

**Action Plan
for Achieving a Low-carbon Society**

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Introduction

Japan has proposed to share globally the long-term goal of “halving total global greenhouse gas emissions by 2050 from its current level of emissions”.

It will be indispensable to have not only participation of the major economies but also efforts of all countries in some way. Japan, as one of the developed countries which should contribute more than developing countries, should set a long-term goal of reducing 60 to 80 percent of its current level of emissions by 2050, so as to realize a low-carbon society that we can proudly present to the world.

The basic policies toward the achievement of a low-carbon society were put forward in a speech by Prime Minister Yasuo Fukuda (June 9, 2008) and in the Proposal of the Council on the Global Warming Issue (June 16, 2008). This Action Plan sets out the specific measures for implementing each of the policy points set out in the Prime Minister’s speech and the proposals made by the Council on the Global Warming Issue.

The measures contained in this Action Plan are to be steadily enforced, and followed up with checks at regular intervals on the status of efforts toward bringing about a low-carbon society.

I Japan's targets

In order to halve the global greenhouse gas emissions by 2050 with the aim of achieving a low-carbon society, it is essential that all countries, not only the major economies, address this issue. Japan sets the long-term goal of reducing 60 to 80 percent of its current level of emissions by 2050.

In order to achieve the long-term goal of halving emissions by 2050, we will work to ensure that the world's total emissions peak in roughly the next 10 to 20 years.

Moreover, regarding the post-2012 framework, Japan will aim to build international agreement on fair and equitable rules, and will announce its quantified national emission reduction target at an appropriate time next year.

1. Building agreement on a fair, equitable, and effective post-2012 framework

Japan will aim for an agreement at the Fifteenth Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP15), to be held in 2009, on a fair and effective post-2012 framework with participation of all relevant countries which includes major economies such as the U.S., China, and India, in order to ensure that global emissions peak in the next 10 to 20 years and to achieve at least 50% reduction of global emissions by 2050.

To achieve this, Japan will promote discussions of the working group under the United Nations (the Ad Hoc Working Group on Long-term Cooperative Action) in accordance with the Bali Action Plan agreed at COP13. Japan will also deepen discussions at the G8 Summit and other multilateral platforms and at bilateral meetings on sharing a long-term goal, setting fair quantified national targets based on the sectoral approach, and ways of improving global energy efficiency through technology transfer. The results of these discussions are to be reflected as appropriate in the discussions in the UN.

2. Setting quantified national targets

Japan aims at obtaining the understanding of other countries regarding the sectoral approach for setting fair quantified national targets, in order to establish this approach as a common methodology at the international level. Japan will announce its quantified national target, at an appropriate time next year, together with points of controversy such as a review of the base year.

Japan will promote the understanding of other countries toward the method of setting quantified national targets based on the sectoral approach, through various platforms, such as the G8 Summit, Meeting of Major Economies (MEM), and bilateral meetings. At the same time, Japan will also introduce applied case study such as the long-term energy demand forecast, and will call on other countries to analyze the actual extent of their reduction potentials and to report on the results at COP14.

The workshop on the sectoral approach to be held during the meeting of the Ad Hoc Working Group on Long-term Cooperative Action in Ghana, August 2008 and the second international workshop on sectoral emission reduction potentials by a bottom up basis, to be held this autumn, both offer significant opportunities for establishing a common methodology. Japan intends to use both workshops to promote further understanding of the sectoral approach.

Japan's aim on both occasions is to gain understanding from other countries in order to establish a common methodology, taking into account other countries' evaluations of the sectoral approach and also other points including base year and the treatment of carbon sinks such as forests.

From a perspective of ensuring the participation of all the major economies and of ensuring fairness, Japan's own quantitative national targets will be decided at an appropriate time next year, taking into consideration the status of the negotiations.

3. Support for other countries' efforts

(1) The dissemination of technologies through the sectoral approach and support through co-benefits

Through the sectoral approach, Japan proactively disseminates environmentally friendly and energy-conserving technologies, in which Japan has advantages, globally, including developing countries.

To achieve this, Japan works with the International Energy Authority (IEA) and at the Asia-Pacific Partnership on Clean Development and Climate (APP) to identify and share best practices sector by sector. Japan also makes use of multilateral and bilateral frameworks to carry out technological cooperation with China, India, and other countries such as the demonstration projects of energy-saving installations and the dispatch of expert personnel, and also to remove barriers to technical cooperation.

In order to strengthen international collaboration to reduce greenhouse gas and air pollutant emissions from the transport sector, Japan is hosting the Ministerial Conference on Global Environment and Energy in Transport. Based on the outcomes of the Conference, Japan will work to promote cooperative measures such as sharing best practices, facilitating new technologies and measures, and enhancing capacity building in developing countries.

Moreover, Japan will work to achieve in developing countries sustainable development, low-carbon, low-pollution, and sound material-cycle societies, and create societies adapted to climate change and can coexist with nature.

To achieve this, Japan will promote the Clean Asia Initiative, and promote the implementation of co-benefit projects in China and Indonesia, conduct the feasibility study of recovery/recycling of the fluorocarbons in the waste refrigeration equipment in East Asia, cooperate toward an inventory of developing countries, and bolster Asia's capacity to build low-carbon, and sound material-cycle societies .

(2) The Cool Earth Partnership

Japan will promote the Cool Earth Partnership, which will give support to developing countries regarding mitigation measures, adaptation measures, and access to clean

energy. This program will make on the scale of 10 billion dollars available over five years to developing countries aiming to achieve greenhouse gas emission reductions and economic growth and working to contribute to climate stability.

As part of this program, Japan will make use of the Climate Change Japanese ODA Loan (In July 2008, the Government of Japan decided to extend ODA loans up to the total amount of 30.8 billion yen to Indonesia as the first case), Program Grant Aid for Environment and Climate Change, Trade and Investment Insurance for Preventing Global Warming, and Japan- UNDP Joint Framework. At the same time, Japan will further extend the aid in the form of ODA loan grant aid (non-project grants have already been extended to Madagascar, Senegal, and Guyana) and technical cooperation, as well as ODA through international organizations such as the Asian Development Bank. And other official finance rather than ODA will also be made available through institutions such as the Japan Bank for International Cooperation and Nippon Export and Investment Insurance. Aid will be allocated, for example, to forest conservation and natural disaster prevention in response to climate change, co-benefit measures, and measures toward energy conservation or new energy development.

Japan will call on African countries for a Japan-Africa Cool Earth Partnership and will hold policy consultations with them, and will continue to proactively promote partnership with developing countries such as Tuvalu and Laos.

Through such assistance outlined above, Japan will facilitate the negotiation process to provide encouragement to developing countries to join the post-2012 framework.

3. Establishment of a multilateral fund

With the initiative from Japan, the U.S., and the U.K., the Climate Investment Funds were established as a multilateral fund within the World Bank, on July 1, 2008. This fund will support efforts by developing countries to tackle climate change, including mitigation measures to reduce greenhouse gas emissions, such as the installation of solar and wind power generation, improvements to the energy efficiency of thermal power stations, the use of low-emission public transport, and improvements to the

efficiency of electricity use in buildings and industry, as well as adaptation measures to cope with the adverse effects of climate change. Japan will make use of the opportunities afforded by bilateral and multilateral platforms to call on interested countries other than itself, the U.S. and the U.K to make a contribution to the fund.

Japan will pursue early operationalization of the fund, and will take an active part in its operation in order to carry out effective and efficient assistance to developing countries.

II The dissemination of innovative technologies and existing advanced technologies

Encouragement will be given to the development of major innovative technologies and the dissemination of existing advanced technologies in order to move toward a low-carbon society and achieve long-term targets.

1 Development of innovative technologies

(1) Steady enforcement of the roadmap to innovative technology development

It will not be possible to achieve drastic cuts in greenhouse gas emissions only through the dissemination of existing technologies or of technologies that are just the extension of what already exists. Japan will thus develop innovative technologies as set out in the Low Carbon Technology Plan (May 19, 2008) and the Cool Earth—Innovative Energy Technology Program (March 5, 2008). These are technologies that are innovative in terms of structures, materials, systems, etc., going beyond existing technologies, and will contribute to substantial global reductions of greenhouse gases by 2050.

Over the next five years, Japan will invest around 30 billion dollars in implementing the technological roadmaps set out in the Low Carbon Technology Plan; this encompasses fast-breeder reactor cycle technology; technologies for the use of biomass; low-fuel consumption (and low-noise) aircraft; high-efficiency ships; improved traffic and goods distribution efficiency through the Intelligent Transport Systems (ITS); and international contributions to earth observation, climate change projection and impact assessment.

Among them, the necessary budget will also be secured for the development of 21 innovative energy technologies set out in the Cool Earth—Innovative Energy Technology Program. These include: innovative photovoltaic power generation that gives significant improvements in efficiency and reductions in cost (the aim is to establish photovoltaic cell technology from 2030 using new materials and new structures that will improve generating efficiency by over 40 percent and give a generating cost of seven yen per kilowatt-hour); plug-in hybrid cars and electric cars;

innovative steelmaking processes that reduce emissions through technology that uses hydrogen as a reducing agent instead of coke and technology to capture carbon dioxide (the aim is to start basic research in fiscal 2008, carry out verification experiments in fiscal 2013, and to establish and apply technology to cut emissions from steelworks by approximately 30 percent by fiscal 2030, depending on the cost at the time of hydrogen production and carbon dioxide capture and storage); advanced nuclear power technologies such as next-generation light-water reactors; fuel cell technology (the aim is to bring costs down to 400,000 yen per kilowatt, increase durability to 90,000 hours, and put fuel cells into widespread use by around 2020–2030); and effective, ultra-efficient heat pump technology for air conditioning and hot water, which account for roughly 50 percent of carbon dioxide emissions from the household sector (the aim is to reduce the cost to three quarters of current levels and increase efficiency by 50 percent by 2030, and to halve the cost and double the efficiency by 2050).

Japan will promote the implementation of technologies as appropriate for realizing technology roadmaps with international collaboration and role sharing among the public and private sectors; at the same time, it will carry out regular reviews of the roadmap. Japan will also work toward the smooth dissemination of the results of technology development as appropriate.

(2) Upgrading coal use

In comparison to oil or natural gas, coal is cheap and its reserves are plentiful; however, coal emits large quantities of carbon dioxide when burned. For this reason, Japan is promoting the development of clean combustion technology that can increase the efficiency of power generation and reduce emissions, and carbon capture and storage (CCS) technology, which returns carbon dioxide to the ground by storing it underground so that it is not emitted into the atmosphere.

Regarding clean combustion technology, Japan will promote the necessary technological development and carry out verification tests toward achieving the targets of a 48 percent increase in the generation efficiency of Integrated Gasification Combined Cycle (IGCC) power generation by around 2015, with a long-term target of

its 57 percent increase, and a 55 percent increase in the generation efficiency of Integrated Gasification Fuel Cell Combined Cycle (IGFC) power generation by around 2025, with a long-term target of its 65 percent increase.

CCS technology has the potential for massive emissions reductions in thermal power generation, which accounts for roughly 30 percent of Japan's emissions, and in the steelmaking process, which accounts for roughly 10 percent. Japan will promote the development of this technology with the target of the cost of capture and storage in the order of 2,000 yen per ton by around 2015, falling to 1,000 yen or so in the 2020s. At the same time, Japan will commence verification tests on a large scale at an early stage from 2009 onward, with the aim of implementation by 2020. Regarding application, Japan will work to resolve issues such as enhancing environmental impact assessments and monitoring, putting legislation in place, and ensuring public approval.

Ultimately, the aim is to combine these technologies to bring emissions down to virtually zero. Full-scale verification tests will be carried out of an integrated system for separation, collection, transport, and storage of carbon dioxide from coal-fired power stations, in order to bring about coal-fired power generation with no emissions of carbon dioxide at all.

(3) Bringing about an International Partnership for Environment and Energy

Developing innovative technologies requires considerable expenditure in terms of money and personnel. Japan will work to accelerate the development and encourage the dissemination of its results by sharing roles among countries under international cooperation.

In order to achieve this, Japan will expand investment in energy research and development, globally share the technology development roadmaps, strengthen existing international collaboration, and launch new international collaboration, as agreed in the G8 Hokkaido Toyako Summit Leaders Declaration. Japan will also facilitate the appropriate dissemination of technology to developing countries by encouraging the participation of motivated developing countries from the development stage.

Specifically, in fiscal 2008 Japan will commence the work of sharing information on the research and development policies of different countries in collaboration with the IEA, in order to formulate a roadmap in fiscal 2010 that can be shared internationally and will form the core of the International Partnership for Environment and Energy.

2. Dissemination of existing advanced technologies

(1) Huge increase in the installation of solar power generation facilities

Among the different types of renewable energy, solar power generation in particular offers a huge potential supply and is capable of becoming a major part of the domestically-produced energy of Japan, which currently has a low rate of energy self-reliance. Japan is thus aiming to become once again the world leader in solar generation, and is promoting a huge increase in the installation of solar power generation facilities with the target of increasing the amount of installations 10-fold by 2020 and 40-fold by 2030.

To make this increase possible, it will be necessary to bring the price down substantially through technological innovation and creation of demand. At the same time, it is necessary to promote technology to mitigate the effects on the power system, which will be a major issue with a big increase in installations. With regard to price, the aim is to roughly halve the current price of a solar power generation system within three to five years.

Japan will consider bold measures to support the introduction of solar energy and new pricing systems, taking as an example the renewable energy policies of Germany and other countries. Specifically, there will be far-reaching support for the installation of solar power generation facilities in the domestic, industrial, and public sectors, support for the research and development of innovative solar cell technology, and support for planning the construction of mega solar power generation facilities by electricity companies. The government will also encourage collaboration with local public bodies and collaboration between companies manufacturing solar systems and companies

building houses, and will make further use of private-sector capital such as tradable green certificates or citizens' investment. At the same time, the government will promote the development of power system stabilization technology to mitigate the effects of solar power on the national grid, and the development of high-capacity, low-cost storage cell technology. Examination of approaches to sharing the cost burden of renewable energy introduction and power system stabilization commenced in July 2008, and conclusions are expected to be reached by the spring of 2009.

(2) Raising the proportion of zero-emission energy sources to over 50 percent

Measures for the electrical power generation sector are extremely important, as this sector accounts for approximately 30 percent of Japan's greenhouse gas emissions. As part of the measures for electricity supply, on the basis of the Long-term Energy Supply and Demand Outlook (May 2008), the proportion of electricity generated from zero-emission sources (renewable energy, nuclear power generation, etc.) will be increased from 40 percent, the level in 2006, to over 50 percent by around 2020. With regard to solar power generation in particular, the aim is to increase the amount of installations 10-fold over the fiscal 2005 level—in crude oil terms, an increase from 350,000 kiloliters to 3.5 million kiloliters. With regard to nuclear power, there will be steady construction of new facilities—construction of 13 facilities is currently being planned, of which nine are planned for construction by 2017.

Specifically, the government will provide support for solar power system installation across the various sectors, and will support research and development, as well as planning for the construction of mega solar power generation facilities by electricity companies. At the same time, it will examine approaches to sharing the cost burden. With regard to nuclear power, the government will aim to improve the utilization capacity to the level of major nuclear-using countries and will promote steady construction of new facilities, with ensuring complete safety as a fundamental premise.

With regard to wind power, the government will support terrestrial installations, and will promote studies of new technology for wind power generation at sea. Hydroelectric generation is calculated to have the potential for an increase of 7 billion kilowatt-hours

by 2030,¹ on the basis of which development surveys and improvements to construction assistance will be examined. Additionally, with regard to geothermal and other renewable energy types, the government will promote local energy production for local consumption, support new energy venture businesses, and encourage independent initiatives.

The government will also share local best practices by evaluating initiatives by local public bodies to produce renewable energy locally for local consumption through means such as solar generation, micro-hydroelectric generation, biomass, wind generation, and snow and ice that take local characteristics into account. The best of these will be selected for the “Renewable Energy Top 100” for two or three years. Regarding power generation from waste, the government will boost the significant amount of energy recovery and will study economic incentives.

Moreover, in order to ensure the smooth trading of electricity generated through the above measures, trial trading of carbon dioxide-free electricity on the Japan Electric Power Exchange will commence by April 2009 at the latest.

In addition, the current targets under the Renewables Portfolio Standard Law (Act No. 62 of 2002) will be robustly enforced, while examination of targets up until fiscal 2018 will commence by fiscal 2010.

(3) Introduction of next-generation vehicles

In order to cut emissions from the transportation sector, which accounts for approximately 20 percent of emissions, while also bolstering the technological strength and competitiveness of the Japanese auto industry, the government will aim at achieving the ambitious target of increasing the present proportion of one in 50 new car sales accounted for by next-generation vehicles (hybrid vehicles, electric vehicles, plug-in hybrid vehicles, fuel cell vehicles, clean diesel vehicles, compressed natural gas [CNG] vehicles, etc.) to one in every two new car sales by 2020.

¹ Interim report by the Hydroelectric Study Group, July 25, 2008.

Specifically, the government will create initial demand by providing support for introduction such as covering part of the cost, and will promote higher performance and lower cost through research and development of next-generation cells and fuel cells, the fundamental technology for electric vehicles, plug-in hybrid vehicles, and fuel cell vehicles (the aim is to increase the capacity of next-generation cells by 50 percent over current levels and bring the cost down to one seventh of the current price by 2015, and to increase capacity seven-fold and reduce the cost to one fortieth by 2030). At the same time, the government will encourage comprehensive efforts that include putting in place recharging infrastructure, including high-speed recharging facilities in order to resolve the worry of batteries running down (for example, high-speed recharging could make it possible to reduce the approximately seven-hour domestic recharging time to approximately 30 minutes); promoting traffic flow measures such as the Intelligent Transport Systems (ITS); and improving the perception of clean diesel cars and encouraging their uptake. The government will also encourage the commercialization of next-generation, low- emission trucks and buses.

(4) Changing from incandescent light bulbs to low-energy lamps

Incandescent light bulbs commonly used in homes are to be replaced by products such as bulb-shaped fluorescent lamps, which offer superior energy efficiency, by around 2012.

Bulb-shaped fluorescent lamps consume one fifth of the electricity of incandescent light bulbs and have a product life span six to ten times as long, so that with the period of use included they offer excellent value. Nonetheless, with the product price approximately 10 times that of a conventional bulb, the large price differential represents a heavy burden at the time of installation. There is also the issue that conventional bulbs cannot readily be replaced by fluorescent lamps in some variable or ornamental lighting applications.

To resolve these issues, the government, manufacturers, distributors, and consumer groups have collaborated to call on consumers to replace their light bulbs by providing

consumers with information about the benefits of energy-efficient lighting through initiatives such as the introduction of the Day of Lighting (October 21), the Energy-saving Lighting Forum, and Team Minus 6%.

The government will also carry out research and development of next-generation lighting using organic electroluminescence (organic EL), which offers the possibility of even greater energy savings than fluorescent lamps. At the same time, manufacturers will work to improve performance and usability, and develop products for use in applications where it is difficult to replace conventional light bulbs. Distributors will make proactive efforts to provide information about energy-efficient lamps and market them.

(5) Accelerating the introduction of energy-efficient televisions, water heaters, air-conditioning, and refrigerators

The government will work to spread energy-efficient devices that meet the “top-runner” standards, which include televisions that achieve a 15.3 percent improvement in efficiency from fiscal 2004 to fiscal 2008, air conditioners that achieve a 22.4 percent improvement in efficiency from fiscal 2004 to fiscal 2010, and refrigerators that that achieve a 21.0 percent improvement in efficiency from fiscal 2004 to fiscal 2010. With regard to high-efficiency water heaters, the government will aim for accelerated uptake of between 4.46 million and 5.2 million units for carbon dioxide refrigerant heat pump water heaters and between 2.91 million and 3.26 million units for condensing gas-fired water heaters.

Specifically, the government will review and bolster the “top-runner” standards in accordance with the Act on the Rational Use of Energy (also known as the Energy-saving Law, Act No. 49 of 1979). Regarding televisions, which will reach their target year in fiscal 2008, new standards will be examined during fiscal 2008 in order to bolster the standards at an early stage. Standards will be steadily bolstered in this way for all devices that reach their target year, and additional standards will be examined for other devices, such as commercial-use refrigerators, routers, and combination printer-copier-scanner-fax devices.

Moreover, research and development will be carried out into large-size liquid crystal and plasma displays, semiconductors, and innovative energy-efficient air conditioners using refrigerants that do not contribute much to the greenhouse effect, and the government will give support for the installation of high-efficiency water heaters and energy-efficient refrigeration equipment with natural refrigerants.

In addition, the government will work toward the provision of information to consumers by manufacturers, distributors, and consumer groups from their respective standpoints through the energy-efficient labeling system, the energy-efficient products sellers evaluation system, the Team Minus 6% initiative, and the activities of the Energy-efficient Appliances Popularization Forum; the government will also enhance the standards for uniform energy-efficient appliance labeling and increase the range of appliances that come under the scheme.

A study will be carried out during fiscal 2008 of the construction of a system to disclose the reduction in carbon dioxide emissions achieved through the use of energy-efficient appliances, so that producers, consumers, and sellers of the respective products can feel that there is an incentive.

(6) Promoting energy-efficient housing and office buildings, and “200-year Housing”

With regard to energy-efficient housing and office buildings, the goal is that all newly constructed housing and office buildings will be energy efficient. To achieve this, the revised Energy-saving Law (Act No. 47 of 2008) will be properly enforced; this law includes extending the criteria for obligatory reports on energy-efficiency measures, the introduction of directives for the construction of large-scale housing or buildings, and measures to encourage housing businesses to improve the energy efficiency of houses built for sale. The government will examine the creation of standards for water heaters and other devices, and methods of assessing and displaying energy performance that are easy for the consumer to understand. Assistance will also be made available for constructing or improving energy-efficient housing and office buildings through the

implementation of taxation and budgetary measures.

The introduction of renewable energy to office buildings will be accelerated through measures that include increased assistance for introducing energy-efficient devices.

Regarding the promotion of “200-year Housing”, the aim is to reduce the burden on the environment and lighten the load on the people by switching to a richer, eco-friendlier lifestyle through the creation of a stock of high-quality housing that can be used for many years. To achieve this, legislative systems will be put in place and assistance given through the implementation of taxation and budgetary measures as well as financing at each stage of housing construction, maintenance, distribution, and financing.

(7) Promotion of nuclear power

Nuclear power emits no carbon dioxide during the electricity generation process, and as a key low-carbon energy source it will occupy an extremely important position in the promotion of global warming counter-measures. The government is thus aiming to improve the utilization capacity to the level of major nuclear-using countries, while at the same time steadily constructing new facilities—construction of 13 facilities is currently being planned, of which nine are planned for construction by 2017—with ensuring complete safety as a fundamental premise. Through these initiatives, the aim is to greatly increase the proportion of electricity coming from nuclear generation, as part of the effort to increase the proportion of electricity output from zero-emission sources to over 50 percent by around 2020. The government also aims to establish a nuclear fuel cycle as well as to implement the fast breeder reactor cycle at an early stage.

To achieve this, the government will make the necessary improvements to the environment to assist initiatives by power companies aimed at improving the utilization capacity to the level of major Western nuclear-using countries, with ensuring complete safety as a fundamental premise. At the same time, with regard to the new and additional facilities being planned, including the three currently under construction (Tomari no. 3 reactor, Shimane no. 3 reactor, and Oma reactor), as well as the 55

reactors currently in operation, the government will conduct follow-up checks of the initiatives of electricity companies. Also, the government will promote development of next-generation light-water reactor technology in the light of expected demand for replacement of existing light water reactors around 2030, and also from the perspective of the global market.

Regarding fast breeder reactor cycle technology, the Monju prototype reactor will restart during fiscal 2008, and research and development will be promoted with the aim of constructing a demonstration reactor and related fuel cycle facilities by 2025 and introducing the technology on a commercial basis from around 2050. There will also be steady efforts toward establishing a nuclear fuel cycle, which will include implementation of plutonium-thermal reactor technology and the start of full-scale operations at the Rokkasho reprocessing plant. Moreover, from a long-term perspective, research and development of nuclear fusion will be promoted.

(8) Providing outstanding nuclear power safety technology and expertise to the world

Japan will contribute to the international trend toward introducing nuclear energy emanating from the viewpoint of climate change and energy security, through the use of its outstanding nuclear power technology and by means of intergovernmental cooperation and international activities of the nuclear industry, while ensuring nuclear non-proliferation/safeguards, safety, and security (3S) as a prerequisite for peaceful uses of nuclear energy.

Specifically, Japan will continue to promote more actively from fiscal 2008 assistance for and cooperation with countries planning to introduce or expand nuclear power, with regard to infrastructure development including 3S, ensuring of which is indispensable for international cooperation on nuclear energy. Assistance and international cooperation will be extended through multilateral frameworks such as the International Atomic Energy Agency (IAEA) and the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development(OECD/NEA), as well as bilateral frameworks. At the same time, Japan will consider establishing frameworks for the

transfer of nuclear materials and equipment, including bilateral agreements, taking into account current infrastructure development situation, specific needs and other related issues in each individual country. The government will also make use of government financial institutions to support the international activities of the Japanese nuclear power industry. Japan will also continue to participate in activities of the IAEA such as developing international safety standards and will continue to be engaged in information and personnel exchanges through platforms such as bilateral information exchanges meetings with the authorities responsible for nuclear safety regulations in countries such as the US, France, and China.

(9) Implementing Japan's own initiatives

The government will be at the forefront in implementing and enforcing advanced global warming countermeasures, with the aim of developing its initiatives into a propulsive force behind the realization of a low-carbon society inclusive of the private sector. These initiatives will be disseminated to local public bodies, including independent administrative institutions, public schools, and hospitals, and then to the private sector. This will lead to a movement among the Japanese people toward bringing about a low-carbon society.

Specifically, on the basis of the Plan Stipulating Measures to Curb Greenhouse Gas Emissions Relating to the Work of the Government (decided by the Cabinet on May 30, 2007), the government will steadily increase its use of low-emission vehicles and energy-efficient office appliances, and will promote emissions countermeasures in the construction and maintenance of its buildings, including energy-efficient lighting and air-conditioning, and the introduction of solar power generation. Through these measures, by 2010–2012 there will be an average cut of 8 percent over 2001 levels in greenhouse gases emitted through government activity.

The government is also working toward realization of a “Kasumigaseki Low-carbon Society” in Tokyo’s Kasumigaseki district, which is the center of the Japanese government. The introduction of solar power into government buildings, improved energy efficiency through reconstruction, and heat island countermeasures are all being

examined. These measures will be compiled to coincide with the formulation of the development plan for a new Central Government Building as site of the Ministry of Finance and the Central Government Building No.4, and targets for improvements in energy efficiency will be set.

III Framework to move the whole country toward reduced carbon

In order to reduce emissions in all sectors, the government will price carbon dioxide and make use of market mechanisms, and at the same time will encourage the provision of information about carbon dioxide emissions.

1. Emissions trading

The government will commence an experimental introduction of an integrated domestic market for emissions trading this autumn, with the inclusion of as many sectors and companies as possible. The government will design the system of the experimental introduction, taking into account the consistency with the Kyoto Protocol Target Achievement Plan and with the Voluntary Action Plans which is one of the countermeasures in the Target Achievement Plan, focusing on a scheme in which participating sectors and companies set their targets by energy intensity or emission volume and trade various types of emissions allowances and credits to achieve their targets, making use of existing and under considered systems, and expecting the participation of as many sectors and companies as possible. Considering issues such as target setting, types of tradable emissions allowances and credits, and monitoring and verification methods, study team from the relevant ministries will consider designs of an experimental introduction during September, and commence an experimental introduction around October.

The government intends to use the experience thus gained, to identify the conditions necessary to be met, the issues of design to be dealt with and other relevant matters in the event an emissions trading scheme is to be fully introduced.

2. Tax system

(1) Making the tax system greener

In discussions scheduled this autumn on a fundamental reform of the tax system, in addition to the usage of earmarked revenues for road construction after its shift into general revenues, the government will carry out a cross-sectional review of the whole

tax system, including environmental taxes, and make the tax system greener from a perspective of promoting reduced carbon.

As an example, tax incentives to curb greenhouse gas emissions from cars, household appliances, housing and building will be examined.

(2) Global environment tax

The government will carry out a study on a possible modality of an internationally coordinated global environmental tax system that would serve as a financial resource for joint development of innovative technology and implementation of aid projects in developing countries mainly by developed countries. The study will include review of the discussion carried out so far in international institutions and of various challenges. The government will make public of some outcome of the study around the end of the current fiscal year.

3. Visualization

(1) Disseminating the “carbon footprint” system, etc.

The government aims to make visible to the consumer the greenhouse gas emissions associated with as many goods, foodstuffs, and services as possible. In this regard, the approach to visualizing emissions from foodstuffs will be examined considering the concept of “food mileage.”

Specifically, visualization involves a “carbon footprint” system that displays the greenhouse gas emissions associated with the life cycle like the complete process from manufacture of goods or production of a foodstuff to transportation and disposal, or the emissions associated with the use of a service. The aim is for guidelines for calculating emissions, ensuring their credibility, and displaying them to be compiled during fiscal 2008, and for the trial implementation to be started in the following fiscal year.

The government will use the results of this trial to further crystallize area-specific guidelines for goods, foodstuffs, and services, and will promote the spread of goods,

foodstuffs, and services that display the greenhouse gas emissions associated with them.

In drawing up the guidelines, the government will give sufficient consideration to international consistency on the basis of World Trade Organization (WTO) agreements, and Japan will make proactive contributions to the discussions toward establishing international standards on the carbon footprint system under the International Organization for Standardization (ISO).

(2) Creating rules for carbon offsetting and carbon accounting

The government will raise awareness of businesses and citizens toward carbon offsetting² and carbon accounting, and disseminate these initiatives widely.

As for carbon offsetting, model carbon offsetting projects will be implemented since FY 2008, taking into account the consistency of carbon offsetting with existing systems and initiatives, and considering common rules that will be necessary to disseminate carbon offsetting (the methods for calculating the amount of emissions to be offset and the amount of emissions reductions to be used in offsetting, the way to ensure the certainty of the reductions, the way to prevent double counting of the reductions, etc.). The results of the considerations will be made public around FY 2008.

Carbon accounting, which involves disclosure of both greenhouse gas emissions and emission reductions from business activities converted into carbon equivalents, is integral to corporate environmental information disclosure. Implementation methods and rules will be examined during FY 2008, and the findings will be made public.

4. Formulating standards and frameworks to facilitate flow of capital into environmental businesses

² Activities to recognize one's greenhouse gas emissions, make voluntary efforts to reduce them and subsequently offset the whole or a part of such emissions that cannot readily be reduced by buying greenhouse gas emission reductions or absorption that have been achieved elsewhere, or by implementing projects or activities to reduce greenhouse gas emissions or absorb greenhouse gases elsewhere.

The government will implement continuous initiatives to make Japan's capital markets internationally attractive to overseas businesses and investors, and will also work to create an environment encouraging investment from individual investors. Furthermore, standards and frameworks will be formulated to facilitate the flow of domestic and foreign capital to environmental businesses, aiming Japanese financial and capital markets to be top runners in environmental friendliness.

In order to strengthen competitiveness of environmental businesses by attracting more capital, comprehensive methods for assessing the environmental initiatives of companies, possibility of using such initiatives for the stock index, and ways to disclose comparable environmental information, will be further examined during FY2008, and policies regarding assessment methods and measures for disclosing comparable environmental information will be announced after FY2009.

Following primary financing initiatives will be implemented:

- The government will establish the Innovation Network Corporation of Japan to ensure the smooth provision of domestic and foreign long-term "risk money" (high-risk, high-return investments).
- The government will give financial support to environmental funds, loans based on environmental ratings, etc.
- Guidelines will be drawn up to promote private investment and private financing initiatives (community funds, etc.) involving investment and loans aimed at projects to collect private funds for environmental conservation.

The government will clarify the scope and categories of environmental finance, encourage Japanese financial institutions to participate in the Principles for Responsible Investment (PRI) and promote disclosure of environmental finance initiatives. The government will ask for financial institutions to report initiatives such as environment-related financing and eco-funds, and will bring together case studies of leading approaches and cases worthy of dissemination.

Also, as well as carrying out leading research on the mutual relationship between

climate change and social economy, the government will construct an international network of institutions involved in low-carbon society research.

IV Support for regional and citizens' initiatives

In order to bring about a low-carbon society, the government will carry out efforts to encourage regional pacesetter initiatives as well as understanding and action on the part of individual citizens.

1. Reducing carbon by using the functions of agriculture, forestry and fisheries

Regions with rural areas have a major part to play in bringing about a low-carbon society, as they represent sources for the provision of biomass and their forests act as carbon sinks. In order to give free rein to these capabilities, the government will promote local production for local consumption to help reduce the energy used for transportation, it will promote the improvement and use of forest resources which act as carbon sinks and sources of wood products, and it will promote measures to cut greenhouse gas emissions in the fields of agriculture, forestry and fisheries. Such measures may also be expected to have beneficial effects with regard to issues such as regional revitalization and improving the food self-sufficiency rate.

Regarding biomass, the government aims to expand the number of municipalities which has created Biomass Town plan to 300 by fiscal year 2010. It will also introduce measures to enhance the production of biofuels that do not compete with food production; promote the production of ethanol from rice straw and waste wood; examine the use of extensive ethanol for transportation use and promote the provision and use of untapped woody biomass.

Regarding local production for local consumption, the government will give support to local production for local consumption model towns in order to promote initiatives aimed mainly at the use of local agricultural and marine products in school lunch and the setting up of points for direct sales of local produce. Support will also be given for producing biofuel from waste cooking oil.

Regarding the improvement and use of forest resources, the government will carry out initiatives to improve forests through thinning, expand the use of local materials in

housing construction, and expand the use of materials and energy from untapped biomass resources. In order to improve the carbon sink functions of farmland, the use of model districts for verification, etc., will be examined.

2. Creating low-carbon cities and regions

(1) Making use of local characteristics to create low-carbon cities and regions

An effective approach for making society overall low-carbon is to implement finely-tuned, integrated measures making use of the particular characteristics of individual cities and regions, thus creating advanced models which can be spread across the whole country.

To achieve this, 10 or so cities will be selected as environmental models during fiscal 2008 (six cities have already been selected as of July); support will be given for their initiatives with follow-ups conducted to assess the results, and outstanding cases will be developed on a nationwide basis. There will also be collaboration with cities overseas making proactive environmental efforts, and outstanding initiatives from Japan will be publicized overseas.

Bringing about intensive urban structure and promoting the use of public transportation are integral to the creation of low-carbon cities and regions. The government will give support to the formulation of regional planning to cut greenhouse gas emissions, to the implementation of measures based on this planning, to securing suitable locations for urban functions such as large-scale facilities used by many people, and to building up urban functions by improving and revitalizing city centers. The government will also improve the convenience of public transport by opening new railway lines and introducing Light Rail Transit (LRT) and Bus Rail Transit (BRT) systems, and will promote comprehensive urban and regional transportation strategies.

In addition, the government will conserve green areas and promote urban greening, encourage the effective use of the resources and energy of drainage systems, promote shared energy use at district or block level, and facilitate the effective use of the various

resources and energy sources of rural areas.

(2) Traffic and transportation networks with low carbon dioxide emissions

With the aim of bringing about traffic and transportation networks with low carbon dioxide emissions, the government will encourage the use of public transport, transition toward intensive urban structure, encourage bicycle use, increase the efficiency of goods distribution by shifting from the use of trucks to modes of transportation with lower environmental impact (modal shift), and facilitate the smoother flow of traffic.

To achieve these aims, the government will put in place rail and bus networks that have low carbon dioxide emissions, and will concentrate urban functions. Specifically, the government will improve the convenience of public transportation by improving or securing wide-area and main-line bus routes, and putting into place new railway lines, LRT systems, and other infrastructure.

The government will also promote a modal shift toward rail and sea transportation of goods, which both have low carbon dioxide emissions, and promote reductions in overland distances in road transportation of international cargo. Specifically, the government will carry out projects to boost rail cargo transportation capacity; enhance the functioning of ports, which are the hubs for sea, rail, and road transport; strengthen collaboration between transportation organizations; and promote initiatives such as the Green Partnership.

Furthermore, the government will carry out traffic flow measures in order to effectively improve fuel consumption by permitting greater speed. Specifically, the government will promote congestion measures such as the construction of ring roads, introduce flexible toll policy at expressways, and improve the environment for bicycle use.

In addition, the government will work to further reduce the carbon dioxide emissions of the different means of transportation by promoting the creation of low-carbon maritime transport systems and the spread and development of energy-efficient railway systems and low-carbon trucks and buses, as well as by giving support to the introduction of

eco-drive management systems and promoting green, intelligent transportation.

Also, the government will give its support to initiatives that bring about low-carbon transportation networks based on planning for local public bodies to take a lead in curbing carbon dioxide emissions.

3. Frameworks for learning about low-carbon and sustainable societies

The government will incorporate frameworks for teaching and learning about low-carbon and sustainable societies into every educational level and situation, throughout people's lives, by collaborating with groups and individuals working with environmental issues, enhancing opportunities for Education for Sustainable Development (ESD), and promoting education that helps reduce emissions from schools and communities under the 21st Century Environmental Education Plan.

The government will further promote ESD including environmental education in school education by promoting environmental education appropriate to each educational stage through hands-on experience and other methods based on the revised government curriculum guidelines; by enhancing initiatives for learning and putting into practice specific methods for creating a low-carbon society; by increasing to 500 the number of UNESCO Associated Schools that are centers for promoting ESD; and by promoting school facilities with ecological considerations. In higher education, the government will implement the Environmental Leaders Education Program and foster Asian environmental human resources through collaborative consortiums of industry, academia, government, and the private sector.

Regarding families and communities, the government will collaborate with schools to endorse and disseminate superior initiatives for ESD that require the joint effort of the whole community, and will promote the training of coordinators. The government will also promote ESD including environmental education through the After School Environmental Education Project 21 (ASEEP21) and the Ecofamily project, which encourages the use of environmental education tools such as environmental household account books.

4. Urging changes to business styles and lifestyles

(1) Diligent energy saving, use of IT, promotion of the 3Rs

In order to bring about changes in business styles and lifestyles, the government will promote initiatives that allow people to actually feel in their daily lives the advances in the creation of a low-carbon society. These include diligent energy-saving initiatives that involve a continual awareness of carbon reduction, and styles of living, way of working, and business utilizing Green IT that allow people to feel the compatibility of convenience and low carbon. Initiatives toward things such as car sharing, which involves a shift in consciousness from ownership to utilization of functions, and the 3 Rs (reduce, reuse, recycle) will be promoted. Also, the government will encourage public debate to reevaluate lifestyles that involve staying awake until increasingly late hours.

Regarding diligent energy-saving initiatives, the government's Team Minus 6% campaign will collaborate with various media such as music, film, fashion, and sports to save electricity through Cool Biz (in fiscal 2008 the Cool Biz + campaign called for people to adopt one further action to help prevent global warming) and Warm Biz, and the government will work to spread domestic activities such as the use of reusable shopping bags and eco-cooking, as well as eco-driving. Advertising and events will also be carried out using photographs and visual images to spread awareness of global warming and to put across initiatives toward a low-carbon society in a readily understandable format.

Moreover, the government will disseminate examples of energy-saving ideas through its National Energy-saving Campaign, and will develop a nationwide Eco-Action-Point scheme, under which people can acquire points through the purchase of energy-efficient appliances or other products or services that contribute to reducing greenhouse gas emissions; these points can later be exchanged for goods, etc.

Regarding the use of IT, a model for a sustainable nation with ubiquitous networks

founded on environmental principles will be developed and verified in “ubiquitous special zones,” and the use of IT for saving energy in society will be demonstrated. This will allow the establishment of initiatives to reduce carbon dioxide emissions from homes, businesses, and social infrastructure, as well as methods to assess the results of emissions reductions.

A group to study the dissemination of car sharing will be launched during fiscal 2008, and by examining ways to resolve the issues and increase convenience, the scheme will be made attractive in both environmental and economic terms. At the same time, Environmentally Sustainable Transport (EST) will be spread by measures such as encouraging people to shift toward means of transport with low environmental impact.

With regard to the 3Rs, in order to improve resource productivity and so on, the government will work toward creating frameworks concentrating on reduce and reuse, charging for household waste, reducing disposable plastic bags in Japan and calling for other countries to follow suit, and thorough separation of different types of waste. The government will also carry out studies relating to the Act on the Promotion of Effective Utilization of Resources (Act No. 48 of 1991), and will implement model projects in order to create superior precedents of resource-efficient manufacturing through collaboration among the companies in the supply chain.

(2) Study of daylight saving time introduction

The government will specify the points of controversy with regard to daylight saving time in order to build the national consensus necessary for its introduction.

Specifically, the government will carry out a basic survey of the results and costs of introducing the system, and will examine the need for improving the control and information systems relating to administrative tasks and private-sector businesses, taking into consideration the status of studies of a daylight saving time bill.

In the event that daylight saving time is to be introduced, the government will ensure that citizens and businesses are fully informed, and as things like adjusting international

flight timetables, modifying traffic lights and other traffic safety facilities, modifying the control and information systems of private-sector businesses, and dealing with work schedules will be particularly important issues, necessary measures for them will be put in place.

(3) Cool Earth Day

July 7 every year has been designated Cool Earth Day in Japan, when the steps toward the low-carbon society are shared among the Japanese people.

Every year various PR activities and events like the Tanabata (Star Festival) Light Down, which was held in fiscal 2008, will be held to encourage a shift in the awareness of the Japanese people toward the low-carbon society.

Specifically, the number of facilities participating in the Tanabata Light Down in different parts of Japan will be increased through advertising in newspapers and other media, the holding of count-down events, encouraging the understanding of children toward global warming through activities to spread information in schools, and the promotion of initiatives to make people think about local production for local consumption.

Moreover, the government will implement year-round efforts through the Team Minus 6% activities, such as calling on citizens to participate in national efforts to prevent global warming (the “six actions” such as Cool Biz and electricity usage habits, carbon dioxide reduction of one kilogram per person), and holding various PR activities and events to encourage understanding among the people toward the low-carbon society.

(4) Support for initiatives by NGOs and community groups

The government will collaborate with a variety of different actors, such as NGOs, community groups, citizens, companies, and the administration, with the aim of established and spreading across the country activities that are rooted in the community, such as region-wide citizens’ movements, thus creating a society in which individuals

act starting from what is closest at hand.

To achieve this, the government will support the initiatives of organizations of different types, such as the Centers for Climate Change Actions and regional committees, and the initiatives of climate change action officers. It will also support environmental conservation initiatives carried out through partnerships of regional NGOs, NPOs, companies, regional public bodies, etc. Moreover, the government will support community funds that give financial and non-financial support to the initiatives of organizations, NGOs, etc., that have close links to the community and demonstrate leadership; it will support businesses consulting on the emission reduction initiatives of companies and individuals; and it will facilitate such initiatives. The government will also support, through regional industry-university-government collaboration, the development of new products and services that contribute to bringing about a low-carbon society, and the expansion of markets for these products and services, by promoting Industrial Cluster Project.

Specifically, the government will elicit initiatives that use local creativity and ideas and disseminate them nationally; it will call for action on the part of the people through the challenge to reduce carbon dioxide emissions by one kilogram per person per day, etc.; it will give support to the diverse environmental conservation activities of NGOs and NPOs through consultations and information provision by intermediate support organizations; it will formulate guidelines for community funds; it will carry out projects giving incentives for region-wide citizens' movements; and it will give support to strengthening regional networks between industry, academia, and the government.