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## Report of the technical review of the second biennial report of Japan

According to decision 2/CP.17, developed country Parties are requested to submit their second biennial reports by 1 January 2016, that is, two years after the due date for submission of a full national communication. This report presents the results of the technical review of the second 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”.

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## **I. Introduction and summary**

### **A. Introduction**

1. This report covers the centralized technical review of the second biennial report (BR2)<sup>1</sup> 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). In accordance with the same decision, a draft version of this report was communicated to the Government of Japan, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

2. The review took place from 6 to 11 June 2016 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Mr. Benon Bibbu Yassin (Malawi), Ms. Ana Maria Danila (European Union), Ms. Laura Elena Dawidowski (Argentina), Ms. Hongmin Dong (China), Mr. Domenico Gaudio (Italy), Ms. Hana Hamadalla (Sudan), Ms. Diana Harutyunyan (Armenia), Mr. Nicolo Macaluso (Canada), Ms. Neranda Maurice (Saint Lucia) and Ms. Sina Wartmann (Germany). Ms. Danila and Ms. Dawidowski were the lead reviewers. The review was coordinated by Ms. Veronica Colerio, Mr. Daniel Hooper and Ms. Barbara Muik (UNFCCC secretariat).

### **B. Summary**

3. The expert review team (ERT) conducted a technical review of the information reported in the BR2 of Japan in accordance with the “UNFCCC biennial reporting guidelines for developed country Parties” (hereinafter referred to as the UNFCCC reporting guidelines on BRs). During the review, Japan provided the following additional relevant information: updated information on its emission reduction target; how the emission projections are estimated; the sensitivity analysis for electric power generation; and its contribution to the Trust Fund for Supplementary Activities for 2013.

#### **1. Timeliness**

4. The BR2 was submitted on 28 December 2015, before the deadline of 1 January 2016 mandated by decision 2/CP.17. The common tabular format (CTF) tables were also submitted on 28 December 2015. Japan submitted a revised BR2 and revised CTF tables on 22 June 2016 and further revised CTF tables on 19 August 2016.

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

5. Issues and gaps related to the reported information identified by the ERT are presented in table 1 below. The information reported by Japan in its BR2 is mostly in adherence with the UNFCCC reporting guidelines on BRs as per decision 2/CP.17.

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<sup>1</sup> The biennial report submission comprises the text of the report and the common tabular format (CTF) tables. Both the text and the CTF tables are subject to the technical review.

Table 1  
**Summary of completeness and transparency issues related to mandatory reported information in the second biennial report of Japan**

<i>Chapter of the biennial report</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Paragraphs with recommendations</i>
Greenhouse gas emissions and trends	Complete	Transparent	
Assumptions, conditions and methodologies related to the attainment of the quantified economy-wide emission reduction target	Complete	Transparent	
Progress in achievement of targets	Mostly complete	Mostly transparent	16, 19, 22, 39, 40
Provision of support to developing country Parties	Complete	Transparent	

*Note:* A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in chapter III.

## II. Technical review of the reported information

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

6. Japan has provided a summary of information on greenhouse gas (GHG) emission trends for the period 1990–2013 in its BR2 and CTF tables 1(a)–(d). The BR2 makes reference to the national inventory arrangements, which are explained in more detail in the national inventory report included in Japan’s 2015 annual inventory submission (in chapter 1.2.4). The national inventory arrangements were established in accordance with the reporting requirements related to national inventory arrangements contained 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” (hereinafter referred to as the UNFCCC Annex I inventory reporting guidelines) that are required by paragraph 3 of the UNFCCC reporting guidelines on BRs. Further, Japan indicated that there have been no changes in the national inventory arrangements since its first biennial report (BR1), which was submitted in December 2013.

7. The information reported in the BR2 on emission trends is consistent with that reported in the 2015 annual inventory submission of Japan. To reflect the most recently available data, version 1.0 of Japan’s 2016 annual inventory submission has been used as the basis for discussion in chapter II.A of this review report.

8. Total GHG emissions<sup>2</sup> excluding emissions and removals from land use, land-use change and forestry (LULUCF) increased by 7.3 per cent between 1990 and 2014, whereas total GHG emissions including net emissions and removals from LULUCF increased by 7.5 per cent over the same period. The increase in the total GHG emissions can be attributed mainly to carbon dioxide (CO<sub>2</sub>) emissions, which increased by 9.5 per cent (excluding

<sup>2</sup> In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions expressed in terms of carbon dioxide equivalent excluding land use, land-use change and forestry, unless otherwise specified. Values in this paragraph are calculated based on the 2016 inventory submission, version 1.0.

LULUCF) between 1990 and 2014. Over the same period, emissions of methane (CH<sub>4</sub>) decreased by 27.0 per cent, while emissions of nitrous oxide (N<sub>2</sub>O) decreased by 32.3 per cent. The combined fluorinated gases (F-gases), such as perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), sulphur hexafluoride (SF<sub>6</sub>) and nitrogen trifluoride (NF<sub>3</sub>), increased by 18.9 per cent over the same period. The emission trend was driven mainly by the increased fossil fuel consumption for electricity power generation and the increase in emissions from road transport. In addition, the substitution of nuclear energy with fossil fuels for electricity power generation, due to the impact of the great Japan earthquake and subsequent tsunami in 2011, augmented the increasing emission trend since 2011. These factors outweighed the improvements in the efficiency of energy use (e.g. in the transport sector), as well as emission reductions in the industrial processes, agriculture and waste sectors.

9. The ERT noted that, during the period 1990–2014, Japan experienced a 7.3 per cent increase in its GHG emissions, and a 24.1 per cent increase in gross domestic product (GDP), while its population remained relatively stable (a 2.9 per cent increase). As a result, Japan's GDP per capita increased by 20.6 per cent, while GHG emissions per GDP unit decreased by 13.5 per cent and GHG emissions per capita increased by 4.3 per cent. Table 2 below illustrates the emission trends by sector and some of the economic indicators relevant to GHG emissions for Japan.

Table 2

**Greenhouse gas emissions by sector and some indicators relevant to greenhouse gas emissions for Japan for the period 1990–2014**

Sector	GHG emissions (kt CO <sub>2</sub> eq)					Change (%)		Share by sector (%)	
	1990	2000	2010	2013	2014	1990–2014	2013–2014	1990	2014
1. Energy	1 091 235.57	1 209 835.59	1 164 439.41	1 260 638.74	1 214 698.24	11.3	–3.6	85.9	89.1
A1. Energy industries	354 411.45	395 371.81	463 902.07	567 134.10	534 560.95	50.8	–5.7	27.9	39.2
A2. Manufacturing industries and construction	381 936.69	382 070.91	340 862.93	344 134.41	330 474.92	–13.5	–4.0	30.1	24.2
A3. Transport	204 245.55	253 323.19	217 699.87	217 707.35	210 147.90	2.9	–3.5	16.1	15.4
A4.–A5. Other	145 477.05	176 722.23	140 615.01	130 408.34	138 281.42	–4.9	6.0	11.4	10.1
B. Fugitive emissions from fuels	5 164.83	2 347.45	1 359.53	1 254.54	1 233.05	–76.1	–1.7	0.4	0.1
C. CO <sub>2</sub> transport and storage	NO, NE	NO, NE	NO, NE	NE, NO	NE, NO	NA	NA	NA	NA
2. IPPU	109 309.82	106 634.08	78 355.48	87 011.58	89 649.66	–18.0	3.0	8.6	6.6
3. Agriculture	41 997.80	39 235.82	39 856.99	38 838.52	38 372.24	–8.6	–1.2	3.3	2.8
4. LULUCF	–59 295.16	–86 811.62	–69 123.72	–65 047.58	–61 463.44	3.7	–5.5	NA	NA
5. Waste	28 199.76	31 008.36	22 250.76	21 394.38	21 142.17	–25.0	–1.2	2.2	1.6
6. Other	NO	NO	NO	NO	NO	NA	NA	NA	NA
<b>Total GHG emissions without LULUCF</b>	<b>1 270 742.95</b>	<b>1 386 713.84</b>	<b>1 304 902.64</b>	<b>1 407 883.23</b>	<b>1 363 862.31</b>	<b>7.3</b>	<b>–3.1</b>	<b>100.0</b>	<b>100.0</b>
<b>Total GHG</b>	<b>1 211</b>	<b>1 299</b>	<b>1 235</b>	<b>1 342</b>	<b>1 302</b>	<b>7.5</b>	<b>–3.0</b>	<b>NA</b>	<b>NA</b>

Sector	GHG emissions (kt CO <sub>2</sub> eq)					Change (%)		Share by sector (%)	
	1990	2000	2010	2013	2014	1990–2014	2013–2014	1990	2014
	<b>emissions with LULUCF</b>	<b>447.79</b>	<b>902.22</b>	<b>778.92</b>	<b>835.65</b>	<b>398.86</b>			
<i>Indicators</i>									
GDP per capita (thousands 2011 USD using PPP)	29.55	32.19	34.40	35.61	35.63	20.6	0.1		
GHG emissions without LULUCF per capita (t CO <sub>2</sub> eq)	10.29	10.93	10.19	11.06	10.73	4.3	–3.0		
GHG emissions without LULUCF per GDP unit (kg CO <sub>2</sub> eq per 2011 USD using PPP)	0.35	0.34	0.30	0.31	0.30	–13.5	–3.0		

Sources: (1) GHG emission data: Japan’s 2016 annual inventory submission, version 1.0; (2) GDP per capita data: World Bank.

Note: The ratios per capita and per GDP unit as well as the changes in emissions and the shares by sector are calculated relative to total GHG emissions without LULUCF using the exact (not rounded) values, and may therefore differ from the ratio calculated with the rounded numbers provided in the table.

Abbreviations: GDP = gross domestic product, GHG = greenhouse gas, IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry, NA = not applicable, NE = not estimated, NO = not occurring, PPP = purchasing power parity.

## B. Assumptions, conditions and methodologies related to the attainment of the quantified economy-wide emission reduction target

10. In its BR2 and CTF tables 2(a)–(f), Japan reported a description of its target, including associated conditions and assumptions. CTF tables 2(a)–(f) contain the required information in relation to the description of the Party’s emission reduction target. Further information on the target and the assumptions, conditions and methodologies related to the target is provided in this report (see paras. 11 and 12 below).

11. For Japan, the Convention entered into force on 21 March 1994. Under the Convention, Japan has announced an interim target to reduce its GHG emissions by 3.8 per cent below the 2005 level by 2020. This target includes all GHGs included in the UNFCCC Annex I inventory reporting guidelines, namely CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, SF<sub>6</sub> and NF<sub>3</sub>. It also includes all Intergovernmental Panel on Climate Change (IPCC) sources and sectors included in the annual GHG inventory. The global warming potential (GWP) values used are those from the IPCC Fourth Assessment Report (AR4). Emissions and removals from the LULUCF sector are included in the target and accounted using an activity-based approach. Japan reported that it plans to make use of market-based mechanisms to achieve its target; however, the level of contribution of such mechanisms has not been estimated (see para. 35 below).

12. During the review, Japan informed the ERT that the Plan for Global Warming Countermeasures was adopted in May 2016, which sets Japan’s emission reduction target for 2020 as “3.8 per cent or more emission reduction in 2020 compared to the 2005 level”. During the review, Japan stated that it would formally submit this 2020 emission reduction

target to the secretariat.<sup>3</sup> In absolute terms, this means that under the Convention, Japan has to reduce its emissions from 1,396,510.56 kilotonnes of carbon dioxide equivalent (kt CO<sub>2</sub> eq) (in the base year)<sup>4</sup> to 1,343,443.16 kt CO<sub>2</sub> eq or less by 2020.

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

13. This chapter provides information on the review of the reporting by Japan on the progress made in reducing emissions in relation to the target, mitigation actions taken to achieve its target, and the use of units from market-based mechanisms and LULUCF.

### **1. Mitigation actions and their effects**

14. In its BR2 and CTF table 3, Japan reported on its progress in the achievement of its target and the mitigation actions implemented and planned to achieve its target. Japan clarified during the review that the content of its policies and measures (PaMs) has been updated but there were no major changes in the status of implementation of its PaMs since its sixth national communication (NC6) and BR1. The BR2 includes information on mitigation actions organized by sector and by gas. Further information on the mitigation actions related to the Party's target is provided in chapter 3.1 of the BR2 and in this report (see paras. 25–30 below).

15. In its BR2, Japan provided information on its domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress made towards its target. However, Japan did not provide information on changes to its domestic institutional arrangements. During the review, Japan clarified that there have been no changes in its domestic institutional arrangements since the BR1.

16. The ERT recommends that Japan improve the completeness of its next biennial report (BR) by presenting information on any changes in its domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress made towards its economy-wide emission reduction target, or explicitly stating that there have been no changes to the institutional arrangements.

17. Japan did not provide information in the BR2 and CTF table 3, as required by the UNFCCC reporting guidelines on BRs, on the estimated effects of its cross-cutting PaMs, leaving the respective cells in CTF table 3 blank. Also, for most of the PaMs reported, Japan used the notation key “NE” (not estimated) in the relevant cells of CTF table 3.

18. During the review, Japan explained the reasons why the effects of PaMs were not estimated and were reported as “NE” in CTF table 3. During the preparation of the BR2, the estimated mitigation impact of many PaMs was not available because the Plan for Global Warming Countermeasures was under preparation. After the preparation of the BR2, Japan adopted the Plan for Global Warming Countermeasures, including the 2020 emission reduction target, and will report on the progress made in that regard in its third biennial report. In addition, Japan also clarified during the review that the impacts of cross-cutting PaMs were not reported in CTF table 3 because these impacts are assumed to be included in those of other PaMs. The ERT noted that the provision of information on

<sup>3</sup> The information is available at: <<http://unfccc.int/focus/mitigation/items/9736.php>>.

<sup>4</sup> Japan chose 2005 as the base year for its 2020 target. The emission level in the base year is calculated based on Japan's 2016 annual inventory submission, version 1.0.

estimated mitigation impacts would greatly improve the transparency of the Party's reporting and understanding of the scale of impact of its key PaMs on emission levels. The ERT also noted Japan's intention to take the Plan for Global Warming Countermeasures into account in its next BR submission.

19. The ERT reiterates the recommendation made in the previous review report that Japan improve the transparency of its reporting in its next BR and/or CTF tables by reporting the estimated mitigation impacts for the mitigation actions presented in CTF table 3, or including an explanation of why such information is not reported. Such an explanation could be provided either in the BR or in the footnotes to CTF table 3.

20. In its BR2, Japan presented information on its mitigation actions, grouped by sector and by gas, in line with the structure required by the UNFCCC reporting guidelines on BRs. However, Japan also provided the information required in CTF table 3 for groups of PaMs per sector rather than for each individual PaM. As a result of this approach, it is difficult to extract the specific objective, type of instrument used and starting year of implementation for each individual PaM. Moreover, the direct reference to individual PaMs is included in the "Brief description" column and not in the first column, "Name of mitigation action", while some of the PaMs appear to have been omitted altogether from CTF table 3 and others are duplicated and appear in several rows.

21. During the review, Japan explained that the presentation of the information on mitigation actions in CTF table 3 is based on the organization of PaMs in the domestic plan. Japan acknowledged the overall discrepancies between the tabular and the textual information on PaMs included in the BR2 and informed the ERT that it would make efforts to achieve the required consistency in its next BR.

22. The ERT recommends that, in its next BR submission, Japan improve the transparency of the information reported by providing in CTF table 3 the required information for each individual PaM while ensuring consistency with the textual information included in the BR.

23. Japan provided, to the extent possible, detailed information on the assessment of the economic and social consequences of its response measures. Japan reported that it takes into account the importance of making efforts to minimize the adverse economic and social impacts of response measures, and focuses its efforts on the establishment of a low-carbon society. In its BR2, Japan briefly reported on two initiatives that it is leading: the East Asia Low Carbon Growth Partnership and the Actions for Cool Earth.

24. Japan reported, to the extent possible, on the domestic arrangements established for the process of self-assessment of compliance with emission reductions required by science, and on the progress made in the establishment of national rules for taking action against non-compliance with emission reduction targets. The Government has put in place an annual review of the progress of national PaMs and voluntary initiatives of business operations. In addition, GHG emission levels are estimated biannually (see also chapter 3.1.1.2 of the BR2).

25. Japan's emission reduction target for 2020 is presented in the Global Warming Countermeasure Plan, which was developed based on the Act on Promotion of Global Warming Countermeasures. At the time of the preparation of the BR2, Japan was developing this plan, but its full details had not yet been determined. During the review, Japan informed the ERT that the plan was adopted in May 2016.

26. A key overarching cross-sectoral policy reported in the BR2 is the Accounting, Reporting and Disclosure Programme, under which businesses must report their emissions if they exceed certain thresholds. In addition, the J-credit scheme is a cross-cutting measure that works as a domestic carbon offset scheme, with eligible activities including the use of

renewable energy, the introduction of energy saving equipment and forest sequestration. Economic and taxation measures are in place, such as the Tax for Climate Change Mitigation and Eco-Car Tax Cuts, and the greening of finance through the promotion of financial incentives to mobilize private investment in low-carbon projects. Also, there has been considerable investment by the Government in technology, infrastructure, research and demonstration projects to assist the commercialization of new technologies. Further, Japan established the Joint Crediting Mechanism (JCM), which is designed to facilitate the diffusion of leading low-carbon technologies, products, systems, services and infrastructure in developing countries, generating carbon offsets to be used towards the achievement of Japan's emission reduction target.

27. For Japan, the energy sector accounted for 89.5 per cent of emissions in 2013. Measures to underpin actions to reduce emissions in the energy sector are comprehensive (see also chapter II.C.1 of the report of the technical review of Japan's BR1). Among the key policies related to energy supply are PaMs aimed at promoting renewable energy, including onshore and offshore wind power, solar power, small-scale hydropower, geothermal power and biomass, and promoting high-efficiency thermal power generation. Japan is encouraging low-carbon urban/regional development through low-carbon structures. In the building sector, energy efficiency standards have been established for commercial and residential buildings, and energy management systems promote the optimization of energy consumption.

28. In the transport sector, economic instruments such as tax relief for eco-friendly automobiles are aimed at promoting the use of next-generation automobiles. In addition, the Government is implementing traffic flow management measures, together with investments in technology and infrastructure. Modal shifts from lorry transport to rail and coastal shipping are tackled through fiscal measures.

29. In the industry and industrial processes sectors, key PaMs are aimed at the promotion and enhancement of voluntary action plans of industry, including setting guidelines for controlling GHG emissions for certain industry sectors. Holistic policies to reduce F-gas emissions are also in place, such as the Act on the Rational Use and Proper Management of Fluorocarbons.

30. A number of PaMs are also being implemented in other sectors. In the agriculture sector, initiatives are in place to replace the conventional process of ploughing in rice straw with the application of compost. In the forestry/LULUCF sector, several measures are in place that contribute to the conservation of forests and sustainable forest management, such as thinning in accordance with the Basic Plan for Forest and Forestry and the Act on Special Measures concerning Advancement of Implementation of Forest Thinning. These, together with other policies, aim to achieve a forest sink target of 38,000 kt CO<sub>2</sub> eq or more by 2020. In the waste sector, the Basic Recycling Plan sets targets for waste reduction and recycling which are promoted through several measures, including reducing direct landfill disposal of organic waste and upgrading combustion technology at incineration facilities.

31. Table 3 below provides a summary of the key mitigation actions and estimates of their mitigation effects reported by Japan to achieve its target.

Table 3

**Summary of information on mitigation actions and their impacts reported by Japan**

<i>Sector affected</i>	<i>List of key mitigation actions</i>	<i>Estimate of mitigation impact by 2020 (kt CO<sub>2</sub> eq)</i>
Policy framework and cross-sectoral measures	Global Warming Countermeasures Plan; based on the Act on Promoting Global Warming	NE

<i>Sector affected</i>	<i>List of key mitigation actions</i>	<i>Estimate of mitigation impact by 2020 (kt CO<sub>2</sub> eq)</i>
	Countermeasures	
	Accounting, Reporting and Disclosure Programme	NE
	J-credit scheme	NE
	Joint Crediting Mechanism	NE
Energy, including:		
Energy supply	Promotion of power from renewable energy sources: feed-in tariff scheme	NE
	Technological development	NE
Energy consumption	Building efficiency standards (commercial and residential)	NE
	Top Runner Programme	
Transport	Promotion of the use and diffusion of vehicles with lower environmental loads	NE
	Investments in technology, traffic flow management and infrastructure	NE
	Tax incentives for eco-friendly automobiles	NE
IPPU	Voluntary action plans	NE
	Holistic policies to reduce emissions of fluorinated gases	18 500
Agriculture	Reducing methane emissions from rice cultivation	333–922
LULUCF	Forest sink strategies	38 000
	Measures to increase sinks in agricultural soils	7 084–8 280
Waste	Waste Management Law	NE

*Note:* The estimates of mitigation impact are estimates of emissions of carbon dioxide or carbon dioxide equivalent avoided in a given year as a result of the implementation of mitigation actions.

*Abbreviations:* IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry, NE = not estimated.

32. In the BR2, updated information since the NC6 and BR1 has been presented for several sectors: for the building sector, the Act on the Improvement of the Energy Saving Performance of Buildings was introduced in 2015; for the transport sector, following the introduction of fuel cell vehicles in December 2014, measures are planned to promote the use of fuel cell vehicles, including the introduction of hydrogen stations, and traffic flow improvements are being implemented; and with regard to energy supply, following approval by the Nuclear Regulation Authority, the Government decided to restart the Sendai nuclear power plant unit 1 reactor (in September 2015) and unit 2 reactor (in November 2015) and is making efforts to further refine the safety of nuclear power generation.

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

33. Japan reported in its BR2 and CTF tables 4, 4(a)I, 4(a)II and 4(b) its use of units from market-based mechanisms under the Convention and the contribution of LULUCF to achieving its target. The information on total emissions excluding LULUCF was provided for 2005 and for each reported year (2011–2013). The information on the contribution from LULUCF was provided for 2013. Further relevant information on emissions and removals and the use of units is provided in chapter 3.3 of the BR2.

34. For 2013, Japan reported in CTF table 4 annual total GHG emissions excluding LULUCF of 1,407,774.97 kt CO<sub>2</sub> eq, or 0.8 per cent above the 2005 base year level.

35. On the contribution from LULUCF, Japan reported in CTF tables 4 and 4(a) removals amounting to 60,563.82 kt CO<sub>2</sub> eq in 2013 to offset 4.3 per cent of its total GHG emissions. With regard to the contribution from LULUCF for the other reported years, Japan explained during the review that its approach is consistent with the accounting for LULUCF activities under the Kyoto Protocol for the second commitment period, which began in 2013. Japan reported in CTF tables 4 and 4(b) that it did not use units from market-based mechanisms in 2012 and 2013 towards the achievement of its 2020 target, although in principle it intends to use units to achieve its target (see para. 11 above). In its BR2, Japan notes that it establishes and implements the JCM in partner countries in order to appropriately evaluate in a quantitative manner its contributions to GHG emission reductions or removals achieved through the diffusion of low-carbon technologies, products, systems, services and infrastructure as well as the implementation of mitigation actions in developing countries, and to use these credits to achieve its emission reduction target (see chapter 3.1.2 of the BR2). Table 4 below illustrates Japan's total GHG emissions, the contribution of LULUCF and the use of units from market-based mechanisms to achieve its target.

Table 4

### Summary of information on the use of units from market-based mechanisms and land use, land-use change and forestry as part of the reporting on the progress made by Japan towards the achievement of its target

<i>Year</i>	<i>Emissions excluding LULUCF (kt CO<sub>2</sub> eq)</i>	<i>Contribution from LULUCF (kt CO<sub>2</sub> eq)</i>	<i>Emissions including contribution from LULUCF (kt CO<sub>2</sub> eq)</i>	<i>Use of units from market-based mechanisms (kt CO<sub>2</sub> eq)</i>
1990	1 270 247.10	NA	NA	NA
Base year (2005) <sup>a</sup>	1 396 510.56	NA	NA	NA
2010	1 304 299.73	NA	NA	0.00
2011	1 354 313.88	NA	NA	0.00
2012	1 390 484.55	NA	NA	0.00
2013	1 407 774.97	-60 563.82	1 347 211.15	0.00

*Sources:* Japan's second biennial report and common tabular format tables 1, 4, 4(a) I, 4(a)II and 4(b).

*Abbreviations:* LULUCF = land use, land-use change and forestry, NA = not applicable.

<sup>a</sup> Emissions and removals are reported for a base year, if a year other than 1990 is used as a base year.

36. To assess the progress towards the achievement of the 2020 target, the ERT noted that Japan's emission reduction target under the Convention is at least 3.8 per cent below

the 2005 base year level (see para. 12 above). In 2013, Japan's annual total GHG emissions excluding LULUCF were 0.8 per cent (or 11,264.41 kt CO<sub>2</sub> eq) above the 2005 base year level. The contribution from LULUCF was -60,563.82 kt CO<sub>2</sub> eq in 2013, thus annual total GHG emissions including the contribution from LULUCF were 3.5 per cent below the 2005 base year level. In addition, the ERT noted that in 2013 the Party did not use units from market-based mechanisms to achieve the target. Taking into consideration the latest national inventory estimates which Japan issued on 14 April 2016, the Party's annual total GHG emissions excluding LULUCF in 2014 (1,363,862.31 kt CO<sub>2</sub> eq) were 2.4 per cent below the 2005 base year level.

37. The ERT noted that Japan is making progress towards its emission reduction target by implementing or planning mitigation actions and through the contribution of LULUCF. Moreover, to ensure the effectiveness of its climate change policy, Japan in its BR2 announced that it will strictly manage and monitor the progress of its PaMs. This, coupled with the prospect of an increased contribution from nuclear energy and the planned use of units from the market-based mechanisms, should assist Japan in making further progress towards its emission reduction target.

### 3. Projections

38. Japan reported in its BR2 and CTF table 6(a) updated projections for 2020 and 2030 relative to actual inventory data for 2013 under the 'with measures' (WEM) scenario. Projections are presented on a sectoral basis, using the same sectoral categories as used in chapter 3.1.2 on mitigation actions, and on a gas-by-gas basis for the following GHGs: CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, PFCs, HFCs and SF<sub>6</sub> (treating PFCs and HFCs collectively in each case) as well as NF<sub>3</sub>. Projections are also provided in an aggregated format for each sector as well as for a Party total, using GWP values from the IPCC AR4. Further information on the projections is provided in chapters 4.1–4.9 of the BR2.

39. The BR2 and CTF table 6(a) do not include the information required by the UNFCCC reporting guidelines on BRs on emission projections related to fuel sold to ships and aircraft engaged in international transport. During the review, Japan provided information, noting that it was not possible to calculate the projections related to international transport as it does not have the projected data of "bonded imports" and "bonded exports" of fuels, which are used as activity data in the inventory. Japan also provided information confirming that the projections in CTF table 6 do not include emission projections related to fuel sold to ships and aircraft engaged in international transport. To increase the completeness of the Party's reporting, the ERT reiterates the recommendation made in the previous review report that Japan report emission projections related to fuel sold to ships and aircraft engaged in international transport, to the extent possible, in its next BR.

40. The information reported by Japan on factors and activities influencing emissions for each sector is not complete. While chapters 4.4 and 4.5 of the BR2 provide information on how the emissions in the fiscal year 2020 compare with the emissions in the fiscal year 2005, no information is presented regarding the main factors and activities that contributed to the trends. During the review, Japan provided additional information on the factors and activities influencing emissions for each sector, noting, for example, that for selected sectors activity data (e.g. growth in sector output) are multiplied by an emission intensity factor and that the emission factors are influenced by the PaMs described in chapter 3.1.2 of the BR2. To increase completeness, the ERT reiterates the recommendation made in the previous review report that Japan provide information on factors and activities influencing emissions for each sector in order to provide an understanding of the emission trends in the years from 1990 to the latest projected years.

41. Japan included information in CTF table 5 on key variables and assumptions for selected years (i.e. 1990, 2000, 2005, 2010, 2011, 2020 and 2030) but not for 1995 and 2015, as required by the UNFCCC reporting guidelines on BRs. During the review, Japan provided the missing information for 2015. To increase transparency, the ERT encourages Japan to provide a summary of key variables and assumptions for the historical period and for the projection analysis for all years identified in CTF table 5.

42. Japan's BR2 does not provide the information required by paragraph 43 of the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications" (hereinafter referred to as the UNFCCC reporting guidelines on NCs) on the methodologies used for the preparation of the emission projections. During the review, Japan supplied information that provided a high-level overview of the methodologies used for the preparation of the emission projections; for example, it explained that a simple spreadsheet model was used to estimate non-CO<sub>2</sub> GHGs. To increase the completeness of the Party's reporting, the ERT encourages Japan to include the following information in its next BR: (1) the gases and/or sectors for which a model or approach was used; (2) the type of model or approach used and its characteristics (for example, top-down model, bottom-up model, accounting model, expert judgement); (3) the original purpose for which the model or approach was designed and, if applicable, how it has been modified for climate change purposes; (4) the strengths and weaknesses of the model or approach used; and (5) how the model or approach used accounts for any overlap or synergies that may exist between different PaMs. The information should be sufficiently detailed to allow the reader to have an understanding of how Japan prepares its emission estimates.

43. Moreover, Japan did not report in the BR2 on whether there were changes in the methodology used since the BR1. During the review, Japan provided information confirming that the approach used for the projections in the BR2 is similar to that used in the BR1. To increase transparency, the ERT encourages Japan to provide information on changes (or the lack thereof) in the methodology used since its most recent national communication and/or BR.

44. Japan did not report emission projections for indirect GHGs such as carbon monoxide, nitrogen oxides and non-methane volatile organic compounds, as well as for sulphur oxides. To increase completeness, the ERT encourages the Party to include projections of indirect GHGs in its next BR.

45. Japan did not report a 'with additional measures' (WAM) or 'without measures' (WOM) scenario. The ERT encourages Japan to provide emission projections for the WOM and WAM scenarios, in addition to the WEM scenario.

46. Japan did not provide information in its BR2 on the sensitivity of the projections to underlying assumptions. During the review, it provided the sensitivity analysis for electricity generation (see para. 52 below). While the information was detailed, it did not enhance transparency with respect to the uncertainty regarding the economy-wide emission trends. The ERT encourages Japan to provide an analysis of the sensitivity of the projections to underlying key variables and assumptions.

#### Overview of projection scenarios

47. The WEM scenario reported by Japan includes implemented and adopted PaMs up to 2013 (chapter 3.1.2 of the BR2). Japan provided a definition of its scenario, which indicates that it has been prepared according to the UNFCCC reporting guidelines on NCs.

Methodology and changes since the previous submission

48. While the BR2 provides limited information regarding its approach to preparing the projections, during the review, Japan confirmed that the approach for the projections in the BR2 is similar to that used in the BR1. However, the emission and removal data used as the basis for the projections are different between the BR1 and the BR2 because of different methodology used. The inventory submitted in 2013, based on the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* and the *IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, was used to prepare the BR1, and the inventory submitted in 2015, based on the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*, was used to prepare the BR2.

49. To prepare its projections, Japan relied on the following key underlying assumptions: real GDP, population, households, crude steel production, cement production, ethylene production, paper and paperboard production, and commercial floor area. These variables and assumptions are reported in CTF table 5. In its BR2, Japan explained that these assumptions are compiled from several sources, including: *Economic and Fiscal Projections for Medium to Long Term Analysis*;<sup>5</sup> *Long-term Energy Supply and Demand Outlook*;<sup>6</sup> and publications by the Agency for Natural Resources and Energy.

50. With respect to the assumptions reported in CTF table 5, the key trends are as follows: real GDP is projected to grow from 514 to 711 trillion (2005) Japanese yen (or an annual rate of 1.7 per cent) over the period 2011–2030. The population is projected to decline at an annual rate of 0.5 per cent (or from 127,799,000 to 116,618,000 inhabitants), while the number of households is projected to decrease at an annual rate of 0.1 per cent (or from 52,055,000 to 51,231,000 households). The total commercial floor area is projected to increase at an annual rate of 0.4 per cent. For the assumptions related to industry, crude steel production is projected to increase at an annual rate of 0.7 per cent, while cement production and ethylene production are projected to decline at an annual rate of 0.2 per cent and 0.7 per cent, respectively. Pulp and paper board production is projected to remain at its 2011 level.

51. Japan did not provide any discussion regarding these trends; however, the ERT noted that total GHG emissions excluding LULUCF are projected to decrease at an average annual rate of 1.2 per cent.<sup>7</sup> Taking into consideration the growth in real GDP and the decrease in population, this suggests that the average annual rate of improvement in activities such as energy efficiency, fuel switching and decarbonization is 2.4 per cent.<sup>8</sup> Although the ERT does not have sufficient information to assess the plausibility of the annual rate of improvement, it noted that this rate is significantly higher than that which occurred over the period 1990–2010.

52. In its BR2, Japan did not report sensitivity analyses for important assumptions, such as population trends, energy prices and economic development indicators. During the review, Japan provided a sensitivity analysis for electricity generation. According to the

<sup>5</sup> National Institute of Population and Social Security Research. 2014.

<sup>6</sup> Ministry of Economy, Trade and Industry. 2015. Available at <[http://www.meti.go.jp/english/press/2015/0716\\_01.html](http://www.meti.go.jp/english/press/2015/0716_01.html)>.

<sup>7</sup> Calculated according to the following formula:  $(\text{Emissions}_{2030} / \text{Emissions}_{2011})^{(1/19)} - 1$  or  $(1,079,000.00 / 1,354,313.88)^{(1/19)} - 1$ .

<sup>8</sup> Derived from the Kaya identity:  $\text{GHG} = \text{Pop} * (\text{GDP}/\text{Pop}) * (\text{Energy}/\text{GDP}) * (\text{GHG}/\text{Energy})$ . In the formula Pop is calculated as  $(116,617.66 / 127,799.00)^{(1/19)} - 1 = -0.5$ ; GDP/Pop is calculated as  $((6.097 / 4.023)^{(1/19)} - 1 = 2.2)$ ; and GHG is calculated as  $((1,079,000.00 / 1,354,313.88)^{(1/19)} - 1 = -1.2)$ . With the missing information on (Energy/GDP) and Energy), balancing the identity suggests that it must be an improvement of 2.4 per cent.

analysis, Japan's overall GHG emissions could be +/- 8,400 kt CO<sub>2</sub> eq depending on the share of generation (e.g. coal, liquefied natural gas, nuclear or renewable energy).

#### Results of projections

53. Japan's total GHG emissions excluding LULUCF in 2020 and 2030 are projected to be 1,399,465.40 kt CO<sub>2</sub> eq and 1,079,000.00 kt CO<sub>2</sub> eq, respectively, under the WEM scenario. The projected emission level in 2020 is expected to be 0.2 per cent above the 2005 level, while the projected level for 2030 is projected to decrease by 22.7 per cent below the 2005 level. The projections suggest a significant change in emission trends between 2010 and 2020, and between 2020 and 2030. Between 2010 and 2020, total GHG emissions excluding LULUCF are projected to increase by 7.3 per cent. In contrast, total GHG emissions excluding LULUCF are projected to decrease by 22.9 per cent between 2020 and 2030. This change in emission trends is due in part to changes in the energy system, most notably the contribution of both nuclear energy and the PaMs that are expected to deliver more significant emission reductions.

54. The reported projections under the WEM scenario for 2020 suggest that Japan may face challenges in meeting its 2020 target under the Convention (see para. 12 above). Japan's projections do not include the possible contribution from additional PaMs that may lead to the further introduction of renewable energy and further promotion of high-efficiency thermal power generation, in the form of a WAM scenario (see para. 45 above). In addition, Japan did not provide an estimate of the level of contribution of units from market-based mechanisms (see para. 11 above). Thus, the ERT could not assess whether Japan can be expected to achieve its 2020 target under the Convention with additional PaMs, the contribution of LULUCF and the use of units from market-based mechanisms.

55. According to the projections reported for 2020 under the WEM scenario, the most significant emission reductions are expected to occur in the transport, waste management/waste and agriculture sectors, amounting to 41,137.05 kt CO<sub>2</sub> eq (17.4 per cent), 6,773.98 kt CO<sub>2</sub> eq (26.0 per cent) and 1,291.94 kt CO<sub>2</sub> eq (3.2 per cent), respectively, between 2005 and 2020. The pattern of projected emissions reported for 2030 under the same scenario is significantly different owing to potential reductions from PaMs in the energy sector. As such, for 2030, the largest emission reductions are projected to occur in the energy sector (225,493.34 kt CO<sub>2</sub> eq, or 22.3 per cent below the 2005 level). Emission reductions in the transport sector are projected to be 70,477.66 kt CO<sub>2</sub> eq, or 29.9 per cent below the 2005 level, while the industry/industrial processes, waste management/waste and agriculture sectors are projected to experience emission reductions of 9,928.60 kt CO<sub>2</sub> eq (11.7 per cent), 8,795.94 kt CO<sub>2</sub> eq (33.7 per cent) and 2,515.02 kt CO<sub>2</sub> eq (6.3 per cent), respectively, between 2005 and 2030.

56. In 2020, the most significant reductions are projected for CO<sub>2</sub> emissions and CH<sub>4</sub> emissions: 6,000.75 kt CO<sub>2</sub> eq (0.5 per cent) and 5,029.41 kt CO<sub>2</sub> eq (12.9 per cent), respectively, between 2005 and 2020. Projected energy-related CO<sub>2</sub> emissions (which cover approximately 90 per cent of emissions) were categorized as manufacturing industries and construction, commercial and others, residential, transportation and energy industries and are projected to increase by 0.4 per cent between 2005 and 2020. The most significant decreases are expected in energy use. For example, the projections suggest a 19.7 per cent decrease in transport CO<sub>2</sub> emissions between 2005 and 2020, followed by a 7.1 per cent decrease in CO<sub>2</sub> emissions from energy industries. The decrease in CO<sub>2</sub> emissions from the residential sector is projected to be more modest at 0.9 per cent below the 2005 level. In contrast, CO<sub>2</sub> emissions from the industries and commercial sectors are projected to increase by 7.3 per cent and 11.6 per cent, respectively, above the 2005 level.

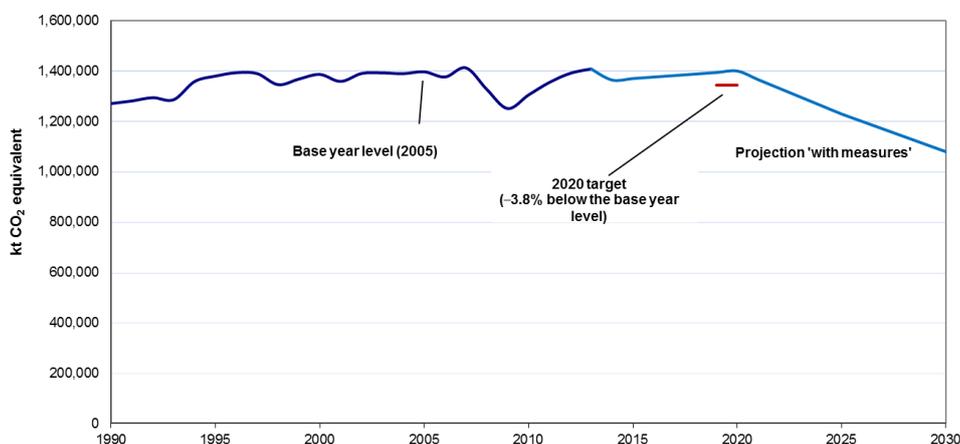
57. Non-energy related CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions are projected to decrease by 13.0 per cent, 12.9 per cent and 15.5 per cent, respectively, over the same period. The drivers of

the emission trends for these gases were not discussed. Emissions of F-gases are expected to increase by 64.6 per cent. The projected increase in F-gases is based on the increasing use of HFCs as substitutes for ozone-depleting substances, such as in air conditioning and refrigeration.

58. In 2030, the most significant reductions are projected for CO<sub>2</sub> emissions: 306,575.96 kt CO<sub>2</sub> eq (23.5 per cent) between 2005 and 2030. CH<sub>4</sub>, N<sub>2</sub>O, PFC and SF<sub>6</sub> emissions are also projected to decrease significantly by 7,362.32 kt CO<sub>2</sub> eq (18.9 per cent), 4,410.95 kt CO<sub>2</sub> eq (17.3 per cent), 4,423.35 kt CO<sub>2</sub> eq (51.3 per cent) and 2,363.86 kt CO<sub>2</sub> eq (46.7 per cent), respectively, between 2005 and 2030, while HFC emissions are projected to increase by 8,875.76 kt CO<sub>2</sub> eq (69.8 per cent). Energy-related CO<sub>2</sub> emissions are projected to decrease by 24.0 per cent between 2005 and 2030. Between 2005 and 2030 a significant decrease in emissions is expected in all subsectors: 32.2 per cent in residential, 32.1 per cent in transport, 29.8 per cent in energy industries, 29.7 per cent in commercial and others, and 12.3 per cent in industries sector.

59. The projected emission levels under the WEM scenario and Japan’s quantified economy-wide emission reduction target are presented in the figure below.

**Greenhouse gas emission projections by Japan**



Sources: (1) Data for the years 1990–2013: Japan’s 2015 annual inventory submission, version 1.0; total GHG emissions excluding LULUCF; (2) Data for the years 2013 to 2030: Japan’s second biennial report; total GHG emissions excluding LULUCF.

Note: Projections are shown without emissions and removals from LULUCF, thus they are not directly comparable with the 2020 target, which Japan expects to achieve with the contribution of LULUCF.

Abbreviations: GHG = greenhouse gas, LULUCF = land use, land-use change and forestry.

Assessment of aggregate effects of policies and measures

60. The ERT acknowledged the information submitted by Japan on the estimated and expected effects of PaMs in terms of emissions avoided or sequestered, by gas, for 2020. The reductions achieved by emission reduction measures have been quantified for CH<sub>4</sub> (0.8 Mt CO<sub>2</sub> eq), N<sub>2</sub>O (0.8 Mt CO<sub>2</sub> eq) and F-gases (18.5 Mt CO<sub>2</sub> eq), with a total of 20.1 Mt CO<sub>2</sub> eq. The mitigation impacts for PaMs targeting CO<sub>2</sub> emissions were not reported in the BR2, although CO<sub>2</sub> emissions constitute the major share of total emissions (92.8 per cent). Japan stated in its BR2 that it is difficult to estimate their mitigation impact (see also para. 18 above).

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

61. In its BR2, Japan reported information on the provision of financial, technological and capacity-building support required under the Convention for 2013 and 2014. The BR2 includes information on the national approach to tracking the provision of support, indicators, delivery mechanisms used and allocation channels tracked. Japan reported a description of the methodology used to report financial support, including underlying assumptions.

62. In its BR2, Japan provided details on what new and additional support it has provided and clarified how this support is new and additional. In the footnote to CTF table 7, Japan explains that it considers financial resources provided as “new and additional” as they are committed and approved by the Diet<sup>9</sup> on an annual basis and as such are considered to be “new”. In addition, the resources are considered “additional”, as they do not include the committed or disbursed financial support for previous years. The approach to the reporting of new and additional resources has not changed since the BR1.

63. Japan reported on the financial support it provided to Parties not included in Annex I to the Convention (non-Annex I Parties), distinguishing between support for mitigation and adaptation activities, as well as for activities of a cross-cutting nature, and recognizing the capacity-building elements of such support. During the review, Japan provided additional information, explaining that the allocation of financial support each year to developing countries is undertaken by the Government by requesting a corresponding budget from the Diet, based on the requests and needs of developing countries.

64. Japan included in its BR2 information on its approach to tracking the climate support provided to developing countries, which is based on the information gathered by the Ministry of Foreign Affairs from corresponding ministries administering official development assistance (ODA) and other official flows (OOF), as well as other institutions. The support provided for adaptation and mitigation activities in non-Annex I Parties is based on a list of projects, using the Rio Markers of the Organisation for Economic Co-operation and Development as one of the references. However, the ERT noted that insufficient information was provided to enable it to assess the progress made by Japan in improving the approach and indicators used for tracking the provision of support provided.

65. The ERT noted that Japan did not specify in its BR2 the climate-specific funding provided through multilateral channels and multilateral institutions and reported all funding as “core/general”, including, for example, contributions to the UNFCCC and the IPCC. The Party also stated that it cannot specify the amount of resources allocated to the climate change focal area of its contributions to the Global Environment Facility (GEF). During the review, Japan informed the ERT that it is difficult to quantitatively specify the amount of contributions for climate-specific purposes because it is the responsibility of each institution to judge whether the funds provided to them are used for climate-specific activities, and therefore the amount of contributions is reported as “NE” in CTF table 7(a). Moreover, when a contribution to a multilateral fund appears to contain costs other than the project costs, such as the administrative costs related to the secretariat, Japan chooses to follow a conservative approach and classify the overall funding as “core/general” rather than as “climate-specific”.

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<sup>9</sup> According to the 1947 Constitution, the Japanese Administration is composed of the legislative, executive and judiciary powers. The Parliament, or Legislature, is called the Diet and is composed of the House of Representatives (480 members) and the House of Councillors (242 members). The members of the Diet are elected by the Japanese people.

66. The ERT encourages Japan to report on its climate-specific support delivered through multilateral channels in its next BR.

## 1. Finance

67. In its BR2 and CTF tables 7, 7(a) and 7(b), Japan reported information on the provision of financial support required under the Convention, including on financial support provided and committed, allocation channels and annual contributions. The summary information was reported on the main areas of support provided in 2013 and 2014.

68. In its original submission, Japan did not include information in the BR2 and CTF table 7(a) regarding its contribution to the Trust Fund for Supplementary Activities for 2013. In response to a question raised by the ERT during the review, Japan provided the missing information in its revised BR2 and CTF tables, as well as an update of the information for 2014 (see para. 4 above). To increase completeness, the ERT encourages Japan to provide information on all its contributions through multilateral channels in its next BR and/or in CTF table 7(a).

69. Japan reported that, as at December 2014, 546 projects in 99 countries had been implemented and described how those resources assist non-Annex I Parties to mitigate and adapt to the adverse effects of climate change, facilitate economic and social response measures, and contribute to technology development and transfer and capacity-building related to mitigation and adaptation.

70. Japan provided information on the types of instruments used in provision of its financial assistance to developing countries through the mobilization of ODA, OOF and private finance, principally in the form of concessional and non-concessional loans, but also as grants and technical assistance, as well as through contributions to environment-related funds and development organizations such as the GEF, United Nations organizations and multilateral development institutions (reported in CTF table 7(a)).

71. In addition, Japan reported information on its private finance flows and on how it promotes the scaling up of private investment in large-scale infrastructure projects (see para. 77 below). With regard to the most recent financial contributions aimed at enhancing the implementation of the Convention by developing countries, Japan reported on how it seeks to ensure that the aid provided effectively addresses the needs of non-Annex I Parties. Japan reported that this was achieved through the involvement of its embassies and the overseas offices of the Japanese International Cooperation Agency. The projects were developed following close consultation with the governments of the respective developing countries and international organizations in response to the mitigation and adaptation needs of the recipient countries.

72. Japan reported that the financial resources for the reporting period were committed according to the Proactive Diplomatic Strategy for Countering Global Warming (adopted by Japan in November 2013) for the period 2013–2015 in the amount of USD 16 billion. The financial support provided to non-Annex I Parties was equally distributed between 2013 and 2014 and exceeded the committed amount, reaching USD 20.0 billion. This included USD 16.4 billion from public sources and USD 3.6 billion from private finance, which is around 33 per cent more than for 2011 and 2012. For the reporting period, approximately 79 per cent of the assistance reported was delivered through bilateral, regional and other channels, while 21 per cent was through multilateral funds. Table 5 includes some of the information reported by Japan on its provision of financial support.

Table 5  
**Summary of information on provision of financial support in 2013–2014 by Japan**  
(Millions of United States dollars)

<i>Allocation channel of public financial support</i>	<i>Years of disbursement</i>	
	<i>2013</i>	<i>2014</i>
Official development assistance <sup>a</sup>	11 581.59	9 266.29
Climate-specific contributions through multilateral channels, <sup>b</sup> including:	2 337.24	2 559.83
Global Environment Facility	118.90	147.46
Trust Fund for Supplementary Activities <sup>c</sup>	0.56	0.92
Other multilateral climate change funds	20.06	23.53
Financial institutions, including regional development banks	1 916.45	2 075.69
United Nations bodies	281.27	312.23
Climate-specific contributions through bilateral, regional and other channels	8 072.52	8 211.65

<sup>a</sup> Source: Query Wizard for International Development Statistics, available at <<http://stats.oecd.org/qwids/>>.

<sup>b</sup> The amounts reported are defined as “core/general” and not “climate-specific”, consistent with the information reported by Japan in its second biennial report.

<sup>c</sup> Source: the additional data was provided to the expert review team by Japan during the review.

73. Japan has provided information on its contributions to the GEF in accordance with its commitments to the fifth replenishment of the GEF (GEF-5). Japan is the second largest contributor to GEF-5 and provided USD 266.36 million over the period 2013–2014. During the review, Japan provided information on its intention of making a contribution to the Green Climate Fund (GCF) as announced at the Group of 20 summit in November 2014, and explained that it had signed an arrangement with the GCF secretariat in May 2015 regarding its contribution of USD 1.5 billion to the GCF. The ERT acknowledged that Japan is one of the largest contributors to climate finance using a wide variety of channels, including the private sector.

74. The BR2 and CTF table 7(b) include detailed information on the financial support provided through bilateral and regional channels in 2013 and 2014. In 2013, 77.8 per cent of financial contributions made through bilateral channels was allocated to mitigation, predominantly to the energy sector, and 20 per cent to adaptation for the disaster prevention and recovery, agriculture, and water and sanitation sectors, and the remaining 2.2 per cent of bilateral funding was allocated to activities that are cross-cutting across mitigation and adaptation. The corresponding figures for 2014 were 89.4 per cent for mitigation in sectors such as energy and forestry; 8.9 per cent for adaptation in the water and sanitation, disaster prevention and recovery, and agriculture sectors; and 1.5 per cent for cross-cutting activities.

75. The BR2 also provides information on the types of support provided. The mitigation programme (USD 17.26 billion) focuses on the promotion of renewable energy, particularly solar, biomass and geothermal energy, as well as on the introduction of facilities with high energy efficiency. Adaptation projects (USD 2.46 billion) focus on strengthening resilience capability, flood control and early warning systems, and water supply. In addition, Japan allocated resources to cross-cutting mitigation and adaptation projects (USD 304 million),

as well as to the REDD-plus<sup>10</sup> programme (USD 9.72 million) to conduct surveys on forest resources and to develop plans to manage forests and build capacity for forest conservation.

76. CTF tables 7(a) and 7(b) include information on the types of financial instrument used in the provision of assistance to developing countries, which include grants, concessional and non-concessional loans and equity. The ERT noted that the share of the grants and equity provided through multilateral channels was approximately 42 and 58 per cent, respectively. With respect to bilateral assistance, the grants, loans and grants blended with loans provided in 2013 and 2014 were approximately 6, 28 and 66 per cent, respectively, of the total public financial support. Japan reported on the ODA loan programme titled Climate Change Programme Loan, which helps in shaping the climate change policy of the respective developing countries. It is important to mention that Japan monitors and evaluates the impact of the implementation of such policies in order to plan the subsequent phase of the programme loan.

77. In its BR2, Japan clarified that private finance amounting to USD 3.6 billion had been leveraged as at December 2014 as a result of financing by the Japan Bank for International Cooperation (JBIC) and trade insurance provided by Nippon Export and Investment Insurance and is mainly related to infrastructure projects. JBIC follows the GREEN (Global Action for Reconciling Economic Growth and Environmental Preservation) operation framework, through which it utilizes its untied facility to attract private investments and applies its own accounting measures to track the impact on GHG emissions. The funding provided by JBIC has enabled private finance institutions in Brazil, Mexico, South Africa and Turkey to co-finance renewable energy and energy efficiency projects.

## **2. Technology development and transfer**

78. In its BR2 and CTF table 8, Japan provided information on measures and activities related to technology transfer, access and deployment benefiting developing countries, including information on activities undertaken by the public and private sectors. Japan provided examples of support provided for the deployment and enhancement of the endogenous capacities and technologies of non-Annex I Parties.

79. Japan provided examples of technology transfer contributions for the development of low-carbon innovation technologies and their dissemination in non-Annex I Parties, mainly in Asia, as well as global-level projects. Japan also reported on its efforts directed to enhancing technology, which ensures co-benefits for the reduction of environmental pollution, and in developing tools to assess the impacts of PaMs. The ERT encourages Japan to provide more detailed information on success and failure stories, including lessons learned through its technology transfer practices.

80. Japan reported on measures taken to promote, facilitate and finance the transfer and deployment of climate-friendly technologies and to support the development and enhancement of the endogenous capacities and technologies of non-Annex I Parties provided through public financing; the corresponding activities are implemented by both private and public entities.

81. Japan provided information on its framework policy for technology transfer based on two approaches: the development of technologies related to the environment and energy

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<sup>10</sup> In decision 1/CP.16, paragraph 70, the Conference of the Parties encouraged developing country Parties to contribute to mitigation actions in the forest sector by undertaking the following activities: reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks.

(“innovation”) and leadership in international diffusion (“application”), which were formulated under the Actions for Cool Earth initiative, announced in November 2013.

82. The support provided mainly addresses countries’ needs in the areas of energy, forestry and disaster preparedness by supporting the diffusion of sustainable forest management practices, disaster preparedness and weather monitoring systems, improved agricultural practices, including improved irrigation systems, and renewable energy use.

83. In the BR2, Japan also reported on activities aimed at the diffusion of the technologies and the know-how of Japan through supporting low-carbon strategies and enhancing adaptive capacity. Japan reported that the low-carbon technologies will be complemented with technologies to verify the effectiveness of the GHG emission reduction effect. In June 2012, Japan announced its support to developing countries in the amount of USD 3 billion to boost the development of human resources for the transition to green economies by training 10,000 experts within three years.

84. In the BR2, Japan reported on the progress made regarding the implementation of JCM projects (see para. 35 above). The number of JCM partner countries had increased to 16 as at the end of December 2015; eight JCM projects had been registered in four countries and 19 methodologies had been approved, ensuring the diffusion of new technologies and instruments for the verification of mitigation effects. During the review, Japan provided additional information, elaborating on technology transfer provided through this mechanism.

### **3. Capacity-building**

85. In its BR2 and CTF table 9, Japan supplied information on how it provided capacity-building support for mitigation, adaptation and technology that responds to the existing and emerging needs identified by non-Annex I Parties. Japan described individual measures and activities related to capacity-building support in textual and tabular format. The ERT commends Japan for its transparent reporting of capacity-building support.

86. Japan reported that it supported climate-related capacity development activities relating to mitigation and adaptation, as well as capacity-building for policy development and reporting under the Convention. Japan also reported that it responded to the existing and emerging capacity-building needs of non-Annex I Parties through training and workshops and in the course of its support for the implementation of projects/programmes financed by Japan through bilateral channels. With regard to mitigation activities, Japan reported on its continuous efforts in building the capacity of developing countries in relation to the preparation of the national GHG inventory and in promoting the exchange of experience with developing countries regarding the development of a low-carbon society. In building capacity for adaptation, Japan uses international networks such as the Asia Pacific Climate Change Adaptation Network and the Global Adaptation Network and integrates capacity-building components into adaptation projects.

87. The BR2 and CTF table 9 include information describing a number of individual capacity-building measures and activities carried out during the reporting period. Japan reported on the projects implemented to: enhance the capacity of researchers in the Asia-Pacific region through joint research programmes; enhance capacity in formulating national adaptation and mitigation plans in Indonesia, Mongolia and Thailand; build capacity for the successful implementation of REDD-plus activities in Guyana, Indonesia, Malaysia, Mexico, Nepal, Panama, Papua New Guinea, Peru and Viet Nam; and increase resilience capacity in Bangladesh, Indonesia and Sri Lanka.

### III. Conclusions

88. The ERT conducted a technical review of the information reported in the BR2 and CTF tables of Japan in accordance with the UNFCCC reporting guidelines on BRs. The ERT concludes that the reported information is mostly in adherence with the UNFCCC reporting guidelines on BRs and provides an overview on: 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; progress made by Japan in achieving its target; and the Party's provision of support to developing country Parties.

89. Japan's total GHG emissions excluding LULUCF related to its quantified economy-wide emission reduction target were estimated to be 2.4 per cent below its 2005 level (or 7.3 per cent above the 1990 level), whereas total GHG emissions including LULUCF are 0.4 per cent below its 2005 level (or 7.5 per cent above the 1990 level) for 2014. The emission trend was driven mainly by the increased fossil fuel consumption for electricity power generation and the increase in emissions from road transport. In addition, the substitution of nuclear energy with fossil fuels for electricity power generation, due to the impact of the great Japan earthquake and subsequent tsunami in 2011, augmented the increasing emission trend since 2011. These factors outweighed the improvements in the efficiency of energy use (e.g. in the transport sector), as well as emission reductions in the industrial processes, agriculture and waste sectors.

90. Under the Convention, Japan committed itself to achieving a quantified economy-wide emission reduction target of at least 3.8 per cent below the 2005 level by 2020. This target covers the following GHGs: CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, SF<sub>6</sub> and NF<sub>3</sub>, expressed using GWP values from the IPCC 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 and Japan reported that it plans to make use of market-based mechanisms to achieve its target. In absolute terms, this means that under the Convention, Japan has to reduce emissions from 1,396,510.56 kt CO<sub>2</sub> eq (in the base year (2005)) to 1,343,443.16 kt CO<sub>2</sub> eq by 2020.

91. Japan's main policy framework relating to global warming is the Act on Promoting Global Warming Countermeasures. Key PaMs supporting Japan's goals on GHG emission reductions and removal increases include the Accounting, Reporting and Disclosure Programme, which sets reporting obligations for businesses with emissions exceeding certain thresholds; the Guidelines for Controlling GHG Emissions, which encourage business operators to actively implement environmentally friendly business actions on a voluntary basis and industries' action plans towards a low-carbon society in the industry sector, which encourage major corporations to reduce GHG emissions; the promotion of the development of renewable energy; and the promotion of high-efficiency thermal power generation. The Basic Plan for Forest and Forestry and the Act on Special Measures concerning Advancement of Implementation of Forest Thinning promote enhancing forest carbon sinks. Economic and taxation measures are in place, such as the Tax for Climate Change Mitigation and Eco-Car Tax Cuts, and measures concerning 'greening finance' through the promotion of financial support to mobilize private investment for low-carbon projects.

92. For 2013, Japan reported in CTF table 4 total GHG emissions excluding LULUCF at 1,407,774.97 kt CO<sub>2</sub> eq, or 0.8 per cent above the 2005 base year level. Japan reported that in 2013 it did not use units from market-based mechanisms to achieve its target and that the contribution of LULUCF amounted to removals of 60,563.82 kt CO<sub>2</sub> eq, offsetting 4.3 per cent of its total GHG emissions. Japan's latest national inventory report shows total GHG emissions excluding LULUCF for 2014 at 2.4 per cent below the 2005 base year level. This represents a significant reduction in emissions compared with the figures for 2013.

93. The GHG emission projections provided by Japan in its BR2 include those for the WEM scenario. Under this scenario, emissions are projected to be 0.2 per cent above the 2005 level in 2020, while the projected level for 2030 is a decrease of 22.7 per cent below the 2005 level. The projections suggest a significant change in emission trends between the periods 2010–2020 and 2020–2030, in part due to changes in the energy system, most notably the contribution of nuclear energy and PaMs that are expected to deliver more significant emission reductions in the energy sector.

94. The ERT noted that Japan is making progress towards its emission reduction target. However, on the basis of the actual trends and projections for 2020 under the WEM scenario, the ERT noted that Japan may face challenges in achieving its emission reduction target by 2020. Japan's projections do not include the possible contribution from additional PaMs and, therefore, the ERT could not assess whether Japan can be expected to achieve its 2020 emission reduction target. In this regard, Japan indicated in its BR2 that it plans to use the units from market-based mechanisms in order to achieve its target.

95. Japan continues to allocate climate financing in line with the climate finance programmes such as Proactive Diplomatic Strategy for Countering Global Warming (adopted by Japan in November 2013) for the period 2013–2015, in order to assist developing country Parties to implement the Convention. It has increased its contributions by 33 per cent since its NC6/BR1. Its public financial support totalled USD 16.4 billion and its private finance totalled USD 3.6 billion for 2013 and 2014, and was approximately equally distributed between the two years. For these years, the support provided by Japan for mitigation action was higher than the support provided for adaptation. The bulk of the financial support went to projects in the energy, forestry, and water and sanitation sectors, followed by the disaster prevention and restoration, and agriculture sectors.

96. In its BR2, Japan reported on activities aimed at diffusing the technologies and know-how of Japan by supporting low-carbon strategies and enhancing adaptive capacity in non-Annex I Parties. Japan reported that low-carbon technology transfer is complemented with technologies to verify the effectiveness of the GHG emission reduction effect and technology assessments.

97. 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:<sup>11</sup>

- (a) Improve the completeness of its reporting by:
  - (i) Providing information on any changes in its domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress made towards its economy-wide emission reduction target, or explicitly stating that there have been no changes to the institutional arrangements (see para. 16 above);
  - (ii) Providing information on emission projections related to fuel sold to ships and aircraft engaged in international transport (see para. 39 above);
  - (iii) Providing information on factors and activities influencing emissions for each sector to provide an understanding of the emission trends in the years from 1990 to the latest projected years (see para. 40 above);
- (b) Improve the transparency of its reporting by:

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<sup>11</sup> The recommendations are given in full in the relevant chapters of this report.

- (i) Providing information in CTF table 3 on the expected mitigation impacts of each of the actions reported, or including an explanation of why such information is not reported (see para. 19 above);
- (ii) Providing in CTF table 3 the required information for each individual PaM while ensuring consistency with the textual information included in the BR (see para. 22 above).

## Annex

### Documents and information used during the review

#### A. Reference documents

“UNFCCC biennial reporting guidelines for developed country Parties”. Annex to decision 2/CP.17. Available at

<<http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf#page=4>>.

“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#page=2>>.

“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>>.

FCCC/IDR.6/JPN. Report of the technical review of the sixth national communication of Japan. Available at <<http://unfccc.int/resource/docs/2015/idr/jpn06.pdf>>.

FCCC/TRR.1/JPN. Report of the technical review of the first biennial report of Japan. Available at <<http://unfccc.int/resource/docs/2015/trr/jpn01.pdf>>.

2015 greenhouse gas inventory submission of Japan. Available at <<http://unfccc.int/8812.php>>.

2016 greenhouse gas inventory submission of Japan. Available at <<http://unfccc.int/9492.php>>.

Sixth national communication of Japan. Available at

<[http://unfccc.int/files/national\\_reports/annex\\_i\\_natcom/submitted\\_natcom/application/pdf/nc6\\_jpn\\_resubmission.pdf](http://unfccc.int/files/national_reports/annex_i_natcom/submitted_natcom/application/pdf/nc6_jpn_resubmission.pdf)>.

First biennial report of Japan. Available at

<[http://unfccc.int/files/national\\_reports/biennial\\_reports\\_and\\_iar/submitted\\_biennial\\_reports/application/pdf/br1\\_jpn\\_resubmission\\_v02.pdf](http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/br1_jpn_resubmission_v02.pdf)>.

Common tabular format tables of the first biennial report of Japan. Available at

<[http://unfccc.int/files/national\\_reports/biennial\\_reports\\_and\\_iar/submitted\\_biennial\\_reports/application/pdf/jpn\\_2014\\_v2.0.pdf](http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/jpn_2014_v2.0.pdf)>.

Second biennial report of Japan. Available at

<[http://unfccc.int/files/national\\_reports/biennial\\_reports\\_and\\_iar/submitted\\_biennial\\_reports/application/pdf/japan\\_br2.pdf](http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/japan_br2.pdf)>.

Common tabular format tables of the second biennial report of Japan. Available at

<[http://unfccc.int/files/national\\_reports/biennial\\_reports\\_and\\_iar/submitted\\_biennial\\_reports/application/pdf/jpn\\_2016\\_v1.0\\_formatted.pdf](http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/jpn_2016_v1.0_formatted.pdf)>.

**B. Additional information used during the review**

Responses to questions during the review were received from Mr. Shigeyoshi Sato (Ministry of the Environment of Japan), including additional material.

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