

Part 2 Report on Each Sector's Measures

The White Paper on the Environment, the Sound Material-Cycle Society and the Biodiversity report on policy measures of various sectors as follows:

Chapter 1 Establishing a Low Carbon Society

Chapter 2 Conservation of the Atmospheric Environment, the Water Environment, and the Soil Environment

Chapter 3 Building a Sound Material-Cycle Society

Chapter 4 Assessing and Managing the Environmental Risk of Chemical Substances

Chapter 5 Conservation of Biodiversity and Its Sustainable Use

Chapter 6 Basics for Various Policies, and Measures Related to the Participation of Various Entities and International Cooperation

1. Establishment of a Low Carbon Society

(1) Overview of the problem

In recent years, as human activities have expanded, a massive amount of anthropogenic greenhouse gas emissions including carbon dioxide (CO₂) and methane is being emitted into the atmosphere, causing the danger of excessive global warming. Especially, the excessive quantities of CO₂ are emitted in an anthropogenic way from the combustion of fossil fuels. Of all greenhouse gases emitted in Japan, carbon dioxide emissions make up roughly 95% of the total.

(2) Current status and outlook of global warming

According to the Fourth Assessment Report produced by the Intergovernmental Panel on Climate Change (IPCC) in 2007 (Table 1-1), the global average surface temperature increased by 0.74 (0.56 to 0.92)°C from 1906 to 2005, and the global average sea level rose by 17 (12 to 22) cm during the 20th century. The temperature over the last 50 years increased at double the rate of the last 100 years, and the global average sea level rise is also accelerating in recent years. The report states that "Warming of the climate system is unequivocal," and that "Most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations."

Based on multiple emission scenarios, with certain assumptions on worldwide economic growth, population growth, technological innovation, economic/energy structures and some other trends, the report predicts that the global surface temperature change at the end of the 21st century (from 2090 to 2099) relative to 1980 to 1999 is 1.8 (1.1 to 2.9)°C in a world where the conservation of the environment and economic development would coexist on a global scale. On the other hand, in a world of fossil fuel-intensive high economic growth, the projected global surface temperature change is 4.0 (from 2.4 to 6.4)°C.

In addition, the report explains as a new finding that the climate change may cause the reduction of CO₂

absorption by terrestrial and ocean sinks from the atmosphere, further amplifying the climate change (i.e. Climate-Carbon Cycle Feedback). As the atmospheric concentration of CO₂ increases, it forecasts, that the average global surface ocean pH will be reduced by 0.14 to 0.35 during the 21st century, in addition to the present decrease of 0.1.

According to the Japan Meteorological Agency, the average temperature in Japan has risen by approximately by 1°C during the 20th century. It is anticipated that climate change will have a significant impact on ecosystems, agriculture and forestry, social infrastructure, and human health in Japan.

(3) Efforts Based on the United Nations Framework Convention on Climate Change

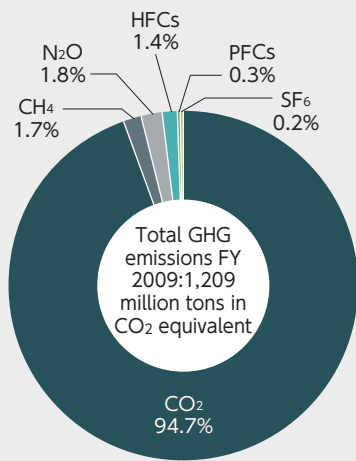
At the COP16 and COP/MOP6 held in Cancun, Mexico from November to December in 2010, Japan aimed at

Table 1-1 Impacts of Global Warming Observed in Recent Years

Indicator	Observed changes
Global average surface temperature	<ul style="list-style-type: none"> • 100-year linear trend (1906-2005) is increasing 0.74 (0.56-0.92) °C • The linear warming trend over the last 50 years is nearly twice that for the last 100 years. • Eleven of the last twelve years (1995-2006) rank among the 12 warmest years in the record of global surface temperature (since 1850). • Average arctic temperatures increased at almost twice the global average rate in the last 100 years.
Global mean sea level	<ul style="list-style-type: none"> • The sea level rise over the 20th-century was 0.17m. • The global average sea level rose at the rate of 3.1mm per year from 1993 to 2003.
Hot days/heat waves	More frequent
Cold days and nights/days that frost falls	Less frequent
Heavy precipitation events	More frequent
Drought	More intense and longer droughts have been observed over wider areas since the 1970s, particularly in the tropics and subtropics.
Glaciers and snow cover	Mountain glaciers and snow cover have declined on average in both hemispheres.

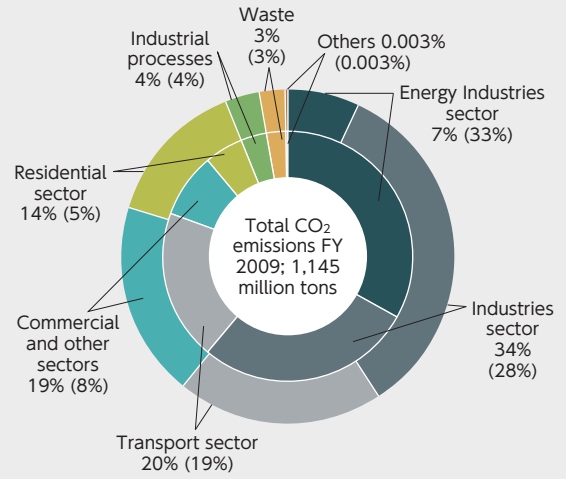
Source: Compiled by the Ministry of the Environment based on the IPCC Forth Assessment Report

Figure 1-1 Breakdown of Greenhouse Gas Emissions in Japan (FY 2009)



Source: Ministry of the Environment

Figure 1-2 Breakdown of CO₂ Emissions by Sector

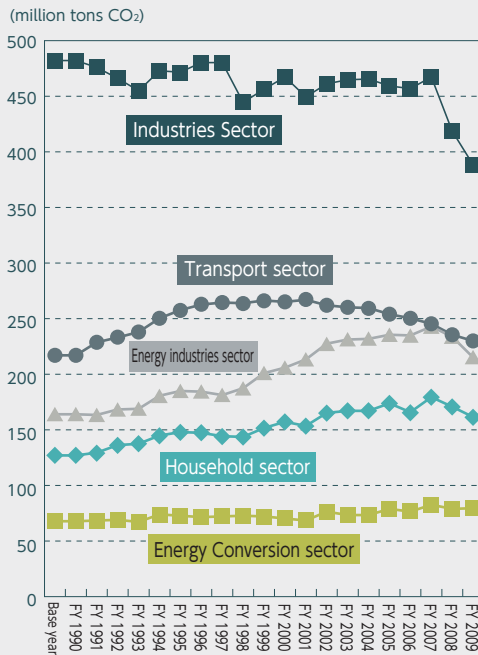


Note 1: The inner circle represents the share of direct emissions from each sector (figures in round parentheses on the second row). The outer circle represents the share of each final demand sector (figures on the first row), correcting emissions from power generation by electric utility companies and emissions from heat generation by heat supply operators to final demand sectors based on their electric and heat consumption level.

Note 2: Due to statistical errors and rounded figures, the sum of percentages of emissions may not correctly add up to 100%.

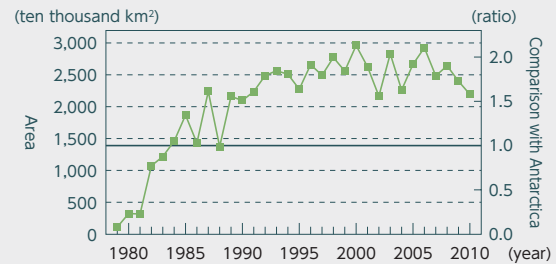
Source: Ministry of the Environment

Figure 1-3 Trends in Energy-derived CO₂ Emissions by Sector



Source: Ministry of the Environment

Figure 1-4 Annual Changes in the Maximum Area of Ozone Hole over Antarctica



Source: Japan Meteorological Agency Website

early adoption of a fair and effective international legal framework with the participation of all major emitters, including the United States and China, based on the Copenhagen Accord. Although developing countries demanded that developed countries set the second commitment period under the Kyoto Protocol, Japan explained persistently that the total CO₂ emissions of the Parties under the obligation of the Kyoto Protocol account for only 27% of total global emissions, and that if the second commitment period is accepted without a new framework for which the participation of all major economies is guaranteed, the current framework of the Kyoto Protocol would be fixed and only some countries

would be obliged to reduce emissions after 2013. In the end, the Parties adopted the Cancun Accord, in which the reduction targets by developed countries and mitigation actions by developing countries were placed within the same framework. This will serve as the basis for the next framework that Japan was seeking. The Cancun Accord also stipulated the establishment of the Green Climate Fund and technical mechanisms. It also included important steps forward toward support for developing countries, such as the establishment of adaptation plans for the least developed countries, and reducing emissions from deforestation and forest degradation (REDD+) in developing countries.