Japan's National Greenhouse Gas Emissions in Fiscal Year 2020 (Final Figures[1]) <Executive Summary>

- Japan's total greenhouse gas (GHG) emissions[2] in fiscal year[3] (FY) 2020 were 1,150 million tonnes of carbon dioxide equivalent (Mt CO_2 eq.).
  - ➢ Total emissions decreased by 5.1% (62 Mt CO_2 eq.) compared to FY2019 emissions (1,212 Mt CO_2 eq.).
  - ➢ Total emissions decreased by 18.4% (259 Mt CO_2 eq.) compared to FY2013 emissions (1,409 Mt CO_2 eq.).

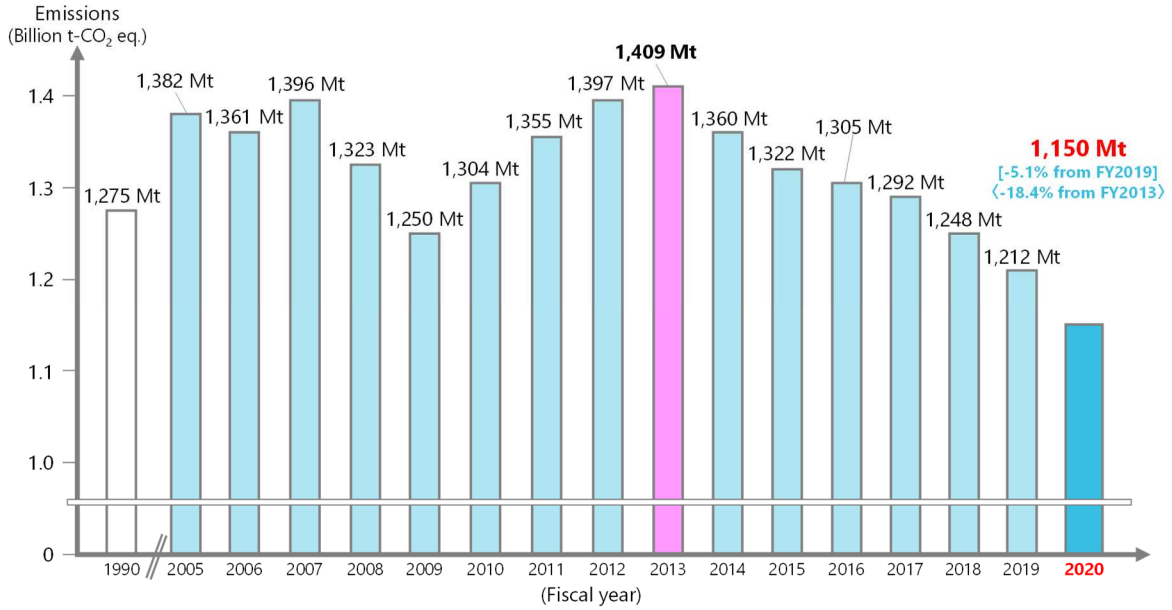

Figure 1 Japan's total national GHG emissions in FY2020 (final figures)

Note:

- Total GHG emissions have decreased for the seventh consecutive year, falling to a record low following FY2019 and since FY1990, when emission estimates began.
- The main factor for the decrease in emissions as compared to FY2019: the reduced energy consumption due to reduced production in manufacturing industries and decrease in the amount of passenger and freight traffic, etc., resulting from the spread of the coronavirus disease 2019 (COVID-19).
- The two main factors for the decrease in emissions as compared to FY2013: the reduced energy consumption (due to improved energy conservation, the effects of the spread of COVID-19, etc.) and the decrease in CO_2 emissions from electricity production due to the wider use of low-carbon electricity (wider adoption of renewable energy, resumption of nuclear power plant operations).
- The emissions of hydrofluorocarbons that substitute ozone-depleting substances as refrigerants are increasing every year.

- Removals by forests and other carbon sink measures in FY2020 were 44.5 Mt CO_2 eq., consisting of 40.5 Mt CO_2 eq. by forest carbon sink measures, 2.7 Mt CO_2 eq. by carbon sink measures for agricultural soils, and 1.3 Mt CO_2 eq. by promotion of revegetation.
- The subtraction of Japan's removals by forests and other carbon sink measures from the total GHG emissions yielded 1,106 Mt CO_2 eq. (a decrease by 60 Mt CO_2 eq. from FY2019), reflecting a 21.5% (303.6 Mt CO_2 eq.) decrease compared to the total GHG emissions in FY2013.

Footnote:

1. "Final figures" refers to the figures officially submitted to the Secretariat of the United Nations Framework Convention on Climate Change as Japan's GHG emissions and removals in the national GHG inventory. The final figures compiled this time may be recalculated when annual 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 December 10, 2021, due to recalculations conducted based on annual statistical data made available after the preliminary estimation, and further revision of estimation methods. The preliminary figures for GHG emissions in FY2020 were 1,149 Mt CO2 eq., showing a 5.1% decrease compared to FY2019 (an 18.4% decrease compared to FY2013).
3. Japan's fiscal year runs from April 1 to March 31.

Table 1 Japan's national GHG emissions by gas in FY2020
(compared to FY2013 and FY2019)

	FY1990 emissions [Share]	FY2013 emissions [Share]	FY2019 emissions [Share]	FY2020		
				Emissions [Share]	Amount of change 《Rate of change》	
					Compared to FY2013	Compared to FY2019
Total	1,275 [100%]	1,409 [100%]	1,212 [100%]	1,150 [100%]	-259.0 《-18.4%》	-62.1 《-5.1%》
Carbon dioxide (CO_2)	1,164 [91.2%]	1,318 [93.5%]	1,108 [91.4%]	1,044 [90.8%]	-273.7 《-20.8%》	-63.9 《-5.8%》
Energy-related CO_2	1,068 [83.7%]	1,235 [87.7%]	1,029 [84.9%]	967 [84.1%]	-268.0 《-21.7%》	-61.2 《-5.9%》
Non-energy-related CO_2	96.1 [7.5%]	82.5 [5.9%]	79.5 [6.6%]	76.8 [6.7%]	-5.7 《-6.9%》	-2.7 《-3.4%》
Methane (CH_4)	44.1 [3.5%]	30.1 [2.1%]	28.5 [2.3%]	28.4 [2.5%]	-1.7 《-5.6%》	-0.08 《-0.3%》
Nitrous oxide (N_2O)	32.4 [2.5%]	22.0 [1.6%]	20.3 [1.7%]	20.0 [1.7%]	-2.1 《-9.4%》	-0.27 《-1.3%》
Four gases incl. alternative CFC	35.4 [2.8%]	39.1 [2.8%]	55.4 [4.6%]	57.5 [5.0%]	+18.4 《+47.1%》	+2.1 《+3.8%》
Hydrofluorocarbons (HFCs)	15.9 [1.2%]	32.1 [2.3%]	49.7 [4.1%]	51.7 [4.5%]	+19.6 《+61.0%》	+2.0 《+4.0%》
Perfluorocarbons (PFCs)	6.5 [0.5%]	3.3 [0.2%]	3.4 [0.3%]	3.5 [0.3%]	+0.19 《+5.7%》	+0.05 《+1.5%》
Sulfur hexafluoride (SF_6)	12.9 [1.0%]	2.1 [0.1%]	2.0 [0.2%]	2.0 [0.2%]	-0.05 《-2.3%》	+0.03 《+1.4%》
Nitrogen trifluoride (NF_3)	0.03 [0.003%]	1.6 [0.1%]	0.26 [0.02%]	0.29 [0.03%]	-1.3 《-82.1%》	+0.03 《+10.5%》

(Unit: Mt-CO_2 eq.)

Table 2 Energy-related CO_2 emissions from each sector
(after allocation of power and heat)

	FY1990 emissions [Share]	FY2013 emissions [Share]	FY2019 emissions [Share]	FY2020		
				Emissions [Share]	Amount of change 《Rate of change》	
					Compared to FY2013	Compared to FY2019
Total	1,068 [100%]	1,235 [100%]	1,029 [100%]	967 [100%]	-268.0 《-21.7%》	-61.2 《-5.9%》
Industry (factories, etc.)	503 [47.2%]	464 [37.5%]	387 [37.6%]	356 [36.8%]	-108.1 《-23.3%》	-31.2 《-8.1%》
Transport (cars, etc.)	208 [19.5%]	224 [18.2%]	206 [20.0%]	185 [19.1%]	-39.5 《-17.6%》	-21.0 《-10.2%》
Commercial and other (commerce, service, office, etc.)	131 [12.3%]	237 [19.2%]	191 [18.6%]	182 [18.8%]	-55.1 《-23.2%》	-8.9 《-4.7%》
Residential	129 [12.1%]	208 [16.8%]	159 [15.5%]	166 [17.2%]	-41.1 《-19.8%》	+7.2 《+4.5%》
Energy conversion	96.2 [9.0%]	103 [8.3%]	85.7 [8.3%]	78.4 [8.1%]	-	-
Power plants, oil refineries, etc.	96.2 [9.0%]	106 [8.6%]	89.6 [8.7%]	82.1 [8.5%]	-24.1 《-22.7%》	-7.5 《-8.4%》
Statistical discrepancy from power and heat allocation	-0.007 [-0.0006%]	-3.5 [-0.3%]	-3.9 [-0.4%]	-3.6 [-0.4%]	-	-

(Unit: Mt)

Note: "After allocation of power and heat" refers to the allocation of energy-related CO_2 emissions from power and heat generation to each sector based on the consumption of power and heat.

Details of main increases/decreases as compared to FY2019

1）Energy-related CO_2 emissions (after allocation of power and heat)

- Industry sector (factories, etc.): 31.2 Mt (8.1%) decrease
  - The production in manufacturing industries decreased.
- Transport sector (cars, etc.): 21.0 Mt (10.2%) decrease
  - The amount of traffic decreased.
- Commercial and other sector (commerce, services, office, etc.): 8.9 Mt (4.7%) decrease
  - The tertiary industry activities stagnated.
- Residential sector: 7.2 Mt (4.5%) increase
  - The time spent at home increased.
- Energy transformation sector (power plants, oil refineries, etc.) (excluding statistical discrepancy from power and heat allocation): 7.5 Mt (8.4%) decrease
  - Emissions from the manufacturing of oil products decreased.

2）Emissions other than energy-related CO_2 (CO_2 eq.)

- CO_2 emissions not related to energy: 2.7 Mt (3.4%) decrease
  - Emissions from the Industrial Processes and Product Use sector decreased.
- Methane (CH_4) emissions: 0.08 Mt (0.3%) decrease
  - Emissions from the Waste sector decreased.
- Nitrous oxide (N_2O) emissions: 0.27 Mt (1.3%) decrease
  - Emissions from fuel combustion/ fugitives decreased.
- Hydrofluorocarbon (HFC) emissions: 2.0 Mt (4.0%) increase
  - Emissions from refrigerants increased.
- Perfluorocarbon (PFC) emissions: 0.05 Mt (1.5%) increase
  - Emissions from semiconductor and liquid crystal display (LCD) manufacturing increased.
- Sulfur hexafluoride (SF_6) emissions: 0.03 Mt (1.4%) increase
  - Emissions from metal production increased.
- Nitrogen trifluoride (NF_3) emissions: 0.03 Mt (10.5%) increase
  - Emissions from semiconductor and LCD manufacturing increased.