

## Addressing the challenge of climate change

### Introduction

In recent years, abnormal weather and large-scale natural disasters have occurred frequently all over the world, and researchers are pointing out connections between the abnormal weather patterns and climate change. Phenomena such as abnormally heavy rains and fierce heatwaves are expected to increase in volume and intensity as a result of global warming. The World Meteorological Organization (WMO) is warning that because of global warming there will be an inevitable increase in abnormal weather phenomena. The International Panel on Climate Change (IPCC) and various other international agencies are also sounding alarms about the effects of global warming and pointing out the need to quickly implement countermeasures.

### Japan's international contribution to the reduction of greenhouse gases

Japan has met its commitment under the Kyoto Protocol for reducing greenhouse gases (GHG): average GHG emissions during the first commitment period were down by 8.4% compared to the base year. The country's reduction targets for FY 2020 are now being considered. They should be ambitious enough to be achievable only as a result of maximum effort. While still achieving the economic growth targeted by the current Japanese administration, efforts will include further promoting

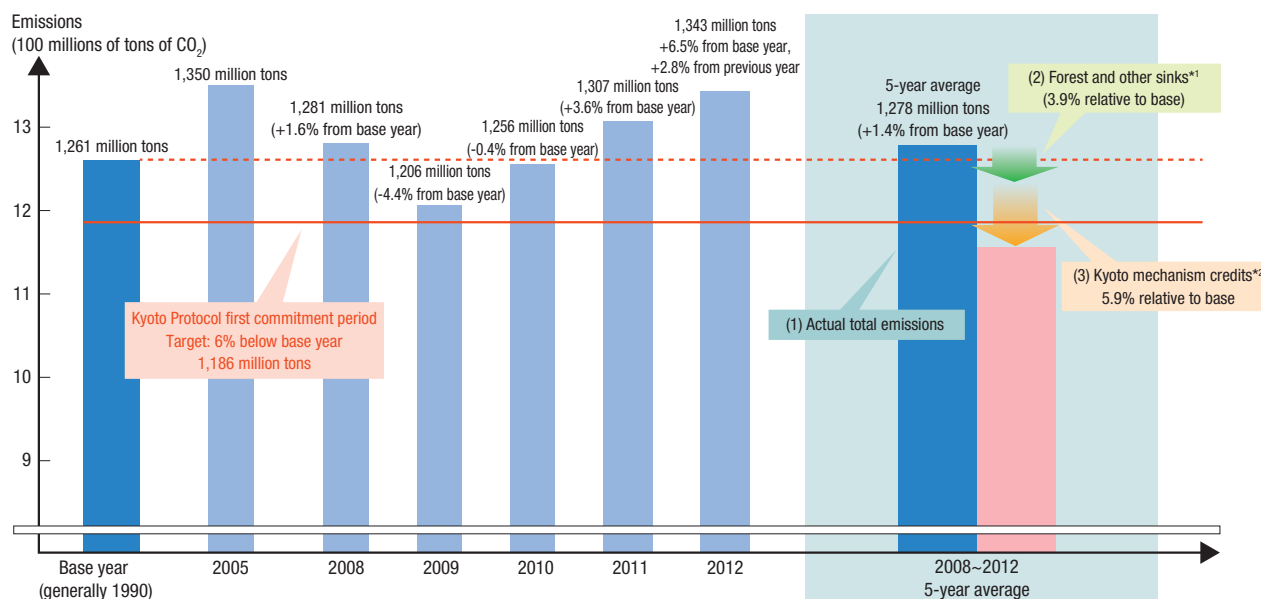
Japan's energy efficiency (which is already among the highest in the world), improving emissions per unit of electric power production (partly through the introduction of renewable energy sources), strengthening measures against the release of fluorocarbons, making use of the Joint Crediting Mechanism (JCM), and taking measures to promote forest carbon sinks.

Furthermore, in November 2013, Japan created Actions for Cool Earth (ACE), a program aimed at halving worldwide greenhouse gas emissions by 2050 and reducing aggregate emissions from developed countries by 80%. Based on the three pillars of technological innovation, widespread application, and international partnership, Japan will implement a proactive diplomatic strategy to counter global warming by making available technologies that help reduce worldwide carbon dioxide emissions.

Specifically, in addition to promoting development of innovative, eco-friendly energy technologies that assure significant reductions in GHG emissions in the long term, Japan will help developing countries reduce GHG emissions by promoting the development of technologies suited to local needs in developing areas. Additionally, by providing some 16 billion dollars, or one third of the approximately 35 billion dollars in aid that developed countries are expected to grant to developing nations in the three years from 2013 to 2015, the Japanese public and private sectors together aim to build a foundation for technological innovation and application.

## Japanese greenhouse gas emissions meet Kyoto Protocol target

- Total Japanese emissions in FY 2012 (established value): 1,343 million tons (+6.5% from base year; +2.8% from previous fiscal term)
- Factoring in forest sinks<sup>\*1</sup> and Kyoto mechanism credits<sup>\*2</sup>, the 5-year average value falls to 8.4% below the base year, meeting the Kyoto Protocol target of -6%.



Notes:

- Volume of emissions that can be offset by forest and other sinks (forest sink and urban greening measures, etc.) when calculating target achievement. Since the volume of emissions absorbed as a result of Japan's forest sink measures exceeded the maximum forest sink offset allowance of 238.3 million tons established for the five-year period, the maximum allowance was used to calculate the average value.
- Government-acquired: Total volume of Kyoto mechanism credits acquired through credit acquisition projects as of the end of FY 2013 (97.493 million tons)  
Privately acquired: Volume of credits held by the Federation of Electric Power Companies of Japan (Source: Environmental Action Plan by the Japanese Electric Utility Industry, FY 2013 version)
- Final emissions and absorption volumes are to be decided on the basis of investigations conducted in FY 2014 under the United Nations Framework Convention on Climate Change and the Kyoto Protocol. Kyoto mechanism credits are to be decided after the end of the adjustment period following the first commitment period (expected to be no earlier than the second half of 2015)

Source: Ministry of the Environment

## Initiatives undertaken by Japan's industrial sector

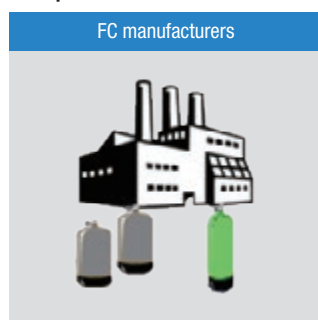
Although alternative fluorocarbons (FCs) do not destroy the ozone layer, they do have a powerful heat-trapping (greenhouse) effect ranging from three to five orders of magnitude greater than that of CO<sub>2</sub>. Due to the use of FCs in products such as air conditioners and refrigerators, worldwide emissions in 2010 were double those of 2002.

In response to this situation, Japan revised its legis-

lation to severely restrict emissions of fluorocarbons. The changes included measures such as establishing criteria and introducing a permit system that addresses the entire life cycle from manufacture, product use, recovery, recycling, and/or destruction. As a result of these revisions, Japan strengthened measures aimed at reducing emissions, for example by applying restrictions to manufacturers and importers who were not previously affected, and by promoting the switch to either fluorocarbons with a weaker greenhouse effect or non-FC products.

## Outline of Japan's Act on the Rational Use and Management of Fluorocarbons

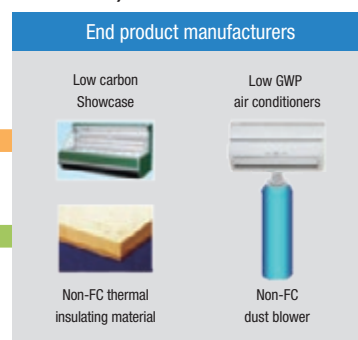
(1) Reducing the volume of newly manufactured fluorocarbons (FCs) by replacement and reuse



Low GWP\*  
Natural refrigerants

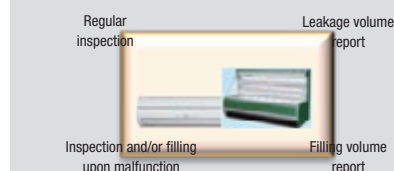
Fluorocarbons (FCs)

(2) Promotion of alternative refrigerants (Switching to non-FC or FC products with lower GWP)



Low GWP Natural refrigerant products

Users



(3) Optimal refrigerant management for industrial equipment (Reduction of leakage during use)

Filling and collection businesses (filling)

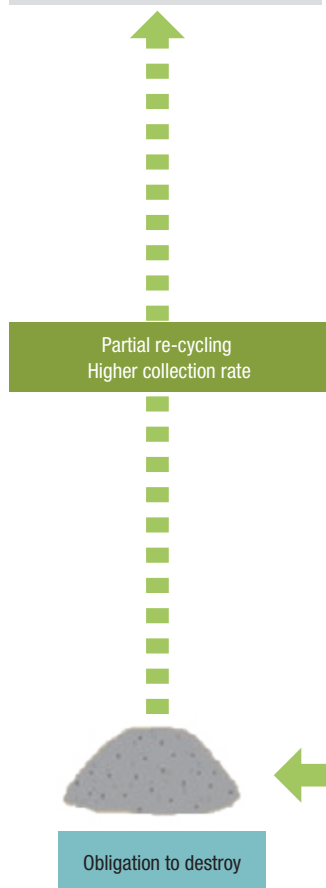
Filling and collection businesses (collection)



Destruction/recycling businesses

(5) Optimization of recycling actions, confirming recycling or destruction through certification

(4) Optimization of filling actions



\* GWP: Global Warming Potential. The extent of each greenhouse gas' effect on global warming is expressed as a ratio comparing it to the effect of carbon dioxide.

Source: Ministry of the Environment

## Transport sector initiatives

Intelligent Transport Systems (ITS) can reduce CO<sub>2</sub> emissions by using cutting-edge information and communication technologies to network people, roads, and vehicles in ways that prevent traffic accidents and congestion and improve the actual running fuel efficiency of automobiles.

Japan was able to reduce CO<sub>2</sub> emissions by about 210,000 tons per year by adopting technology such as Electronic Toll Collection (ETC). The national government is now conducting research aimed at making ITS even more advanced and further reducing CO<sub>2</sub> emissions.

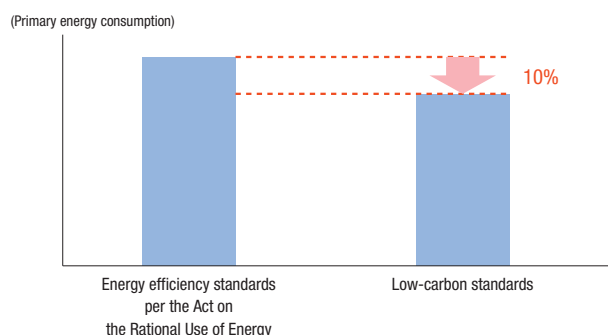
## Residential and commercial sector initiatives

The lifespan of a residential building—from construction through demolition aimed at rebuilding—is only about 27 years in Japan, compared to about 67 years in the United States and some 81 years in the UK.

In addition to revising energy efficiency standards for residences and other buildings based on the Act on the Rational Use of Energy, Japan enacted the Low Carbon City Promotion Act and created a certification system for low-carbon buildings. In order to be certified as a low-carbon building, primary

energy consumption must be at least 10% below the energy efficiency standard set forth in the Act on the Rational Use of Energy. Certification of a building results in eligibility to receive income tax exemptions and lower-interest loans. By establishing standards that motivate the construction of buildings with smaller carbon footprints, Japan intends to increase the popularity of very low-carbon homes and buildings.

#### Relationship between energy efficiency and low-carbon building certification standards



Source: Ministry of the Environment

## A truly enriched society utilizing natural ecosystems

### Introduction

Achieving a truly enriched society that enables us to continue reaping the blessings of nature is one of the prerequisites for the creation of a sustainable society.

### Progress on achieving Aichi Biodiversity Targets

Under the National Biodiversity Strategy of Japan 2012-2020, five basic strategies and 13 national targets for the purpose of achieving the Aichi Biodiversity Targets were adopted at CBD COP10—the 10th meeting of the Conference of the Parties to the Convention on Biological Diversity. Since the agenda for COP12 includes interim assessment of the level of achievement of the Aichi Targets, it will be an opportunity to review the progress made in achieving Japan's national targets.\*

In addition to the efforts of relevant branches of government to mainstream biodiversity in daily life, other organizations such as the Japan Committee for the United Nations Decade on Biodiversity (UNDB-J), which was established in September 2011 with the participation of various parties, are implementing educational and other biodiversity mainstreaming activities. The Japan Business and

Biodiversity Partnership is a program voluntarily established in 2010 by the business community and others. Providing the program and sharing information has resulted in greater awareness by businesses, and activities by businesses have increased. Regarding the national target to “appropriately conserve and manage at least 17% of inland areas and inland water areas, and at least 10% of coastal areas and ocean areas”, about 20.3% of the terrestrial areas and inland water areas are already being conserved and managed as protected areas under applicable laws and regulations.

### Global activities

There is growing interest worldwide in ecosystem-based disaster risk reduction, such as wetland and forest ecosystems, the economic benefits of tourism, the value of protected areas to scientific research, and the many other ways in which biodiversity and ecosystem services can contribute to the creation of a sustainable society. The Japanese people have traditionally coexisted with nature and have built up an extensive body of knowledge and culture grounded in the natural environment. It is important to recognize the value of this legacy and share it with the world.

\*For the results of the review, please refer to the CBD website (<http://www.cbd.int/reports/>).