Japan's National Greenhouse Gas Emissions in Fiscal Year 2017 (Final Figures[1]) <Executive Summary>

- Japan's total greenhouse gas emissions[2] in fiscal year* (FY) 2017 were 1,292 million tonnes of carbon dioxide equivalents (Mt CO_2 eq.). [Preliminary figures: 1,294 Mt CO_2 eq.]
  - Total emissions decreased by 1.2% (16 Mt CO_2 eq.) [Preliminary figures: 1.0% (12 Mt CO_2 eq.)] when compared to those of FY2016 (1,308 Mt CO_2 eq.). [Preliminary figures: 1,307 Mt CO_2 eq.]
  - Total emissions decreased by 8.4% (119 Mt CO_2 eq.) [Preliminary figures: 8.2% (115 Mt CO_2 eq.)] when compared to those of FY2013 (1,410 Mt CO_2 eq.). [Preliminary figures: 1,409 Mt CO_2 eq.]
  - Total emissions decreased by 6.5% (90 Mt CO_2 eq.) [Preliminary figures: 6.2% (86 Mt CO_2 eq.)] when compared to those of FY2005 (1,382 Mt CO_2 eq.). [Preliminary figures: 1,380 Mt CO_2 eq.]

* Japan's fiscal year is from April 1 to March 31.

Note:

- The total greenhouse gas emissions per unit real GDP has decreased for the fifth consecutive year since 2013.
- The main factor for the lower emissions in FY2017 as compared to FY2016 is the decrease in energy-related CO_2 emissions due to the increase in the share of non-fossil fuels within the domestic energy supply brought by the wider adoption of renewable energy such as solar and wind power and the resumption of nuclear power plant operation, despite the increase in hydrofluorocarbon emissions from refrigerants that substitute for ozone-depleting substances.
- The main factor for the decrease in emissions in FY2017 as compared to FY2013 is the decrease in energy-related CO_2 emissions due to the decrease in energy consumption owing to energy conservation, and the increase in the share of non-fossil fuels within the domestic energy supply brought by the wider adoption of renewable energy such as solar and wind power and the resumption of nuclear power plant operation, despite the increase in hydrofluorocarbon emissions.
- The main factor for the decrease in emissions in FY2017 as compared to FY2005 is the decrease in energy-related CO_2 emissions due to the decrease in energy consumption owing to energy conservation, despite the increase in hydrofluorocarbon emissions.

- Removals by forest and other carbon sinks from activities under the Kyoto Protocol[3] in FY 2017 were 55.7 Mt CO_2 eq., consisting of 47.6 Mt CO_2 eq. by forest carbon sinks and 8.1 Mt CO_2 eq. by cropland management, grazing land management, and urban revegetation.

Footnote:

1. "Final figures" means the figures officially submitted to the Secretariat of the United Nations Framework Convention on Climate Change (hereinafter, Convention) as Japan's GHG emissions and removals in the national GHG inventory. The final figures compiled this time may be recalculated when annual values in statistical data are updated, and/or estimation methods are revised.

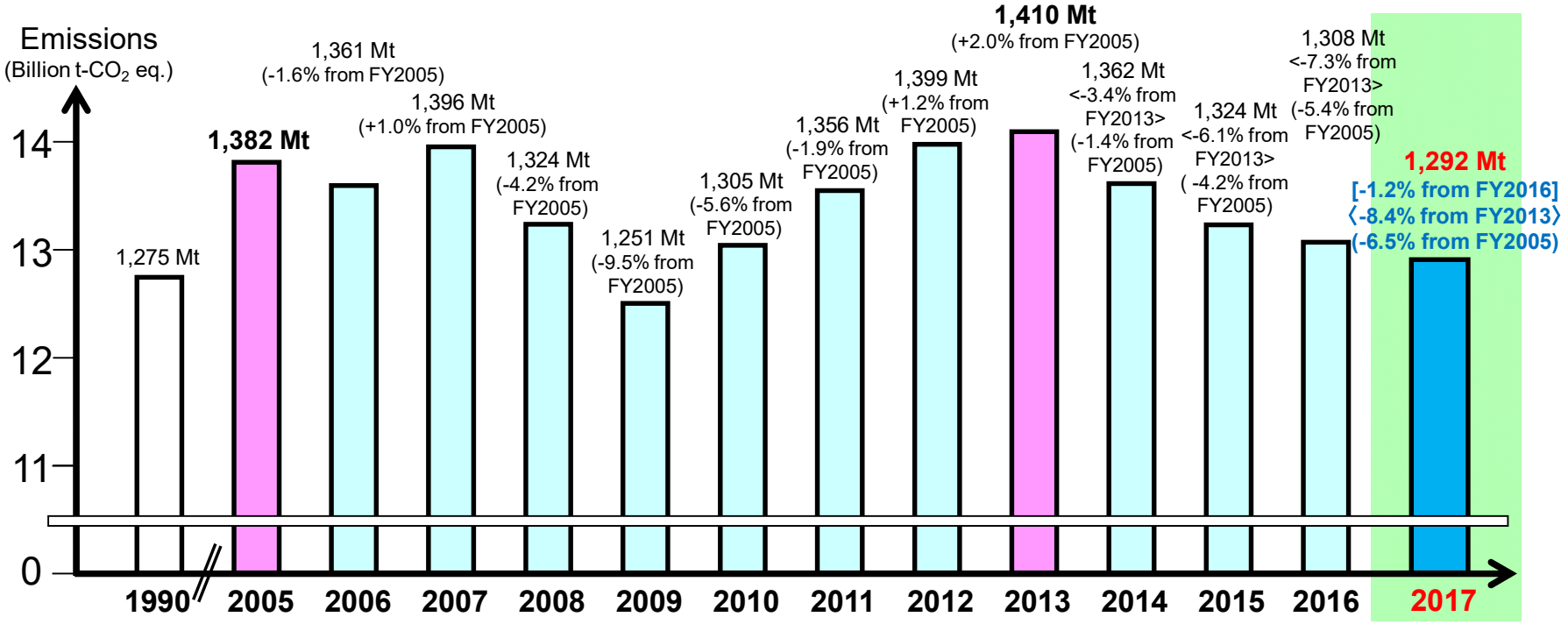
2. There are some differences between the final figures compiled this time and the preliminary figures released on November 30th, 2018, because some recalculation was conducted based on annual values in statistics and other data which were made available after the estimation of the preliminary figures, and some estimation methods were further revised. The preliminary figures for GHG emissions in FY2017 showed a 1.0% decrease compared to FY2016 (8.2% decrease and 6.2% decrease when compared to FY2013 and FY2005, respectively).

3. The removals by forest and other carbon sinks reported this time were estimated by calculating emissions/removals from activities under the Kyoto Protocol, in accordance with the decision of the 8th session of the Conference of the Parties serving as the meeting of the Kyoto Protocol.

Japan's total greenhouse gas emissions in fiscal year (FY) 2017 (Final figures)

Japan's total greenhouse gas (GHG) emissions in FY2017 (final figures) were 1,292 Mt CO_2 eq. (1.2% decrease as compared to FY2016; 8.4% decrease from FY2013; and 6.5% decrease from FY2005 levels)

- The main factor for the lower emissions in FY2017 as compared to FY2016 is the decrease in energy-related CO_2 emissions due to the increase in the share of non-fossil fuels within the domestic energy supply brought by the wider adoption of renewable energy such as solar and wind power and the resumption of nuclear power plant operation, despite the increase in hydrofluorocarbon emissions from refrigerants that substitute for ozone-depleting substances.
- The main factor for the decrease in emissions in FY2017 as compared to FY2013 is the decrease in energy-related CO_2 emissions due to the decrease in energy consumption owing to energy conservation, and the increase in the share of non-fossil fuels within the domestic energy supply brought by the wider adoption of renewable energy such as solar and wind power and the resumption of nuclear power plant operation, despite the increase in hydrofluorocarbon emissions.
- The main factor for the decrease in emissions in FY2017 as compared to FY2005 is the decrease in energy-related CO_2 emissions due to the decrease in energy consumption owing to energy conservation, despite the increase in hydrofluorocarbon emissions.



1. "Final figures" means the figures officially submitted to the Secretariat of the United Nations Framework Convention on Climate Change (hereinafter, Convention) as Japan's GHG emissions and removals in the national GHG inventory. The final figures compiled this time may be recalculated when annual values in statistical data are updated, and/or estimation methods are revised.
2. There are some differences between the final figures compiled this time and the preliminary figures released on November 30th, 2018, because some recalculation was conducted based on annual values in statistics and other data which were made available after the estimation of the preliminary figures, and some estimation methods were further revised.
3. Total GHG emissions in each FY and percent changes from previous years (such as changes from FY2013) do not include removals by forest and other carbon sinks from activities under the Kyoto Protocol.

Figure 1 Japan's national greenhouse gas emissions in FY2017 (final figures)

Table 1　Japan's national greenhouse gas emissions by gas (comparison with FY2005, FY2013, and FY2016)

	FY1990 emissions [Share]	FY2005 emissions [Share]	FY2013 emissions [Share]	FY2016 emissions [Share]	FY2017			
					Emissions [Share]	(Compared to FY2005)	(Compared to FY2013)	(Compared to FY2016)
Total	1,275 [100%]	1,382 [100%]	1,410 [100%]	1,308 [100%]	1,292 [100%]	-90.4 《-6.5%》	-118.5 《-8.4%》	-16.1 《-1.2%》
Carbon Dioxide (CO_2)	1,164 [91.3%]	1,293 [93.6%]	1,317 [93.4%]	1,208 [92.4%]	1,190 [92.1%]	-103.3 《-8.0%》	-127.1 《-9.6%》	-18.0 《-1.5%》
Energy-related Carbon Dioxide	1,068 [83.7%]	1,201 [86.9%]	1,235 [87.6%]	1,129 [86.3%]	1,111 [86.0%]	-89.6 《-7.5%》	-124.3 《-10.1%》	-18.3 《-1.6%》
Non-energy-related Carbon Dioxide	96.4 [7.6%]	93.0 [6.7%]	82.1 [5.8%]	79.1 [6.0%]	79.3 [6.1%]	-13.6 《-14.7%》	-2.8 《-3.4%》	+0.2 《+0.3%》
Methane (CH_4)	44.3 [3.5%]	35.7 [2.6%]	32.3 [2.3%]	30.5 [2.3%]	30.1 [2.3%]	-5.6 《-15.7%》	-2.2 《-6.9%》	-0.4 《-1.4%》
Nitrous Oxide (N_2O)	31.8 [2.5%]	25.0 [1.8%]	21.6 [1.5%]	20.3 [1.5%]	20.5 [1.6%]	-4.6 《-18.3%》	-1.1 《-5.2%》	+0.2 《+1.0%》
F-gases	35.4 [2.8%]	27.9 [2.0%]	39.1 [2.8%]	48.8 [3.7%]	51.0 [3.9%]	+23.1 《+82.5%》	+11.9 《+30.4%》	+2.2 《+4.4%》
Hydrofluorocarbons (HFCs)	15.9 [1.2%]	12.8 [0.9%]	32.1 [2.3%]	42.6 [3.3%]	44.9 [3.5%]	+32.1 《+251.1%》	+12.8 《+39.8%》	+2.3 《+5.4%》
Perfluorocarbons (PFCs)	6.5 [0.5%]	8.6 [0.6%]	3.3 [0.2%]	3.4 [0.3%]	3.5 [0.3%]	-5.1 《-59.3%》	+0.2 《+7.1%》	+0.1 《+4.1%》
Sulfur Hexafluoride (SF_6)	12.9 [1.0%]	5.1 [0.4%]	2.1 [0.1%]	2.2 [0.2%]	2.1 [0.2%]	-2.9 《-57.7%》	+0.03 《+1.6%》	-0.1 《-4.6%》
Nitrogen Trifluoride (NF_3)	0.03 [0.003%]	1.5 [0.1%]	1.6 [0.1%]	0.63 [0.05%]	0.45 [0.03%]	-1.02 《-69.4%》	-1.17 《-72.2%》	-0.18 《-29.1%》

(Unit: Mt-CO_2 eq.)

Table 2　Energy-related CO_2 emissions from each sector

(CO_2 emissions from power and heat allocated to each final demand sector)

	FY1990 emissions [Share]	FY2005 emissions [Share]	FY2013 emissions [Share]	FY2016 emissions [Share]	FY2017			
					Emissions [Share]	(Compared to FY2005)	(Compared to FY2013)	(Compared to FY2016)
Total	1,068 [100%]	1,201 [100%]	1,235 [100%]	1,129 [100%]	1,111 [100%]	-89.6 《-7.5%》	-124.3 《-10.1%》	-18.3 《-1.6%》
Industries (factories, etc.)	503 [47.2%]	467 [38.9%]	465 [37.6%]	419 [37.1%]	413 [37.2%]	-54.6 《-11.7%》	-51.9 《-11.2%》	-6.3 《-1.5%》
Transport (cars, etc.)	207 [19.4%]	244 [20.3%]	224 [18.2%]	215 [19.1%]	213 [19.2%]	-31.0 《-12.7%》	-11.1 《-4.9%》	-2.1 《-1.0%》
Commercial and other (commerce, service, office, etc.)	130 [12.2%]	220 [18.4%]	236 [19.1%]	212 [18.8%]	207 [18.7%]	-12.9 《-5.9%》	-28.9 《-12.2%》	-5.0 《-2.3%》
Residential	131 [12.2%]	170 [14.2%]	208 [16.8%]	185 [16.3%]	186 [16.7%]	15.2 《+8.9%》	-22.2 《-10.7%》	1.0 《+0.6%》
Energy transformation	96.2 [9.0%]	98.0 [8.2%]	102 [8.3%]	97.7 [8.7%]	91.8 [8.3%]	-	-	-
Oil refineries, power plants, etc.	96.2 [9.0%]	102 [8.5%]	105 [8.5%]	102 [9.0%]	96.2 [8.7%]	-6.3 《-6.1%》	-8.9 《-8.4%》	-5.7 《-5.6%》
Statistical discrepancy from power and heat allocation	-0.01 [-0.001%]	-4.4 [-0.4%]	-3.1 [-0.3%]	-4.2 [-0.4%]	-4.4 [-0.4%]	-	-	-

(Unit: Mt-CO_2)

【Details of main increases/decreases in energy-related CO_2 emissions (after allocation of power and heat), as compared to FY2016】

○ Industries sector (factories, etc.): 6.3 million tonnes (1.5%) decrease [Preliminary figures: 6.4 million tonnes (1.5%) decrease]

・The energy consumption intensity in manufacturing (energy consumption per unit GDP in manufacturing) further improved.

○ Transport sector (cars, etc.): 2.1 million tonnes (1.0%) decrease [Preliminary figures: 1.9 million tonnes (0.9%) decrease]

・Emissions from private vehicles excluding household-owned cars (company-owned cars, etc.) decreased.

○ Commercial and other sector (commerce, services, office, etc.): 5.0 million tonnes (2.3%) decrease [Preliminary figures: 5.7 million tonnes (2.7%) decrease]

・Emissions from electricity consumption decreased due to improvements in the CO_2 emission intensity of electricity.

○ Residential sector: 1.0 million tonnes (0.6%) increase [Preliminary figures: 3.2 million tonnes (1.8%) increase]

・Emissions from kerosene, city gas, etc. consumption increased.

○ Energy transformation sector (oil refineries, power plants, etc.) (excluding statistical discrepancy from power and heat allocation): 5.7 million tonnes (5.6%) decrease [Preliminary figures: 4.7 million tonnes (4.6%) decrease]

・Emissions from utility power producers decreased.

【Details of main increases/decreases in emissions other than energy-related CO_2 emissions, as compared to FY2016 (CO_2 eq.)】

○ Non-energy related CO_2 emissions: 0.22 million tonnes (0.3%) increase [Preliminary figures: 0.64 million tonnes (0.8%) increase]

・Emissions from the Industrial Processes and Product Use sector increased.

○ Methane (CH_4) emissions: 0.44 million tonnes (1.4%) decrease [Preliminary figures: 0.24 million tonnes (0.8%) decrease]

・Emissions from the Agriculture sector decreased.

○ Nitrous Oxide (N_2O) emissions: 0.2 million tonnes (1.0%) increase [Preliminary figures: 0.03 million tonnes (0.1%) decrease]

・Emissions from fuel combustion and fugitives increased.

○ Hydrofluorocarbon (HFC) emissions: 2.3 million tonnes (5.4%) increase [Preliminary figures: 3.2 million tonnes (7.6%) increase]

・Emissions from refrigerants increased.

○ Perfluorocarbon (PFC) emissions: 0.14 million tonnes (4.1%) increase

・ Emissions from semiconductor and liquid crystal display (LCD) manufacturing increased.

○ Sulfur Hexafluoride (SF_6) emissions: 0.10 million tonnes (4.6%) decrease

・ Emissions from metal production decreased.

○ Nitrogen Trifluoride (NF_3) emissions: 0.18 million tonnes (29.1%) decrease

・ Fugitive emissions from NF_3 production decreased.