

## Japan's National Greenhouse Gas Emissions in Fiscal Year 2011 (Final Figures) <Executive Summary>

In this document, “final figures” means the figures officially submitted to the UNFCCC secretariat as Japan's greenhouse gas (GHG) emissions and removals in a national GHG inventory. The final figures compiled at this time will be revised when annual values in statistical data are updated, and/or estimation methods are revised.

Note: On the basis of the results of investigation conducted to identify the impact of the Great East Japan Earthquake on statistics to be used for emission estimates including missing data, the Committee for the Greenhouse Gas Emission Estimation Methods in FY2012 confirmed that it was not necessary to perform any adjustments or corrections to the emission estimates to obtain these final figures. Meanwhile, investigation will be continued for some statistics on which the influence of the earthquake is uncertain at the current moment.

- Japan's total greenhouse gas emissions in FY 2011 were 1,308 million tonnes of carbon dioxide equivalents.
- Total emissions increased by 3.7% (46.4 million tonnes of carbon dioxide equivalents) compared to those of the base year under the Kyoto Protocol (FY 1990 for CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O and calendar year (CY) 1995 for HFCs, PFCs, SF<sub>6</sub>).
- Total emissions increased by 4.0% (50.3 million tonnes of carbon dioxide equivalents) compared to the previous year due to an increase in CO<sub>2</sub> emissions from power generation.
- Total removals by forest carbon sink measures and others under the Kyoto Protocol in FY 2011 were 52.1 million tonnes of carbon dioxide equivalents (consisting of 51.0 million tonnes of carbon dioxide equivalents by forest carbon sink measures and 1.1 million tonnes of carbon dioxide equivalents by urban revegetation). The removals corresponded to 4.1% of the total emissions in the base year (of which 4.0% is from removals by forest carbon sink measures).

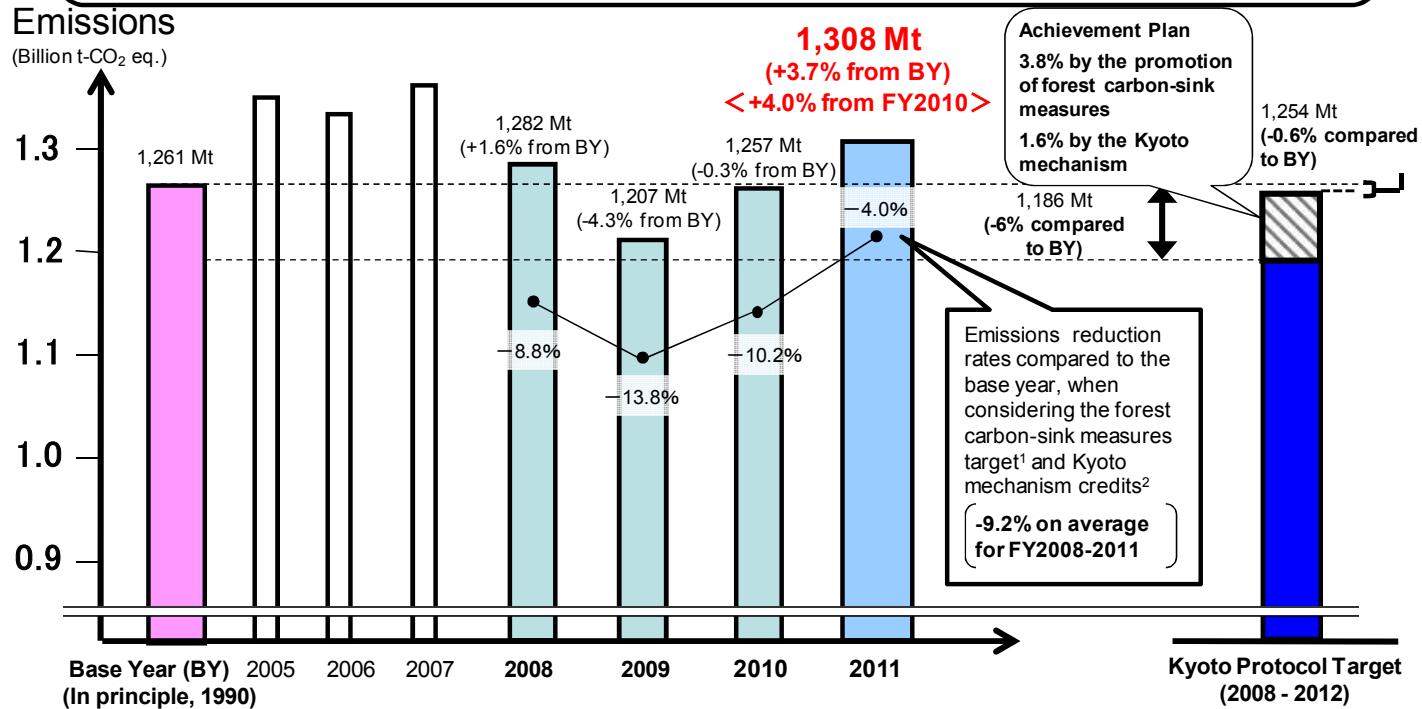
### (Reference)

- The primary reason for the emission increase in FY 2011 as compared to FY 2010 was the increased fossil fuel consumption in response to the expansion of thermal power generation, although the amount of production in manufacturing industries decreased due to the influence of the Great East Japan Earthquake, etc.

# Japan's Greenhouse Gas Emissions

Japan's greenhouse gas emissions in FY2011 increased 3.7% compared to the base year and 4.0% compared to the previous year.

Average emissions for four years of the first commitment period under the Kyoto Protocol (FY2008-2011) decreased 9.2% compared to the base year, when considering the forest carbon-sink measures target<sup>1</sup> and Kyoto mechanism credits<sup>2</sup>.



1. Forest carbon-sink measures target: About 3.8% (47.67 Mt CO<sub>2</sub>/yr) of the base year emissions according to the Kyoto Protocol Target Achievement Plan.
2. Kyoto mechanism credits:  
Acquired by the Government: Total credits that were contracted until FY2012 through the Kyoto Mechanisms Credit Acquisition Program (97.528 Mt) divided by 5 (yrs)  
Acquired by the private sector: The amount of credits that were acquired by the Federation of Electric Power Companies of Japan (According to the *Environmental Action Plan by the Japanese Electric Utility Industry* [FY2009 to FY2012])

Figure 1 Japan's national greenhouse gas emissions

Table 1 Japan's national greenhouse gas emissions, comparison with the base year and the previous year

|  | Base year under Kyoto Protocol [Share] | FY2010 (Compared to base year) | Changes from FY2010 | FY2011 (Compared to base year) [Share] |
|--|--|--------------------------------|---------------------|--|
| <b>Total</b>                           | <b>1,261</b><br>[100%]                 | <b>1,257</b><br>(-0.3%)        | → <+4.0%> →         | <b>1,308</b><br>(+3.7%) [100%]         |
| <b>Carbon Dioxide (CO<sub>2</sub>)</b> | <b>1,144</b><br>[90.7%]                | <b>1,191</b><br>(+4.1%)        | → <+4.2%> →         | <b>1,241</b><br>(+8.4%) [94.9%]        |
| Energy-origin Carbon Dioxide           | <b>1,059</b><br>[84.0%]                | <b>1,123</b><br>(+6.1%)        | → <+4.4%> →         | <b>1,173</b><br>(+10.8%) [89.7%]       |
| Non-Energy-origin Carbon Dioxide       | <b>85.1</b><br>[6.7%]                  | <b>67.6</b><br>(-20.5%)        | → <+0.02%> →        | <b>67.6</b><br>(-20.5%) [5.2%]         |
| <b>Methane (CH<sub>4</sub>)</b>        | <b>33.4</b><br>[2.6%]                  | <b>20.7</b><br>(-37.9%)        | → <-2.1%> →         | <b>20.3</b><br>(-39.2%) [1.6%]         |
| <b>Nitrous Oxide (N<sub>2</sub>O)</b>  | <b>32.6</b><br>[2.6%]                  | <b>22.0</b><br>(-32.6%)        | → <-1.7%> →         | <b>21.6</b><br>(-33.7%) [1.7%]         |
| <b>F-gases</b>                         | <b>51.2</b><br>[4.1%]                  | <b>23.6</b><br>(-53.9%)        | → <+6.5%> →         | <b>25.1</b><br>(-50.9%) [1.9%]         |
| Hydrofluorocarbons (HFCs)              | <b>20.2</b><br>[1.6%]                  | <b>18.3</b><br>(-9.4%)         | → <+11.8%> →        | <b>20.5</b><br>(+1.3%) [1.6%]          |
| Perfluorocarbons (PFCs)                | <b>14.0</b><br>[1.1%]                  | <b>3.4</b><br>(-75.7%)         | → <-11.5%> →        | <b>3.0</b><br>(-78.5%) [0.2%]          |
| Sulfur Hexafluoride (SF <sub>6</sub> ) | <b>16.9</b><br>[1.3%]                  | <b>1.9</b><br>(-89.0%)         | → <-12.1%> →        | <b>1.6</b><br>(-90.3%) [0.1%]          |

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

Table 2 Energy-origin CO<sub>2</sub> emissions by sector  
(CO<sub>2</sub> emissions from power and steam generation are allocated to the sector in which the final demand occurs)

|   | Base year under Kyoto Protocol [Share] | FY2010 (Compared to base year) | Changes from FY2010 | FY2011 (Compared to base year) [Share] |
|---|--|--------------------------------|---------------------|--|
| <b>Total</b>  | <b>1,059</b><br>[100%]                 | <b>1,123</b><br>(+6.1%)        | → <+4.4%> →         | <b>1,173</b><br>(+10.8%) [100%]        |
| Industries (factories, etc)                           | <b>482</b><br>[45.5%]                  | <b>421</b><br>(-12.7%)         | → <-0.5%> →         | <b>419</b><br>(-13.1%) [35.7%]         |
| Transport (cars, etc)                                 | <b>217</b><br>[20.5%]                  | <b>232</b><br>(+6.9%)          | → <-1.0%> →         | <b>230</b><br>(+5.9%) [19.6%]          |
| Commercial and other (commerce, service, office, etc) | <b>164</b><br>[15.5%]                  | <b>217</b><br>(+32.0%)         | → <+14.3%> →        | <b>248</b><br>(+50.9%) [21.1%]         |
| Residential   | <b>127</b><br>[12.0%]                  | <b>172</b><br>(+34.9%)         | → <+9.8%> →         | <b>189</b><br>(+48.1%) [16.1%]         |
| Energy Industries (power plants, etc)                 | <b>67.9</b><br>[6.4%]                  | <b>81.1</b><br>(+19.6%)        | → <+7.7%> →         | <b>87.4</b><br>(+28.8%) [7.4%]         |

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

## 【Details of increase/decrease in energy-origin CO<sub>2</sub> emissions compared to FY 2010】

- Industries sector (factories, etc.): 2.3 million tonnes (0.5%) decrease
  - Emissions from manufacturing and others decreased with the decrease of production in manufacturing industries due to the influence of the Great East Japan Earthquake, etc.
- Transport sector (vehicles, etc.): 2.3 million tonnes (1.0%) decrease
  - Emissions from passengers cars/trucks/lorries decreased
- Commercial and other sectors (commerce, service, office, etc.): 31.1 million tonnes (14.3%) increase
  - Emissions from electricity consumption increased due to deteriorated CO<sub>2</sub> emissions intensity.
- Residential sector: 16.8 million tonnes (9.8%) increase
  - While the electricity consumption decreased mainly due to the effect of power-saving measures, total emissions from electricity consumption increased due to deteriorated CO<sub>2</sub> emissions intensity.
- Energy Industries sector (power plants, etc.): 6.2 million tonnes (7.7%) increase
  - Emissions associated with transmission and distribution loss increased due to deteriorated CO<sub>2</sub> emissions intensity.

## 【Details of increase/decrease in greenhouse gas emissions other than those of energy-origin CO<sub>2</sub> emissions compared to FY 2010 (CO<sub>2</sub> equivalents)】

- Non-energy origin CO<sub>2</sub> emissions: 0.01 million tonnes (0.02%) increase
- Methane (CH<sub>4</sub>) emissions: 0.4 million tonnes (2.1%) decrease
  - Emissions from the Agriculture sector (e.g. enteric fermentation, rice cultivation) and the Waste sector (e.g. solid waste disposal on land) decreased.
- Nitrous Oxide (N<sub>2</sub>O) emissions: 0.4 million tonnes (1.7%) decrease
  - Emissions from the Industrial Processes sector (e.g., adipic acid production) decreased due to the decrease in the emissions from adipic acid production, etc.
- Hydrofluorocarbons (HFCs): 2.2 million tonnes (11.8%) increase
  - Emissions from refrigerants increased as a result of increased use of HFCs as substitutes for ozone depleting substances, HCFCs.
- Perfluorocarbons (PFCs): 0.4 million tonnes (11.5%) decrease
  - Emissions from semiconductor production, etc. decreased.
- Sulfur Hexafluoride (SF<sub>6</sub>): 0.2 million tonnes (12.1%) decrease
  - Emissions from semiconductor production, etc. decreased.