

# Japan's National Greenhouse Gas Emissions in Fiscal Year 2020 (Preliminary Figures<sup>1</sup>) <Executive Summary>

- Japan's total greenhouse gas (GHG) emissions<sup>2</sup> in fiscal year<sup>3,4</sup> (FY) 2020 were 1,149 million tonnes of carbon dioxide equivalent (Mt CO<sub>2</sub> eq.<sup>5</sup>).
  - Total emissions decreased by 5.1% (62 Mt CO<sub>2</sub> eq.) compared to FY2019 emissions (1,211 Mt CO<sub>2</sub> eq.).
  - Total emissions decreased by 18.4% (259 Mt CO<sub>2</sub> eq.) compared to FY2013<sup>6</sup> emissions (1,408 Mt CO<sub>2</sub> eq.).
  - Total emissions decreased by 16.8% (232 Mt CO<sub>2</sub> eq.) compared to FY2005<sup>7</sup> emissions (1,381 Mt CO<sub>2</sub> eq.).

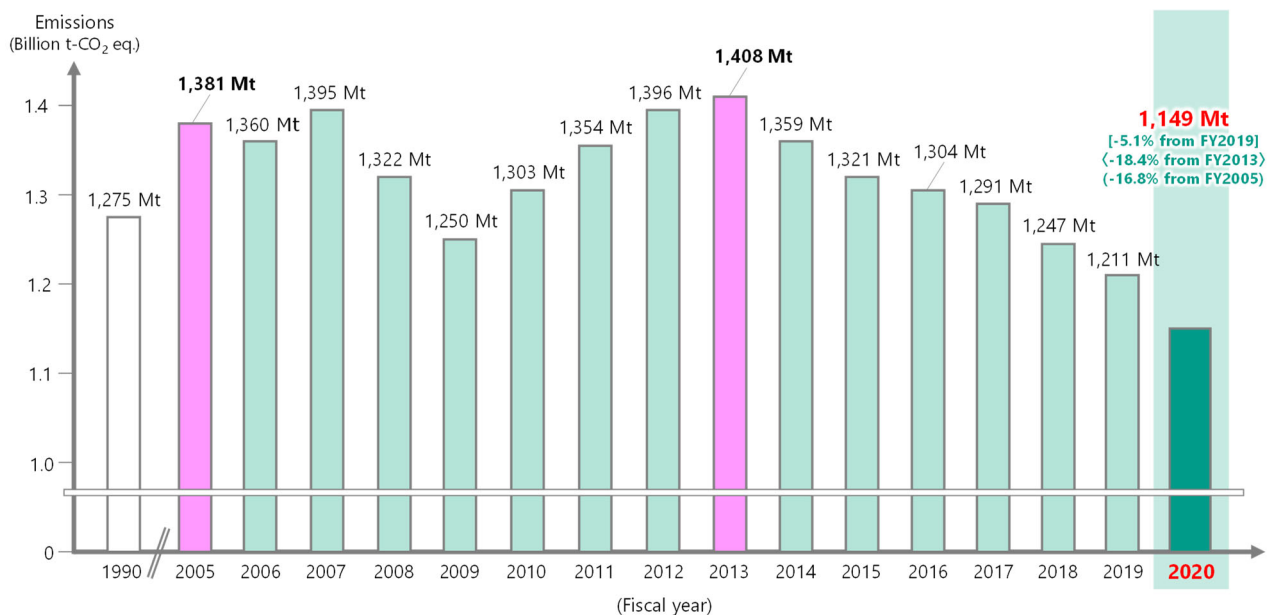


Figure 1 Japan's total national GHG emissions in FY2020 (preliminary figures)

Footnote:

1. These preliminary figures for FY2020 were estimated based on annual figures in various statistics. Some annual figures from FY2019 were temporarily used in place of FY2020 figures that have yet to be released. Moreover, some estimation methodologies are currently being reconsidered in order to make more accurate estimations of emissions for the final figures. As such, the final figures to be released in April 2022 may differ from the preliminary figures in this summary. Removals by measures for forests and other carbon sinks will also be estimated and announced at the time of the release of the final figures.
2. Total GHG emissions for each FY and percentage changes from previous years do not include removals by measures for forests and other carbon sinks.
3. Japan's fiscal year runs from April 1 to March 31.
4. The emissions of the four kinds of GHGs (hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF<sub>6</sub>), and nitrogen trifluoride (NF<sub>3</sub>)) are estimated on a calendar year basis.
5. The emissions of each GHG are converted to CO<sub>2</sub> equivalent by multiplying them by their respective global warming potentials (GWPs). The total emissions are a summation of these. GWPs are the degree to which each GHG contributes to global warming, described as a ratio to the effect of CO<sub>2</sub>. Based on the United Nations Framework Convention on Climate Change (UNFCCC) Reporting Guidelines on Annual GHG Inventories, GWPs of the 100-year time horizon which were presented in the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (2007) are adopted.
6. In the updated Nationally Determined Contribution (NDC) submitted to the UNFCCC Secretariat in October 2021, Japan expressed that it "aims to reduce its greenhouse gas emissions by 46 percent in fiscal year 2030 from its fiscal year 2013 levels, setting an ambitious target which is aligned with the long-term goal of achieving net-zero by 2050. Furthermore, Japan will continue strenuous efforts in its challenge to meet the lofty goal of cutting its emission by 50 percent."
7. Japan's FY2020 GHG emission reduction target was a 3.8% or more reduction compared to the FY2005 levels. This target was resubmitted to the UNFCCC Secretariat in May 2016.

Table 1 Japan's national GHG emissions by gas  
(compared to FY2005, FY2013, and FY2019)

	FY1990 emissions [Share]	FY2005 emissions [Share]	FY2013 emissions [Share]	FY2019 emissions [Share]	FY2020 (preliminary figures)			
					Emissions [Share]	Amount of change «Rate of change»		
						Compared to FY2005	Compared to FY2013	Compared to FY2019
<b>Total</b>	1,275 [100%]	1,381 [100%]	1,408 [100%]	1,211 [100%]	1,149 [100%]	-231.8 «-16.8%»	-258.8 «-18.4%»	-61.9 «-5.1%»
<b>Carbon dioxide (CO<sub>2</sub>)</b>	1,164 [91.3%]	1,294 [93.7%]	1,318 [93.6%]	1,108 [91.5%]	1,044 [90.8%]	-249.6 «-19.3%»	-273.6 «-20.8%»	-63.7 «-5.8%»
Energy-related CO <sub>2</sub>	1,068 [83.8%]	1,201 [86.9%]	1,235 [87.7%]	1,029 [84.9%]	967 [84.2%]	-233.1 «-19.4%»	-268.0 «-21.7%»	-61.5 «-6.0%»
Non-energy-related CO <sub>2</sub>	96.0 [7.5%]	93.1 [6.7%]	82.3 [5.8%]	78.9 [6.5%]	76.6 [6.7%]	-16.5 «-17.7%»	-5.6 «-6.9%»	-2.2 «-2.8%»
<b>Methane (CH<sub>4</sub>)</b>	43.8 [3.4%]	34.6 [2.5%]	30.0 [2.1%]	28.4 [2.3%]	28.2 [2.5%]	-6.4 «-18.5%»	-1.8 «-6.0%»	-0.14 «-0.5%»
<b>Nitrous oxide (N<sub>2</sub>O)</b>	31.8 [2.5%]	25.0 [1.8%]	21.4 [1.5%]	19.7 [1.6%]	19.3 [1.7%]	-5.6 «-22.5%»	-2.1 «-9.6%»	-0.34 «-1.7%»
<b>Four gases incl. alternative CFC</b>	35.4 [2.8%]	27.9 [2.0%]	39.1 [2.8%]	55.4 [4.6%]	57.7 [5.0%]	+29.8 «+106.8%»	+18.6 «+47.7%»	+2.3 «+4.2%»
Hydrofluorocarbons (HFCs)	15.9 [1.3%]	12.8 [0.9%]	32.1 [2.3%]	49.7 [4.1%]	51.9 [4.5%]	+39.2 «+306.3%»	+19.8 «+61.7%»	+2.2 «+4.4%»
Perfluorocarbons (PFCs)	6.5 [0.5%]	8.6 [0.6%]	3.3 [0.2%]	3.4 [0.3%]	3.5 [0.3%]	-5.2 «-59.8%»	+0.19 «+5.7%»	+0.05 «+1.5%»
Sulfur hexafluoride (SF <sub>6</sub> )	12.9 [1.0%]	5.0 [0.4%]	2.1 [0.1%]	2.0 [0.2%]	2.0 [0.2%]	-3.0 «-59.7%»	-0.05 «-2.3%»	+0.03 «+1.4%»
Nitrogen trifluoride (NF <sub>3</sub> )	0.03 [0.003%]	1.5 [0.1%]	1.6 [0.1%]	0.26 [0.02%]	0.29 [0.03%]	-1.2 «-80.4%»	-1.3 «-82.1%»	+0.03 «+10.5%»

(Unit: Mt-CO<sub>2</sub> eq.)

Table 2 Energy-related CO<sub>2</sub> emissions from each sector  
(after allocation of power and heat)

	FY1990 emissions [Share]	FY2005 emissions [Share]	FY2013 emissions [Share]	FY2019 emissions [Share]	FY2020 (preliminary figures)			
					Emissions [Share]	Amount of change «Rate of change»		
						Compared to FY2005	Compared to FY2013	Compared to FY2019
<b>Total</b>	1,068 [100%]	1,201 [100%]	1,235 [100%]	1,029 [100%]	967 [100%]	-233.1 «-19.4%»	-268.0 «-21.7%»	-61.5 «-6.0%»
<b>Industry (factories, etc.)</b>	503 [47.2%]	467 [38.9%]	463 [37.5%]	385 [37.4%]	353 [36.5%]	-114.1 «-24.4%»	-109.9 «-23.7%»	-32.0 «-8.3%»
<b>Transport (cars, etc.)</b>	208 [19.5%]	244 [20.4%]	224 [18.2%]	206 [20.0%]	185 [19.1%]	-59.6 «-24.4%»	-39.4 «-17.6%»	-21.0 «-10.2%»
<b>Commercial and other (commerce, service, office, etc.)</b>	131 [12.3%]	220 [18.4%]	238 [19.3%]	192 [18.7%]	184 [19.1%]	-35.9 «-16.3%»	-53.3 «-22.4%»	-8.0 «-4.1%»
<b>Residential</b>	129 [12.1%]	171 [14.2%]	208 [16.8%]	160 [15.5%]	167 [17.3%]	-3.1 «-1.8%»	-40.2 «-19.3%»	+7.9 «+4.9%»
<b>Energy conversion</b>	96.2 [9.0%]	98.0 [8.2%]	103 [8.3%]	86.0 [8.4%]	77.6 [8.0%]	-	-	-
Power plants, oil refineries, etc.	96.2 [9.0%]	102 [8.5%]	106 [8.6%]	89.7 [8.7%]	82.4 [8.5%]	-20.0 «-19.5%»	-23.8 «-22.4%»	-7.3 «-8.1%»
Statistical discrepancy from power and heat allocation	-0.007 [-0.0006%]	-4.4 [-0.4%]	-3.5 [-0.3%]	-3.7 [-0.4%]	-4.9 [-0.5%]	-	-	-

(Unit: Mt)

Note: "After allocation of power and heat" refers to the allocation of energy-related CO<sub>2</sub> emissions from power and heat generation to each sector based on the consumption of power and heat.