology used for converting local currency to United States dollars, during the review Japan explained that it used the foreign currency rates annually issued by the Organisation for Economic Co-operation and Development, and that it would report this information in the next BR. Regarding the information on implementing agencies to be reported in CTF table 7(b), the Party noted that it has this information available and would consider reporting it in the next BR.</p> <p>The ERT encourages Japan to improve the transparency of its reporting by describing the methodology used to convert the currency figures reported in CTF tables 7, 7(a) and 7(b). The ERT reiterates the encouragement from the previous review report for Japan to improve the transparency of its reporting by including, as appropriate, information on the implementing agencies in the column for additional information in CTF tables 7(a) and 7(b).</p>

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, transparent and thus adhering to the UNFCCC reporting guidelines on BRs.

III. Conclusions and recommendations

91. The ERT conducted a technical review of the information reported in the BR4 and BR4 CTF tables of Japan in accordance with the UNFCCC reporting guidelines on BRs. The ERT concludes that the reported information mostly adheres to the UNFCCC reporting guidelines on BRs and provides 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.

92. Japan’s total GHG emissions excluding LULUCF and including indirect CO₂ covered by its quantified economy-wide emission reduction target were estimated to be 2.8 per cent below its 1990 level, whereas total GHG emissions including LULUCF and including indirect CO₂ were 2.5 per cent below its 1990 level, in 2018. Emissions peaked in 2013 owing to an increase in solid fuel consumption for electricity power generation, stemming from an

increase in electricity demand and a shift from petroleum to coal, and decreased thereafter as a result of measures promoting energy efficiency and renewable energy, as well as nuclear power plants reinitiating operations following their shutdown after the Great East Japan Earthquake of 2011. The changes in total emissions in Japan were driven mainly by a decrease in CO₂ emissions from manufacturing industries and construction, which was offset to a large extent by increases in emissions from energy industries.

93. Under the Convention Japan committed to achieving a quantified economy-wide emission reduction target of 3.8 per cent or more below the fiscal year 2005 level by fiscal year 2020. The target covers CO₂ (including indirect CO₂), CH₄, N₂O, HFCs, PFCs, SF₆ and NF₃, expressed using GWP values from the AR4, and covers all sources and sectors included in the annual GHG inventory. Emissions and removals from the LULUCF sector are included in the target. Japan reported that it does not plan to make use of market-based mechanisms for achieving its target. In absolute terms, this means that under the Convention Japan has to reduce its emissions from 1,382,144.50 kt CO₂ eq (in the base year) to 1,329,623.00 kt CO₂ eq by 2020.

94. In addition to its fiscal year 2020 target, Japan also reported on its mid-term target of achieving a 26 per cent (approximately 1,042,000 kt CO₂ eq) reduction in fiscal year 2030 compared with the fiscal year 2013 level under the Paris Agreement. In its long-term low GHG emission development strategy submitted to the secretariat in accordance with Article 4, paragraph 19, of the Paris Agreement, Japan has also set a long-term carbon-neutrality target of achieving a decarbonized society as early as possible in the second half of the twenty-first century.

95. Japan's annual total GHG emissions excluding LULUCF and including indirect CO₂ in 2017 were 6.5 per cent (90,396.07 kt CO₂ eq) below the base-year level. Japan reported that the contribution of LULUCF was -53,933.93 kt CO₂ eq in 2017, resulting in net emissions of 1,237,814.50 kt CO₂ eq, or 91,807.50 kt CO₂ eq (6.9 per cent) below the 2020 target. The ERT noted that Japan is making progress towards its emission reduction target by implementing mitigation actions that are delivering emission reductions and through the contribution of LULUCF.

96. The GHG emission projections provided by Japan in its BR4 correspond to the WEM scenario. Under this scenario, emissions are projected to be 9.7 per cent above the 1990 level by 2020. On the basis of the reported information, the ERT concludes that Japan may face challenges in achieving its 2020 target under the WEM scenario.

97. Japan's main policy framework relating to climate change is the Act on Promotion of Global Warming Countermeasures, adopted in 1998. The Party described the mitigation actions that it has implemented to help it achieve its 2020 targets, which include initiatives to encourage business operators to voluntarily reduce GHG emissions, the introduction of mandatory GHG accounting, a domestic credit scheme (called the J-Credit Scheme), a tax for climate change action introduced in 2012 and the development of green finance. The PaMs promoting the introduction and distribution of highly energy-efficient equipment and devices in various sectors have the most significant expected mitigation effect. Other policies that are expected to deliver significant emission reductions are those aimed at distributing next-generation vehicles and improving fuel efficiency in transport, reducing emissions of F-gases and promoting forest sinks.

98. The Party highlighted the mitigation actions for 2020–2030 that it has implemented to help achieve its medium- and long-term emission reduction targets. In addition to the measures listed in paragraph 97 above, measures aimed at reducing CO₂ emissions in the power sector by improving the efficiency of thermal power generation, generating nuclear power and ensuring the maximum possible use of renewable energy are expected to have significant mitigation impacts in 2030.

99. Japan continues to provide climate financing to developing countries in line with its national climate finance programmes. The Party has increased its contributions by 1.5 per cent since the BR3; its public financial support in 2017 and 2018 totalled USD 9,800.41 million and 11,024.86 million, respectively. For those years, Japan provided substantially more public financial resources through bilateral and regional channels (97.6 per cent) than through multilateral channels (2.4 per cent). Over that period, Japan provided more support

for mitigation (USD 22.2 billion) than for adaptation (USD 2.1 billion). The biggest share of financial support went to projects and programmes to support mitigation actions in the energy and water and sanitation sectors and to support adaptation through disaster prevention and recovery. Examples of this support include a geothermal power plant planning project in Indonesia (USD 190 million) and water supply improvement projects in India and Iraq (USD 670 million).

100. Japan continues to provide support for technology development and transfer and capacity-building. The Party reported information on 128 technology transfer and development activities supporting developing countries in 2017–2018. Priority for technological support was given to activities addressing mitigation actions in the energy and transport sectors and, in the case of adaptation projects, to activities supporting disaster prevention and recovery in Asian countries. An example of a successful technology transfer project is a demonstration project that promoted green hospitals by improving efficiency and environment in national hospitals in Viet Nam.

101. Priority for capacity-building support was given to activities supporting adaptation and mitigation (216 of the 250 reported capacity-building activities) in countries in Asia, Africa and Latin America and in small island developing States. Good examples of the Party's support for capacity-building activities include establishing long-term risk evaluation methods for storm tides for use in the event of cyclones in the Pacific region and developing a system of analysis.

102. In the course of the review, the ERT formulated the following recommendations for Japan to improve its adherence to the UNFCCC reporting guidelines on BRs in its next BR:

- (a) To improve the completeness of its reporting by:
 - (i) Reporting separately, to the extent possible, emission projections related to fuel sold to ships and aircraft engaged in international transport rather than including them in the total emissions (see issue 3 in table 10);
 - (ii) Including information on the financial support it has provided, committed and/or pledged for assisting non-Annex I Parties to adapt to any economic or social consequences of response measures, as appropriate, or explaining that it does not provide such support (see issue 2 in table 13);
- (b) To improve the transparency of its reporting by:
 - (i) Clearly explaining in the BR and/or CTF tables the notation keys used to report the possible scale of contributions from market-based mechanisms under the Convention and those from other market-based mechanisms in CTF tables 2(e)I and 2(e)II in relation to the progress towards its quantified economy-wide emission reduction target, clarifying whether it intends to use units from market-based mechanisms to achieve its 2020 target (see issue 1 in table 3);
 - (ii) Organizing the reporting of its mitigation actions, to the extent appropriate, by sector and by gas (see issue 1 in table 5);
 - (iii) Explaining the reporting of "NE" and zero in CTF table 3 in a footnote to CTF table 3 and/or in the textual part of the BR in relation to the mitigation actions and their effects (see issue 2 in table 5);
 - (iv) Including the indirect CO₂ emissions for each sector in the historical and projected emissions reported for them or in "Other"; maintaining consistency with the annual GHG inventory, rather than including the indirect CO₂ emissions in the industry/industrial processes sector; and including a description of its approach in the BR and/or CTF table 6 (see issue 1 in table 10);
 - (v) Providing more detailed information on how it defines funds as climate-specific in relation to its national approach to tracking financial, technological and capacity-building support provided to non-Annex I Parties (see issue 1 in table 13);
 - (vi) Including in the BR and/or CTF tables 7 and 7(a) relevant explanations for its use of the notation keys in relation to the provision of financial support to non-Annex I Parties (see issue 3 in table 13).

Annex

Documents and information used during the review

A. Reference documents

2019 GHG inventory submission of Japan. Available at <https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/national-inventory-submissions-2019>.

2020 GHG inventory submission of Japan. Available at <https://unfccc.int/ghg-inventories-annex-i-parties/2020>.

BR3 of Japan. Available at <https://unfccc.int/documents/193560>.

BR3 CTF tables of Japan. Available at <https://unfccc.int/documents/198850>.

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

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“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 I: UNFCCC reporting guidelines on annual greenhouse gas inventories”. Annex to decision 24/CP.19. Available at <http://unfccc.int/resource/docs/2013/cop19/eng/10a03.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/1999/7. Available at <http://unfccc.int/resource/docs/cop5/07.pdf>.

“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>.

Report on the technical review of the BR3 of Japan. FCCC/TRR.3/JPN. Available at https://unfccc.int/sites/default/files/resource/trr.3_JPN.pdf.

“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 Toru Hayashi (Ministry of the Environment of Japan), including additional material. The following documents¹ were provided by Japan:

Government of Japan. 2019. *The Long-term Strategy under the Paris Agreement*. Available at <https://unfccc.int/sites/default/files/resource/The%20Long-term%20Strategy%20under%20the%20Paris%20Agreement.pdf>.

Government of Japan. 2020. *Submission of Japan’s Nationally Determined Contribution*. Available at <https://www4.unfccc.int/sites/NDCStaging/Pages/Party.aspx?party=JPN&prototype=1>.

¹ References reproduced as received from the Party.