

(Provisional Translation)

Kyoto Protocol Target Achievement Plan

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< Contents >

Introduction.....	1
Chapter 1 Basic Direction of Promotion of Global Warming Countermeasures.....	6
Section 1 Direction of Japan's Global Warming Countermeasures.....	6
Section 2 Basic Philosophy of Global Warming Countermeasures.....	7
Chapter 2 Targets for Control and Removal of Greenhouse Gases.....	10
Section 1 Japan's Greenhouse Gas Emissions.....	10
Section 2 Targets by Type of Greenhouse Gas or Other Category.....	11
Section 3 Targets of Individual Countermeasures.....	22
Chapter 3 Measures and Policies to Achieve the Targets.....	23
Section 1 Basic Roles of the National and Local Governments, Business Operators and Citizens.....	23
Section 2 Global Warming Measures and Policies.....	26
I. Measures and Policies for Greenhouse Gas Emissions Reduction and Removal.....	26
1. Measures and Policies for Greenhouse Gas Emissions Reduction.....	26
(1) Energy-originated Carbon Dioxide.....	26
(i) Formation of Low-carbon Urban/Regional Structures and Socioeconomic Systems.....	30
(ii) Measures and Policies by Sector (<i>Industrial, Consumer, Transport, etc.</i>).....	33
A. Efforts in the <i>Industrial</i> Sector (Manufacturers, etc.).....	33
B. Efforts in the <i>Commercial and Other</i> Sector.....	39
C. Efforts in the <i>Residential</i> Sector.....	45
D. Efforts in the <i>Transport</i> Sector.....	47
E. Efforts in the <i>Energy Conversion</i> Sector.....	52
(2) Non-energy-originated Carbon Dioxide.....	57
(3) Methane and Nitrous Oxide.....	58
(4) Three Fluorinated Gases (HFCs, PFCs and SF ₆).....	60
2. Greenhouse Gas Sink Measures and Policies.....	62
II. Cross-sectoral Policies.....	65
1. Utilization of a Policy Mix Approach.....	65
(1-1) Economic Instruments.....	65
(1-2) Domestic Emissions Trading Scheme.....	65
(1-3) Environment Tax.....	66
2. Review of the Shift to Night-time Lifestyles and Working Styles.....	66
3. Introduction of Summer Time.....	66
4. Calculating, Reporting and Announcing System of Greenhouse Gas Emissions.....	66
5. Promotion of Environmental Consideration in Business Activities.....	66
6. Development of National Campaigns.....	67
III. Basic Policies.....	70
1. Development of a National System for Calculating Greenhouse Gas Emissions and Removals Based on the UNFCCC and the Kyoto Protocol.....	70
2. Promotion of the Development of Global Warming Countermeasure Technology.....	70
3. Promotion of Research on Climate Change and Strengthening of Observation and Monitoring Systems.....	72
4. Ensuring of International Partnership on Measures Against Global Warming and Promotion	

of International Cooperation.....	73
Section 3 Efforts Expected of Local Governments in Particular.....	76
Section 4 Efforts Expected of Business Operators with Large Emissions in Particular.....	78
Section 5 Measures and Policies Related to the Kyoto Mechanisms.....	79
Chapter 4 To Promote Global Warming Countermeasures in a Sustained Manner	86
Section 1 Kyoto Protocol Target Achievement Plan Progress Management.....	86
Section 2 Evaluation Methods for Citizens' Efforts and Technology Development.....	91
Section 3 Development of Implementation Structures.....	92
Conclusion	93

- (Appendix 1) List of Measures and Policies on Energy-originated Carbon Dioxide
- (Appendix 2) List of Measures and Policies on Non-energy-originated Carbon Dioxide
- (Appendix 3) List of Measures and Policies on Methane and Nitrous Oxide
- (Appendix 4) List of Measures and Policies on Three Fluorinated Gases
- (Appendix 5) List of Measures and Policies on Greenhouse Gas Sinks
- (Appendix 6) Cross-sectoral Policies

Introduction

The global warming issue is one of the most important environmental issues that impact on the very foundations of human survival. The issue forces us to make efforts to use resources and energy efficiently and to reconsider our socioeconomic activities and lifestyles that involve mass production, mass consumption and mass disposal. In that sense, the adoption of the Kyoto Protocol in 1997 was a major turning point.

The Kyoto Protocol entered into force in February 2005. Under the Protocol, Japan made a legally binding commitment to reduce its greenhouse gas emissions by 6%.

The Government has promoted global warming countermeasures by the Action Program to Arrest Global Warming (1990), the Basic Policy on Measures to Tackle Global Warming (1999), the Outline for Promotion of Efforts to Prevent Global Warming (1998, 2002) or the like.

The 2002 Outline for Promotion of Efforts to Prevent Global Warming was to undergo evaluation and review in 2004. The Act on Promotion of Global Warming Countermeasures (Act No.117 of 1998) stipulates that the Kyoto Protocol Target Achievement Plan is to be established when the Kyoto Protocol enters into force.

Therefore, based on the Act on Promotion of Global Warming Countermeasures, as the results of the evaluation and review (2004) of the 2002 Outline, the Government formulated in April 2005 the Kyoto Protocol Target Achievement Plan, which stipulated the measures necessary for ensuring the achievement of 6% reduction commitment under the Kyoto Protocol. This Plan carries on the 2002 Outline, the 1990 Action Program and the 1999 Basic Policy.

The Act on Promotion of Global Warming Countermeasures provides that the national government shall conduct study in 2007 concerning the targets and programs prescribed in the Kyoto Protocol Target Achievement Plan and change the Plan if it finds this to be necessary based on the results of study (Article 9). Therefore, the Government just revised this Plan totally in March 2008.

○ Scientific Knowledge concerning Global Warming

The global warming issue has a serious impact on the natural ecosystem and humans as greenhouse gases released as a result of human activities increase the concentrations of atmospheric greenhouse gases and this leads to an incremental increase in the surface and air temperatures of our entire planet. In view of the expected scale and seriousness of its impact, it can be concluded that this issue is one of the most important environmental issues that impact on the very foundations of human survival.

The Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (2007) shows that the global average temperature increased by 0.74 (0.56-0.92)°C for the hundred years ending in 2005, and that the global average sea level rose by approximately 17 (12-22) cm during the 20th century. Based on these facts and widespread melting of ice and snow, the Report concludes that global warming is unequivocal and very likely due to the increase in anthropogenic greenhouse gas concentrations.

Current global greenhouse gas emissions are more than double the capacity of natural sinks. If the current situation persists, global greenhouse gas emissions will continue to increase over the next few decades. The Report projects that at the end of the 21st century (2090-2099), as compared to the period from 1980 to 1999, global temperatures will increase by approximately 1.8 (1.1-2.9) °C in a world in which environmental conservation and economic development are compatible on a global scale. In a world that relies heavily on fossil energy sources to achieve high economic growth the increase will be approximately 4.0 (2.4-6.4) °C. Moreover, as some examples of the projected impacts of climate change, it points to increased damage from floods and storms, serious water shortages for hundreds of millions of people, increasing risk of species extinctions, increasing social burden from infectious diseases and malnutrition, among others.

Global warming has already had negative impacts on water resources and natural habitats. In the future, the higher the temperatures are, the more serious effects are predicted to occur in a variety of fields and regions.

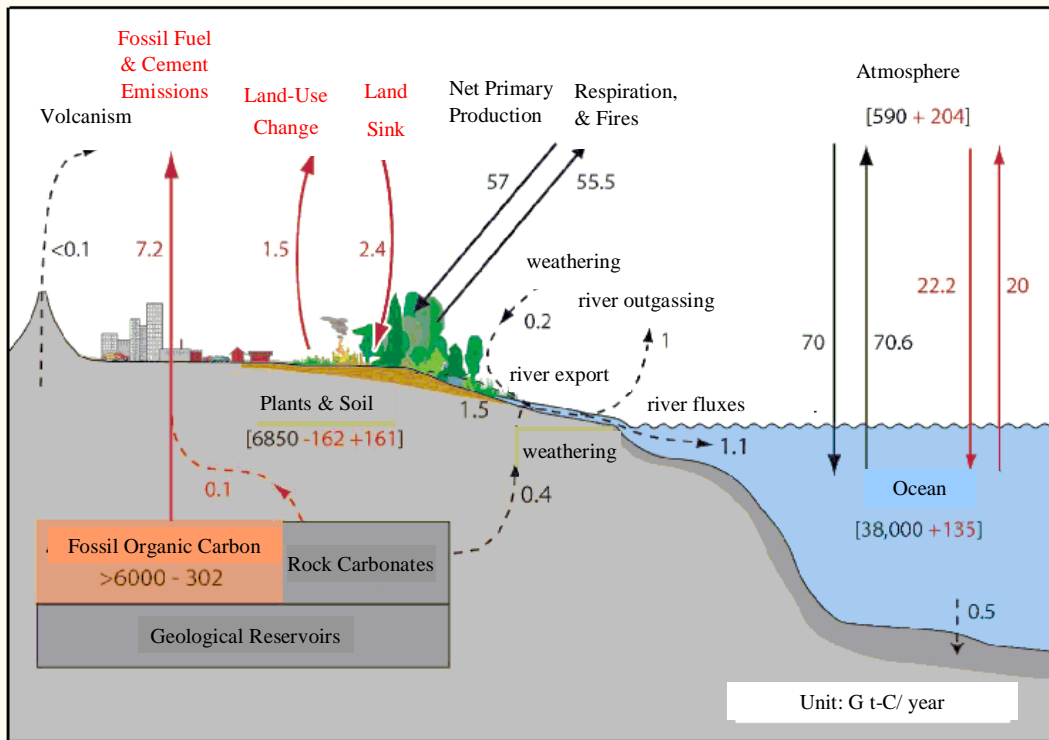
With much effort and investment to reduce greenhouse gas emissions for the next 20 to 30 years, it is possible to avoid, delay or decrease many of the serious effects of global warming. Delay in reducing greenhouse gases will have a large influence on stabilization of greenhouse gas concentrations at a lower level and increase the risk of impacts by severer climate changes.

In Japan, the average temperature increase between 1898 and 2007 was approximately 1.10°C per century. In recent years, it has been reported that changes in the distribution of the ecosystem have appeared, such as habitat reductions of certain species of alpine flora, changes in the habitats of insects and animals, as well as changes in the dates when cherry blossoms bloom or maple leaves change color in autumn. It has also been pointed out that there have been an increase in the frequency of heavy rain, poor crop growth, and an expansion of the risk area for infectious diseases among other things.¹

In order to achieve the ultimate objective of the United Nations Framework Convention on Climate Change (hereinafter referred to as the “UNFCCC”), namely “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system,” it is necessary to get to a situation in which such a level will be maintained with a balance between the volume of greenhouse gas emitted and the volume of greenhouse gas absorbed, thereby keeping the earth’s stock of atmospheric greenhouse gases unchanged. Considering that current global greenhouse gas emissions are more than double the capacity of natural sinks and that the greenhouse gas concentrations in the atmosphere continue to increase, Japan is proposing the target of cutting global greenhouse gas emissions by half from the current level by 2050 in the “Cool Earth 50,” which it announced in May 2007.

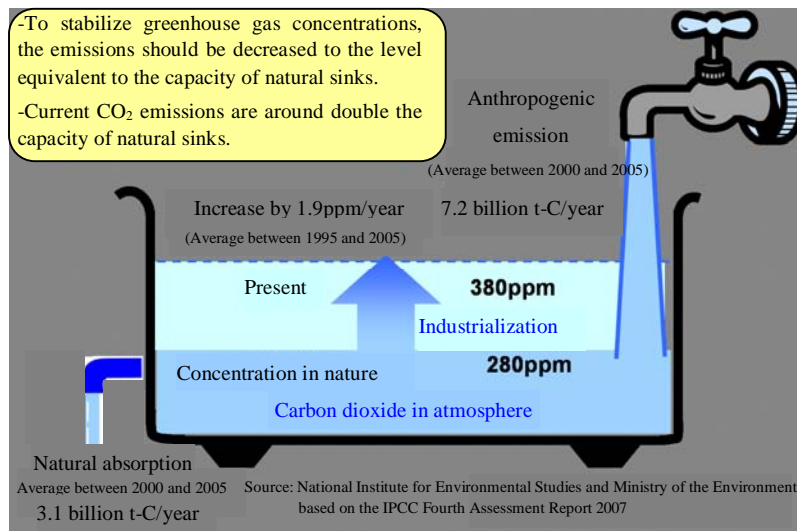
¹ References: Japan Meteorological Agency (2005) Abnormal weather report 2005 and Ministry of the Environment (2001) The Impacts of Global Warming on Japan 2001.

Figure 1: Carbon Cycle



Note: Non-anthropogenic reservoirs and fluxes are in black; Anthropogenic reservoirs and fluxes in red.
 Source: Global Carbon Project "The Global Carbon Cycle" (2006)

Figure 2: Image of Stabilization of Carbon Dioxide Concentration (Pattern Diagram)



Prior to industrialization in the second half of the 18th century, natural circulation was balanced around 280 ppm.

Note: In order to show the image of stabilization of carbon dioxide concentration in an easy-to-understand manner, the continental and oceanic reservoirs and carbon exchanges shown in Figure 1 are omitted.

○ The Series of Events Leading Up to the Entry into Force of the Kyoto Protocol

1. Adoption and Entry into Force of the UNFCCC

In order to tackle the global warming issue, the UNFCCC was adopted in May 1992 and entered into force in 1994. Japan signed it at the United Nations Conference on Environment and Development (UNCED) in June 1992 and concluded it in May 1993.

The UNFCCC makes its ultimate objective to achieve “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system” and states that such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production will not be threatened and to enable economic development to proceed in a sustainable manner.

The UNFCCC notes that per capita emissions in developing countries are still relatively low compared to those in developed countries, that the largest share of historical and current global emissions of greenhouse gases has originated in developed countries, and that there are differences between countries with respect to the state of their global warming countermeasures and capacity to implement them. Based on the principle of “common but differentiated responsibilities,” it was agreed to divide the State Parties to the Convention into three groups: (1) All signatory countries including the developing countries, (2) Annex I countries (OECD countries, countries undergoing the process of transition to a market economy, etc.), and (3) Annex II countries (OECD countries, etc.), and to formulate global warming countermeasures at different levels for each group.

2. Adoption of the Kyoto Protocol

As a first step toward the long-term, continuous emissions reduction required to achieve the ultimate objective of the UNFCCC, the Kyoto Protocol, under which developed countries make legally binding commitments to reduce their greenhouse gases, was adopted at the Third Conference of the Parties to the UNFCCC (COP3) held in Kyoto in December 1997.

The Kyoto Protocol determines that the following greenhouse gases are subject to quantified commitments concerning control and reduction of emissions: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆).

With the objective of reducing emissions of these greenhouse gases by at least 5% below 1990 levels in all developed countries in the first commitment period (2008-2012), legally binding and quantified commitments were stipulated for each country. For Japan an emissions reduction of 6% was determined.

Furthermore, under the Kyoto Protocol, carbon sinks can also be counted toward achievement of commitments and the Kyoto Mechanisms are provided as well to add flexibility in the achievement of the commitments by each country.

3. Entry into Force of the Kyoto Protocol

The Kyoto Protocol provides that it shall enter into force on the ninetieth day after the date on

which not less than 55 Parties to the Convention, incorporating Parties included in Annex I which accounted in total for at least 55% of the total carbon dioxide emissions for 1990 of the Parties included in Annex I, have deposited their instruments of ratification, acceptance, approval or accession.

To bring the Protocol into force as soon as possible, Japan, the chair of COP3, continuously made efforts to encourage non-Parties to the Protocol to conclude the Protocol. Such non-Parties include Russia, which held the key to meeting the conditions required for bringing the Protocol into force, and the United States, which had announced a policy of withdrawal from the Protocol.

With the ratification by Russia in November 2004, the Kyoto Protocol met the above conditions and thus entered into force on February 16, 2005.

○ Japan's Efforts up to the Formulation of the Kyoto Protocol Target Achievement Plan

Japan formulated the Action Program to Arrest Global Warming in October 1990 in a Meeting of the Council of Ministers for Global Environmental Conservation. The Action Program set targets such as stabilization of carbon dioxide emissions at the 1990 level in and after 2000 and formulated a variety of global warming countermeasures.

Subsequently, with the adoption of the Kyoto Protocol in December 1997, in June 1998 the Global Warming Prevention Headquarters decided on the Outline for Promotion of Efforts to Prevent Global Warming, a compilation of global warming countermeasures that had to be urgently promoted toward 2010.

Through the establishment of the Act on Promotion of Global Warming Countermeasures and the Cabinet Decision on the Basic Policy on Measures to Tackle Global Warming, the Government built the basic framework for promoting global warming countermeasures in Japan. At the same time, the Government implemented various domestic countermeasures such as the amendment of the Act on the Rational Use of Energy (Act No.49 of 1979; hereinafter referred to as the "Energy Conservation Act").

With the adoption in November 2001 of the Marrakesh Accords, which established rules, procedures and institutions for implementing the Kyoto Protocol, an environment was in place to encourage ratification of the Kyoto Protocol by each country.

In March 2002, the Government revised the Outline for Promotion of Efforts to Prevent Global Warming with a view to ratifying the Kyoto Protocol. The Act on Promotion of Global Warming Countermeasures was amended to prepare for the ratification, for example, to stipulate the establishment of the Kyoto Protocol Target Achievement Plan at the time of the Protocol's entry into force. With the development of these domestic frameworks, Japan ratified the Kyoto Protocol in June 2002.

After the Kyoto Protocol came into effect in February 2005, the Government formulated the Kyoto Protocol Target Achievement Plan on April 28, 2005.

Chapter 1 Basic Direction of Promotion of Global Warming Countermeasures

Section 1 Direction of Japan's Global Warming Countermeasures

Japan will steadily achieve its 6% reduction commitment under the Kyoto Protocol. In addition, Japan will further aim at long-term, continuous and substantial emissions reduction.

The 21st century is known as the “century of the environment” and the response to the global warming issue is becoming an important challenge shared by all humans. In this context, Japan, as a leading environmentally advanced nation that is a model for other countries, will take the role of leading the world with respect to the global warming issue.

I. Steady Achievement of the 6% Reduction Commitment under the Kyoto Protocol

Japan will promote the measures necessary to achieve its commitment under the Kyoto Protocol to reduce its total greenhouse gas emissions by 6% from the base year level in the first commitment period (2008-2012).

During the Kyoto Protocol commitment period, the later we take measures, the more drastic ones we will have to adopt to attain large reductions over a short period to achieve the 6% reduction commitment. Thus, Japan intends to steadily reduce emissions by promptly implementing the measures and policies which are feasible at the present stage.

II. Further Long-term and Continuous Reduction of Greenhouse Gas Emissions on a Global Scale

Achievement of the reduction commitments of developed countries stipulated in the Kyoto Protocol is a significant milestone toward achieving the ultimate objective of the UNFCCC: stabilization of greenhouse gas concentrations in the atmosphere. Furthermore, Japan is proposing as a long-term global common goal “to cut greenhouse gas emissions by half from the current level by 2050” in the “Cool Earth 50,” which it announced in May 2007. In order to contribute to the achievement of this goal, Japan will first work to achieve its 6% reduction commitment under the Kyoto Protocol and will further take the lead on a long-term, continuous and substantial emissions reduction.

From this perspective, the Government positioned the measures and policies to achieve the 6% reduction commitment in overall measures toward its mid-term strategies beyond 2012 and long-term strategies up to 2050 based on the “Cool Earth 50,” and will aim to build a low-carbon society which incorporates greenhouse gas emissions reduction along with innovative technology development while ensuring the consistency of the efforts to achieve the Kyoto Protocol commitment and these mid- and long-term efforts.

Furthermore, because the causes and impacts of global warming are indeed global, Japan will continue efforts to ensure international cooperation on global warming countermeasures to lead to worldwide emissions reduction.

Section 2 Basic Philosophy of Global Warming Countermeasures

Greenhouse gas emissions are closely related to economic activities and citizens' lives. Therefore, the Government will boldly implement global warming countermeasures, founded on the basic philosophy of "compatibility between the environment and the economy."

Aiming to be a world-leading environmental nation, Japan will promote innovative technology development and creation of a low-carbon society, encourage the participation and collaboration of national and local governments, business operators and citizens, and try to ensure transparency and share information in order to achieve it.

Japan will ensure the achievement of its 6% reduction commitment by promoting countermeasures with diverse policy instruments and by strengthening progress management such as quantitative evaluations and reviews of countermeasures. Japan will also ensure international cooperation on global warming countermeasures.

I. Compatibility Between the Environment and the Economy

So that the efforts to achieve the 6% reduction commitment under the Kyoto Protocol can also lead to Japan's economic revitalization, employment creation and other benefits, the Government will take full advantage of technological innovation and its originality and ingenuity to develop and build mechanisms that contribute to compatibility between the environment and the economy.

Specifically, to realize sound economic development with a small environmental burden and a high quality of life for citizens while reducing greenhouse gas emissions, the Government will develop and disseminate energy-saving devices, improve the efficiency of energy use, further accelerate technology development, and move to reform citizens' lifestyles and working styles. In addition, the Government will boldly implement global warming countermeasures which entail transformations of wide-ranging socioeconomic systems.

II. Innovative Technology Development and Creation of a Low-carbon Society

To achieve the Kyoto Protocol commitment and also promote the long-term and continuous emissions reduction toward a "low-carbon society," it is ultimately necessary to reduce our dependency on fossil fuels.

In order to achieve these targets ensuring compatibility between the environment and the economy, Japan will aim to be a world-leading environmental nation not only by accelerating the dissemination of existing technologies and effective measures, but also by undertaking the following: improving its environmental and energy technologies such as energy conservation, renewable energy and nuclear energy; promoting creative technological innovations; disseminating efficient devices and cutting-edge systems; and moving to reform the foundational structure of society such as citizens' lifestyles and urban and traffic systems.

III. Promotion of the Participation and Collaboration of All Actors and Ensuring of Transparency and Sharing of Information to That End

The global warming issue is deeply involved with all aspects of socioeconomic activities, communities and life of citizens, so it is necessary for all actors including the national and local governments, business operators and citizens to participate and collaborate in the efforts on this issue.

For this reason, the Government will promote the active participation of all actors in measures and policies, and will strengthen collaboration between each actor by actively providing and sharing information concerning the progress of global warming countermeasures.

The Government will actively provide and share, in as visible a manner as possible, knowledge about the increasingly serious global warming issue and information about the specific actions demanding enormous efforts to achieve the 6% reduction commitment and about what each individual must do. The Government will carry out public relations and dissemination activities on these topics to improve the awareness of households and enterprises and rouse them to take action.

IV. Utilization of Diverse Policy Instruments

In order to meticulously take into account the conditions in each sector, realize the potential for emissions reductions as much as possible, fully mobilize all types of policy instruments and work toward effective and efficient control of greenhouse gases, the Government will consider the fairness of the cost burden on each actor and effectively utilize diverse policy instruments such as voluntary, regulatory, economic and informational ones, while taking advantage of their special characteristics.

Particularly, to ensure wide-ranging emission control effects, the Government will place importance on incentive policies utilizing economic instruments which induce technology development and countermeasures introduction overcoming cost constraints.

V. Placing of Importance on the Evaluation and Review Process (PDCA)

In order to constantly assess the effectiveness of this Plan and make it reliable, each year after formulation of this Plan, the Government will rigorously inspect the progress of the policies for each countermeasure using countermeasure evaluation indices and others, and will expeditiously revise the Plan to add or strengthen measures and policies as necessary.

To promptly take effective additional measures and policies in and after FY2010 (the middle year of the first commitment period) to achieve the target, in FY2009 the Government will comprehensively evaluate the progresses of measures and policies in this Plan and the state of emissions, based on the projection of Japan's greenhouse gas emissions during the whole first commitment period (five years).

For this reason, this Plan clearly specifies the following: targets by type of greenhouse gas or other category; individual countermeasures and their evaluation indices; estimated volume of greenhouse gas emissions reductions; each actor's roles and efforts for the countermeasures; and policies of the national and local governments (For details, refer to Chapter 4, Section 1).

VI. Ensuring of International Cooperation on Global Warming Countermeasures

Since the causes and impacts of global warming are indeed global, it is essential for all major emitting countries to endeavor to reduce greenhouse gases in an effective way so as to ensure the effectiveness of the global warming countermeasures. Not only efforts by each country, but also further efforts through international cooperation are indispensable. Therefore, Japan will unceasingly continue to put in its utmost efforts based on the “Cool Earth 50” in order to create an effective framework beyond 2012 in which all major emitters will participate.

Moreover, carbon dioxide emissions are projected to rapidly increase as a result of the future population growth and economic development on a global scale. Therefore, Japan, which has superior technological capabilities and accumulated experience in environmental conservation, will take a leading role in the world’s efforts to combat global warming through international cooperation. From the viewpoints of responding to the global warming issue and freeing ourselves from fossil fuel resource constraints, it is necessary to create a “Low Carbon Society,” in which citizens can feel the affluence in their life and at the same time the atmospheric greenhouse gas concentrations are stabilized at a level that has no negative impact on the climate, by substantially reducing greenhouse gas emissions from fossil fuel consumption to the level equivalent to the capacity of natural sinks.

Chapter 2 Targets for Control and Removal of Greenhouse Gases

Section 1 Japan's Greenhouse Gas Emissions

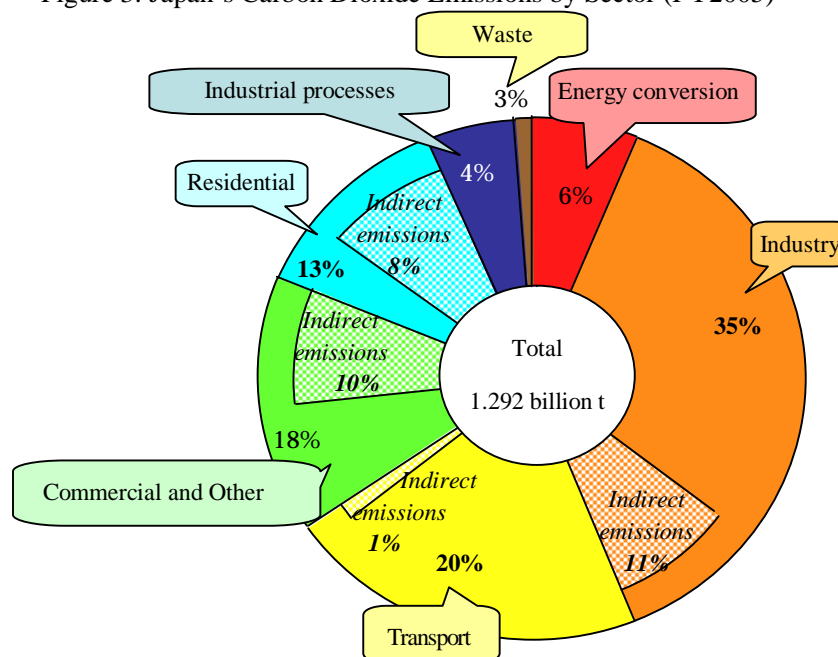
Japan's base year total greenhouse gas emissions (hereinafter referred to as the "base year total emissions") were 1.261 billion t-CO₂. In order to achieve the 6% reduction commitment, it is necessary to reduce annual average total emissions to 1.186 billion t-CO₂ per year in the first commitment period.

On the other hand, Japan's total emissions of greenhouse gases in FY2005 were 1.359 billion t-CO₂, a 7.7% increase over base year level. Japan now has to reduce emissions by 13.7% to achieve its reduction commitment.

The main reason for this is because the emissions of energy-originated carbon dioxide, which account for approximately 90% of Japan's greenhouse gas emissions, have greatly increased (an increase of 11.3% in FY2005 relative to the base year total emissions), even though there has been progress in the reduction of methane, nitrous oxide and the three fluorinated gases. The factors behind the increase in energy-originated carbon dioxide emissions include the following; the cessation of nuclear power generation in the second half of 2002 and other one-off factors; the economic expansion of China; the transformation of industrial structure; increased energy consumption in offices and households due to an expansion of the floor area of office and other buildings; and increased numbers of personal computers, home appliances or the like. The emissions from the *industrial* sector, which account for around 40% of carbon dioxide emissions, have not shown much change, and those from the *transport* sector, which account for roughly 20%, have increased by about 20% as compared to FY1990 level but have been on a downward trend for the last few years. On the other hand, the emissions from the *commercial and other* sector, which account for approximately 20%, and those from the *residential* sector, which account for around 10%, have greatly increased.

Carbon dioxide emissions in FY2005 by sector are shown in Figure 3.

Figure 3: Japan's Carbon Dioxide Emissions by Sector (FY2005)



*Indirect emissions refers to the emissions resulting from power generation by electric utilities, etc.

Section 2 Targets by Type of Greenhouse Gas or Other Category

The Government has established the following targets concerning the amounts of emission control and removal of greenhouse gases.

I. Greenhouse Gases

The Kyoto Protocol determines that the following greenhouse gases are subject to quantified commitments concerning control and reduction of emissions: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆). In this Plan, the Government has established the following targets for the control of emissions in the first commitment period for each greenhouse gas.

The targets for each greenhouse gas shown below were basically determined as standards for emission control that can be achieved through implementation of this Plan, taking into account rational and transparent projections of the volume of activities and the improvement effects of intensities such as energy use efficiency and chlorofluorocarbon's substitutes emissions intensity.

* The volume of greenhouse gas emissions can be factorized into the "intensity," which is the volume of energy consumption or greenhouse gas emissions per unit of activity, and the "volume of activity," including the volume of production by enterprises and the number of households.

(Examples)

Intensity: automobile fuel efficiency; volume of energy consumption per household; volume of energy consumption per unit of production in a factory; volume of carbon dioxide emissions per unit of energy consumption for each type of energy such as gasoline, coal and electric power; and volume of HFCs emissions per unit of production.

Volume of activity: Index of Industrial Production; number of households; floor area; and transport volume.

Table 2: Global Warming Potentials² and Major Sources of Gases Subject to the Kyoto Protocol

	Global warming potential	Major sources
Energy-originated CO ₂	1	Generated through fuel combustion. In addition to direct consumption of heating oil, gas or other fuels, the consumption of electricity obtained from fossil fuels leads to indirect emissions.
Non-energy-originated CO ₂	1	Generated from consumption of limestone in industrial processes, waste incineration, etc.
Methane (CH ₄)	21	Generated by anaerobic fermentation of organic matter in paddy fields and waste disposal sites, etc.
Nitrous oxide (N ₂ O)	310	Generated in some manufacturing processes of raw materials for chemical products, and the management of farm-used soil and livestock manure, etc.
Hydrofluorocarbons (HFCs)	1,300 (HFC-134a)	Used as refrigerants in refrigeration appliances and air conditioning appliances, or as foaming agents in heat insulation materials, etc.
Perfluorocarbons (PFCs)	6,500 (PFC-14)	Used in manufacturing processes of semiconductors, etc.
Sulphur hexafluoride (SF ₆)	23,900	Used as cover gas when making a magnesium solution, in manufacturing processes of semiconductors, or as electrical insulation gas, etc.

1. Energy-originated Carbon Dioxide³

The emissions of energy-originated carbon dioxide, which account for 90% of Japan's greenhouse gas emissions, can statistically be divided into five sectors: *industrial*,⁴ *commercial and other*,⁵ *residential, transport*, and *energy conversion*.⁶ It is also possible to look at the effects of measures and policies for each of these sectors. Approximate targets of future emissions in each sector are shown in Table 3. Provisional calculations show that these approximate targets can be achieved if Japan maintains the currently forecast level of economic growth,⁷ all countermeasures on the energy supply side produce the anticipated results, and all countermeasures in each sector on the energy demand side also produce the anticipated results. Table 3 gives the upper and lower limits of approximate targets: the upper limit will be reached if the countermeasures demonstrate their maximum effects, and the lower limit will be reached if they show their minimum effects. Although the Government will certainly aim to maximize their effects, the targets have been set to meet the Kyoto Protocol target even if the countermeasures have their minimum effects.

² *Global Warming Potentials* express the extent of the global warming effect caused by each greenhouse gas relative to the global warming effect caused by a similar mass of carbon dioxide.

³ *Energy-originated carbon dioxide* refers to carbon dioxide generated as a result of the use of energy.

⁴ Factories, agriculture, construction, etc.

⁵ Office buildings, retail stores, hospitals, schools, etc.

⁶ Self-consumption at power plants and petroleum processing facilities, etc.

⁷ *Course and Strategy of the Japanese Economy* (Cabinet Decision of January 18, 2008)

The approximate target for energy-originated carbon dioxide emissions in FY2010 is 1.3-2.3% above base year (FY1990) level as the ratio to the base year total emissions (approximately 1,076 to 1,089 million t-CO₂).

* It is estimated that emissions will increase by economic growth and other factors if no measures or policies are taken. Thus, the approximate targets provisionally calculated and established for each sector will be achieved through measures and policies to reduce emissions from FY2005 levels by 25 to 29 million t-CO₂ in the *industrial* sector, by 29 to 31 million t-CO₂ in the *commercial and other* sector, by 32 to 35 million t-CO₂ in the *residential* sector, by 14 to 17 million t-CO₂ in the *transport* sector, and by 13 million t-CO₂ in the *energy conversion* sector.

Table 3: Approximate Targets of Energy-originated Carbon Dioxide in Each Sector

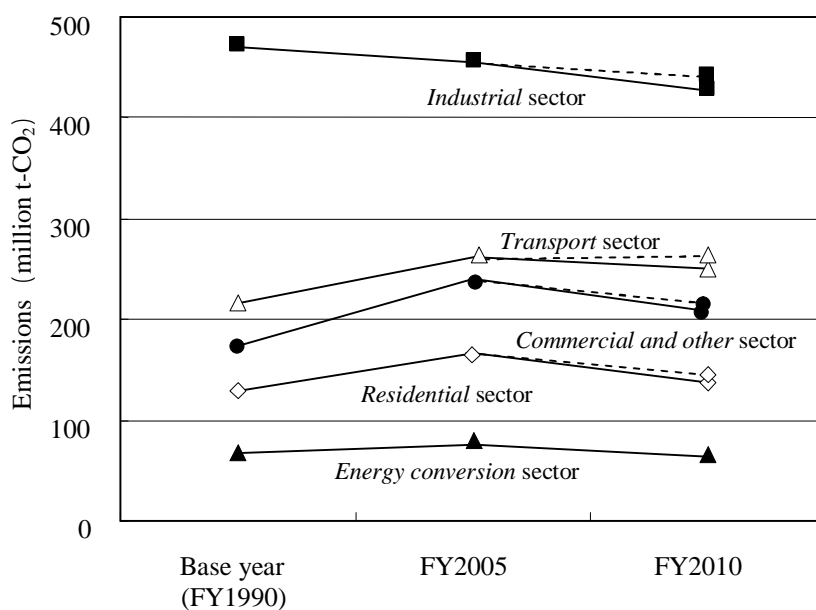
Estimated results	Base year (FY1990)	FY2005 level of emissions		Approximate targets ^{Note} in each sector in FY2010		<Reference> Differences between FY2010 targets and FY2005 level of emissions	
	A	B	(B - A)/A	C	(C - A)/A		
	million t-CO ₂	million t-CO ₂	(Percentage change relative to base year by sector)	million t-CO ₂	(Percentage change relative to base year by sector)		
Energy-originated CO ₂	1,059	1,201		1,076 -1,089			
	<i>Industrial sector</i>	482	452	(-6.1%)	424-428	(-12.1%) - (-11.3%)	It is estimated that if no measures or policies are taken, emissions will increase through increases in the volume of production resulting from economic growth or other factors. Provisional calculations show that emissions can be reduced by 25 to 29 million tons from FY2005 level through measures and policies.
	<i>Commercial and other sector</i>	164	239	(+45.4%)	208-210	(+26.5%) - (+27.9%)	It is estimated that if no measures or policies are taken, emissions will increase through increases in the floor area in buildings or other factors. Provisional calculations show that emissions can be reduced by 29 to 31 million tons from FY2005 level through measures and policies.
	<i>Residential sector</i>	127	174	(+36.4%)	138-141	(+8.5%) - (+10.9%)	It is estimated that if no measures or policies are taken, emissions will increase through increases in the number of households and the device ownership rate per household or other factors. Provisional calculations show that emissions can be reduced by 32 to 35 million tons from FY2005 level through measures and policies.

	<i>Transport sector</i>	217	257	(+18.1%)	240–243	(+10.3%) – (+11.9%)	It is estimated that if no measures or policies are taken, emissions will increase through increases in the number of automobiles owned or other factors. Provisional calculations show that emissions can be reduced by 14 to 17 million tons from FY2005 level through measures and policies.
	<i>Energy conversion sector</i>	68	79	(+16.5%)	66	(-2.3%)	This is self-consumption at power plants, petroleum processing facilities or the like. Provisional calculations show that emissions can be reduced by 13 million tons from FY2005 level by continuing to steadily promote efficient energy use in these facilities.

*In each column, the numbers in all sectors may not add up exactly to the total due to rounding.

Note: The upper and lower limits of approximate targets are provided: the upper limit will be reached if the countermeasures demonstrate their maximum effects, and the lower limit will be reached if they show their minimum effects. Although the Government will certainly aim to maximize their effects, the targets have been set to meet the Kyoto Protocol target even if the countermeasures have their minimum effects.

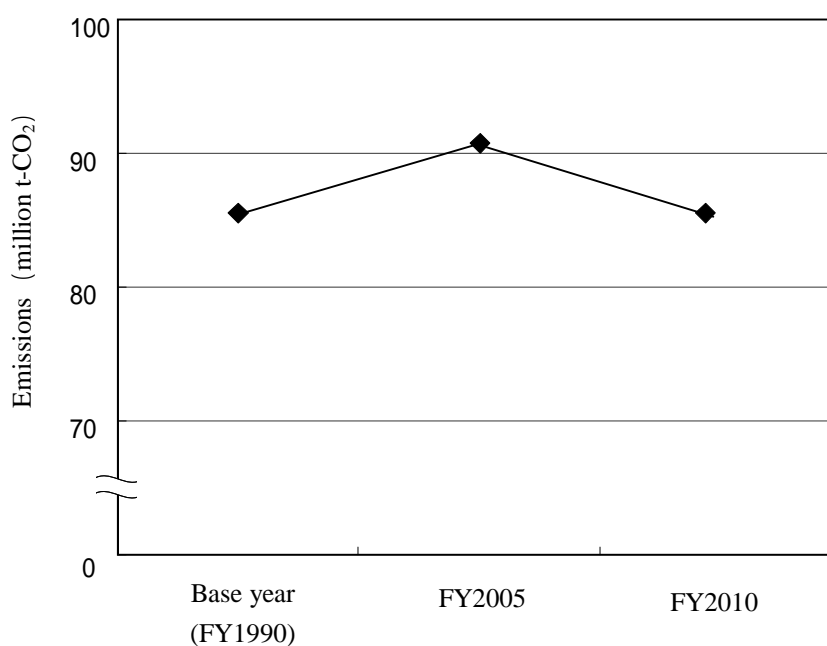
Figure 5: Approximate Targets of Energy-originated Carbon Dioxide Emissions in Each Sector



2. Non-energy-originated Carbon Dioxide⁸

The target for non-energy-originated carbon dioxide emissions is 0.04% below base year (FY1990) level as the ratio to the base year total emissions (approximately 85 million t-CO₂).

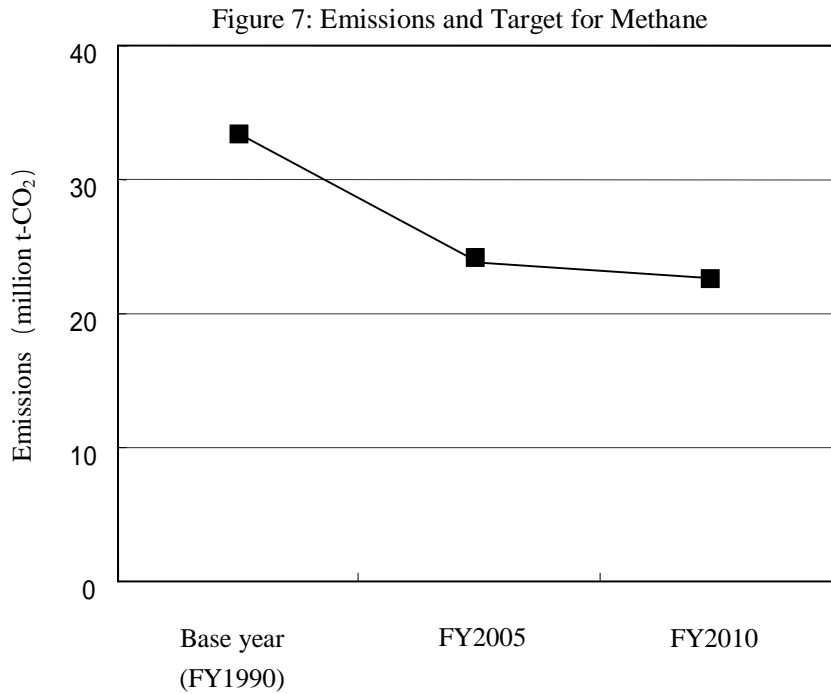
Figure 6: Emissions and Target for Non-energy-originated Carbon Dioxide



⁸ When promoting countermeasures, it is sometimes necessary to strike a balance among non-energy-originated carbon dioxide, methane and nitrous oxide, because, for example, effective countermeasures for reducing methane emissions in the treatment of human waste can increase nitrous oxide emissions.

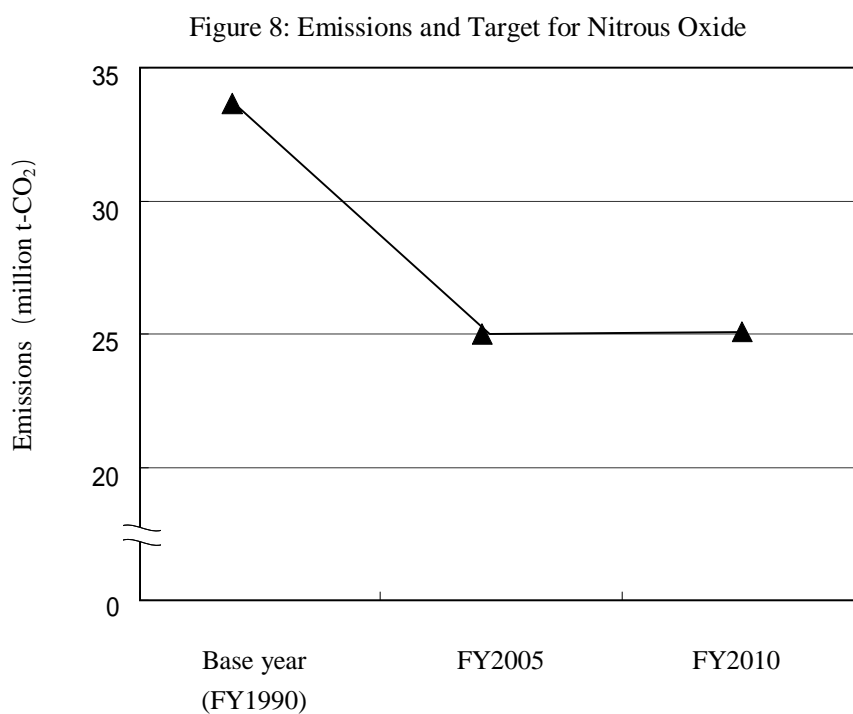
3. Methane⁸

The target for methane emissions is 0.9% below base year (FY1990) level as the ratio to the base year total emissions (approximately 23 million t-CO₂).



4. Nitrous Oxide⁸

The target for nitrous oxide is 0.6% below base year (FY1990) level as the ratio to the base year total emissions (approximately 25 million t-CO₂).



5. Three Fluorinated Gases

The target for the three fluorinated gases (HFCs, PFCs and SF₆) is 1.6% below base year (CY1995) level as the ratio to the base year total emissions (approximately 31 million t-CO₂).

In some cases, measures and policies are implemented for all of these three fluorinated gases because they are used interchangeably in some businesses. Therefore, it is appropriate to combine measures and policies according to technology and market conditions so as to minimize the social costs and obtain the maximal results. For this reason, the figures for each gas are shown as rough indications of the breakdown in order to more steadily achieve the target of “1.6%” reduction for the three fluorinated gases collectively, on the assumption of the current technology and market conditions. It is necessary to keep in mind the fact that these figures would fluctuate depending on future changes in these conditions.

Table 4: Emissions and Target for the Three Fluorinated Gases and Rough Indications of the Breakdown for Each Gas

	Base year (CY1995)	CY2005			Target for the three fluorinated gases and rough indications of the breakdown for each gas	
	million t-CO ₂	million t-CO ₂	Ratio to the base year total emissions	million t-CO ₂	Ratio to the base year total emissions	
Three fluorinated gases	51	18	-2.6%	31	-1.6%	
HFCs	20	7	(-1.0%)	22	(+0.1%)	
PFCs	14	6	(-0.6%)	5	(-0.7%)	
SF ₆	17	4	(-1.0%)	4	(-1.0%)	

Figure 9: Emissions and Target for the Three Fluorinated Gases and Rough Indications of the Breakdown for Each Gas

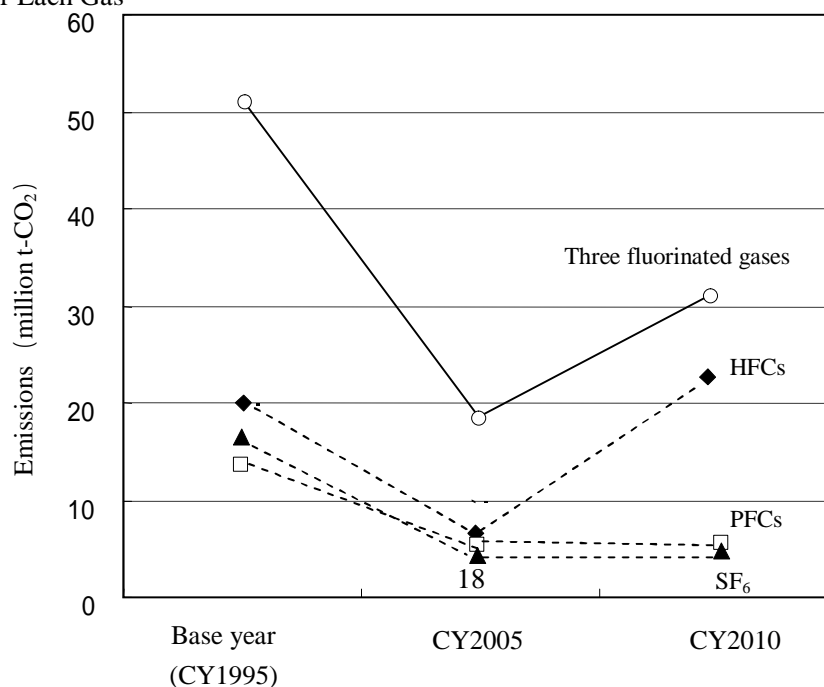


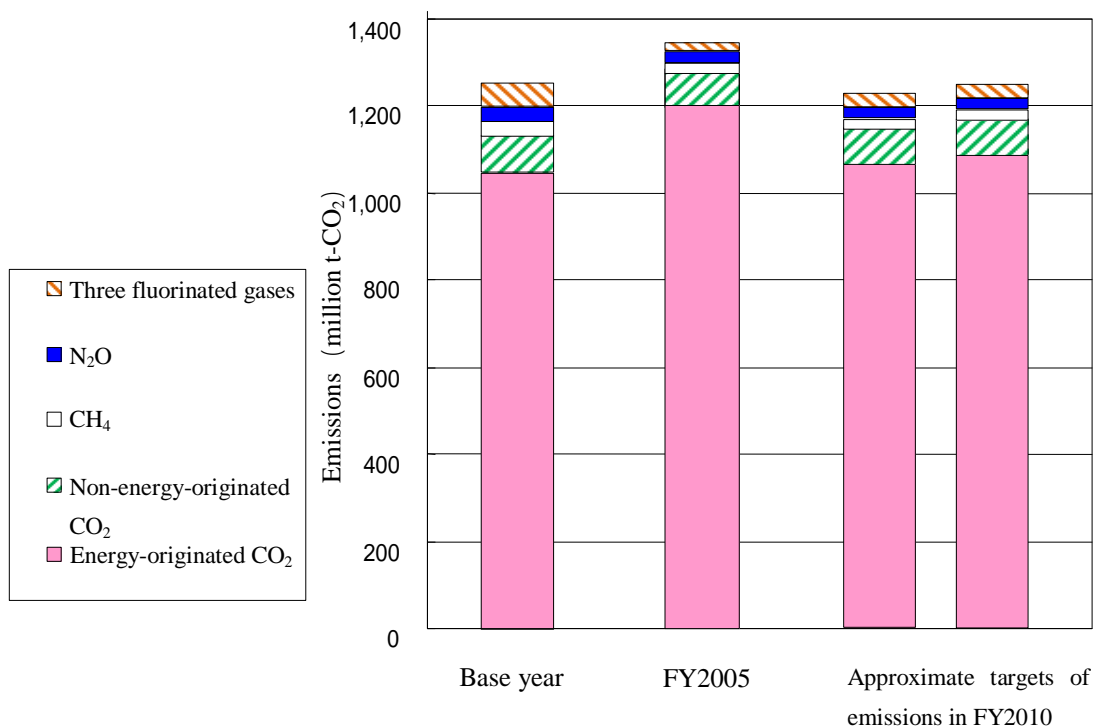
Table 5: Approximate Targets of Greenhouse Gas Emissions in FY2010

	Base year	FY2005		Approximate targets of emissions in FY2010 ^{Note}	
	million t-CO ₂	million t-CO ₂	Ratio to the base year total emissions	million t-CO ₂	Ratio to the base year total emissions
Energy-originated CO ₂	1,059	1,201	+11.3%	1,076–1,089	<u>(+1.3%)</u> <u>– (+2.3%)</u>
<i>Industrial</i> sector	482	452	-2.3%	424–428	(- 4.6%) – (- 4.3%)
<i>Commercial and other</i> sector	164	239	+5.9%	208–210	(+3.4%) – (+3.6%)
<i>Residential</i> sector	127	174	+3.7%	138–141	(+0.9%) – (+1.1%)
<i>Transport</i> sector	217	257	+3.1%	240–243	(+1.8%) – (+2.0%)
<i>Energy conversion</i> sector	68	79	+0.9%	66	(-0.1%)
Non-energy-originated CO ₂ , CH ₄ , N ₂ O	151	140	<u>-0.9%</u>	132	<u>(-1.5%)</u>
Non-energy-originated CO ₂	85	91	+0.4%	85	(-0.0%)
CH ₄	33	24	-0.7%	23	(-0.9%)
N ₂ O	33	25	-0.6%	25	(-0.6%)
Three fluorinated gases	51	18	<u>-2.6%</u>	31	<u>(-1.6%)</u>
HFCs	20	7	-1.0%	22	(+0.1%)
PFCs	14	6	-0.6%	5	(-0.7%)
SF ₆	17	4	-1.0%	4	(-1.0%)
Greenhouse gas emissions	1,261	1,359	<u>+7.7%</u>	1,239–1,252	<u>(-1.8%)</u> <u>– (-0.8%)</u>

* In each column, the numbers in all sectors may not add up exactly to the total due to rounding.

Note: The upper and lower limits of approximate targets are provided: the upper limit will be reached if the countermeasures demonstrate their maximum effects, and the lower limit will be reached if they show their minimum effects. Although the Government will certainly aim to maximize their effects, the targets have been set to meet the Kyoto Protocol target even if the countermeasures have their minimum effects.

Figure 10: Approximate Targets of Greenhouse Gas Emissions by Gas Type



Note: The upper and lower limits of approximate targets are provided: the upper limit will be reached if the countermeasures demonstrate their maximum effects, and the lower limit will be reached if they show their minimum effects. Although the Government will certainly aim to maximize their effects, the targets have been set to meet the Kyoto Protocol target even if the countermeasures have their minimum effects.

II. Greenhouse Gas Sinks

The target for sinks is to ensure removal of 13 million t-C (47.67 million t-CO₂; approximately 3.8% compared to the base year total emissions), which was decided on at the Seventh Conference of the Parties to the UNFCCC (COP7) as the amount of removal by Japan's forest management, for all forests subject to Article 3, Paragraph 3 and 4 of the Kyoto Protocol.

III. Kyoto Mechanisms

The target for the Kyoto Mechanisms is to utilize them for the difference between the emissions equivalent to the reduction commitment and the actual greenhouse gas emissions (this refers to the emissions after deduction of greenhouse gas removals) in the first commitment period of the Kyoto Protocol.

Even if any of the targets for greenhouse gas emissions or sinks is confidently expected to be achieved in the first commitment period, the Government will not be complacent with the expectation but rather continue to steadily promote countermeasures.

* Based on the emissions projections for each gas with the results of each countermeasure undertaken at the time this Plan was formulated, the difference above was expected to reach 1.6% as the ratio to the base

year total emissions. However, this expectation may fluctuate due to the results of each measure or policy, economic trends or other factors.

Section 3 Targets of Individual Countermeasures

In order to give an overall picture of countermeasures with specific grounding to achieve the 6% reduction commitment under the Kyoto Protocol, this Plan provides nationwide countermeasure evaluation indices, estimated volumes of emissions reductions, national policies to promote countermeasures, and examples of policies that local governments are expected to implement, for each countermeasure to achieve the targets by type of greenhouse gas or other category and the approximate targets for energy-originated carbon dioxide emissions in each sector described in Section 2. These are shown in tabular form for each sector and category(Refer to Appendix 1-6).

Countermeasure evaluation indices are stipulated as targets for individual countermeasures designed to achieve the targets by type of greenhouse gas and the approximate targets for energy-originated carbon dioxide emissions in each sector.

The estimated volume of reductions in greenhouse gas emissions (carbon dioxide equivalent) resulting from a certain countermeasure is calculated by encompassing factors other than the results of the countermeasure in question. Therefore, the assumptions of calculation at the time of drafting this Plan are clarified to make ex-post verifications possible.

Chapter 3 Measures and Policies to Achieve the Targets

Section 1 Basic Roles of the National and Local Governments, Business Operators and Citizens

The national government has the role of comprehensively promoting global warming countermeasures and taking the initiative in implementing such countermeasures. Local governments, business operators and citizens are required to undertake the roles appropriate for their respective positions.

Concerning the promotion of global warming countermeasures, the national government is to have the following basic roles, and local governments, business operators and citizens are required to undertake the following roles.

If all the actors are aware of their roles and closely collaborate with each other to promote the countermeasures, it is expected that synergistic results exceeding those of efforts by each actor alone can be obtained.

I. Basic Roles of the National Government

1. Comprehensive Promotion of Global Warming Countermeasures by Mobilizing Diverse Policy Instruments

Taking account of the fact that it is essential to reconsider socioeconomic activities and lifestyles that involve mass production, mass consumption and mass disposal to reduce greenhouse gas emissions, the national government has the roles of forming the overall framework of Japan's global warming countermeasures and comprehensively implementing the countermeasures through promotion of this Plan. Furthermore, all national government agencies are to promote the countermeasures by sufficiently collaborating in line with this overall framework and mobilizing diverse policy instruments including voluntary, regulatory, economic and informational ones, environmental impact assessment, social capital development.

In addition, when implementing a policy whose major objective is not prevention of global warming, each national government agency will make arrangements so that it can also contribute to the control of greenhouse gas emissions.

2. Taking the Initiative in Implementing Countermeasures

The national government will take the lead in implementing measures to reduce the greenhouse gas emissions and to conserve and strengthen the removal effects concerning its own administration and undertakings, while placing importance on promoting dissemination of such measures to the entire society.

II. Basic Roles of Local Governments

1. Implementation of Countermeasures in Accordance with the Local Characteristics

Local governments will endeavor to formulate and implement comprehensive, plan-based programs for the control of greenhouse gas emissions, in accordance with the natural and social conditions of their local areas.

For example, local governments will develop pioneering, highly original and ingenious countermeasures tailored to the natural and social conditions in their areas, including low-carbon town planning, promotion of the use of

public transport systems and bicycles, introduction of renewable energy such as biomass energy, and promotion of waste management closely related to local residents.

Through the revisions to the Act on Promotion of Global Warming Countermeasures, the Government will prompt prefectures, government-designated cities, core cities and special case cities to stipulate the following programs in their local government action plans: encouragement of solar and wind power utilization; promotion of activities for the control of the greenhouse gas emissions from business operators or residents in their local areas; improvement of the convenience for passengers using public transport; conservation and expansion of green spaces in urban areas; and promotion of waste generation control.

2. Taking the Initiative in Implementing Countermeasures

Local governments themselves are required to be a model in their areas by taking the initiative in implementing global warming countermeasures. To this end, they will formulate and implement action plans for their administration and undertakings, including public schools⁹ and hospitals, based on the Act on Promotion of Global Warming Countermeasures.

3. Information Provision and Activity Promotion for Local Residents, etc.

When prefectural and major municipal Promotion Centers for Climate Change Action, Climate Change Action Officers or Regional Councils on Global Warming Countermeasures have been designated, commissioned or organized in order to give meticulous support to local residents and enterprises, local governments will endeavor to utilize them to provide education, support private organizations, introduce pioneering efforts and offer consultations.

III. Basic Roles of Business Operators

1. Highly Original and Ingenious Efforts

Each business operator will voluntarily and actively implement appropriate, effective and efficient global warming countermeasures with originality and ingenuity in a wide range of fields in the light of the nature of its business activities. Each business operator will promote efforts contributing to greenhouse gas emissions control by other actors to the extent possible. Such efforts include development of CO₂-saving¹⁰ products and reduction of waste generation.

2. Efforts Based on the Social Role of Business Operators

Business operators, as members of society, will individually or collectively formulate voluntary plans and inspect the implementation of those plans. They will also provide environmental education to employees and collaborate with labor unions, consumer groups or community groups to work toward the control of greenhouse gases. In addition, they will cooperate with the policies of national and local governments.

⁹ Excluded are the schools belonging to public universities established based on the Local Independent Administrative Agency Act (Act No.118 of 2003).

¹⁰ In this Plan, *CO₂-saving* refers to the control or reduction of carbon dioxide emissions through countermeasures on the energy demand side, such as promotion of energy conservation, or countermeasures on the energy supply side, such as promotion of nuclear power and introduction of renewable energy.

3. Reduction of Environmental Burdens Throughout the Life Cycle of Products and Services Provided

Business operators providing final-consumption products will monitor greenhouse gas emissions or other data throughout the life cycle of their products and services, and will make efforts to provide ones with lower environmental burdens. They will also provide information concerning greenhouse gas reduction by their products and services.

IV. Basic Roles of Citizens

1. Control of Greenhouse Gas Emissions Arising From Daily Life

Being aware that the increase in greenhouse gas emissions in recent years is closely related to the life of citizens, namely the *residential* and *transport* (private automobile) sectors, citizens will actively work toward the reform of lifestyles involving mass consumption and mass disposal.

Specifically, citizens will monitor their own energy consumption and greenhouse gas emissions, and choose a CO₂-saving lifestyle. For example, they will try the following: taking part in the campaign “Team Minus 6%” including *Cool Biz* and *Warm Biz*, which require proper temperature setting of cooling and heating; installing heat insulation in their houses; switching to energy-saving devices; and using public transport and bicycles.

Citizens will also exert meticulous efforts such as saving electricity like standby power, and refraining from unnecessary or unhasty automobile use.

2. Participation in Global Warming Countermeasure Activities

Citizens will further deepen their understanding of the global warming issue and undertake efforts in collaboration with all actors. The efforts include active participation in global warming countermeasure activities such as a national campaign to promote the 3Rs (**R**educe waste generation, and **R**euse and **R**ecycle recyclable resources of manufactured goods and the like), forest fostering and other tree-planting campaigns.

Section 2 Global Warming Measures and Policies

I. Measures and Policies for Greenhouse Gas Emissions Reduction and Removal

1. Measures and Policies for Greenhouse Gas Emissions Reduction

(1) Energy-originated Carbon Dioxide

The Government will implement all of the measures and policies based on the following six basic philosophies.

○ Shift From an Individual Approach to an Integrated Approach

The Government will continue to promote conventional measures for individual energy-related devices or places of business, and at the same time will rethink Japan's energy supply-demand structure from an integrated, wide-ranging perspective in order to change the structure itself into a CO₂-saving one. In other words, it will endeavor to maximize CO₂-saving effects through such measures as reforming Japan's socioeconomic structure, including urban/regional structures and public transport infrastructure, and designing low-carbon cities and transport systems.

○ Transcending the Boundaries Between Actors

Each actor involved in energy supply and demand will appropriately be aware of their own roles and aim to further improve energy efficiency in collaboration with other suppliers and consumers of energy, not just within the areas they directly manage. They will work to control carbon dioxide emissions in as wide a range of sectors as possible. For example, the industrial community can actively contribute to CO₂ saving in the *consumer* and *transport* sectors.

○ Approaches From Both Supply and Demand Sides Placing Priority on Demand Side Countermeasures

In order to effectively implement CO₂-saving countermeasures, it is necessary to take measures on both energy supply and demand sides. To produce results at an early time, first of all, the Government will place priority on countermeasures on the energy demand side and set a goal of becoming an "energy-conservation nation serving as a model for the world." Although a certain amount of time is required to develop and reform infrastructure for energy supply side countermeasures, the Government will make every effort to continue their steady promotion.

○ Approaches Placing Priority on Improvement of Intensities

With a view to steady advancement of CO₂-saving countermeasures, the Government will place priority on promoting emission control by improving the energy intensity and the carbon dioxide emissions intensity per unit of energy consumption through increasing the efficiency of energy use.

Specifically, it will work on the following: utilization of such frameworks as voluntary action plans of industry, the Energy Conservation Act and the Top-runner Program; dissemination of energy-saving devices and automobiles; introduction of

highly energy-efficient buildings and houses; traffic flow management and improvement of the efficiency of logistics systems; and mutual energy accommodation at the regional level.

In order to improve the carbon dioxide emissions intensity in the *energy conversion* sector, the Government will steadily promote such efforts as implementation of nuclear power generation and introduction of renewable energy.

○ Effective Measures to Respond to the Factors Behind Increases in Emissions

Looking at carbon dioxide emissions trends by sector, the emissions from the *industrial* sector, accounting for approximately 40% of emissions on the demand side, have not shown much change, and those from the *transport* sector, accounting for around 20%, have been on a downward trend. On the other hand, the emissions from the *commercial and other* sector, accounting for about 20%, and those from the *residential* sector, accounting for approximately 10%, have greatly increased.

For this reason, the Government will steadily promote countermeasures in the *industrial* and *transport* sectors, while drastically strengthening effective countermeasures in the *commercial and other* and *residential* sectors.

○ Change of Every Citizen's Lifestyle and Working Style

Beyond the countermeasures in individual sectors, and based on not only short-term but mid- and long-term points of view, the Government will strengthen countermeasures so that every citizen will be urged to change their lifestyle and working style to give their total efforts to curtailing greenhouse gas emissions.

Table 6: Overview of Countermeasures Concerning Energy-originated Carbon Dioxide

<p>Formation of low-carbon urban/regional structures and socio-economic systems</p>	<p>Low-carbon Urban/Regional Designs</p> <ul style="list-style-type: none"> <input type="checkbox"/> <u>Realization of compact, low-carbon urban structures</u> <input type="checkbox"/> <u>Measures at the block and district levels</u> <input type="checkbox"/> <u>Promotion of area-wide energy usage</u> <input type="checkbox"/> <u>Efforts transcending the individual boundaries between actors</u> <input type="checkbox"/> <u>Decarbonization of urban areas through improving the thermal environment by urban greening and other heat island countermeasures</u> <input type="checkbox"/> <u>Measures for extending the useful life of housing</u> <p>Low-carbon Transport and Logistics System Designs</p> <ul style="list-style-type: none"> <input type="checkbox"/> <u>Construction of low-carbon transport systems</u> <input type="checkbox"/> <u>Formation of low-carbon logistics systems</u>
<p>Measures and policies by sector</p>	<p>Efforts in the <i>Industrial</i> Sector (Manufacturers, etc.)</p> <ul style="list-style-type: none"> <input type="checkbox"/> <u>Promotion and reinforcement of voluntary action plans of industry</u> <input type="checkbox"/> <u>Promotion of introduction of highly energy-efficient equipment and devices</u> <ul style="list-style-type: none"> ○ Dissemination of energy-efficient machinery and tools in the manufacturing field ○ Dissemination of fuel-efficient construction machinery in the construction field <input type="checkbox"/> <u>Thorough energy management, etc.</u> <ul style="list-style-type: none"> ○ Thorough energy management in factories and workplaces ○ Implementation of emissions reduction measures for small and medium sized enterprises ○ Efforts in the agriculture, forestry and fisheries industry ○ Efforts by the industrial community in the <i>consumer</i> and <i>transport</i> sectors <p>Efforts in the <i>Commercial and Other</i> Sector</p> <ul style="list-style-type: none"> <input type="checkbox"/> <u>Promotion and reinforcement of voluntary action plans of industry</u> <input type="checkbox"/> <u>Initiatives by public organizations</u> <ul style="list-style-type: none"> ○ Initiatives by the national government ○ Initiatives by local governments ○ Promotion of the initiatives by other public organizations <input type="checkbox"/> <u>CO₂ saving of buildings, equipment and devices</u> <ul style="list-style-type: none"> ○ Improvement of the energy efficiency performance of buildings ○ Decarbonization of urban areas through improving the thermal environment by urban greening and other heat island countermeasures ○ Dissemination of energy management systems ○ Improvement of the efficiency of services based on the Top-runner standards ○ Support for the development and dissemination of high-efficient energy-saving devices <input type="checkbox"/> <u>Thorough energy management, etc.</u> <ul style="list-style-type: none"> ○ Thorough energy management in factories and workplaces ○ Implementation of emissions reduction measures for small and medium sized enterprises ○ Initiatives in water supply and sewerage systems and waste management <input type="checkbox"/> <u>Development of national campaigns</u>

Efforts in the *Residential Sector*

- Development of national campaigns
- CO₂ saving of housing, equipment and devices
 - Improvement of the energy efficiency performance of houses
 - Dissemination of energy management systems
 - Improvement of the efficiency of devices based on the Top-runner standards
 - Support for the development and dissemination of high-efficient energy-saving devices

Efforts in the *Transport Sector*

- Automobile/road traffic measures
 - Improvements in the fuel efficiency of automobile, etc.
 - Promotion of traffic flow management
 - Promotion of the environmentally-friendly usage of vehicles
 - Development of national campaigns
- Promotion of public transport utilization, etc.
 - Promotion of public transport utilization
 - Promotion of the development and introduction of energy-efficient railways, ships and aircrafts
- Promotion of telework and other transport substitution by information and communications technology
- Promotion and reinforcement of voluntary action plans of industry
- Improvement of the efficiency of logistics systems, etc.
 - Implementation of CO₂ saving by cooperation between shippers and logistics operators
 - Promotion of modal shifts, increase of truck transport efficiency, etc.
 - Promotion of dissemination of the Certification Program for Green Management

Efforts in the *Energy Conversion Sector*

- Promotion and reinforcement of voluntary action plans of industry
 - Reduction of carbon dioxide emissions intensity in the electric power sector
- Efforts by energy type
 - Steady implementation of nuclear power generation
 - Introduction and utilization expansion of natural gas
 - Promotion of the efficient use of petroleum
 - Promotion of the efficient use of liquefied petroleum gas
 - Realization of a hydrogen society
- Measures for renewable energy
 - Promotion of the introduction of renewable energy, etc. ○ Promotion of biomass utilization
 - Initiatives in water supply and sewerage systems and waste management

(i) Formation of Low-carbon Urban/Regional Structures and Socioeconomic Systems

It is quite effective to incorporate efficient energy use structurally through sweeping reviews of urban/regional structures and transport systems or reviews of socioeconomic systems with collaboration among energy consumers.

Therefore, the Government will work toward building a “low-carbon society” by commencing the transformation of urban/regional structures and socioeconomic systems from a mid- and long-term perspective at the earliest possible time.

In particular, the Government will reconstruct urban structures into low-carbon ones since urban structures can have a big impact on global warming, taking into account the aims of the Improvement Plan for Cities and Urban Lives.¹¹

Furthermore, the Government will formulate and improve policies based on regional voices through the invitation of proposals concerning the special zones for structural reform and the regional revival.

A. Low-carbon Urban/Regional Designs

Since the improvement of energy use efficiency is very effective in urban areas with high energy demand density, the Government will improve the energy environment of urban areas by means of area-wide energy usage or heat island countermeasures, while extending the useful life of housing, building and infrastructure. The Government will also encourage low-carbon urban/regional development by realizing cities with minimal environmental loads, or “Compact Cities,” where urban functions are allocated within walking distance.

○ Realization of Compact, Low-carbon Urban Structures

Aiming to realize a compact urban structure in which various urban functions are concentrated centering on public transport, the Government will ensure suitable location of large-scale customer-attracting facilities and other functions. It will also encourage the buildup of those functions by means of maintaining and revitalizing central urban districts, while promoting coordinated urban/regional transport strategies.

Furthermore, in an effort to carry out area-wide measures including the promotion of public transport utilization and the untapped energy and natural capital usage, the Government will support the establishment of effective carbon dioxide reduction plans through reduction simulations. In addition, the Government will aim to reconstruct the urban structures into low-carbon ones through improving energy efficiency of housing, building and infrastructure, extending their useful life, constructing ring roads, and implementing heat island countermeasures.

The Government will promote the creation of *environmental model cities* out of around ten cities selected from all over the country, which will take on pioneering efforts by setting challenging goals for drastic greenhouse gas reductions.

○ Measures at the Block and District Levels

¹¹ Recognized at the Third Regional Meeting of the Regional Revitalization Headquarters (January 29, 2008)

Taking advantage of urban development and other opportunities, the Government will promote the construction of low-carbon cities through introduction of area-wide measures at the block and district levels, for example, bringing in pioneering measures to an entire district or complex buildings, which are anticipated to lead to drastic reductions in carbon dioxide emissions by the efforts through public-private partnership.

○ Promotion of Area-wide Energy Usage

In local areas, large CO₂-saving benefits can be expected from efficient area-wide energy usage including efficient energy supply to multiple facilities and buildings, mutual energy accommodation among facilities and buildings, and utilization of untapped energy. Therefore, the Government will intensively introduce multiple renewable energy-utilizing equipment to blocks, districts or buildings, and will actively introduce and disseminate environmentally outstanding district heating and cooling, keeping in mind the characteristics of each area, the promoting actor, the feasibility of each measure, etc.

For this reason, in order for a wide range of stakeholders including national and local governments, energy suppliers, local developers to collaborate and select efficient energy based on evaluations from the perspectives of the global and city environment, and to improve the understanding and promote the cooperation of people on the demand side like building users, the Government will continue to take such measures as the promotion of area-wide energy usage under the cooperation among multiple buildings at block and district levels, by indicating areas of potential area-wide energy usage, implementing pioneering model projects, or promoting environmental improvements by information provision. The Government will also continue to implement policies including the utilization of city planning systems.

○ Efforts Transcending the Individual Boundaries Between Actors

In order to promote CO₂ saving in an entire building or facility such as multi-tenant building or housing complex, the Government will activate efforts transcending the individual boundaries between actors like building owners, tenants and energy suppliers.

For this reason, the Government will utilize information technology to promote efforts such as energy management and control for an entire area, collective energy management for multiple buildings and facility-wide energy management.

○ Decarbonization of Urban Areas Through Improving the Thermal Environment by Urban Greening and Other Heat Island Countermeasures

The Government will promote decarbonization of urban areas through improving the thermal environment by utilizing the knowledge obtained from scientific observations, studies and researches on the heat island phenomenon and implementing comprehensive heat island policies.

The Government will try to decrease anthropogenic exhaust heat from air-conditioning equipment, automobiles or the like by promoting the improvement in energy efficiency of equipment and the utilization of untapped energy. In addition, the Government will work for the improvement of the urban lifestyle and working style including proper temperature setting of cooling and heating, which leads to the mitigation of heat island

phenomenon.

From the perspective of preventing and improving the decline in evapotranspiration effect and the rise in surface temperature caused by the artificial surface covering, the Government will take the following measures to improve area-wide land coverage: keeping green areas through the creation of urban parks; greening public spaces and government and other public facilities; greening the premises of buildings through utilization of the greening region system; using spring water or reclaimed wastewater; utilizing road paving materials that can control the rise in road surface temperatures; introducing integrally such technologies as water-retentive building materials and highly reflective coatings; and preserving privately-owned green areas and agricultural lands.

In addition, with a view to forming and utilizing green islands serving as sources of cold air and securing wind passages like green and water areas, the Government will work to improve the city form by the following measures: conserving the green areas remaining in cities; carrying out facility greening such as rooftop and wall surface greening; creating urban parks; promoting the formation of water and greenery networks through collaboration among projects on parks, roads, rivers, *sabo* (erosion and sediment control), ports or sewage systems; and building cities with small environmental burdens.

○ Measures for Extending the Useful Life of Housing

Toward the realization of a sustainable society, the Government will promote measures for “200-year Housing,” which is designed to have long useful life, in order to contribute to CO₂ saving and other environmental burden reduction through long-term use of housing in good condition. These measures include the encouragement of construction and appropriate maintenance of housing with superior performances in durability, ease of maintenance, energy efficiency or the like.

B. Low-Carbon Transport and Logistics System Designs

○ Construction of Low-Carbon Transport Systems

In order to increase the efficiency of transport systems, the Government, coupled with realization of a compact urban structure, will implement comprehensive measures including the following: traffic jam alleviation; traffic demand management; development of traffic safety facilities such as traffic signals; and promotion of the use of public transport systems.

○ Formation of Low-Carbon Logistics Systems

To promote the greening of the overall logistics system, the Government will strengthen and expand the efforts under the cooperation among shippers and logistics operators, while promoting *modal shifts*,¹² improvement of the truck transport efficiency or other measures.

¹² *Modal shifts* means a change (shift) in the means of transport (mode), from trucking to railway or marine transport, which is considered as an effective way to reduce CO₂ from cargo transport sector.

(ii) Measures and Policies by Sector (*Industrial, Consumer, Transport, etc.*)

Each of actors who consume energy, including business operators and individuals will make various efforts aimed at overall control of carbon dioxide emissions related to their own activities.

In doing so, each actor, being appropriately aware of the scopes of their own responsibilities, roles and efforts, will contribute to the control of carbon dioxide emissions in a wide range of sectors. Such efforts include those taken by manufacturers for the *consumer* and *transport* sectors, and information provision by retailers to consumers.

Now that energy-saving performances of individual equipment like refrigerators, air conditioners and water heaters are dramatically improving, the Government will continue to work for further improvement in their performances and wide introduction and dissemination of such highly energy-efficient equipment.

In the *energy conversion* sector, the Government will also promote the utilization of energy sources with low carbon dioxide emissions intensity and the improvement in the efficiency of energy supply.

A. Efforts in the *Industrial* Sector (Manufacturers, etc.)

Carbon dioxide emissions in the *industrial* sector in FY2005 decreased by 6.1% compared to those in FY1990. The Government will steadily continue to promote voluntary action plans and other countermeasures. In addition, business operators in this sector will contribute to CO₂ saving in the *consumer* and *transport* sectors.

(a) Promotion and Reinforcement of Voluntary Action Plans of Industry

In the *industrial* and *energy conversion* sectors, in 1997 the *Keizai Dantai Rengokai*, or *Japan Business Federation* (hereinafter referred to as “*Nippon Keidanren*”) took the lead in formulating Voluntary Action Plan on the Environment, and established the target of controlling carbon dioxide emissions in FY2010 below FY1990 levels. In addition to this *Nippon Keidanren* Voluntary Action Plan on the Environment, individual businesses in sectors including *commercial and other* and *transport*, both affiliated and unaffiliated with *Nippon Keidanren*, have set up greenhouse gas emissions reduction plans (hereinafter, these individual plans are referred to as “voluntary action plans”). These voluntary action plans now cover approximately 80% of the emissions from the *industrial* and *energy conversion* sectors, and around 50% of those from all sectors.

* In setting targets of the voluntary action plan, each business¹³ voluntarily selects any of the four indicators—energy consumption intensity, energy consumption, carbon dioxide emissions intensity or carbon dioxide emissions.

As of the end of March 2008, 50 businesses in the *industrial* sector, 32 in the *commercial and other* sectors, 17 in the *transport* sector and 4 in the *energy conversion* sector have quantitative targets and have undergone assessments and verifications by councils or similar bodies.

¹³ The term “business” here refers to a group or organization which formulates a voluntary action plan and undergoes assessments and verifications for its plan by the Government.

Industrial sector: 50 businesses

(Breweries, tobacco manufacturing, pharmaceutical manufacturing, starch and saccharified products, dairy industry, soft drink, baking industry, beet sugar, frozen foods, vegetable oil, pastries, sugar refining, meat processing, flour milling, coffee, convenience foods, soy sauce, canning, mayonnaise and dressing, iron and steel, chemical industry, paper manufacturing, cement, electronics and electrical equipment, auto parts, automobile, mining, lime manufacturing, rubber, dyeing, aluminium, flat glass, glass bottle, auto body, electric wire and cable, bearing, industrial machinery, copper and brass, construction equipment, limestone mining, sanitary equipment, machine tool, petroleum development, industrial vehicles, construction, housing production, shipbuilding, marine equipment, rolling stock, boating)

Commercial and other sector: 32 businesses

(Banking, life insurance, damage insurance, telecommunications, telecom service, commercial broadcasting, NHK(Japan Broadcasting Corporation), cable broadcasting, satellite broadcasting, schools, co-op, processed foods wholesale, supermarket, convenience store, department store, household appliance retailer, do-it-yourself industry, information services, chain drug store, trading company, liquefied petroleum gas, leasing, warehousing, refrigerated warehouse, hotel, international hotel, domestic hotel, automobile service, real estate, industrial waste management, newspaper, pet retailing)

Transport sector: 17 businesses

(Ship owner, trucking, scheduled airline, coastal shipping, passenger ships, taxi, bus, private railroads, JR East Japan, JR West Japan, JR Tokai, port transportation, JR Cargo, JR Kyushu, JR Hokkaido, transportation, JR Shikoku)

Energy conversion sector: 4 businesses

(Petroleum, electricity, gas, power producer and supplier)

Total: 103 businesses

NOTE: In revising this Plan (March 2008), the calculations of reduction effects by the voluntary action plans have been conducted concerning 85 out of these 103 businesses (*Industrial* sector: 49 businesses, *commercial and other* sector: 19 businesses, *transport* sector: 14 businesses, *energy conversion* sector: 3 businesses) . The other 18 businesses have been excluded from the calculations because concerned governmental councils or similar bodies did not confirm their formulation of new plans or quantification of qualitative targets before the calculations by the Government (February 8, 2008).

These voluntary action plans by business operators have thus far produced results and the voluntary action plans of *Nippon Keidanren* are, in particular, playing a central role in countermeasures in the industrial community. The advantages of a voluntary instrument include the ease of selection of superior countermeasures for each actor based on its originality and ingenuity, the likelihood of providing incentives to pursue aggressive targets, and no procedural costs for both the Government and implementing actors. It is expected that these advantages will be further exploited in voluntary action plans by business operators.

In order for Japan to achieve its reduction commitment under the Kyoto Protocol, it is extremely important for the industrial community to advance efforts to control emissions, including the improvement of energy consumption intensity or carbon dioxide emissions intensity, so that the targets of these voluntary action plans will be achieved. For this reason, keeping in mind that the targets and content of voluntary action plans should be determined by the industrial community itself, the following efforts are encouraged from the viewpoint of meeting social demands:

1. Formulating a new plan for a business which has no plan;
2. Quantifying targets (i.e. setting quantitative targets) for a business which has qualitative targets only;
3. Undergoing strict assessments and verifications for the plan by the Government; and
4. Raising targets in the case where targets are already overachieved.

At the same time it is urged that the *Nippon Keidanren* Voluntary Action Plan targets should be fully achieved, and that individual businesses should make active efforts toward achievement of their own voluntary targets.

With regards to the businesses¹⁴ noted below, related ministries and agencies will strongly encourage those within their jurisdiction to make the following efforts as soon as possible:

(1)Formulating a new plan;¹⁵

(Pachinko parlors, game centers, securities, hospitals, large-scale exhibition halls)

(2)Quantifying qualitative targets;

(Credit unions, credit associations, dining establishments)

(3)Undergoing strict assessments and verifications by the Government; and

NOTE: As of the end of March 2008, there is no applicable business.

(4)Raising targets for businesses whose current targets are overachieved.¹⁶

(* indicates the businesses with intensity targets.)

(Breweries, tobacco manufacturing, vegetable oil,* sugar refining, meat processing,* convenience foods,* soy sauce, automobile, mining,* lime manufacturing, dyeing, aluminum,* flat glass, glass bottles, construction machinery,* limestone mining,* sanitary equipment, construction,* rolling stock,* department store,* do-it-yourself industry,* chain drug store,* hotel,* automobile service, industrial waste management, petroleum,* gas, power producer and supplier*)

In order to improve the transparency, credibility and probability of targets achievement with regards to these voluntary action plans, the Government will promote periodic follow-ups by concerned councils or similar bodies as assessments and verifications of these plans.

In addition to the efforts above ((1) – (4)), the Government will carry out assessments and verifications with the

¹⁴ The businesses named here are the ones for which the achievement of the efforts of (1) to (4) have not been confirmed by concerned councils or similar bodies (as for (3), assessments and verifications have not been undergone by them).

¹⁵ When a new plan is formulated by a business which had no plan at the time of formulation of this Plan (April, 2005), such a plan is required to include quantitative targets based on the business's actual performances and other factors, because it is necessary to evaluate emissions reduction effects quantitatively toward the achievement of the reduction commitment under the Kyoto Protocol.

¹⁶ Although boating, JR East Japan, JR West Japan and JR Hokkaido are currently overachieving their target levels, it has been concluded that it would not be necessary to immediately raise their targets, in the results of assessments and verifications for their voluntary action plans at a joint session of the Environmental Subcommittees of both the Panel on Infrastructure Development and the Transport System Committee of the Council for Transport Policy.

following viewpoints in mind.

- Since the first commitment period of the Kyoto Protocol runs from 2008 to 2012, the Government will encourage that plan targets should be met by the average values of the five-year period.
- The Government will urge businesses to denote the contents and effects of future measures (including utilization of the Kyoto Mechanisms) designed to achieve unfulfilled targets in as quantitatively and tangibly as possible. With regards to the businesses that will utilize the Kyoto Mechanisms in the case targets achievement is difficult, the Government will urge these businesses to provide as tangible an outlook as possible regarding the volume and timing of credit acquisition. Also, the businesses which utilize acquired credits for their targets achievement need to transfer those credits to the Government account for free.
- To further improve the probability of target achievement, the Government will urge that check and review should be carried out with regards to the responsibility sharing among the enterprises that constitute each business.
- Given that the Kyoto Protocol has the targets of gross greenhouse gas emissions, the Government will urge the businesses having only intensity targets to proactively consider adopting the targets of total carbon dioxide emissions as well.
- With regards to carbon dioxide emissions from places of business participating in the voluntary action plans, the Government will press for even more proactive disclosure of information, including the presentation of examples of leading efforts in quantitative terms by utilizing emissions data from individual places of business based on the Act on Promotion of Global Warming Countermeasures.
- Since it is required to drastically strengthen measures in the *commercial and other, residential and transport* sectors, *Nippon Keidanren* will urge its participating businesses and member enterprises to promptly establish carbon dioxide emission reduction targets for their headquarters and other offices in a cross-industrial and comprehensive manner. At the same time, *Nippon Keidanren* will further promote efforts such as expansion of environmental account book use in the homes of employees belonging to its member enterprises.
- With regards to the industrial community's efforts in the *commercial and transport* sectors as well as its contributions to the emissions reduction in the *consumer and transport* sectors, the Government will urge quantification of these efforts to the extent possible, including quantification based on a product life cycle assessment (LCA) perspective.
- In order to transmit to consumers and overseas easy-to-understand information concerning the efforts based on the voluntary action plans, the Government will encourage international comparisons founded on highly reliable data for each business and proactive outgoing transmission regarding the efforts based on the voluntary action plans.

(b) Promotion of Introduction of Highly Energy-efficient Equipment and Devices

○Dissemination of Energy-efficient Devices in the Manufacturing Field

In addition to the introduction of various kinds of energy-efficient devices based on the voluntary action plans, the Government will take support measures intensively and provide assistance for the introduction of next-generation coke ovens in order to promote the dissemination of highly efficient industrial furnaces and other devices enabling a large energy conservation compared with conventional ones.

○ Dissemination of Fuel-efficient Construction Machinery in the Construction Field

The Government will promote CO₂ saving in the construction field. For example, it will promote the dissemination of fuel-efficient construction machinery by encouraging its use and actively utilizing it in public construction projects.

(c) Thorough Energy Management, etc.

○ Thorough Energy Management in Factories and Workplaces

In addition to the promotion and reinforcement of the voluntary action plans, energy conservation efforts for factories and other facilities have been made in the *industrial* sector by the measures based on the Energy Conservation Act.

Besides, highly energy-consuming office buildings and the like are required to make a regular report and formulate mid- and long-term plans for energy use after strengthening the regulations of the Energy Conservation Act in April 2003 in order to encourage energy management in those buildings.

Furthermore, the targets of regulation under the Energy Conservation Act were expanded in April 2006 by the integral management of heat and electricity, both of which had been dealt with separately up until that time.

From now, the Government will work for further reinforcement of effective energy conservation measures for factories, office buildings and the like, by amending the Energy Conservation Act. The amendment will aim to shift its legal system from the current regulations on a *factory/workplace* basis to comprehensive energy management on an *enterprise* basis. It will also introduce to a franchise chain consuming over a certain amount of energy the energy management of treating the entire chain as a single unit.

In addition, based on the management structure of each enterprise, the Government will promote objective valuations of the efforts by each factory or workplace by utilizing a benchmark or other indicators. At the same time, the Government will construct a mechanism in which multiple business operators will cooperate to carry out voluntary energy conservation or emissions reductions (energy/carbon dioxide joint reduction project), in such forms as the *Implementation of Emissions Reduction Measures for Small and Medium Sized Enterprises*, as described next, and the inter-enterprise accommodation of exhaust heat from factories in industrial centers like industrial complexes. The Government will also support cooperative projects with large energy conservation effects.

○ Implementation of Emissions Reduction Measures for Small and Medium Sized Enterprises

To strengthen greenhouse gas emission reduction measures for small and medium sized enterprises, the Government will provide further financial support to those companies' introduction of emission-reducing equipment.

In addition, the Government will construct a system in which large enterprises will provide technical or financial supports to small and medium sized enterprises (including moderately-large and large enterprises that do not participate in any voluntary action plan) and utilize the amount of emission reductions verified by the Government for achieving the targets of their own voluntary action plans. At the same time, the Government will

urge those large enterprises to raise the targets of their plans.

While premised on the idea that participating enterprises make voluntary efforts, the Government will ensure certain strictness and additionality in verifying the amount of emissions reduction by commissioning a third-party body made up of private-sector experts to carry out the verification based on standards emulating simple verification methods applied to the Kyoto Mechanisms credits, so that this will lead to emissions reduction in the whole country. The Government will also simplify the verification procedures from the perspective of ensuring convenience for small and medium sized enterprises.

The Government will design it to be coordinated and consistent with existing related systems (including the calculating, reporting and announcing system under the Act on Promotion of Global Warming Countermeasures and the periodic reporting system under the Energy Conservation Act).

In operating this system, the Government will see to it that small and medium sized enterprises can receive minimum existing support measures such as subsidies for equipment introduction only when their business cannot be viable solely with incomes derived through this system.

The Government will also create a simplest possible *Domestic Credits* management system, which will enable a small or medium sized enterprise and a large enterprise to jointly formulate a business plan and apply for its approval.

○ Efforts in the Agriculture, Forestry and Fisheries Industry

The Government will promote energy conservation in greenhouse horticulture by verification and dissemination of advanced heating systems utilizing woody biomass and oil-free horticultural systems, and by consideration of a rating system for energy efficient equipment and devices. It will also encourage the utilization of agricultural machinery and other devices that contribute to reductions in greenhouse gas emissions, and try to establish “local production for local consumption” models to utilize biodiesel for agricultural machinery.

The Government will promote energy conservation by setting up facilities utilizing woody biomass at lumber mills and other facilities.

The Government will encourage management improvement through promoting the acquisition of energy-efficient fishing vessels by the construction of vessels employing new energy-saving technologies such as LED (light emitting diode) fishing lamp and improved propulsion efficiency. The Government will also furnish vessel-owners with information on appropriate management and operations of these vessels for energy saving.

○ Efforts by the Industrial Community in the *Consumer* and *Transport* Sectors

The industrial community will contribute to CO₂ saving in the *consumer* and *transport* sectors through the following efforts: developing lighter and more functional materials; supplying highly energy-efficient products; improving the efficiency of logistics systems by modal shifts and shift from private trucks to commercial trucks; and urging their employees to use public transport in commuting.

B. Efforts in the *Commercial and Other* Sector

Carbon dioxide emissions in the *commercial* sector covering offices and other buildings (including service businesses such as stores) have increased by more than 40% above FY1990 levels along with the increase in floor area of those buildings. The Government will try to control these emissions through energy management under the Energy Conservation Act, steady implementation of voluntary action plans and other measures.

As energy consumption in the *commercial and other* sector can be controlled by developing and disseminating energy-efficient devices used in offices and other buildings, the Government will continue to promote further improvements in energy efficiency of those devices towards the world's highest standard of energy efficiency.

(a) Promotion and Reinforcement of Voluntary Action Plans of Industry

(As described previously: See A(a))

As of the end of March 2008, 32 businesses in the *commercial* sector had established quantitative targets and undergone assessments and verifications for their plans by concerned councils or similar bodies.

(b) Initiatives by Public Organizations

○ Initiatives by the National Government

With the first commitment period of FY2008-FY2012 in mind, the Government will make leading efforts concerning its own administration and undertakings such as the purchase and utilization of goods and services, and the construction and management of buildings, based on the National Government Action Plan under the Act on Promotion of Global Warming Countermeasures and each ministry's implementation plan under this Plan.

In particular, the Government will intensively promote *greening* of national government buildings across the country by means of photovoltaic power generation, building planting, ESCO¹⁷ or the like.

In advancing the efforts based on the National Government Action Plan, the Government will conclude environment-conscious contracts mainly in four areas: electrical power, automobiles, ESCO and buildings, based on the Act Concerning the Promotion of Contracts Considering Reduction of Greenhouse Gases and Other Emissions by the State and Other Entities (Act No.56 of 2007; hereinafter referred to as the "Green Contract Act"), which was put into effect in November 2007, as well as its Basic Policies, which were decided by the cabinet on December 7, 2007. By this means, the Government will more reliably fulfill the targets stipulated in the National Government Action Plan and endeavor to achieve further reductions. The Basic Policies should be revised as necessary.

With regards to national government buildings, the Government will continue to promote Green Government Building¹⁸ construction, Green Assessment and Green Renovation,¹⁹ and thorough appropriate operation and management. In addition, the Government will utilize the Life Cycle Energy Management (LCEM)²⁰ method of air-conditioning system.²¹

¹⁷ Energy Service Company.

¹⁸ Green Government Building is a government building whose environmental burdens are reduced throughout its lifecycle from planning to construction to operation to abolishment.

¹⁹ Green Assessment is the assessment of the environmental preservation performances of government buildings. Green Renovation is the renovation for reducing environmental burdens of a government building throughout its lifecycle from planning to construction to operation to abolishment.

²⁰ Life Cycle Energy Management is the consistent management of energy throughout its lifecycle performances (e.g. setting performance requirements, verifying and improving performance).

²¹ In the use of heat insulating materials, the Government is trying to use fluorocarbon-free ones by standard public works specifications (See footnote 24).

Not only will the Government try to utilize bio-fuel, but it will also make efforts to take the initiative in introducing fuel-efficient vehicles such as clean diesel, clean energy and idling stop vehicles.

In order to spur demands for products that contribute to greenhouse gas emissions reduction and other eco-friendly goods and services, the Government will take the initiative in procuring such goods and services, based on the Act Concerning the Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities (Act No.100 of 2000; hereinafter referred to as the “Green Purchasing Act”).

The Government will inspect the progress of the National Government Action Plan annually at the Directors’ meeting of the Global Warming Prevention Headquarters, and publish the results. From the viewpoint of ensuring transparency, the Government will evaluate not only the total emissions, but the progress for each measure and for each organization by comparing the targets with the past performances. The results of this inspection will be made public all together.

The Government will work to form a “CO₂-saving government office area” around Kasumigaseki District through pioneering introduction of new technology and systems and organic collaboration among ministries and agencies.

Specifically, the Government will continue to advance the following efforts:

- * Accelerated introduction of fuel cells;
- * Further introduction of renewable energy such as photovoltaic power generation and wind power generation;
- * Selection of energy sources that contribute to CO₂ saving;
- * Introduction of heat pumps/thermal storage systems and storage batteries, which contribute to electric power load leveling, gas air conditioning, or the like;
- * Introduction of water-retaining materials for pavements on government building sites at the time of repair;
- * Thorough implementation of appropriate operation and management of facilities;
- * Sophistication of common-use bicycle systems; and
- * Further promotion of planting.

○ Initiatives by Local Governments

Based on the Act on Promotion of Global Warming Countermeasures, prefectures and municipalities are obliged to formulate local government action plans. They are expected to formulate these plans with reference to a manual formulated by the national government, pursuant to the provisions of the National Government Action Plan, in particular, with the following points in mind.

- Matters to be included in an action plan
 - Basic matters such as plan objective(s) and period
 - Comprehension of the total greenhouse gas emissions
 - Concrete efforts (measures)
 - Goals of efforts (measures), quantified targets regarding total greenhouse gas emissions
 - Implementation/inspection systems, procedures for inspection, assessments, or publication of the plan
- Scope
 - Some local governments have large proportions of emissions from the operations of waste management,

water supply and sewerage systems, publicly-owned mass transport systems, public schools and public hospitals or other facilities, as well as energy consumption in government buildings. For this reason, all the administrative affairs determined by the Local Autonomy Act (Act No.67 of 1947) should be within the scope of the plan.

Furthermore, with regards to the affairs implemented via outsourcing or designated manager systems, local governments should request outsourcees or other contractors to take necessary measures to achieve possible greenhouse gas emissions reductions.

- In particular, in purchasing electricity for government buildings and facilities, local governments should try to save carbon dioxide by introducing a cutoff method, which bars from bidding power companies with over a certain carbon dioxide emission coefficient, based on the Green Contract Act and its Basic Policies.

○ Inspection and Evaluation System

- Local governments should carry out periodical inspections and evaluations of implementation of the plan and publicize the results annually.
- In publicizing the results of inspections and evaluations, local governments should evaluate not only the total emissions but the progress for each measure and for each facility or organization by comparing the targets with the past performances. The results of these inspections should be made public all together in as much detail as possible.
- Based on the inspections and evaluations, when necessary, local governments should revise their action plans and rearrange the various schemes of operation which they set up for implementing the plans.

From the viewpoint of ensuring transparency, the national government will compile the results publicized by local governments and publish them in a comprehensive manner.

In addition, local governments will make efforts on environment-conscious contracts by, for example, creating a policy relating to promotion of environment-conscious contracts based on the Green Contract Act.

Based on the Green Purchasing Act, local governments will also work on green purchasing by, for instance, drawing up policies for promoting procurement of eco-friendly goods and services.

○ Promotion of the Initiatives by Other Public Organizations

National and local governments will provide information to public organizations such as independent administrative agencies concerning effective global warming countermeasures tailored to their characteristics. At the same time, national and local governments will encourage these public organizations to establish action plans for greenhouse gas emissions reduction regarding their administration and undertakings in conformity with national and local governments' action plans, and to make leading efforts based on these plans. The national government will regularly monitor their efforts to the extent possible.

The independent administrative agencies, quasi-governmental corporations and incorporated national universities that are subject to the green contract provisions of the Green Contract Act will steadily conclude environment-conscious contracts.

(c) CO₂ saving of Buildings, Equipment and Devices

○ Improvement of the Energy Efficiency Performance of Buildings

As the energy efficiency performance of buildings has a large and long-term impact on carbon dioxide emissions in the *commercial and other* sector through energy consumption, the Government will continue to

advance energy-saving measures at the time of new construction, while promoting energy-saving renovations which help improve the energy efficiency performance of existing building stocks.

To this end, the Government will work for the amendment of the Energy Conservation Act in order to expand the coverage of buildings subject to notification obligation concerning energy-saving measures to include certain small- to medium-sized buildings and reinforce regulations regarding energy-saving measures related to large-scale buildings.

Furthermore, while qualifying high-efficiency building systems composed of such building equipment as highly energy-efficient insulation (e.g. windows), air conditioning, lighting and water heater for the Tax System for Promoting Investment in Energy Supply-and-demand Structure Reform, the Government will make the following efforts: development and dissemination of the Comprehensive Assessment System for Building Environmental Efficiency (CASBEE²²) for buildings; promotion of the provision of information concerning design or construction for energy saving in buildings such as energy-saving renovation; promotion of the introduction of construction technologies related to energy-saving measures for small and medium sized enterprises; assistance for leading technology developments by private business operators and model projects introducing CO₂-saving technologies; and support to model projects aiming at the collaboration of building owners and tenants on energy-saving measures.²³

In addition, the Government will promote the introduction of energy-saving equipment and devices by utilizing ESCO.

○Decarbonization of Urban Areas Through Improving the Thermal Environment by Urban Greening and Other Heat Island Countermeasures

(As described previously: See (i)A)

○Dissemination of Energy Management Systems

The Government will promote the technology development and dissemination of energy management systems, which will display the state of energy use in real time and ensure the optimal operation of lighting, air conditioning, or other equipment depending on indoor conditions by utilizing information technology.

The Government will also support the introduction of energy management systems for commercial buildings by qualifying those systems for the Tax System for Promoting Investment in Energy Supply-and-demand Structure Reform.

○ Improvement of the Efficiency of Devices Based on the Top-runner Standards

The Top-runner standards have been in place since FY1998 under the Energy Conservation Act. In order to further improve the efficiency of individual types of devices, the Government will expand the range of products subject to the Top-runner standards and widen the range of application or toughen up the standards for the products already designated.

²² CASBEE is a comprehensive environmental performance assessment system for houses and buildings, which integrally assesses the improvements of comfort of houses (indoor environment) and the measures to reduce environmental burdens including energy-saving ones and presents the results by easy-to-understand indices.

²³ In the case where heat insulation materials are used for energy conservation purposes in houses and buildings, the materials containing fluorocarbons are likely to have opposite results of increasing the total greenhouse gas emissions, because of their strong greenhouse effects. Therefore, it is necessary to promote the use of fluorocarbon-free heat insulation materials.

To reduce standby power consumption, the Government has encouraged voluntary efforts by the industry so far. The Government will continue to follow up on the industry's voluntary efforts in this regard.

○ Support for the Development and Dissemination of High-efficient Energy-saving Devices

In order to further improve the efficiency of individual types of devices and systems, the Government will further promote the development of energy conservation technologies.

In the hot water supply sector, which accounts for approximately 30% of household energy consumption, new types of apparatuses with particularly outstanding energy conservation performance compared to the conventional types, have been developed and commercialized. Such apparatuses include carbon dioxide refrigerant heat pump water heaters, latent heat recovery type water heaters and gas engine water heaters. To accelerate the dissemination of these apparatuses, the Government will support their introduction to promote further dissemination by business operators and encourage technology development for miniaturization or installability improvement.

Furthermore, recent years have seen the development of highly-efficient commercial-use air conditioners utilizing heat pump technology, highly energy-efficient and fluorocarbon-free commercial-use water heaters and low-temperature natural refrigerant freezer units, and energy-efficient integrated systems of refrigerator, freezer and air conditioner for the use of convenience stores and other energy-intensive small- and medium-scale retail stores. The Government will work to accelerate the dissemination of these appliances in the *commercial* sector through such measures as supporting their introduction.

The introduction of energy-efficient lighting utilizing light emitting diodes (LEDs) enables significant energy conservation compared to conventional incandescent and fluorescent lights. Therefore, the Government will promote technology development toward further efficiency improvements and work to disseminate these lightings.

(d) Thorough Energy Management, etc.

○ Thorough Energy Management in Factories and Workplaces

(As described previously: See A.(c))

○ Implementation of Emissions Reduction Measures for Small and Medium Sized Enterprises

(As described previously: See A.(c))

○ Initiatives in Water Supply and Sewerage Systems and Waste Management

With regard to waterworks, the Government will carry out energy conservation measures such as introduction of highly energy-efficient devices or pump inverter controls, and implement renewable energy measures such as small-scale hydropower and solar power generation.

As for sewerage systems, the Government will implement energy-conserving measures such as the improvements to equipment operation and the introduction of efficient devices to air diffusers of reactor and sludge dehydrators, while promoting renewable energy measures such as the utilization of solid fuels and digestion gases generated from sewage sludge for power generation and the effective use of heat from sewage and treated sewage (sewage heat), etc.

Regarding waste management, the Government will further promote waste power generation and other

types of energy utilization at waste treatment facilities, while at the same time encouraging the recycling of plastic container and packaging and the vehicle measures such as the introduction of bio-diesel fuel (BDF) to waste collection vehicles.

(e) Development of National Campaigns

(As described later: See II.6.)

C. Efforts in the Residential Sector

Even though the increase in the number of households has gradually been slowing down, carbon dioxide emissions in the *residential* sector have gone up by more than 30% above FY1990 levels due to the growth in energy consumption resulting from the increase in the number of household appliances and other factors. For this reason, the Government will work to improve the energy efficiency performances of houses, while encouraging citizens to think of global warming as their own issue, constantly review their lifestyles and make efforts for energy saving.

Since the improvement and dissemination of energy-efficient devices used in households control the energy consumption in the *residential* sector, the Government will continue to promote further improvements in the energy efficiency of such devices, aiming for the world's highest standards of energy efficiency.

(a) Development of National Campaigns

(As described later: See II.6.)

(b) CO₂ Saving of Houses, Equipment and Devices

○ Improvement of the Energy Efficiency Performance of Houses

As the energy efficiency performance of houses has a large and long-term impact on carbon dioxide emissions in the *residential* sector through energy consumption, the Government will thoroughly implement energy-saving measures at the time of new construction, while promoting energy-saving renovations which help improve the energy efficiency performance of existing housing stocks.

To this end, the Government will work for the amendment of the Energy Conservation Act, in the same manner as buildings, in order to expand the coverage of houses subject to notification obligation concerning energy-saving measures to include certain small- to medium-sized houses and reinforce regulations regarding energy-saving measures related to large-scale houses. The amendment will also aim to introduce measures to urge businesses operators who construct or sell houses to improve their energy efficiency performance.

In addition, the Government will provide support by loans through securitization framework, promote dissemination of energy-efficient houses by creative and original local efforts through the Regional Housing Grant, and establish tax relief for renovations to improve energy efficiency (e.g. the installation of double-paned window glass) in existing houses. The Government will also encourage small- to medium-sized business operators to introduce energy-saving construction technologies, and will give assistance to leading technology development by private business operators and model projects introducing CO₂-saving technologies. The Government will provide support to the introduction or renovations of model houses which introduce insulating materials and install solar power systems/solar heating devices en masse, and will familiarize the public with and give support for eco-reform practices such as the introduction of CO₂-saving materials at the time of renovations.

So that consumers can select houses with superior energy efficiency performance, the Government will expedite the provision of information to consumers by evaluating and displaying energy efficiency performance. Specifically, the Government will enhance and disseminate the Comprehensive Assessment System for Building Environmental Efficiency (CASBEE) for houses and the Housing Performance Indication System, and promote the development of comprehensive energy efficiency evaluation methods including ones for housing equipment.

In order to encourage the wider use of window glass and sash with a high energy-saving performance, the Government will smoothly put into execution a system under which the manufacturers have to display the

energy-efficiency performances of their products on labels, while thoroughly publicizing their energy-saving effects by utilizing all forms of media. The Government will implement familiarization of all types of energy-saving measures that can be introduced at the time of housing renovation.

Besides, as for detached housing, the Government will promote the provision of information to each resident on the benefits of introducing energy-saving devices, equipment and building materials in accordance with the state of energy consumption. Regarding complex housing, the Government will encourage the introduction of energy-saving devices, equipment and building materials by utilizing leasing and ESCO.

○Dissemination of Energy Management Systems

(As described previously: See B.(c))

○Improvement of the Efficiency of Devices Based on the Top-runner Standards

(As described previously: See B.(c))

○ Support for the Development and Dissemination of High-efficient Energy-saving Devices

(As described previously: See B.(c))

D. Efforts in the *Transport* Sector

Carbon dioxide emissions in the *transport* sector have increased by approximately 20% above FY1990 levels but have been on a declining trend in recent years. In order to make this trend steadier, the Government will implement comprehensive measures such as automobile/road traffic measures, promotion of public transport utilization, and improvement of the efficiency of logistics systems.

(a) Automobile/Road Traffic Measures

○ Improvements in the Fuel Efficiency of Automobile, etc.

Since automobile accounts for the majority of energy consumption in the *transport* sector, the Government will promote automobile measures such as further improvements in the fuel efficiency by the world's highest technology and dissemination of highly fuel-efficient or clean energy vehicles.

With regards to the Top-runner standards, the Government will proactively promote the expansion and dissemination of automobiles conforming to the 2015 fuel consumption efficiency standards, which have already been in effect (passenger vehicles since July 2007; trucks and utility vehicles since April 2006), to promote the shift from the 2010 fuel efficiency standards to the more efficient ones.

In order to promote the dissemination of fuel-efficient vehicles (including clean diesel) and CO₂-saving clean energy vehicles (CEV)²⁴ (including electric, hybrid and natural gas), the Government will improve the infrastructure by developing support measures such as subsidy systems and favorable tax treatments and by utilizing assessment and publication systems on fuel efficiency performance.

The Government will also develop a mechanism by which retailers—contact points between manufacturers and consumers—will provide appropriate information on energy efficiency.

In addition, the Government will continue to provide subsidies for the introduction of idling stop devices, while improving the infrastructure by encouraging automakers to increase the number of models fitted with such devices and make efforts to promote sales of those models.

Taking into account the introduction of sulphur-free (containing no more than 10ppm of sulphur) petroleum fuel, the Government will work to improve fuel efficiency through the optimal combination with automobile technology.

○ Promotion of Traffic Flow Management

As the increase in traveling speeds by untying traffic jam improves effective fuel efficiency and reduces carbon dioxide emissions from automobiles, the Government will promote development of trunk road networks such as ring roads, and construction of continuous flow intersections using an overpass or underpass. The Government will also implement traffic flow management including the following: diverse and flexible expressway toll policies; traffic demand management for automobiles; Intelligent Transport Systems (ITS); traffic information provision service; illegal street parking control; roadworks reduction; countermeasures against bottleneck railroad crossings;

²⁴ *Clean energy vehicle (CEV)* is a general term for an electric, hybrid, hydrogen/fuel cell, natural gas or diesel fuel-substituting LP gas vehicle.

and development of traffic safety facilities.

The Government will also promote the use of LEDs for signal lights in the above-mentioned development of traffic safety facilities.

○ Promotion of the Environmentally-friendly Usage of Vehicles

The Government will disseminate and promote eco-driving, which includes idling stop while stopping or parking, and driving at safe and constant speeds appropriate for the traffic conditions.

To this end, the Government will raise the awareness of citizens through public relations activities or the like, led by the Eco-driving Dissemination Liaison Meeting composed of four related government ministries and agencies,²⁵ while developing an environment for dissemination and promotion of eco-driving.

In order to promote eco-driving by commercial vehicles such as trucks, buses and taxis, the Government will endeavor to build and disseminate Eco-drive Management Systems (EMS)²⁶ for transport operators or the like. With a view to expanding the reach of eco-driving for further emissions reductions, the Government will also carry out a campaign to increase public awareness amongst general drivers.

In addition, the Government will improve the efficiency of commercial vehicle operations by promoting the introduction of such systems as make possible efficient dispatch and movement of taxis by the utilization of GPS and other information technologies.

By limiting the maximum speed at which large trucks travel on expressways by requiring them to install a speed control device, the Government will aim for CO₂ saving through improvements in fuel consumption efficiency.

○ Development of National Campaigns

(As described later: See II.6. concerning eco-driving, promotion of public transport utilization, etc.)

(b) Promotion of Public Transport Utilization, etc.

○ Promotion of Public Transport Utilization

The Government will make ongoing efforts to develop public transport systems such as new railway lines, Light Rail Transit (LRT)²⁷ and Bus Rapid Transit (BRT),²⁸ and to improve service and convenience by promoting IC card introduction or other computerization, facilitating connections and implementing park-and-ride schemes. At the same time, the Government will also promote measures toward the realization of seamless public transport.

In coordination with this, the Government will promote a shift in passenger transport from private cars to

²⁵ National Police Agency; Ministry of Economy, Trade and Industry; Ministry of Land, Infrastructure, Transport and Tourism; and Ministry of the Environment

²⁶ *Eco-drive Management System(EMS)* is a system which implements planned and continuous eco-driving and its evaluation and guidance in an integrated manner in the operation of a vehicle.

²⁷ *Light Rail Transit (LRT)* is an environmentally friendly, next-generation tram system with improved travel space and vehicle performance, possessing the following superior characteristics: ease of boarding/disboarding, punctuality, speed, carrying capacity and comfort.

²⁸ *Bus Rapid Transit(BRT)* is a high-speed bus system using bus-only lanes and the like.

public transport including railways and buses by voluntary activities such as commuter transport management by business operators, implementation of ride sharing and familiarization activities for citizens. To promote these kinds of voluntary activities by business operators, the Government will advance specific measures by utilizing councils made up of people from the transport industry, the business community or the like at national and regional levels.

The Government will provide information on the results of the Environmentally Sustainable Transport (EST) model projects that have been underway since 2005 to the regions that will voluntarily aim to promote EST by limiting excessive dependence on private cars, which are a major cause of the increase in carbon dioxide emissions in the passenger sector. The Government will also plan to disseminate EST exploiting local characteristics to the entire country by providing supports to promotion of public transport utilization, introduction of low-emissions vehicles or familiarization under the cooperation between concerned ministries and agencies.

○ Promotion of the Development and Introduction of Energy-efficient Railways, Ships and Aircrafts

In the railway sector, the Government has promoted the introduction of energy-efficient vehicles which are lightweight or equipped with VVVF devices.²⁹ The Government will continue to promote the introduction of these types of vehicles.

In the ship sector, the Government has worked to develop and disseminate environmentally-friendly economical next-generation domestic vessels (Super Eco-Ships) and other vessels that have introduced new technologies. The Government will continue to promote the dissemination of these vessels. The Government will also establish indices for gauging the fuel efficiency of vessels to promote the dissemination of fuel-efficient vessels.

In the aviation sector, the Government has supported airlines' introduction of new energy-efficient aircrafts and improved the efficiency of flights. The Government will continue to promote such measures as introduction of these energy-efficient aircrafts and sophistication of aircraft safety systems.

(c) Promotion of Telework and Other Transport Substitution by Information and Communications Technology

The Government will promote the reduction of commuting traffic of trains, passenger vehicles or buses by encouraging flexible working styles free from place and time constraints with information and communications technology (telework) based on the Action Plan to Double the Number of Teleworking Population, which was established by the Ministries Concerned Liaison Conference on Teleworking Promotion on May 29, 2007.

(d) Promotion and Reinforcement of Voluntary Action Plans of Industry

(As described previously: See A.(a) on the businesses in the *transport* sector)

As of the end of March 2008, 17 businesses in the *transport* sector had established quantitative targets and undergone assessments and verifications for their plans by concerned councils or similar bodies.

(e) Improvement of the Efficiency of Logistics Systems, etc.

○ Implementation of CO₂ Saving by Cooperation Between Shippers and Logistics Operators

²⁹ VVVF device is a mechanism that efficiently controls the motor revolutions without using electrical resistance.

The Government will promote the greening of the entire logistics system by strengthening collaboration between shippers requesting delivery and logistics operators undertaking it and by expanding their efforts against global warming.

To this end, the Government will continue to promote energy management by shippers and logistics operators by the Energy Conservation Act. The Government will also provide support to the projects in which shippers and logistics operators collaborate on modal shifts or increase of truck transport efficiency through the Green Logistics Partnership Conference.³⁰ The Government will support the review of commercial practices that are supposed to have large environmental impacts and the construction of systems that increase consumers' awareness in logistics, such as the one issuing "eco-points" for improving delivery methods by home delivery service. To facilitate collaboration between shippers and logistics operators, the Government will also refine the unified methods (guidelines) for calculating carbon dioxide emissions in the logistics field, which can be utilized commonly by both parties to enable objective evaluation of the effects for each measure.

In addition, based on the Act on Promotion of Comprehensive and Efficient Logistics Operations (Act No.85 of 2005), the Government will support comprehensive and efficient implementation of logistics operations including transport, storage and distribution processing through the introduction of 3rd Party Logistics (3PL)³¹ projects, joint delivery and transport, or IT utilization.

In combination with this, in order to improve the efficiency of urban logistics, the Government will provide support to councils which uncover bottlenecks and consider problem-solving measures, based on the Total Plan on Urban Logistics.

○ Promotion of Modal Shifts, Increase of Truck Transport Efficiency, etc.

To promote the greening of the entire logistics system, the Government will promote a switch from trucking to domestic shipping or railway transport which produces lower carbon dioxide emissions.

As a part of these efforts, the Government will increase the competitiveness of domestic shipping by promoting the cut of transport costs and the improvement of services through developing domestic trade terminals able to handle combined multimodal transport, and by encouraging the development and dissemination of new technologies such as next-generation domestic vessels (Super Eco-Ships).

The Government will also promote the dissemination of fuel-efficient vessels by establishing indicators to evaluate the fuel efficiency performance of vessels. Moreover, the Government will endeavor to electrify and streamline cargo-handling equipment or the like in port terminals, which are the centers of logistics, by studying the development of onshore facilities for supplying electricity to vessels on the berth. The Government will make efforts on technological development towards further reductions of carbon dioxide emissions in ports.

In the same way, the Government will increase the competitiveness of railway freight transport by working for

³⁰ *Green Logistics Partnership Conference* is an organization composed of shippers, logistics operators, government and other related member enterprises and organizations, which is managed cooperatively by the Ministry of Economy, Trade and Industry, the Ministry of Land, Infrastructure and Transport and Tourism and related organizations, with a view to promoting voluntary efforts of the industrial community toward the greening of logistics systems.

³¹ *3rd Party Logistics (3PL)* is a high-quality service that provides consistent logistics from shippers.

improving the convenience of freight railways. Specifically, the Government will expand and enhance transport power and quality, and reduce the costs of terminal transport through expansion of the carrying capacity of railway transport, arrangement of train diagrams and enhancement of transport equipment and materials such as containers.

The Government will also improve the truck transport efficiency further. To this end, it will promote a switch from private trucks to commercial trucks and the use of heavy or trailer trucks, while constructing roads fit for heavy vehicles. In combination, it will improve load efficiency through elimination of congested transport and ensuring back-hauling.

In addition, the Government will promote the development of international marine container terminals, multipurpose international terminals and infrastructure to deepen collaboration among each mode in core and hub international ports, which can also contribute to the reduction of overland transport distances of international freight.

○ Promotion of Dissemination of the Certification Program for Green Management

The Certification Program for Green Management, which certifies transport operators carrying out certain environmentally superior efforts such as fuel efficiency improvement, has contributed to improvements in the average fuel efficiency of the certified operators. The Government will further promote its dissemination.

E. Efforts in the *Energy Conversion Sector*

Although a certain amount of time is required for infrastructure development and reform in the *energy conversion* sector, the Government will commence at the earliest possible time the measures for the utilization of energy sources with low carbon dioxide emissions intensity and for the improvement of the efficiency in energy supply by working toward the environmentally conscious use of fossil fuels, while keeping in mind the stable supply of energy.

(a) Promotion and Reinforcement of Voluntary Action Plans of Industry

(As described previously: See A.(a) on the businesses in the *energy conversion* sector)

As of the end of March 2008, four businesses in the *energy conversion* sector had established quantitative targets and undergone assessments and verifications by concerned councils or similar bodies.

○ Reduction of Carbon Dioxide Emissions Intensity in the Electric Power Sector

It is important to reduce carbon dioxide emissions intensity in the power generation sector, which accounts for a large part of Japan's energy-originated carbon dioxide emissions. Therefore, the Government will take the measures described below.

- Assessments and verifications of the achievement of the voluntary targets of the following efforts by business operators.
 - Improvement of the nuclear power plant's capacity factor through realization of scientific and rational operation management.
 - Further improvement of the thermal efficiency of thermal power generation, environment-conscious adjustment of the operational methods of thermal power sources, etc.
 - Acquisition of credits (volume of emissions reductions) under the Kyoto Protocol through utilization of the Kyoto Mechanisms by business operators.
- Promotion of measures for electrical load leveling that result in CO₂ saving by promoting the dissemination of heat pump and thermal storage systems, storage batteries, gas air conditioners, etc.
- Steady enforcement of the Act on Special Measures Concerning New Energy Use by Electric Utilities (Act No.62 of 2002, hereinafter referred to as the "RPS Act")³² and promotion of the conversion of obsolete coal thermal power plants into natural gas power plants.

(b) Efforts by Energy Type

○ Steady Implementation of Nuclear Power Generation

Nuclear power does not produce carbon dioxide in the power generation process, so it occupies an extremely important position with respect to the promotion of global warming countermeasures. Based on the most fundamental premise of ensuring safety, the Government will continue to work toward the further utilization of nuclear power generation and steadily promote it as a mainstay power source for the

³² The Act obligates Japanese electric utilities to use a certain amount of electricity from renewable energy, etc. It was promulgated in June 2002 and came into full force in April 2003. *RPS* stands for "Renewables Portfolio Standard."

nation under public private partnership. When doing so, the Government will steadily advance the establishment of the domestic nuclear fuel cycle as the fundamental principle of the country with a view to further improvement in the characteristics of nuclear power generation such as its outstanding supply stability. To this end, complying with the Nuclear Energy Action Plan (Nuclear Energy Subcommittee of the Electric Industry Sectional Committee of the Advisory Committee on Natural Resources and Energy report of August 8, 2005) and in accordance with the basic principles of the Framework for Nuclear Energy Policy (Japan Atomic Energy Commission decision of October 11, 2005), the Government will promote the following policies.

- In addition to the 55 nuclear power plants currently in operation, the Government will follow up on the efforts by the electric utilities in order to ensure that the two new plants under construction (Tomari Unit 3 and Shimane Unit 3) will steadily go into operation by FY2012.
- The Government will progress the development of an environment for the long-term stable operation of nuclear power generators through the following efforts: developing next-generation light water reactor technology, which can become a global standard, through public-private partnership; working with stakeholders towards the early commercialization of the Fast Breeder Reactor (FBR) cycle technology; promoting the voluntary development of uranium resources; and developing human resources for nuclear power generation.
- The Government will also implement the following: steady efforts towards the establishment of the nuclear fuel cycle including the steady implementation of MOX fuel and the full operation commencement of the Rokkasho reprocessing plant; measures for individual sites; public hearings and public relations activities; enhancement of associated industries; and reinforcement of the measures towards promotion of final disposal projects for high-level radioactive wastes.
- The Government will progress the improvements of capacity factor of nuclear power plants and the utilization of existing furnaces through realizing scientific, rational operation management based on the most fundamental premise of ensuring safety.

○ Introduction and Utilization Expansion of Natural Gas

Natural gas is a clean form of energy which has relatively small environmental burdens compared to other fossil fuels and is widely distributed in other regions than the Middle East. Therefore, the Government will promote the introduction and utilization expansion of natural gas including the shift to natural gas, while taking into account energy security and the balance with other energy sources such as nuclear power.

- In order to revitalize domestic gas distribution, the Government will comprehensively promote the development of an environment for building a natural gas supply infrastructure by private actors.
- The Government will advance the fuel conversion for industrial boilers to natural gas, and the conversion of the gas type of city gas utilities to natural gas.
- To promote the efficient use of natural gas, the Government will promote the improvement of the efficiency of gas turbines and gas engines and the introduction of natural gas cogeneration and highly efficient gas air conditioners which contribute to the leveling of

electrical load.

- The Government will promote the development of technologies related to Gas-to-Liquid (GTL)³³ and Dimethyl ether (DME),³⁴ which can be produced from natural gas and methane hydrate.

○ Promotion of the Efficient Use of Petroleum

The Government will promote the environment-conscious and efficient use of petroleum, which will continue to serve as an energy source occupying an important position in the primary energy supply.

For this reason, the Government will promote the dissemination of more environmentally-friendly petroleum systems, including petroleum cogeneration systems and highly efficient boilers with low NO_x, as energy conservation systems that can contribute to CO₂ saving.

○ Promotion of the Efficient Use of Liquefied Petroleum Gas

The Government will promote the use of liquefied petroleum gas (LPG), which has relatively low environmental burdens and is deemed as a clean energy source along with natural gas. Therefore, the Government will promote the highly efficient use of LPG systems such as LPG cogeneration systems and gas engine boilers.

○ Realization of a Hydrogen Society

Hydrogen is an environmentally-desirable secondary energy in the sense that it is an energy medium which does not emit carbon dioxide at the use stage and can be manufactured from non-fossil fuels.

For this reason, the Government will promote measures including technological development, establishment of codes and standards, and revision of regulations regarding fuel cells and hydrogen production that are key technologies for a hydrogen society. The Government will also promote the leading introduction and dissemination of these technologies as well as technological development of hydrogen production that does not produce carbon dioxide, such as hydrogen conversion by nuclear power or renewable energy.

(c) Measures for Renewable Energy

○ Promotion of the Introduction of Renewable Energy, etc.

As renewable energy produced by sunlight and solar heat, wind power, biomass³⁵ or the like makes a big contribution to global warming countermeasures and helps the diversification of energy sources, the Government will promote its introduction through enhancement of governmental supports and other policies. Furthermore, the Government will evaluate the local efforts to introduce renewable energy by

³³ Gas-to-Liquid (GTL): new fuel which can substitute diesel oil, etc. manufactured using synthetic gas made from natural gas or the like.

³⁴ Dimethyl ether: a fuel gas manufactured using synthetic gas made from natural gas or the like. It has similar properties to LPG and can be liquefied easily. In the wider sense, it is one type of GTL products.

³⁵ Carbon dioxide emissions derived from renewable energy including biomass are not counted in the calculation of carbon dioxide emissions under the UNFCCC.

local production for local consumption, and will share best practices by introducing such leading efforts.

In order to promote steadier and more cost-effective introduction of renewable energy, the Government will promptly conduct a comprehensive study on the fundamental reinforcement of measures for renewable energy.

○ Heat Sector

- The Government will take the following measures: promotion of the formulation, implementation and evaluation of comprehensive plans for introducing renewable energy by local governments; reinforcement of the promotion of biomass heat utilization in collaboration with the promotion of the Biomass Nippon Strategy; promotion of solar heat utilization; and promotion of the use of heat from waste incineration.
- The Government will promote the dissemination of biofuels including the ones for transport by tackling such challenges as competition with food, stable supply and economic efficiency. The Government will also promote the following: utilization of economic incentives such as a biofuel associated tax system; establishment of technology utilizing as raw material cellulose such as rice straw, which does not compete with food; large-scale demonstration towards the expansion of domestic biofuel production; and technological development towards the utilization of highly-concentrated biofuels in vehicles or the like. In addition, the Government will develop a system to ensure the quality of biofuels, while supporting the cooperative efforts between people engaged in agriculture, forestry or fisheries, who produce raw material for biofuels, and biofuel manufacturers.

○ Power Generation Sector

- The Government will take the following measures: expanded introduction of renewable energy in the public services; technological development for promoting cost reduction and efficiency improvement of photovoltaic power generation or the like; implementation of grid interconnection measures for wind power generation; smooth coordination with all types of land use regulations including natural park regulations; promotion of the introduction of power generation from waste and biomass; steady enforcement of the RPS Act; and promotion of private-sector voluntary efforts such as green power certificates.

In addition, the Government will promote the introduction of dispersed power sources such as wind power, biomass, photovoltaic power, cogeneration systems (highly energy-efficient ones) and fuel cells, while taking into account technological challenges related to connection to the existing network. Through this approach, the Government will endeavor to realize CO₂-saving energy systems by encouraging the introduction of renewable energy sources in the regions as a whole. To this end, the Government will implement leading model projects and advance the development and demonstration of related technologies.

In conjunction with this, the Government will ensure efficient energy supply in the regions by promoting the use of untapped energy taking full advantage of the local characteristics (e.g. energy using the differences in temperature of sewage, and heat from snow and ice), or the use of exhaust heat from waste incineration.

○ Promotion of Biomass Utilization

The Government will provide information and promote local activities towards the building of biomass towns, which have systems to utilize the various local biomass resources efficiently and comprehensively for thermal and electric power, fuel or materials. At the same time, the Government will develop biomass utilization facilities and technologies for biomass energy conversion or use.

○ Initiatives in Water Supply and Sewerage Systems and Waste Management

(As described previously: See B.(d))

(2) Non-energy-originated Carbon Dioxide

To date, the Government has implemented the following measures: expansion of the use of blended cement generating lower carbon dioxide emissions in the production process; promotion of waste *reduction* and *reuse* and *recycling* of recyclable resources of manufactured goods and the like (hereinafter referred to as the “3Rs”); effective use of timber which is environment friendly and reproducible as raw material or biomass energy source; cultivation of green manure on farmland; recycling through composting; and promotion of biomass plastic use.

Carbon dioxide emissions from industrial processes such as limestone consumption and ammonia manufacture in FY2005 (53.9 million t-CO₂) were 13.5% lower than in FY1990.

Carbon dioxide emissions from the combustion of wastes (waste oil and waste plastics) in FY2005 (36.7 million t-CO₂), which account for approximately 2% of the total carbon dioxide emissions, were approximately 1.6 times higher than in FY1990.

○ Expansion of Blended Cement Use

The Government will expand the production ratio and use of cement made by blending clinker—an intermediate product of cement— with blast-furnace slag or the like.

The Government will also promote the use of blended cement, for example, by taking the lead in using it in public works carried out by the national government and other bodies based on the Green Purchasing Act.

○ Promotion of Measures to Reduce Carbon Dioxide Emissions Derived From Waste Incineration

The Government will promote the 3Rs measures towards the achievement of the targets determined in the Fundamental Plan for Establishing a Sound Material-Cycle Society (hereinafter referred to as the “Sound Material-Cycle Plan”) under the Fundamental Act for Establishing a Sound Material-Cycle Society (Act No.110 of 2000, hereinafter referred to as the “Sound Material-Cycle Act”) and the waste volume reduction targets based on the Waste Management and Public Cleansing Act (Act No.137 of 1970, hereinafter referred to as the “Waste Management Act”). Specifically, the Government will further promote the 3Rs on wastes and the reduction of carbon dioxide emissions resulting from waste incineration, by conducting the following: implementing measures based on the individual recycling acts; evaluating and studying those measures; providing support to projects such as ones for developing facilities contributing to global warming countermeasures; ensuring thorough separated garbage collection and introduction of charge for garbage collection by municipalities; and promoting familiarization regarding the 3Rs on wastes.

The Government will progress the reduction of carbon dioxide emissions resulting from waste incineration by promoting voluntary action plans of industrial waste generators and industrial waste management business operators.

○ Development of National Campaigns

(As described later: See II.6. on promotion of the 3Rs)

(3) Methane and Nitrous Oxide

(i) Methane (CH₄)

To date, the Government has been making the following efforts: promotion of the 3Rs on wastes; sophistication of combustion in waste incineration facilities through such measures as promoting the introduction of continuous furnaces; improved management of cultivated fields; and improvement of livestock manure treatment methods.

Methane emissions in FY2005 (24 million t-CO₂) were 28.1% lower than in FY1990. A big contributor to this was the reduction of emissions from coal mining.

○ Reduction in the Amount of Final Waste Disposal, etc.

The Government will promote measures toward the achievement of the targets determined in the Sound Material-Cycle Plan under the Sound Material-Cycle Act and the waste volume reduction targets based on the Waste Management Act. Specifically, the Government will further promote the 3Rs on wastes and the reduction of methane emissions resulting from direct landfill disposal of waste, by conducting the following: implementing measures based on the individual recycling acts; evaluating and studying those measures; providing support to projects such as ones for developing facilities contributing to global warming countermeasures; ensuring thorough separated garbage collection and introduction of charge for garbage collection by municipalities; and promoting familiarization regarding the 3Rs on wastes. The Government will also promote the sophistication of combustion in municipal waste incineration facilities. The Government will progress the reduction of methane emissions resulting from landfill disposal by promoting voluntary action plans of industrial waste generators and industrial waste management business operators. The Government will also reduce methane emissions by decreasing illegal dumping of industrial wastes through such measures as strengthening waste management systems and fostering excellent waste management business operators.

○ Review of Organic Matter and Water Management in Rice Paddies

The Government will try to control the emissions of methane resulting from rice production (rice paddies) by shifting the management method of organic matter from “digging in rice straw” to “fertilizer utilization,” while taking into account regional circumstances, and by improving the water management methods for intermittent irrigation rice paddies.

(ii) Nitrous Oxide (N₂O)

To date, as for nitrous oxide, the Government has promoted such measures as the emissions reductions in industrial processes and the sophistication of combustion in incineration facilities for waste or sewage sludge through promoting the introduction of continuous furnaces.

Nitrous oxide emissions in FY2005 (25.5 million t-CO₂) were 22.0% lower than in FY1990. The introduction of nitrous oxide decomposer in the production process in workplaces manufacturing adipic acid— a raw material for some chemical products— largely contributed to this reduction.

○ Installation of Nitrous Oxide Decomposer in the Production Process of Adipic Acid

The Government will promote the recovery and destruction of nitrous oxide that is emitted as a by-product in manufacturing adipic acid by installing nitrous oxide decomposer.

○ Sophistication of Combustion at Sewage Sludge Incineration Facilities

The Government will reduce nitrous oxide emissions resulting from incineration of sewage sludge by sophisticating the combustion in incineration facilities. To this end, the Government will establish standards concerning the sophistication of sewage sludge combustion in sewage treatment plants and promote thorough implementation of these standards. The Government will also encourage the voluntary action plan by industrial waste management business operators.

○ Sophistication of Combustion at Municipal Waste Incineration Facilities, etc.

The Government will advance the sophistication of combustion in municipal waste incineration facilities by providing support to projects such as ones for developing facilities contributing to global warming countermeasures, promoting the installation of incineration facilities with continuous furnaces along with widening the areas of waste management, and increasing the ratio of waste disposal by continuous operation of incineration facilities. The Government will further promote the 3Rs on wastes and the reduction of nitrous oxide emissions resulting from waste incineration toward the achievement of the targets determined in the Sound Material-Cycle Plan under the Sound Material-Cycle Act and the waste volume reduction targets based on the Waste Management Act.

○ Reducing and Optimizing Fertilizer Application

The Government will promote the control of nitrous oxide emissions arising from fertilizer application through reduction in fertilizer applied, split application and utilization of slow release fertilizers.

(4) Three Fluorinated Gases (HFCs, PFCs and SF₆)

The three fluorinated gases account for approximately 1.3% of the total greenhouse gas emissions (FY2005 carbon dioxide equivalent). Some factors may increase the emissions of these gases. For example, it is projected that HFCs emissions will increase as they substitute for ozone-depleting substances whose production and consumption is being reduced under the Montreal Protocol (CFCs and HCFCs have strong greenhouse effects although they are outside the scope of the Kyoto Protocol). The Government will control the increase in emissions of these gases.

○ Promotion of Planned Efforts by Industry

In response to the “Guidelines for Measures to Limit Emissions of HFCs, etc. by Industry” (Ministry of International Trade and Industry public notice) in February 1998, 22 organizations in eight sectors have formulated voluntary action plans so far. The Government will continue to assess and verify the progress of the action plans of industry in the Industrial Structure Council, while working to improve the transparency and reliability of the action plans and increasing the certainty of targets achievement.

The Government will also take measures to support the efforts by business operators to control emissions, such as subsidizing the introduction of emissions controlling equipment, while urging the businesses having no action plans to formulate and publicize one.

○ Promotion of Development of Substitute Materials and Use of Substitute Products

The Government will promote the use of new substitute materials, substitute technologies and products, and recovery and destruction technologies for the three fluorinated gases.

To this end, the Government will carry out research and development of new substitute materials and substitute technologies. Taking into account safety, economic efficiency, energy efficiency or the like, the Government will provide information and education concerning the technologies and products using substitute materials or the products using the three fluorinated gases with smaller global warming effects.

In particular, it is expected that more HFCs, which are used as blowing agents in insulation materials, will be emitted into the atmosphere along with the promotion of measures to improve the energy efficiency performance of buildings and houses. In order to control this, the Government will formulate measures to further promote the use of fluorocarbon-free blowing agents and insulation materials. In conjunction with this, the Government will provide information on the appropriate disposal of waste insulation materials containing CFCs and other substances that are not subject to the Kyoto Protocol.

As increases are expected in SF₆ emissions in melting magnesium and HFCs emissions in using aerosol products containing HFCs, the Government will promote the development of substitute materials and substitute technologies in these fields, and will implement familiarization on them.

The Government will further promote appropriate disposal measures for liquid PFCs or the like and development and dissemination of fluorocarbon-free technologies, including safe and highly efficient natural refrigerant freezer units.

○ Recovery of HFCs Filled as Refrigerant in Equipment Based on Relevant Acts, etc.

The Government will ensure thorough recovery and destruction of HFCs in the refrigerant field through appropriate operation of relevant acts including the Designated Home Appliances Recycling Act (Act No.97 of 1998), the Act on Ensuring the Implementation of Recovery and Destruction of Fluorocarbons concerning Designated Products (Act No.64 of 2001; hereinafter referred to as the “Fluorocarbons Recovery and Destruction Act”) and the Automobile Recycling Act (Act No.87 of 2002).

In particular, the Government will endeavor to increase the recovery volume of fluorocarbons from commercial refrigeration and air conditioning equipment by conducting familiarization on the revised Fluorocarbons Recovery and Destruction Act, which came into effect in October 2007. Furthermore, the Government will carry on assessments of refrigerant leakage in use of on-site fixed equipment or car air conditioners, with a view to strengthening the management system as necessary.

2. Greenhouse Gas Sink Measures and Policies

(1) Forest Sink Measures

It is necessary to ensure the attainment of the target removal by Japan's forest of 13.00 million t-C (47.67 million t-CO₂, approximately 3.8% compared to the base year total emissions) through the implementation of measures toward the achievement of the targets for full utilization of multiple functions of forests and for the supply and use of forest products, which are stipulated in the Basic Plan for Forest and Forestry decided by the Cabinet in September 2006 based on the Forest and Forestry Basic Act (Act No.161 of 1964).

According to the result of the estimation based on the assumption that the past level of forest management will continue, the target attainment will require undertaking 200,000ha per annum of additional forest management such as tree thinning for a six-year period starting from FY2007. Therefore, the current challenge is how to achieve this. This necessitates the efforts of the national government as a whole including consideration of cross-sectoral policies, and the cooperation and strenuous efforts of all actors, including local governments, forest owners, citizens and business operators in the forestry and timber industries.

To this end, the Government will promote support measures to accelerate forest management such as tree thinning. Taking into account the progress of consideration of cross-sectoral policies, the Government will make united efforts with the private sector to steadily and comprehensively promote forest management, timber supply, effective use of timber or other measures, which are necessary for achieving the targets of the Basic Plan for Forest and Forestry. Specific policies include the formulation of a new Act on Special Measures Concerning the Promotion of the Implementation of Thinning, etc. of Forests and the development of the "National Movement for Fostering Beautiful Forests in Japan" that has the target of undertaking 3.3 million ha of thinning in a six-year period starting from FY2007, with the understanding and cooperation of a wide range of citizens.

○ Development of Sound Forests

- A. Forest management measures including additional thinning through new legal regimes or the like.
- B. Promotion of efficient and effective thinning of forests by strengthening collective thinning operations, or promoting greater use of thinned wood.
- C. Shift toward forests with longer cutting cycles and multistoried forests.
- D. Measures to eliminate the land left denuded.
- E. Programs to secure and foster essential personnel responsible for forest development.

○ Implementation of Appropriate Management and Conservation of Protection Forests, etc.

- A. Appropriate operation of the regulations for land use conversion and logging and planned designation of protection forests under the protection forests system; implementation of appropriate forest conservation and management under the protected forest system or the like.
- B. Planned promotion of soil conservation projects in the regions with a high risk of mountain disasters, denuded forests in the hinterland or other areas.
- C. Promotion of measures to prevent and control damage caused by forest pests and wild birds/animals; promotion of measures to prevent forest fires.

D. Expansion and enhancement of natural parks and nature conservation areas and strengthening of conservation management within these areas.

○ Implementation of Forest Fostering with the Participation of Citizens, etc.

A. Implementation of forest fostering activities by a wider range of actors, including promotion of the participation of enterprises or others in forest fostering through the development of the “National Movement for Fostering Beautiful Forests in Japan.”

B. Improvement of the skills of people such as forest volunteers and upgrading of safety systems.

C. Implementation of forest environmental education.

D. Implementation of the Green Worker Program to protect flora and fauna including forests in national parks or other areas.

○ Promotion of the Use of Timber and Woody Biomass

In order to contribute to the promotion of sustainable forest management and work toward the active utilization of reproducible timber leading to the carbon dioxide emissions control by controlling the amount of fossil fuels used, the Government will implement the following measures:

A. Promotion of utilization of locally supplied timber in houses, public facilities or the like;

B. Implementation of consumer-focused programs to expand the buyer base creating actual demand for locally supplied timber;

C. Development of production, distribution and processing systems to meet consumer needs in close coordination among all concerned from forest workers to retailers; and

D. Establishment of an efficient and low-cost collection and transport system for remnant wood in forest areas and promotion of the utilization of such wood for making energy and products.

(2) Promotion of Urban Greening

Urban greening is one of the sink measures closest to the citizens’ daily lives. Its promotion does not only have the effect of actual carbon dioxide removal but also brings about a large effect of familiarizing the public with the purpose of the global warming countermeasures.

The removal by urban greening can be counted for the amount of removal as “revegetation” subject to Paragraph 4 of Article 3 of the Kyoto Protocol, outside the framework of the 13.00 million t-C, which is the upper limit of the amount of removal to be obtained through Japan’s forest management (47.67 million t-CO₂, approximately 3.8% of the base year total emissions).

To this end, the Government will continue to actively promote the following: creation of urban parks; greening of public facilities such as roads, rivers, *sabo* (erosion and sediment control facilities), harbors, sewage treatment plants, public housing and government facilities; and creation of new green space on building rooftops or other places, based on comprehensive national and local government plans for the conservation and creation of greenery such as the Green Policy Outline and the Green Basic Plans drawn up by the municipalities.

As a part of these efforts, the Government will familiarize all sectors and strata of society with the value and effects of urban greening, while actively promoting the support for the creation of new greenery in urban areas by diverse actors and approaches, including urban greening with a wide-ranging

participation of citizens, enterprises, NPOs or the like, and the utilization of the Authorized System of Greening Facilities Planning and the Multi-level City Parks System.

It is estimated that if these countermeasures are implemented as planned, an annual average removal volume of about 0.06% relative to the base year total emissions (0.74 million t-CO₂) will be acquired in the first commitment period.

The Government will also continue to promote in a planned manner the development of a system for reporting and verifying the amount of removal by urban greening.

II. Cross-sectoral Policies

1. Utilization of a Policy Mix Approach

The Government will utilize a policy mix approach of fully mobilizing all policy instruments, including voluntary, regulatory, economic and informational ones, taking advantage of their respective characteristics and organically combining them, in order to advance the effective and efficient reduction of greenhouse gas emissions, reduce the cost burden on the entire nation as much as possible with fairness taken into account, and achieve the multiple policy objectives of environmental conservation and economic development at the same time. The Government will promptly conduct a comprehensive study of the most appropriate form for this approach while monitoring the progress of the measures and policies of this Plan.

(1-1) Economic Instruments

Economic instruments rely on market mechanisms and induce each actor to take actions such as emission control based on economic rationality by providing economic incentives. They are expected to be effective also as economic support policies for global warming countermeasures. When using economic instruments, it is important to maximize their effects and minimize the burden on citizens and the administrative and fiscal costs in line with the policy mix approach. When providing fiscal supports, the Government will endeavor for efficient utilization of the budget, taking into account the cost-benefit performance.

(1-2) Domestic Emissions Trading Scheme

In order to accumulate knowledge and experience concerning steady, cost-efficient emissions reductions and trading, the Government has implemented since FY2005 voluntary emissions trading which provides economic incentives to the enterprises making efforts to achieve their self-determined reduction targets and utilizes the trade of emissions quotas. Following the end of the first round in the summer of 2007, from the perspective of accumulating more useful knowledge and experience with the results achieved in mind, the Government will enhance this scheme by expanding the scope of participants, diversifying participation methods and raising the efficiency of verification methods.

A domestic emissions trading scheme is an issue that must be comprehensively studied on a wide range of points such as a comparison with other methods and its effects, its possible impacts on industrial activities and national economy, and international trends in emissions trading, as well as the evaluation of specific proposals and the appropriateness of introducing such proposals, while adequately taking into account the perspective of realizing Japan's mid-term strategies on global warming and the significant emissions reduction effects of the "expansion and reinforcement of voluntary action plans," which is expected to be in place based on the FY2007 evaluation and verification as a pillar of the measures in the *industrial* sector.

* A domestic emissions trading scheme is the system that first sets the total emissions quotas to be issued, then allocates emissions quotas to individual actors and allows such options as trading of emissions quotas with other actors and utilization of Kyoto Mechanism credits.

(1-3) Environment Tax

Since an environment tax would impose a burden on a wide range of citizens, it is an issue for which comprehensive studies must be seriously advanced, in tandem with efforts to obtain the understanding and cooperation of citizens, business operators and other actors, taking into account the specific role of the tax in the context of overall climate change policies and measures, its effects, its impact on national economy and the international competitiveness of industry, as well as the current state of climate change policies and measures in foreign countries.

2. Review of the Shift to Night-time Lifestyles and Working Styles

The Government will comprehensively consider the review of the shift to night-time lifestyles and working styles towards a fundamental change in citizens' consciousness, while taking into account the current state of the related efforts in foreign countries.

3. Introduction of Summer Time

As for summer time, the Government will progress the crystallization of points of the debate and endeavor for environmental awareness raising and public consensus building along with the development of the public debate.

4. Calculating, Reporting and Announcing System of Greenhouse Gas Emissions

The Government will promote the building of a foundation for voluntary efforts by all levels of citizens toward global warming countermeasures by having the emitters of greenhouse gases calculate their own emissions. With a view to increasing incentives and motivation for the promotion of voluntary efforts by all citizens and business operators through the publication and visualization of emissions information, the Government will also introduce a system under which the emitters of a certain volume of greenhouse gases or above will be obliged to annually report their emissions to the national government responsible for collating and publishing the reported information.

In addition, the Government will promote the control of greenhouse gas emissions through the revisions of the Act on Promotion of Global Warming Countermeasures, such as changing the system to require calculation and reporting of each enterprise unit or franchise chain unit, as well as taking a measure to reflect the Kyoto Mechanism credits acquired by an electric utility to the utility's carbon dioxide emission coefficient.

5. Promotion of Environmental Consideration in Business Activities

Through the revision of the Act on Promotion of Global Warming Countermeasures and the formulation and publication of Guidelines for Controlling Greenhouse Gas Emissions, the Government will urge business operators to voluntarily and actively engage in environment-conscious business activities.

Large corporations are required to endeavor to publish environmental reports by the Act Concerning the Promotion of Business Activities with Environmental Consideration by Specified Corporations, etc.

by Facilitating Access to Environmental Information and Other Measures (Act No.77 of 2004). Taking this and other related matters into consideration, the Government will promote the use of environmental information by business operators and citizens and work to develop the conditions for environment-conscious business activities to be highly evaluated by society and the market.

The Government will also promote the inclusion of information about business operators' greenhouse gas emissions and progress on efforts to control emissions in their environmental reports. The Government will prompt small and medium sized business operators to make environment-conscious efforts such as monitoring of carbon dioxide emissions.

The Government will promote environmental consideration in the financial sector (greening of the financial sector) through the following measures: bringing financial institutions' environmental governance to the fore on investment and loan projects; expanding Social Responsible Investment Funds (SRI Funds); disclosing information on the environmental conservation efforts by business operators or the status of environmental conservation projects; and making investments and loans considering environmental conservation efforts.

Furthermore, the Government, through collaboration among government, industry and academia, will promote the efforts toward "energy saving of IT devices" and "energy saving of society through IT," and the establishment of environmental impact assessment methodology for IT enterprises activities (Green IT Initiative). These will then be disseminated internationally.

6. Development of National Campaigns

The Government will clarify the expected roles of the national and local governments, citizens and business operators, while undertaking activities including the provision of information enabling each actor to make appropriate assessment and judgment and the familiarization promoting the practice of emissions reductions.

The Government will further strengthen the roles of the Japan Center for Climate Change Action, prefectural and major municipal Promotion Centers for Climate Change Action, Climate Change Action Officers, Regional Councils on Global Warming Countermeasures and other organizations which promote the activities of controlling greenhouse gas emissions.

○ Information Provision / Familiarization

The Government will encourage individual citizens to take voluntary actions for preventing global warming by strongly appealing to the awareness of citizens through the appropriate provision of information using diverse methods, including the proactive utilization of various mass media such as television, newspapers and the Internet, on the "I declare CO₂ reduction of 1 kg 1 day 1 person" movement, *Cool Biz*(business style to wear light clothing with the air conditioning set at 28 °C in summer), *Warm Biz* (business style to wear warm clothing with the air conditioning set at 20 °C in winter), and other efforts in the Team Minus 6% campaign.

In addition, in accordance with the Energy Conservation Act, energy suppliers and energy-efficient appliance retailers are to adequately provide the users of such appliances with information and methodology on energy saving. The Government will also encourage the industrial community to

supply energy-efficient appliances.

In order to urge consumers to take actions including choice of energy-efficient appliances, the Government will promote “visualization” of carbon dioxide emissions volume at the manufacture, use or other stages of various products and services, while working to foster a sound sense of crisis through the provision of the latest scientific knowledge, and engaging in information provision and familiarization on what specific actions can contribute to the control of greenhouse gas emissions or the promotion of sink measures. Therefore, through the revision of the Act on Promotion of Global Warming Countermeasures, the Government will list measures required of business operators in the Guidelines for Controlling Greenhouse Gas Emissions and implement the following measures for all levels of citizens by a variety of approaches.

- Promoting efforts such as the Team Minus 6% campaign, in which all Japanese make joint efforts for the prevention of global warming with the participation of a broad range of actors, through promoting the large scale campaign under the motto, “I declare CO₂ reduction of 1 kg 1 day 1 person,” *Cool Biz*, *Warm Biz*, or the like.
- Promoting green purchasing by business operators and citizens through such means as the provision of information concerning eco-friendly goods and services.
- Promoting measures which provide economic incentives according to the amount of environmentally considerate behavior, such as “Eco action point.”
- Progressing the dissemination of carbon offset measures.
- Promoting the dissemination of energy-efficient household appliances through the Energy-efficient Household Appliances Promotion Forum.
- Encouraging people to replace dishwashers or other appliances not subject to the Top-runner standard regulations with less energy-consuming ones.
- In addition to the “Energy Saving Labeling Program” by which consumers can easily distinguish efficiency or other performances of appliances, working on the dissemination and enhancement of the “Energy-efficient Appliances Retailers Assessment System,” and promoting familiarization through measures like “Unified Energy Saving Labeling,” in order to promote the proactive sales of energy-efficient appliances.
- Promoting the proactive provision of energy-saving information to consumers by the retailers of household appliances including electrical, gas or oil burning ones.
- Requiring electric power and gas companies to implement energy conservation promotion projects, such as the promotion of dissemination of highly-efficient devices and the provision of information on energy use, and to publicize the progress of those projects.
- Promoting voluntary refrainment from unnecessary or unhasty use of private cars and dissemination of eco-driving (e.g. idling stop while stopping or parking, driving at safe and constant speeds appropriate for the traffic conditions).
- Developing familiarization activities to promote cooperative efforts among transport business operators, the business circle and others concerning promotion of the use of public transport systems.
- Developing familiarization activities to promote cooperative efforts between shippers and logistics operators.
- Developing familiarization activities to raise public awareness of environment-friendly railway freight transport.
- Promoting the efforts of local production for local consumption that contribute to controlling the

fuel consumption associated with food transport.

- Promoting biomass utilization and other global environmental conservation efforts in agriculture, forestry and fisheries industries, which also contribute to regional revitalization.
- Developing popular-participation-type greening campaigns including the development of national greening campaigns in Greenery Month or Urban Greening Month and the promotion of private-sector forest fostering and greening activities through the utilization of the funds such as the Green Fund and the Urban Greening Fund, in order to widely familiarize the public with the importance of greening as a sink measure.
- Developing familiarization activities concerning the value of utilizing local wood, such as the “Kizukai-Undo”(Familiarization with Wood Campaign).

○ Environmental Education, etc.

In order to ensure that citizens recognize and understand the importance of the global warming issue and make it a habit to take actions to prevent global warming, the Government will promote environmental conservation activities and environmental education based on the Act for Enhancing Motivation on Environmental Conservation and Promoting of Environmental Education (Act No.130 of 2003), taking into account the United Nations Decade of Education for Sustainable Development commencing in 2005.

Specifically, in accordance with the “21st-Century Environmental Education Initiative,” the Government will progress environmental education in collaboration with various actors in all locations, such as schools, regions and workplaces. It will also promote programs contributing to this, including human resources development and foothold establishment.

In particular, the Government will promote the implementation of hands-on environmental education and energy conservation activities in school facilities that play a central role in regions. For example, the Government will take such measures as introduction of fluorocarbon-free insulation materials, renovations contributing to global warming countermeasures including local wood use and introduction of renewable energy devices, while utilizing the Internet or other media to promote support for global warming countermeasures in households.

At the same time, the Government will continue to advance the development of teaching materials and programs that encourage citizens’ understanding and actions in collaboration with relevant actors such as NPOs.

The Government will also promote various hands-on activities in such areas as forests, parks and green space in order to deepen understanding of the functions of forests in preventing global warming, the necessity of forest development and cyclical use of timber resources, or the value of urban greening.

III. Basic Policies

1. Development of a National System for Calculating Greenhouse Gas Emissions and Removals Based on the UNFCCC and the Kyoto Protocol

The Kyoto Protocol requires each Annex I party to develop a national system for the calculation of greenhouse gas emissions and removals no later than one year prior to the start of the first commitment period. Therefore, the Government of Japan established a national system for calculating emissions and removals in compliance with the “Guidelines for national systems” decided by the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol at its first session (COP/MOP 1).

From now, taking into account that the first commitment period commences in 2008, the related ministries led by the Ministry of the Environment will cooperate in establishing as soon as possible a system for the aggregation, calculation and publication of statistics on greenhouse gas emissions and removals.

As to the calculation of greenhouse gas emissions, the Government will continue to examine how to refine the calculation methods/processes for emission coefficients and volume of activity.

Furthermore, the related ministries led by the Ministry of the Environment will cooperate to put in place a framework for the prompt submission of a greenhouse gas emission and removal inventory by the stipulated deadline, the quality control of data, the review and approval process of inventory, the response to review of expert review teams to be dispatched based on the Kyoto Protocol, or the like.

In addition, when calculating emissions, the Government will aim to more accurately monitor the status of emissions in each sector and to meticulously examine the methods for evaluating implementation of countermeasures by each actor. To this end, the Government will advance the development of statistics used for volume of activity, the studies and researches concerning calculation of the energy consumption intensity and carbon dioxide emissions intensity, greenhouse gas measurement methods or the like, while promoting standardization (development of Japanese Industrial Standards (JIS)) based on the results of these studies and working to further refine the calculation of greenhouse gas emissions and removals.

On the other hand, when measuring, monitoring and reporting removals (or emissions) by carbon sinks, the Government will establish transparent and highly scientifically-verifiable methods in conformity with the “Good Practice Guidance for Land Use, Land-Use Change and Forestry” decided by the Conference of the Parties to the UNFCCC at its tenth session (COP10). With an eye on the application of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, the Government will promote the accumulation of information on the volume of activity and land use changes, which is necessary to carry out continuous measurement, monitoring and reporting, as well as the studies and researches concerning greenhouse gas removal and emission mechanisms in forests and other sinks.

2. Promotion of the Development of Global Warming Countermeasure Technology

Technological development is expected to generate large effects of greenhouse gas emissions reduction in the future through dissemination of the developed technologies while achieving

compatibility between the environment and the economy. Towards the Third Phase of the Science and Technology Basic Plan (Cabinet Decision of March 28, 2006) and its pillar, the strategic focusing in science and technology, the ministries related to the Sectoral Promotion Strategies, which clearly state future selection and concentration of investment and targets for each research and development issue, collaborate for its promotion comprehensively under the cooperation among government, industry and academia. Also, from a mid- and long-term perspective, the Government will promote the fusion of differing fields of technology or the reform of systems in accordance with the long-term strategic policy road map, “Innovation 25” (Cabinet Decision of June 1, 2006). In order to further promote global warming countermeasures, the related ministries collaborate, for example, for the development of technology to lower costs of equipment utilizing renewable energy including solar power.

○ Promotion of the Practical Application and Commercialization of New Technologies

Further improvement of the efficiency, cost reduction and miniaturization by technological development can lead to the promotion of countermeasures for carbon dioxide emissions reduction such as the introduction and dissemination of renewable energy and highly-efficient devices. However, the important factor affecting whether the benefits of technological development can lead to greenhouse gas reduction within the first commitment period is how quickly effective technologies for emissions reduction can be practically applied and commercialized.

For this reason, through collaboration among government, industry and academia, the Government will strongly promote the following:

- clarification and sharing of a road map for commercializing the results of research and development;
- development and demonstration of technologies that promote practical application; and
- support for pioneering efforts toward commercialization.

In so doing, the Government will work in conjunction with the policies for disseminating development results to the market.

○ Promotion of Cross-sectoral Efforts

As can be seen in the case of the battery technology supporting hybrid automobiles, innovative and promising global warming countermeasure technologies are being put into practical use through application of elemental technologies of a certain field to another or joint work across the boundaries of businesses. In order to produce as many such successful examples as possible, the Government will strongly promote efforts through cross-sectoral collaboration among government, industry and academia.

○ Promotion of Technology Development from a Mid- and Long-term Perspective

Taking into account the long-term goal of “halving global greenhouse gas emissions by 2050” proposed in the “Cool Earth 50,” it is necessary to provide from an early stage sufficient support for the development of global warming countermeasures from a mid- and long-term perspective as long as sustained benefits can be expected from that development, even if it may take a long time before technological development will give results.

For example, some technologies for global warming countermeasures have a significant challenge of reducing costs associated with manufacturing or other processes to commercialize such technologies, although their technological challenges have already been overcome. In order to promote the further

dissemination of such technologies and thus achieve further greenhouse gas emissions reductions, the Government will support from an early stage such technologies as follow: renewable or unused energy technologies that realize significant cost reductions and efficiently conduct energy conversion; dramatically energy-saving technology; carbon dioxide capture and storage technology that recovers carbon dioxide emitted through the use of fossil fuels and thus reduces emissions of carbon dioxide into the atmosphere.

In addition, as the “Cool Earth 50” highlights the necessity of the “innovative technology development,” the Government will promote technological development from a long-term perspective under the international cooperation, aiming to achieve economic growth and greenhouse gas emissions reductions at the same time.

For example, nuclear power, which does not emit carbon dioxide in its power generation process, is currently the only clean energy source that could become a core power source in our country. Based on the most fundamental premise of ensuring safety, the Government will proactively promote the development and practical application of such technologies as the “Fast Breeder Reactor (FBR) cycle technology,” which will dramatically raise the utilization rate of uranium resources and control the generation of radioactive wastes, next-generation light water reactor technology with significantly improved safety, economic efficiency and reliability, and “nuclear fusion technology,” which will produce enormous energy from minimal resources.

The Government will also support the projects regarding the following technologies: ultra high energy efficiency technology; innovative technology for low-cost and high-efficiency solar power generation; fuel cells and hydrogen utilization technology; technology for efficiency improvement of coal-fired power generation and carbon dioxide capture and storage; and green IT.

The Government will intensely promote technology for encouraging reform of urban/regional structures or socioeconomic systems to form a foundation for mid- and long-term global warming countermeasures, as well as technology supporting all kinds of countermeasures in a cross-sectoral manner.

In addition, the Government will promote basic researches in universities contributing to global warming countermeasures, bearing in mind also the perspective of continuously developing human resources in the fields in which Japan possesses strength, while respecting the voluntary efforts by universities.

Besides, the Government will meticulously promote countermeasure technologies in various fields, including the following: development of substitute materials for the three fluorinated gases; greenhouse gas emissions control technology in the agriculture, forestry and fisheries fields; and study and research on the mechanisms by which farmland removes greenhouse gases.

3. Promotion of Research on Climate Change and Strengthening of Observation and Monitoring Systems

Concerning research on global warming, the Government will strategically and intensely promote researches on the following areas: elucidation of the climate change mechanism; monitoring and future

projections of global warming and development of the technology necessary for that; evaluation of environmental, social and economic impacts by global warming; and policies for greenhouse gas reduction and adaptation to global warming. In doing so, the Government will take into account the Global Warming Research Initiatives by the Council for Science and Technology Policy and other initiatives. It will also try to foster international cooperation in this regard.

The Government will strengthen the comprehensive global warming observation and monitoring systems to keep track of greenhouse gases, climate change and their impacts, taking into account the Global Earth Observation System of Systems (GEOSS) 10-Year Implementation Plan endorsed at the Third Earth Observation Summit (February 2005, Brussels), the Council for Science and Technology Policy's Earth Observation Promotion Strategy (decision and opinion offered of December 27, 2004), and the like.

In particular, Japan's efforts include the following: observation of atmospheric, continental and marine greenhouse gases primarily in the Asia and Oceania region; collection, exchange and analysis of various countries' observational data; observations of the continental and marine carbon cycle and ecosystems; observation of the impacts by global warming in regions vulnerable to climate change such as snow and ice zones and coastal zones; and integration of observational data and socioeconomic data.

4. Ensuring of International Partnership on Measures Against Global Warming and Promotion of International Cooperation

In implementing global warming countermeasures, it is essential to make long-term efforts to reduce greenhouse gas emissions not only by Japan but also by the entire world working together. The Kyoto Protocol is an important first step and it is necessary for the entire world to steadily implement the efforts.

To that end, Japan will continue to call on non-Parties to the Protocol to ratify it. At the same time, by utilizing its superior technological capabilities and accumulated experience of environmental conservation, Japan will provide support through a new financial mechanism (Cool Earth Partnership) to developing countries that are making efforts to achieve greenhouse gas emissions reduction and economic growth in a compatible way and to contribute to the climate stabilization. Such support will be given to the following efforts: greenhouse gas emissions reduction; forest conservation including measures against illegal logging and other deforestation and forest degradation; measures for the regions vulnerable to effects of global warming such as sea level rises and droughts; promotion of energy conservation and renewable energy; and promotion of clean energy utilization. Japan will extend its support to those developing nations which will suffer serious damage from climate change, in particular, LLDCs. Through these measures, Japan will fulfill a leading role in the global efforts.

Current global greenhouse gas emissions are more than double the capacity of natural sinks and the greenhouse gas concentrations in the atmosphere continue to increase. In order to achieve the ultimate objective of the UNFCCC, it is necessary not only for the Parties to the Kyoto Protocol to steadily fulfill their commitments under the Protocol, but for the entire world to control global emissions to the level equivalent to the capacity of natural sinks in the long term. To this end, in accordance with the "Cool Earth 50," Japan is proposing a long-term target of cutting global emissions by half from the current

level by 2050 as a common goal for the entire world.

Furthermore, towards the global target of “halving emissions by 2050,” a post-2012 framework must greatly move beyond the Kyoto Protocol. Therefore, in the “Cool Earth 50,” Japan has proposed “three principles” for designing a concrete framework for the period from 2013 following the end of the first commitment period under the Kyoto Protocol. It is important to establish a fair and effective next framework based on these principles.

< “Three principles” for establishing an international post-2012 framework to address global warming >

- (i) All major emitters must participate, moving beyond the Kyoto Protocol, leading to the global reduction of emissions.
- (ii) The framework must be flexible and diverse, taking into consideration the circumstances of each country.
- (iii) The framework must achieve compatibility between environmental protection and economic growth by utilizing energy conservation and other technologies.

On a post-2012 framework, following the adoption of the “Bali Action Plan” at the thirteenth session of the Conference of the Parties to the UNFCCC (COP13) held in Bali at the end of last year, negotiations under the UNFCCC and the Kyoto Protocol are accelerating. Japan, as the chair of the G8 Summit of this year, will take initiatives and facilitate discussions on a post-2012 framework amongst stakeholder countries.

In January 2008, Japan proposed the following three points in the “Cool Earth Promotion Programme.”

(i) Post-Kyoto Framework

Japan will, along with other major emitters, set a quantified national target for the greenhouse gas emissions reductions in working towards the establishment of a framework in which all major emitters participate as well as the setting of fair and equitable emissions target.

(ii) International Environment Cooperation

Japan aspires to set a global target of 30% improvement of energy efficiency by 2020 toward the most efficient use of energy. In addition, Japan establishes a new financial mechanism, Cool Earth Partnership, on the scale of US \$10 billion to support developing countries’ efforts.

(iii) Innovation

Japan will accelerate the development of innovative technologies indispensable for halving greenhouse gas emissions by 2050, while undertaking a rethinking for shifting Japan to a low-carbon society and playing a leading role in creating such a society on a global scale.

Particularly, in setting quantified national targets, it is important to ensure the equity of reduction obligations. To this end, the targets could be set by compiling on a sectoral basis energy efficiency as a scientific and transparent measurement and tallying up the volume of potential emission reductions that

would be achieved based on the technologies to be in use in future. As to Japan's quantified national target, the Government needs to accelerate necessary work.

The Government will also promote international cooperative researches that will contribute to improvements in developing nations' problem-solving ability, while continuing to provide appropriate support to the adaptation measures of vulnerable countries that have low capacity to respond to climate change, such as island nations and least developed countries. In addition, in order to achieve compatibility between environmental protection and economic growth in developing countries, the Government will promote cooperation through the co-benefits approach that will contribute to both pollution or waste control and greenhouse gas emissions reduction.

Section 3 Efforts Expected of Local Governments in Particular

In order to promote global warming countermeasures, it is important for local governments, which are responsible for environmental administration in local areas, to demonstrate the initiatives. It is expected that local governments will promote measures conceived locally and best suited to the conditions in each area.

I. Implementation of Comprehensive, Plan-based Programs

Based on Article 20 of the Act on Promotion of Global Warming Countermeasures, in view of the basic philosophy concerning global warming countermeasures in this Plan, local governments are expected to formulate and implement comprehensive, plan-based programs in accordance with the natural and social conditions of their local areas.

Specifically, such a program is anticipated to incorporate, by local originality and ingenuity, the following measures: urban/regional development and social capital development that contribute to greenhouse gas emissions reduction; introduction of renewable energy utilizing local resources; promotion of the active use of timber resources; forest conservation and development; timber and woody biomass use; and promotion of greening campaigns. Through this, it is expected that the development of cutting-edge model areas serving as examples for other areas will be advanced and spread to other areas.

In doing so, taking into account the difference in local circumstances such as lifestyle, industrial activities and transport, local governments are expected to exercise their originality and ingenuity to enhance or accelerate their unique efforts and establish symbolic global warming countermeasures, through utilization of the national support measures positioned in the “Global Warming Countermeasures Promotion Program for Regions” under the Regional Revival System, or the invitation of proposals for and implementation of special regulatory measures under the Special Zones for Structural Reform System.

Local governments, as the public sector closest to residents and business operators, are expected to advance community-based policies such as education or familiarization to local residents and support for the activities of private organizations.

In promoting policies, it is expected to appropriately ensure the cooperation and participation of residents, business operators and private organizations.

In taking policies, local governments are expected to collaborate with the policies of the national government in this Plan on the basis of respect for the autonomy of each local government, and to contribute to the nationwide greenhouse gas emissions reduction, while considering business operators’ effective improvements in energy efficiency on a national scale.

Through the revisions to the Act on Promotion of Global Warming Countermeasures, the Government will prompt prefectures, government-designated cities, core cities and special case cities to stipulate, in their local government action plans, programs for controlling greenhouse gas emissions in accordance with the natural and social conditions of their local areas. In addition, local governments are to make considerations in related policies such as development of urban plans and agricultural promotion areas

improvement plans, so that control of greenhouse gas emissions will be achieved in harmony with these policies' objectives and in partnership with local government action plans.

II. Efforts Expected of Prefectures in Particular

Prefectures, in particular, as the local public sector covering a wider area, are mainly expected to promote wide-area, large-scale local global warming countermeasures such as traffic flow management and promotion of efforts by commercial buildings and business operators in their areas, and to provide support for municipalities' efforts including formulation of action plans, in cooperation with prefectural and major municipal Promotion Centers for Climate Change Action, Regional Councils on Global Warming Countermeasures and Climate Change Action Officers.

The Government will back up the efforts to prevent global warming by local governments and other local actors by utilizing the "Regional Committees for Promoting Energy and Global Warming Countermeasures" (refer to Chapter 4, Section 3) established in each regional block throughout Japan.

III. Efforts Expected of Municipalities in Particular

Municipalities, in particular, as the public sector closest to local residents and business operators in their areas, are expected to cooperate with Regional Councils on Global Warming Countermeasures, analyze the natural and social conditions of their areas and advance more community-based programs that are most effective in accordance with the local characteristics, in collaboration with the national government, prefectures, local business operators or other actors. The programs mainly include the following: education and familiarization to local residents; support for the activities of private organizations; and implementation of projects to study and introduce renewable energy utilizing local resources.

Section 4 Efforts Expected of Business Operators with Large Emissions in Particular

Business operators with significantly large emissions of greenhouse gases are expected to individually or jointly formulate plans that include quantitative targets on measures for emission control, in order to promote effective countermeasures taking into account the diversities of types, sources and emission control countermeasures of greenhouse gases.

Although the contents of such plans are voluntarily determined by business operators, they are expected to pay attention to the following points in order to make their best efforts by exercising their originality and ingenuity.

- Controlling emissions by advancing improvement in the energy consumption intensity or carbon dioxide emissions intensity as the target of specific efforts, and carrying out analyses of those performances.
- Carrying out international comparisons of the intensities taking into account the characteristics of each business.
- Incorporating in the plan as many measures as possible to contribute to the control of greenhouse gas emissions of other actors, such as development of products with small greenhouse gas emissions, reduction of the amount of wastes, and undertaking quantitative evaluations of their contribution to emissions control in other sectors including *commercial and other, residential and transport*.
- A business operator that has formulated a plan should publish it and endeavor to publish the implementation status of measures taken based on it.
- A business operator should endeavor to improve the transparency and reliability of its plan, by undergoing an objective evaluation of the plan by a concerned governmental council or a third-party institution, and should work to improve the probability of accomplishing the plan, taking into account the results of such an evaluation.

Section 5 Measures and Policies Related to the Kyoto Mechanisms

I. Value of Promotion and Utilization of the Kyoto Mechanisms

In order to achieve the reduction commitments, prevent warming on a global scale and support the sustainable development of developing countries, the Kyoto Protocol approves the Kyoto Mechanisms³⁶ (Joint Implementation (JI), the Clean Development Mechanism (CDM) and emissions trading) to be utilized³⁷ as flexible measures that enable a party to this Protocol to use a part of greenhouse gas emission reductions or removals in another party or the emissions quota of another party toward achievement of their own reduction commitments.

To certainly and cost-effectively achieve the Kyoto Protocol commitment, Japan will appropriately utilize the Kyoto Mechanisms to acquire necessary credits, while bearing in mind the general rule that the Kyoto Mechanisms should be supplementary to domestic measures.

Given that greenhouse gas emissions are projected to dramatically increase mainly in developing countries in the future, it is important for Japan to promote and utilize the Kyoto Mechanisms with a view to contributing to prevent warming on a global scale.

II. Government Efforts Toward the Promotion and Utilization of the Kyoto Mechanisms

1. Basic Philosophy on the Utilization of the Kyoto Mechanisms

Since the adoption of the Kyoto Protocol in 1997, Japan has participated in the international consideration of the implementation rules for the appropriate utilization of the Kyoto Mechanisms. The Government has also been progressing such efforts as capacity building of the countries where CDM or JI projects are conducted, feasibility study of CDM or JI projects and establishment of consultation counters for promoting private business operators' efforts.

All sectors and levels of society in Japan will need to make every effort to achieve the Kyoto Protocol commitment on the basis of the domestic measures for greenhouse gas emissions reduction and carbon sinks (hereinafter referred to as "domestic measures"). These efforts notwithstanding, there will be a

³⁶ Joint Implementation (JI) is a mechanism under which greenhouse gas emissions reduction or removal resulting from projects aimed at reducing anthropogenic emissions by sources or enhancing anthropogenic removals by sinks of greenhouse gases in developed countries, etc. can be received as "emission reduction units" (ERUs under Paragraph 1 of Article 6 of the Kyoto Protocol) by project participants from other developed countries, etc. that contributed to the project. The Clean Development Mechanism (CDM) is a mechanism under which greenhouse gas emissions reduction or removal resulting from projects aimed at reducing anthropogenic emissions by sources or enhancing anthropogenic removals by sinks of greenhouse gases in developing countries can be received as "certified emissions reductions" (CERs under (b) of paragraph 3 of Article 12 of the Kyoto Protocol) by project participants from developed countries, etc. that contributed to the project. Emissions trading is a mechanism under which trading of assigned amount units (AAUs) issued in developed countries, etc. in accordance with the provisions of paragraph 7 of Article 3 of the Kyoto Protocol and/or, removal units (RUs), which are assigned amounts corresponding with the net changes set forth in the provisions of paragraph 3 of Article 3 of the Kyoto Protocol for forests subject to the protocol, etc. is carried out. One form of emissions trading which is conducted under the condition that funds resulting from the transfer of assigned amounts, etc. are used for emissions reduction or other environmental policy objectives is called the Green Investment Scheme (GIS) (hereinafter emission reduction units, certified emissions reductions, assigned amounts and other calculated assigned amounts listed under each item in Paragraph 6 of Article 2 of the Act on Promotion of Global Warming Countermeasures (Act No. 117 of 1998) will be generally referred to as "credits").

³⁷ "Utilization" of the Kyoto Mechanisms means obtaining credits generated from CDM or JI projects or credits of developed countries, etc. and counting them toward achievement of the Kyoto Protocol commitment (transferring these credits first to the account for the Government, and then to the retirement account of the national registry).

shortfall in Japan achieving its Kyoto Protocol commitment (1.6% relative to the base year total emissions: See Chapter 2, Section 2, 3).

It is necessary to steadily make up for this difference by utilizing the Kyoto Mechanisms to acquire credits, while respecting the general rule that the Kyoto Mechanisms should be supplementary to domestic measures.

When acquiring credits in accordance with the Kyoto Mechanisms, it is important to take into account the following perspectives: (i) acquiring these while considering cost effectiveness and reducing risks, and (ii) aiming for the prevention of warming on a global scale and the support towards the sustainable development of developing nations.

It is necessary to proceed with the Kyoto Mechanisms utilization, based on the recognition of the following conditions. First, if we commence to utilize the Kyoto Mechanisms after 2013 when the final confirmation of any shortfalls in the achievement of the Kyoto Protocol commitment will be made, we will have a very high risk that we cannot acquire the amount of credits necessary to achieve the commitment. Second, it takes three to five years for CDM and JI projects, which contribute to additional greenhouse gas emissions reduction and removal, and projects under the Green Investment Scheme (GIS), which is an emissions trading mechanism linked to specific environmental countermeasures, to progress from planning to implementation and credit issuance. In addition, other countries which are anticipated to have difficulty in achieving the Kyoto Protocol commitments through domestic measures alone, have already commenced to utilize the Kyoto Mechanisms by advancing the selection of high-quality projects or the purchase contracts of credits in a systematic manner with a view to securing the credits necessary to achieve their own commitments. It is important for Japan to pay attention to such efforts in other countries.

2. Establishing the Foundations for the Utilization of the Kyoto Mechanisms in Japan

In order for Japan to qualify for the Kyoto Mechanisms throughout the first commitment period and ensure the safety of credit trading by the private sector, the Government will appropriately operate and manage the Quota Account Inventory, by which the Government and private corporations will acquire, hold and transfer credits, in accordance with the international decisions and the Act on Promotion of Global Warming Countermeasures. Likewise, the Government will appropriately manage the domestic system for calculating greenhouse gas emissions and removals, which is necessary to qualify for the utilization of the Kyoto Mechanisms. In addition, in accordance with the international decisions, the Government will aim to report an overview of these systems and other information to the UNFCCC Secretariat without delay.

Through the revision of the Act on Promotion of Global Warming Countermeasures, the Government will also stipulate an obligated actor and procedures including implementation methods concerning the internationally agreed indemnification obligation related to the credits arising from afforestation and reforestation CDM projects.

3. Promotion of CDM, JI and GIS Projects

In order to increase the amount of credits Japan could obtain in the future and to disseminate its superior technologies worldwide, it is important to make efforts to promote the formation of specific emission control, reduction or removal projects through CDM, JI and GIS by Japanese private business operators or other actors.

(1) Contribution to the Development and Improvement of CDM and JI Schemes

Japan will actively contribute to the improvement of international rules or other work to invigorate CDM worldwide. In particular, with energy demand expected to increase along with the development of industry in developing countries, it will be a vital issue to ensure the rational use of energy. The Government will therefore continue to call on the international community to accelerate project evaluations at the CDM Executive Board and integrate methodologies regarding the CDM projects related to energy conservation and renewable energy in order to promote those projects further.

The Government will actively contribute to the formulation of JI-related international rules and the debate on the scheme operation through the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (COP/MOP) or other meetings. With the debate on a future framework in mind, the Government will make efforts to promote broad-based deliberations on the issue of adding nuclear power to the scope of the CDM scheme. For example, the Government will put forward this issue in international deliberations on technology transfers to developing nations.

(2) Establishment of a Specific GIS Scheme

With a view to ensuring the appropriate utilization of GIS, the Government will advance consultations with governments of other countries and work rapidly to establish a specific scheme.

(3) Support for Discovery and Formation of Projects

Through promoting the discovery and formation of CDM/JI/GIS projects, the Government will work to ensure that Japan can obtain credits from those projects. In order to promote the smooth implementation of CDM/JI/GIS projects, the Government will deepen the understanding of the Kyoto Mechanisms in partner countries where those projects are carried out (hereinafter referred to as “host countries”), and will provide support for the capacity building on domestic systems so that host countries can meet the qualifying standard for participation in the Kyoto Mechanisms.

- On CDM/JI/GIS projects, the Government will work to discover projects utilizing promising energy and environmental technology, enhance feasibility studies or other support, and promote their implementation.
- To date, Japan, recognizing the importance of its relations with host country governments, has advanced such efforts as issuing joint statements between heads of state for the promotion of CDM/JI projects. It will continue to advance the creation of these bilateral cooperation schemes.
- Through the holding of intergovernmental talks and seminars, technical cooperation or the like, the Government will work to understand the priority fields in host countries, and will advance the support for capacity building in host countries, such as dissemination of knowledge concerning the Kyoto Mechanisms, formulation of government approval guidelines and human resources development.

4. Japan's Efforts for Credit Acquisition

On top of expending maximum efforts on domestic measures, it is necessary for the public and private sectors to collaborate appropriately in utilizing a variety of approaches effectively to acquire credits through the Kyoto Mechanisms so that Japan can make utmost effort toward the achievement of its Kyoto Protocol commitment.

(1) Establishment of the Government's Credit Acquisition System and Implementation of Credit Acquisition

The Government will appropriately advance credit acquisition toward the achievement of its Kyoto Protocol commitment. In doing so, it is important to keep the following points in mind: (i) acquiring credits while considering cost effectiveness and reducing risks, and (ii) aiming for the prevention of warming on a global scale and the support towards the sustainable development of developing nations. The acquisition of credits by the Government contributes to the overseas expansion of Japanese private business operators actively engaging in the Kyoto Mechanisms, as well as the dissemination of Japan's superior technologies worldwide. Therefore, the Government will endeavor to obtain credits in the following way:

- The Government will make every effort to acquire credits under CDM/JI/GIS projects.
- The Government will rigorously assess and manage the risks of each credit acquisition. In addition, the Government will endeavor to acquire credits while considering cost effectiveness and reducing risks through making efforts to diversify the countries and parties concerned with credit acquisition within the overall credit acquisition program or conducting public solicitations in principle.
- In acquiring credits, the Government will thoroughly consider the effects on the environment and the local residents concerned with the credit yielding project, keeping in mind international rules or the like.
- The Government will utilize the independent administrative agency, New Energy and Industrial Technology Development Organization (hereinafter referred to as "NEDO") for credits acquisition. In doing so, the Government will harness NEDO's skills such as its accumulated expert knowledge and overseas network related to the Kyoto Mechanisms in order to reduce the risks accompanying credit obtainment and ensure the long-term and stable implementation of credit acquisition by NEDO.

(2) Utilization of Public Funds Outside of the Government's Credit Acquisition Scheme

When promoting and utilizing the Kyoto Mechanisms, the Government will advance the effective utilization of ODA in conformity with international rules and on the premise of agreement by its recipient countries. The Government will also promote the effective use of other public funds. The Government will make efforts to have the credits resulting from these make the maximum contribution to the Government's credit acquisition.

5. Development of a Structure for Promotion and Utilization of the Kyoto Mechanisms

It is important for all of the concerned ministries within the Government to make joint efforts for measures and policies concerning promotion and utilization of the Kyoto Mechanisms. Therefore, the Government will strengthen the collaboration within the Government and with government-affiliated organizations in order for the concerned ministries to cooperate to advance their efforts efficiently.

With a view to strengthening the collaboration and promoting the measures and policies to be implemented, the Government will continue to utilize after FY2008 the “Meeting for Promotion and Utilization of the Kyoto Mechanisms,” which is composed of the concerned ministries with the objective of comprehensive promotion and utilization of the Kyoto Mechanisms.

Each concerned ministry will proactively and voluntarily advance its respective efforts, particularly in the following fields.

(Ministry of the Environment)

- For achieving Japan’s Kyoto Protocol commitment, the Minister of the Environment, as a Vice Chairman of the Global Warming Prevention Headquarters, will take the initiative in all aspects of promotion and utilization of the Kyoto Mechanisms by the Government.
- The Ministry of the Environment will proactively work on promotion and utilization of the Kyoto Mechanisms from the viewpoints of promoting efforts toward project formation by private business operators or other actors and contributing to the sustainable development of the host country through CDM/JI projects.
- The Minister of the Environment, as a competent minister of NEDO’s credit acquisition activities, will proactively work on the acquisition of credits through NEDO together with the Minister of Economy, Trade and Industry.

(Ministry of Economy, Trade and Industry)

- For achieving Japan’s Kyoto Protocol commitment, the Minister of Economy, Trade and Industry, as a Vice Chairman of the Global Warming Prevention Headquarters, will take the initiative in all aspects of promotion and utilization of the Kyoto Mechanisms by the Government.
- The Ministry of Economy, Trade and Industry will proactively work on promotion and utilization of the Kyoto Mechanisms from the viewpoints of promoting efforts toward project formation by private business operators or other actors, disseminating Japan’s energy and environmental technology internationally, and alleviating energy use restrictions.
- The Minister of Economy, Trade and Industry, as a competent minister of NEDO’s credit acquisition activities, will proactively work on the acquisition of credits through NEDO together with the Minister of the Environment.
- The Ministry of Economy, Trade and Industry will proactively work on promotion and utilization of the Kyoto Mechanisms by use of ODA in conformity with international rules and on the premise of agreement by its recipient countries.

(Ministry of Foreign Affairs)

- From the viewpoint of complying with international treaties, the Ministry of Foreign Affairs will proactively work on all aspects of promotion and utilization of the Kyoto Mechanisms by the Government for achieving Japan’s Kyoto Protocol commitment.
- The Ministry of Foreign Affairs will take the initiative in promoting and utilizing the Kyoto

Mechanisms through coordinating negotiations and consensus formation with foreign governments necessary for promoting and utilizing the Kyoto Mechanisms, building cooperative relations with foreign governments concerning the Kyoto Mechanisms, implementing the necessary studies, and participating in international organizations.

- The Ministry of Foreign Affairs will proactively work on promotion and utilization of the Kyoto Mechanisms by use of ODA in conformity with international rules and on the premise of agreement by its recipient countries.

(Ministry of Land, Infrastructure, Transport and Tourism)

- The Ministry of Land, Infrastructure, Transport and Tourism will proactively work on promotion and utilization of the Kyoto Mechanisms in the transport sector and the social capital development sector.

(Ministry of Agriculture, Forestry and Fisheries)

- The Ministry of Agriculture, Forestry and Fisheries will proactively work on promotion and utilization of the Kyoto Mechanisms in the forest sector.

(Ministry of Finance)

- From the viewpoint of international financing, the Ministry of Finance will proactively work on promotion and utilization of the Kyoto Mechanisms by supporting the vigorous activities of multilateral development finance organizations and by utilizing the Japan Bank for International Cooperation.
- The Ministry of Finance will proactively work on promotion and utilization of the Kyoto Mechanisms by use of ODA in conformity with international rules and on the premise of agreement by the recipient countries.

Furthermore, independent administrative agencies, government-affiliated financial institutions, diplomatic missions abroad and other government-affiliated organizations responsible for implementing measures and policies on the Kyoto Mechanisms are to collaborate in working on promotion and utilization of the Kyoto Mechanisms.

III. Utilization of the Kyoto Mechanisms by Private Business Operators

Positive evaluation can be given to the efforts by private business operators to control domestic greenhouse gas emissions and voluntarily utilize the Kyoto Mechanisms at their own expenses to achieve their own targets including voluntary action plans, from the perspectives of cost effectiveness and global emissions reduction using superior technology.

In order to promote such utilization of the Kyoto Mechanisms by private business operators, in addition to the measures in II.3 above, the Government will carry out the following policies: provision of consultations and information; support at the project discovery and formation stages; development of instruction manuals on the use of the Kyoto Mechanisms; effective utilization of the systems of lending to the formation of so-called carbon funds; facilitation of credit acquisition; and development of the institutional base for voluntary retirement of credits.

Reference: Accounting and Tax Treatment of Private Business Operators Utilizing the Kyoto Mechanisms

The accounting and tax treatment of private business operators voluntarily utilizing the Kyoto Mechanisms is as follows.

(1) Treatment in Corporate Accounting

Based on the Working Report No.15 “Current Treatment Concerning Account Processing for Emissions Trading” (Accounting Standards Board of Japan, November 30, 2004), credits are counted as “intangible fixed assets” or “investments and other assets” at the time of acquisition and are processed as “selling and general administrative costs” in the fiscal year in which they are retired.

(2) Treatment under the Corporation Tax Act

Taxable income, unless otherwise stipulated by the Act, “is to be calculated in compliance with the standards of accounting processes generally recognized to be fair and reasonable” (Corporation Tax Act (Act No.34 of 1965) Article 22, Paragraph 4). The tax treatment of credits, in principle, is to be handled in compliance with the above accounting standards.

Chapter 4 To Promote Global Warming Countermeasures in a Sustained Manner

Section 1 Kyoto Protocol Target Achievement Plan Progress Management

I. Basic Philosophy

In order to ensure the effectiveness of this Plan and reliably achieve the 6% reduction commitment under the Kyoto Protocol, it is essential to develop and collect comprehensive data concerning the status of achievement of targets by type of greenhouse gas or other category as well as the progress of individual measures and policies. It is also indispensable to rigorously inspect the Plan based on the data and add or strengthen measures and policies by revising the Plan expeditiously.

Not only government policies but also active efforts by each actor involved in the countermeasures are required in order for individual measures and policies to produce results. In terms of encouraging such efforts, it is necessary to carry out ex-post evaluations of the efforts by each actor related to each countermeasure contained in this Plan.

In addition, from the viewpoint of ensuring compliance with the reduction commitment, it is important to conduct progress management all through the five-year commitment period. We need to keep in mind that in the five-year commitment period, the later we take measures, the more drastic ones we will have to adopt to attain large reductions over a short period to achieve the 6% reduction commitment.

II. Progress Management Methods

Bearing in mind that the first commitment period has already begun, the Global Warming Prevention Headquarters will rigorously inspect the progress of policies implemented by the Government for individual countermeasures annually. Since accurate inspections need the data about the latest conditions, each ministry and agency will strive to promptly calculate actual figures required for conducting inspections, including countermeasure evaluation indices, volume of emission reductions and other related indices (hereinafter referred to as “countermeasure evaluation indices and others”).

Specifically, every year around June, the Global Warming Prevention Headquarters will clarify the actual figures of the year before the previous year of inspection for all countermeasure evaluation indices and others (including the previous year’s actual figures if possible), and will at the same time indicate the projected countermeasure evaluation indices and others for greenhouse gases from the year of review until 2012(for each year if data are available). At this time, the Headquarters will specify the status of the policies implemented in the previous year in order to support the projections as well as the policies scheduled to be implemented in that year. Based on this, the Headquarters will evaluate individual measures and policies, identify the ones that are not making expected progress, and proceed with the consideration on improvement and reinforcement of them. The

Headquarters will also check the emissions trends in each sector.³⁸ Focusing on the sectors where emissions are increasing, the Headquarters will confirm that they will consider the introduction of new policies and measures as well as the reinforcement of policies and measures already included in this Plan.

Next, the Global Warming Prevention Headquarters or the Directors' Meeting of the Global Warming Prevention Headquarters, by around the end of the year, will examine the policies and measures needed to be appended or strengthened in the following years. At that time, the Headquarters or the Meeting will clarify actual figures of the previous year of inspections for all countermeasure evaluation indices and others they can (including actual figures of the first half of inspection year if possible). Based on the results of consideration conducted after the inspections around June, the Headquarters or the Meeting will proceed in examining policies and measures including proposals for budgets, laws and tax system revisions to be implemented in the following years as well.

This Plan will be reviewed and revised by a cabinet decision annually as necessary, taking into account the results of this annual progress inspections, the greenhouse gas emissions of the year before the previous year, which are announced as final figures around April every year, and the greenhouse gas emissions of the previous year, which are announced as preliminary figures around October every year.

In the progress inspections, if deemed necessary, a close investigation may also be conducted concerning the relationship between the countermeasure evaluation indices of each individual countermeasure and the volume of emissions reductions resulting from the countermeasure.

The basis of the volume of estimated emissions reductions for each countermeasure and the results of progress inspections will be made available on the Internet or other media, enabling citizens to obtain pertinent information concerning the contents and progresses of each countermeasure.

To promptly take effective additional measures and policies in and after FY2010 (the middle year of the first commitment period) to achieve the target, in FY2009 the Government will comprehensively evaluate the progresses of measures and policies in this Plan and the state of emissions, based on the projection of Japan's greenhouse gas emissions during the whole first commitment period (five years).

When conducting the annual progress inspections and the FY2009 comprehensive evaluation and review, the Government will seek the views of members of the Joint Conference of Relevant Advisory Councils on Domestic Measures Addressing the Global Warming Issue.

In the comprehensive evaluation and review of this Plan, besides public comments, the Government will create opportunities to substantially ensure the participation of citizens in the evaluation and review process.

³⁸ If the development of relevant statistics makes possible the follow-up of emissions volume for smaller areas within a sector, more meticulous evaluations will be conducted.

At the earliest possible time, the Government will establish appropriate evaluation methods for policy areas in which countermeasure evaluation indices and others have not been sufficiently established at the present time, such as the ones of measures and policies leading to the reform of socioeconomic systems.

III. Overview of Quantitative Evaluation and Review Methods

1. Evaluation Methods Concerning Targets by Type of Greenhouse Gas or Other Category

(1) Evaluation Methods Concerning Targets for Greenhouse Gas Emissions

The volume of greenhouse gas emissions, in principle, can be factorized into the “volume of activity”—number of households, floor area, etc. —and the “volume of greenhouse gas emissions per unit of activity.”

In the evaluation of this Plan, emission and removal projections will be evaluated by factorizing them into the volume of activity and the volume of greenhouse gas emissions per unit of activity.

Based on these evaluation results, to reliably achieve the 6% reduction commitment under the Kyoto Protocol, the Government will comprehensively review the following as necessary: targets by type of greenhouse gas or other category; individual countermeasures and their evaluation indices; estimated volume of emissions reductions; each actor’s roles; and policies for promoting countermeasures.

(i) Emissions Projection for Energy-originated Carbon Dioxide

The emissions projection for energy-originated carbon dioxide can be factorized into three factors:

- (a) “Volume of activity” –Index of Industrial Production, number of households, floor area, transport volume, etc.
- (b) “Energy consumption per unit of activity” – automobile fuel efficiency, etc.
- (c) “Carbon dioxide emissions per unit of energy consumption for each energy type” – gasoline, coal, electric power, etc.

With this in mind, the evaluation of the emissions projection will be carried out comprehensively by taking into account changes in economic conditions in Japan and their impacts, changes in the actual figures of each index used for the calculation of the effects of countermeasures, and the progresses of each countermeasure on the demand or supply side and its effects during the period between the formulation of this Plan and the FY2009 evaluation and review.

(ii) Emissions Projection for the Three Fluorinated Gases

The three fluorinated gases are the substitutes for the ozone depleting substances, and are widely used in a diverse range of sectors including *industrial, residential, commercial and other*, and *transport*. The evaluation of

the emissions projections for the three fluorinated gases will be carried out, taking into account not only estimated volume of activity but the progress of measures to protect the ozone layer, the emission records and trends based on the voluntary action plans of industry, the development status of substitute materials and substitute technologies, and the effects of improvements in the intensity or recovery rate for each application.

(iii) Emissions Projection for Non-energy-originated Carbon Dioxide, Methane and Nitrous Oxide

Emissions in the industrial process sector will be projected based on the estimates of the volume of products manufactured, raw material consumption or the like for each emission category. In the waste management sector, future amounts of landfill and incineration for each type of wastes will be estimated based on related policies. Then the volume of emissions will be calculated by multiplying these estimates by the emission coefficients.

In addition to the above, based on the data such as fuel consumption, number of livestock and rice field area, the Government will estimate future emissions for non-energy-originated carbon dioxide, methane and nitrous oxide separately to evaluate these emissions projection.

(2) Evaluation Methods for Sink Utilization

Greenhouse gas removals in the first commitment period, being subject to the calculation under the Kyoto Protocol, will be estimated and evaluated based on the latest scientific knowledge concerning the removal by sinks, including the following: areas of each managed forests maintained properly up to the year of evaluation; areas of each naturally regenerated forest for which protection and conservation measures are taken such as protection forests; areas where various forestry operations are conducted; and tall tree planting areas in public facilities or the like.

(3) Evaluation Methods Concerning Promotion and Utilization of the Kyoto Mechanisms

The Government will evaluate the promotion and utilization of the Kyoto Mechanisms in terms of the progress of establishing the foundations for the utilization of the Kyoto Mechanisms in Japan, the progress of CDM/JI/GIS projects, and the status of Japan's efforts to acquire credits.

2. Evaluation Methods for Measures for Emissions Reduction or Removal of Greenhouse Gases

The Government will set indices for evaluation for each countermeasure to be taken under this Plan concerning greenhouse gas emissions control. The Government will ensure that each countermeasure will be evaluated based on these indices at the time of the evaluation as far as possible.

Not only government policies but also active efforts by each actor involved in the countermeasures are required in order for individual measures and policies to produce results. In terms of encouraging such efforts, the Government will monitor as quantitatively as possible the efforts by each actor related to each countermeasure

contained in this Plan.

The assumptions of calculation at the time of drafting this Plan are clarified to make possible ex-post verifications of the estimated volume of greenhouse gas emissions reductions (carbon dioxide equivalent) resulting from countermeasures.

Refer to Appendix 1-6 for countermeasure evaluation indices and others.

Section 2 Evaluation Methods for Citizens' Efforts and Technology Development

I. Evaluation Methods for Citizens' Efforts

Each individual citizen's efforts, such as lifestyle and working style reform, are the driving force for producing the effects of global warming countermeasures.

Emissions reduction effects resulting from citizens' efforts appear as a part of energy-originated carbon dioxide emissions reduction effects. For the efforts that can be quantitatively evaluated, such as the dissemination of energy-saving devices, the Government will undertake inspection on their progresses by utilizing appropriate countermeasure evaluation indices and others, as with other CO₂-saving countermeasures.

On the other hand, it is difficult to evaluate independently the effects of efforts regarding human actions and usage of goods, such as the reform of citizens' lifestyles and working styles through national campaigns, familiarization and educational activities, and the practice of eco-driving because of the technical difficulty in monitoring and other hurdles. Therefore, those effects will be examined in an integrated manner within the effects of CO₂-saving countermeasures. In order to ensure the consistency and continuity of efforts and use the PDCA cycle to lead to reinforcement of policies, however, the Government will carry out quantitative evaluations of related policies to the extent possible, by monitoring the levels of understanding of the importance of global warming countermeasures or implementation of the efforts by each individual citizen through the utilization of questionnaire surveys, global-warming countermeasures diagnostics, or the standards for actions of citizens.

II. Evaluation Methods for Technology Development

The effects of research and development on environmental and energy technologies, such as energy conservation technology, are considered to be produced along with the effects of other policies within the greenhouse gas emissions reduction countermeasures.

For this reason, The Government will evaluate the effects of strengthening research and development on environmental and energy technologies not independently and quantitatively, but rather in an integrated manner within the effects of greenhouse gas emissions reduction countermeasures. In terms of implementing more appropriate evaluations of policies, however, the Government will continue to undertake appropriate follow-up, by making clear indices that can serve as targets for individual technologies and by implementing PDCA based on those indices.

Section 3 Development of Implementation Structures

In order for each actor to continuously advance measures and policies to realize a global-warming-free society, it is important to develop systematic implementation structures.

In the national government, concerned ministries will work in a close collaboration, mainly by the Global Warming Prevention Headquarters with the Prime Minister as its Chairman and all ministers as its members, and the Directors' Meeting of the Global Warming Prevention Headquarters, which is a Director General level meeting from each ministry, or through working groups tailored to each issue when necessary. In doing so, those ministries will hear the views of experts in the Joint Conference of Relevant Advisory Councils on Domestic Measures Addressing the Global Warming Issue and other related government councils on a timely basis, and will collaborate with relevant institutions such as the Urban Renaissance Headquarters, the Headquarters for the Promotion of Special Zones for Structural Reform, the Headquarters for the Regional Revival and the Headquarters for the Promotion of Revitalization of Central Urban Districts (these are in principle held in a joint session called as the "Meeting of the Regional Revitalization Headquarters").

In local areas, concerned ministries will utilize the Regional Committees for Promoting Energy and Global Warming Countermeasures, in collaboration with local governments, the Regional Councils on Global Warming Countermeasures, the Regional Biomass Councils and other actors, in order to cooperatively support local efforts for global warming countermeasures.

Conclusion

(Global Warming Issue)

The global warming issue is one of the most important environmental issues that impact on the very foundations of human survival.

In order to achieve the ultimate objective of the UNFCCC, that is, stabilization of greenhouse gas concentrations for the purpose of thwarting the progression of global warming, it is essential to reduce global greenhouse gas emissions to the level equivalent to the capacity of natural sinks. To that end, in accordance with the “Cool Earth 50,” Japan is proposing a long-term target of cutting global emissions by half from the current level by 2050 as a common goal for the entire world. Current global emissions are more than double the capacity of natural sinks, and its concentrations in the atmosphere continue to increase. As greenhouse gases, in particular carbon dioxide, can be seen as by-products generated from socioeconomic activities or citizens’ daily lives, their reduction is not an easy task.

Furthermore, Japan’s efforts alone are insufficient; it is necessary to cut the total emissions of greenhouse gases on a global scale.

(Japan’s Position in Tackling the Global Warming Issue)

Taking into account these challenges, Japan needs to make efforts for technological innovation, social system reform and improvement of the environmental awareness of each individual citizen, which make sustainable development possible. At the same time, as an environmentally advanced nation, Japan needs to take the lead in the efforts toward global warming prevention through international collaboration.

Being a resource-poor country whose foundations of the citizens’ lives and industrial activities are dependent on overseas natural resources, Japan has developed technologies to overcome energy and environmental issues. Moreover, it possesses lifestyle and history in harmony with nature represented by the concept of “mottainai” (meaning “don’t waste what is valuable”). These are all the more reasons why Japan should make more efforts than any other country, demonstrate results and make contributions to the world for the safety and reassurance of the human race, by presenting to the world a vision of an attractive society using natural resources efficiently, and by extending international cooperation utilizing Japan’s experience and wisdom to developing countries.

(Aims of the Kyoto Protocol Target Achievement Plan)

From this perspective, the Government has tried to incorporate in this Plan a variety of measures and policies leading to the realization of a low-carbon society that can simultaneously achieve both feeling of affluence in life and greenhouse gas emissions reductions, with the viewpoints both on steady achievement of the immediate target of the Kyoto Protocol commitment and on approaches to take after the first commitment period toward the achievement of long-term, continuous emissions reductions.

Furthermore, in order to overcome the differences in various social conditions, history and the environment

among countries and work together to advance efforts toward building a sustainable world, the Government will promote the development of innovative technology and the creation of a low-carbon society from a long-term perspective on a global scale. The Government will also make efforts to ensure that reform of people's awareness and social systems as well as technology development and dissemination and investment for them will be carried out in all regions of the world.

(Our Generation's Responsibility)

It is thought that the impacts of climate change are already becoming apparent throughout the world, so the actions of the human race over the next few decades will determine the future of this planet. Whether or not the global warming issue will be successfully resolved indeed depends on the decisions and actions of our generation, who lives in the present.

The important thing is that we ourselves know the history, accurately monitor the present conditions and look to the future. Knowing the realities and viewing the future help us to discover the value of protecting the global environment, to reform the structure of society and to change our individual daily actions.

(Message to the Citizens of Japan)

Creating a sustainable society is not an easy task. In order to hand over the sound and bountiful environment to future generations, however, it is essential to bundle together people's wishes for environmental conservation, widen the circle of individual efforts and strongly support them, with the participation of and in cooperation with a wide range of domestic and foreign stakeholders. Japan hopes to make a significant contribution to the civilization of all humanity, by exerting its potential of the good tradition and the world's most advanced technologies to the full extent and stepping up efforts with all its forces of the whole country.