Appendix I

"Kyoto Protocol Target Achievement Plan", totally revised March 28, 2008, appendix table

Table-1 List of Measures and Policies on Energy-originated Carbon Dioxide

Table-2 List of Measures and Policies on Non-energy-originated Carbon Dioxide

Table-3 List of Measures and Policies on Methane and Nitrous Oxide

Table-4 List of Measures and Policies on Three Fluorinated Gases

Table-5 List of Measures and Policies on Greenhouse Gas Sinks

Table-6 Cross-sectoral Policies

(Appendix 1) Table-1 List of Measures and Policies on Energy-originated Carbon Dioxide

*This indicates an assumption other than countermeasure evaluation index and its estimate made in calculating the estimated volume of emissions reductions for each countermeasure at the time of drafting this Plan

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect: Estimated Volume of Emissions Reductions	Countermeasure Effect: Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
(i) Low-carbon Urban/Regional Structures and Socioeconomic Systems A. Low-carbon Urban/Regional Designs						
○ Realization of Compact, Low-carbon Urban Structures						
Realization of compact urban structures		Local government: -Implementing businesses related to town development -Appropriately utilizing city planning systems	-Promoting buildup of urban functions by means of maintaning and revitalizing central urban districts -Supporting businesses related to town development -Strengthening site restrictions for large-scale customer-attracting facilities with city planning systems -Considering evaluation methods and guidelines for accurately monitoring and projecting CO_2 reduction effects, etc. -Providing comprehensive support for programs and businesses based on coordinated urban/regional transport strategies	Local government: -Implementing businesses related to town development -Appropriately utilizing city planning systems	($10,000t-CO_2$)	-
	2008 -				2008 -	
	2009 -				2009 -	
	2010 -				2010 -	
	2011 -				2011 -	
	2012 -				2012 -	
Realization of cities with minimal environmental loads (Compact City)	No. of regions with CO_2 reduction plans (unit: location)	Local government and business operator: -Developing public transport systems and expanding their utilization -Utilizing untapped energy and natural capital	- Supporting the establishment of effective CO_2 reduction plans through reduction simulations on area-wide measures including the promotion of public transport utilization and the untapped energy and natural capital usage	-Promoting public transport utilization -Utilizing renewable energy -Developing green areas	($10,000t-CO_2$)	Efficiency improvement of planned promotion of effective area-wide measures
	2008 20				2008 -	
	2009				2009 -	
	2010				2010 -	
	2011				2011 -	
	2012				2012 -	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
Utilization of the Special Zones for Structural Reform System for global warming countermeasures	No. of approved plans for relevant special zones		Local government: -Making a proposal for a special regulatory measure -Applying for approval for a special zone -Developing businesses by utilizing the special regulatory measure Private business operator, etc: -Making a proposal for a special regulatory measure -Developing businesses by utilizing the special regulatory measure	○ Proposal for a special regulatory measure -Inviting proposals for a special regulatory measure in a special zone and requests for regulatory reform to be implemented nationwide, twice yearly (spring and fall), in each one-month period designated as "Intensive invitation month for special zone and regulatory reform proposals." -During the same periods as the above invitation of proposals, encouraging proposals by conducting a "caravan," in which national government officials will visit each local area to explain about the system and the way for proposal and to provide consultation for specific proposals and requests from private enterprises, NPOs, local governments, etc. ○ Application for approval for a special zone -Inviting applications for approval for a special zone basically three times yearly, around May, September and January.	○ Establishing a forum to confer with relevant organizations for business development utilizing a special regulatory measure ○ Developing an environment, including informing local residents for business development utilizing a special regulatory measure	($10,000t\text{-}CO_2$)		○ The estimated volume of emissions reductions for this countermeasure has been calculated by summing up the estimated volumes of emissions reductions of all the programs each ministry will implement with the Special Zones for Structural Reform System. Therefore, this estimated volume is duplicative. ○ The Assessment and Investigation Committee of the Headquarters for the Promotion of Special Zones for Structural Reform will assess in FY2008 whether to expand the special measures below nationwide. In the case the Committee determines to expand any of the measures nationwide and cancels its special zone plan, the effects of similar measures newly implemented in other areas cannot be monitored in this scheme. They will be calculated only by the ministries in charge of the regulation.
	2008	2				2008	5.3	
	2009	2				2009	5.3	
	2010	2				2010	5.3	
	2011	2				2011	5.3	
	2012	2				2012	5.3	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
					Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
Establishment of the "Global Warming Countermeasures Promotion Program for Regions"	-	Local government: -Applying for approval for a regional revival plan utilizing the policies listed in the Program Local stakeholder (business operator, consumer, etc.): -Working to reduce greenhouse gases in accordance with the regional revival plan	Supporting local efforts based on the "Global Warming Countermeasures Promotion Program for Regions," which systemizes each ministry's policies encouraging proactive efforts to reduce greenhouse gases with local originality and ingenuity	Establishing and implementing a regional revival plan utilizing the policies listed in the Program	($10,000t\text{-}CO_2$)	
	2008				2008 -	
	2009				2009 -	
	2010				2010 -	
	2011				2011 -	
	2012				2012 -	
○ Measures at the Block and District Levels						
○ Promotion of Area-wide Energy Usage						
Promotion of area-wide energy usage	Efficiency improvement through area-wide usage (including parts of "promotion of renewable energy measures," "promotion of introduction of cogeneration and fuel cells," "dissemination of highly-efficient commercial-use air conditioners," etc.	Business operator: -Implementing businesses matching consumer needs -Implementing efficiency improvement through introduction of high-efficient devices -Implementing technology development, such as improvements in system efficiency -Verifying the introduced systems in terms of energy efficiency, environmental performance, etc.	-Creating a promotional framework by establishing a committee -Implementing a leading model project -Developing an introduction manual -Implementing environmental improvement -Providing assistance through such systems as low-interest loan and subsidy	-Promoting area-wide energy usage with city planning systems	Efficiency improvement through area-wide usage (including parts of "promotion of renewable energy measures," "promotion of introduction of cogeneration and fuel cells," "dissemination of highly-efficient commercial-use air conditioners," etc.	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
					Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
○ Efforts Transcending the Individual Boundaries Between Actors						
Promotion of global warming countermeasures for tenant buildings or the like at local levels	Included in "improvement of the energy efficiency performance of buidlings" and "dissemination of energy management systems"	Building owner, tenant, etc: -Promoting cooperative efforts	−Implementing model projects supporting cooperation between building owners, tenants, etc.	-Publicizing good practices by using Regional Councils -Providing consultation service -Utilizing support systems for small and medium sized enterprises	Included in "improvement of the energy efficiency performance of buidlings" and "dissemination of energy management systems"	
○ Decarbonization of Urban Areas Through Improving the Thermal Environment by Urban Greening and Other Heat Island Countermeasures						
Decarbonization of urban areas through improving the thermal environment by urban greening and other heat island countermeasures	Area of green roofs (ha)	Private enterprise: -Implementing projects constributing to heat island countermeasures and CO_2 emissions reduction	-Subsidizing private projects through the pilot project for Cool City central blocks -Indirectly subsidizing private projects through the comprehensive assistance project for developing green spaces environment -Implementing tax breaks through the Authorization System of Greening Facilities Planning		($10,000t-CO_2$)	Assumptions made in calculation ○ Area of green roofs Nationwide 52ha (FY2002), 105ha (FY2004), 160ha (FY2006) ○ CO_2 emissions intensity of electricity 0.425 ($kg-CO_2/kWh$) (base value) Although many heat island countermeasures are being taken, we have calculated the estimated volume of emissions reductions from dissemination of rooftop greening only because of lack of knowledge on the CO_2 emissions reduction effects from other countermeasures than rooftop greening.
	2008	73			2008 0.3-1.4	
	2009	98			2009 0.4-1.8	
	2010	123			2010 0.5-2.3	
	2011	149			2011 0.6-2.8	
	2012	174			2012 0.7-3.2	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
					Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
○ Measures for Extending the Useful Life of Housing						
(i) Low-carbon Urban/Regional Structures and Socioeconomic Systems B. Low-carbon Transport and Logistics System Designs						
○ Construction of Low-carbon Transport Systems						
○ Formation of Low-carbon Logistics Systems						
(ii) Measures and Policies by Sector (*Industrial*, *Consumer*, *Transport*, etc.) A. Efforts in the *Industrial* Sector (Manufacturers, etc.) (a) Promotion and Reinforcement of Voluntary Action Plans of Industry						

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect: Estimated Volume of Emissions Reductions	Countermeasure Effect: Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
○ Promotion and Reinforcement of Voluntary Action Plans of Industry (Businesses in the *Industrial* Sector)						
Steady implementation and assessment and verification of voluntary action plans	Appropriate implementation of strict assessments and verifications by the Government from the viewpoint of improving the transparency, credibility and probability of targets achievement of voluntary action plans of the *Nippon Keidanren* and individual businesses	(Nippon Keidanren, each business) -Working to control emissions such as improving energy consumption intensity through steady implementation of its voluntary action plan, and achieving the target in the plan (Nippon Keidanren) -Establishing CO_2 emission reduction targets for the headquarters and other offices of its participating businesses and member enterprises. -Promoting efforts such as expansion of environmental account book use in the homes of employees belonging to its member enterprises (Each business) (1) Formulating a new plan by a business which has no plan (2) Quantifying targets by a business which has qualitative targets only (3) Raising targets in the case where targets are already overachieved	Encouraging the businesses to make the following efforts through strict assessments and verifications by the Government: (1) Formulating a new plan by a business which has no plan; (2) Quantifying targets by a business which has qualitative targets only; (3) Undergoing strict assessments and verifications by the Government; and (4)Raising targets in the case where targets are already overachieved.	-	(10,000t-CO_2)	- It is assumed that the targets in the voluntary action plans by all businesses will be achieved. - The calculations of reduction effects have been conducted for the 49 businesses marked with a circle(○).
	2008				2008	
	2009				2009	
	2010				2010	approx. 6,530
	2011				2011	
	2012				2012	

Businesses Within the Jurisdiction of the Ministry of Finance

Business (Plan Formulator)	Performance Indicator	Base Year	Target Level
○ Brewers Association of Japan	CO_2 emissions	FY1990	-6%
○ Japan Tobacco Inc.	CO_2 emissions	FY1995	-32% (FY2008)

Businesses Within the Jurisdiction of the Ministry of Health, Labor and Welfare

Business (Plan Formulator)	Performance Indicator	Base Year	Target Level
○ Federation of Pharmaceutical Manufacturers' Associations of Japan / Japan Pharmaceutical Manufacturers Association	CO_2 emissions	FY1990	±0%

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
					Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*

Businesses Within the Jurisdiction of the Ministry of Agriculture, Forestry and Fisheries			
Business (Plan Formulator)	Performance Indicator	Base Year	Target Level
○ Japan Starch and Saccharification Industry Association	CO_2 emissions intensity	FY2005	-3%
○ Japan Dairy Industry Association	energy consumption intensity	FY2000	-0.5% (annual rate)
○ Japan Soft Drink Association	CO_2 emissions intensity	FY1990	-6%
○ Japan Baking Industry Association	CO_2 emissions intensity	FY2004	-1% (annual rate)
○ Japan Beet Sugar Association	CO_2 emissions intensity	FY2000	-3%
○ Japan Frozen Food Association	CO_2 emissions intensity	FY1990	-10%
○ Japan Oilseed Processors Association	CO_2 emissions intensity	FY1990	-15%
○ All Nippon Kashi Association	CO_2 emissions	FY1990	-6%
○ Japan Sugar Refiners' Association	CO_2 emissions	FY1990	-22%
○ Japan Ham and Sausage Cooperative Association	CO_2 emissions intensity	FY2003	-5%
○ Flour Millers Association	CO_2 emissions intensity	FY1990	-5%
○ All Japan Coffee Association	CO_2 emissions intensity	FY2005	-3%
○ Japan Convenience Foods Industry Association	CO_2 emissions intensity	FY1990	-24%
○ Japan Soy Sauce Association	CO_2 emissions	FY1990	-6%
○ Japan Canners Association	energy consumption intensity	FY1990	±0%
○ Japan Mayonnaise and Dressing Association	CO_2 emissions intensity	FY1990	-30%
Businesses Within the Jurisdiction of the Ministry of Economy, Trade and Industry			
Business (Plan Formulator)	Performance Indicator	Base Year	Target Level
○ Japan Iron and Steel Federation	energy consumption	FY1990	-10%
○ Japan Chemical Industry Association	CO_2 emissions intensity	FY1990	-20%
○ Japan Paper Association	CO_2 emissions intensity	FY1990	-16%
	energy consumption intensity	FY1990	-20%
○ Japan Cement Association	energy consumption intensity	FY1990	-3.8%
○ 4 electrical/electronics-related groups	CO_2 emissions intensity	FY1990	-35%
○ Japan Auto Parts Industries Association	CO_2 emissions	FY1990	-7%
	CO_2 emissions intensity	FY1990	-20%
○ Japan Automobile Manufacturers Association	CO_2 emissions	FY1990	-12.5%
○ Japan Mining Industry Association	energy consumption intensity	FY1990	-12%
○ Lime Manufacture Association	CO_2 emissions	FY1990	-8%
	energy consumption	FY1990	-8%
○ Japan Rubber Manufacturers Association	CO_2 emissions	FY1990	-6%
	energy consumption intensity	FY1990	-8%

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
					Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
	Business (Plan Formulator)		Performance Indicator	Base Year	Target Level	
	○	Japan Textile Finishers' Association	CO_2 emissions	FY1990	-41%	
			energy consumption	FY1990	-37%	
	○	Japan Aluminium Association	energy consumption intensity	FY1995	-11%	
	○	Flat Glass Manufacturers Association of Japan	CO_2 emissions	FY1990	-22%	
			energy consumption	FY1990	-21%	
	○	Japan Glass Bottle Association	CO_2 emissions	FY1990	-40%	
			energy consumption	FY1990	-30%	
	○	Japan Auto-Body Industries Association	CO_2 emissions	FY1990	-10%	
	○	Japanese Electric Wire & Cable Makers' Association	(copper/aluminium) energy consumption	FY1990	-27%	
			(fiber optic) energy intensity	FY1990	-77%	
	○	Japan Bearing Industrial Association	CO_2 emissions intensity	FY1997	-13%	
	○	Japan Society of Industrial Machinery Manufacturer	CO_2 emissions	FY1997	-12.2%	
	○	Japan Copper and Brass Association	energy consumption intensity	FY1995	-9.05%	
	○	Japan Construction Equipment Manufacturers Association	energy consumption intensity	FY1990	-15%	
	○	Limestone Association of Japan	energy consumption intensity	FY1990	-10.3%	
	○	Japan Sanitary Equipment Industry Association	CO_2 emissions	FY1990	-25%	
	○	Japan Machine Tool Builders' Association	energy consumption	FY1997	-6%	
			energy consumption intensity	FY1997	-6%	
	○	Japan Petroleum Development Association	CO_2 emissions intensity	FY1990	-20%	
	○	Japan Industrial Vehicles Association	CO_2 emissions	FY1990	-10%	
	Businesses Within the Jurisdiction of the Ministry of Land, Infrastructure, Transport and Tourism					
	Business (Plan Formulator)		Performance Indicator	Base Year	Target Level	
	○	Shipbuilders' Association of Japan / Cooperative Association of Japan Shipbuilders	energy consumption intensity	FY1990	−10%	
	○	Japan Marine Equipment Association	energy consumption intensity	FY1990	−20%	
	○	Japan Boating Industry Association	energy consumption intensity	FY2002	−18%	
	○	Japan Association of Rolling Stock Industries	CO_2 emissions intensity	FY1990	−10%	
	○	Japan Federation of Construction Contractors / Japan Civil Engineering Contractors' Association, Inc. /Building Contractors Society	CO_2 emissions intensity	FY1990	−12%	
	○	Japan Federation of Housing Organizations	CO_2 emissions	FY1990	−20%	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect: Estimated Volume of Emissions Reductions	Countermeasure Effect: Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
(ii) Measures and Policies by Sector (*Industrial*, *Consumer*, *Transport*, etc.) A. Efforts in the *Industrial* Sector (Manufacturers, etc.) (b) Promotion of Introduction of Highly Energy-efficient Equipment and Devices						
○ Dissemination of Energy-efficient Devices in the Manufacturing Field						
Dissemination of energy-efficient devices in the manufacturing field	(a) Highly efficient industrial furnace (unit) (b) Highly efficient boiler (unit) 2008: 2009: 2010: (a) approx. 1,000-1,500 (b) approx. 11,000-15,000 2011: 2012:	Business operator: -Introducing energy-efficient equipment	-Implementing support measures for the introduction of energy-efficient equipment by business operators	-Introduction support -Familiarization	($10,000t-CO_2$) 2008: 2009: 2010: 340-490 2011: 2012:	-Amount of energy saved with highly efficient industrial furnaces (small and medium sized enterprises) -Amount of energy saved with highly efficient boilers (small and medium sized enterprises) -Amount of energy saved with next-generation coke ovens
○ Dissemination of Fuel-efficient Construction Machinery in the Construction Field						
Dissemination of Fuel-efficient Construction Machinery in the Construction Field	Dissemination rate of fuel-efficient construction 2008: 21 2009: 25 2010: 30 2011: 35 2012: 41	Manufacturer: -Developing technology of fuel-efficient construction machinery and providing information to builders Builder: -Utilizing fuel-efficient construction machinery	-Commencing operation of the system to designate fuel-efficient construction machinery -Utilizing fuel-efficient construction machinery in public construction projects -Providing information to builders -Implementing support measures for dissemination of fuel-efficient construction machinery	−Utilizing fuel-efficient construction machinery in public construction projects	($10,000t-CO_2$) 2008: 14 2009: 17 2010: 20 2011: 23 2012: 27	-Total emissions volume from construction machinery: 11.11 million t-CO_2/year -Percentage of emissions from the construction machinery subject to the policies in total emissions volume: 60% (backhoe, tractor shovel, bulldozer) -Reduction rate of CO_2 emissions from the construction machinery subject to the policies: 10%

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect: Estimated Volume of Emissions Reductions	Countermeasure Effect: Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
(ii) Measures and Policies by Sector (*Industrial, Consumer, Transport,* etc.) A. Efforts in the *Industrial* Sector (Manufacturers, etc.) (c) Thorough Energy Management, etc.						
○ Thorough Energy Management in Factories and Workplaces						
Thorough energy management in factories and workplaces	(a) Effect of the Energy Conservation Act (10,000kl; crude oil equivalent) (b) Cooperation among multiple business operators (10,000kl; crude oil equivalent) 2008: 2009: 2010: (a) 210 (b) 45-100 2011: 2012:	Business operator: -Energy-saving effort	-Appropriately administrating the Energy Conservation Act	-	($10,000t\text{-}CO_2$) 2008: 2009: 2010: 820-980 2011: 2012:	-Improvement of energy consumption intensities of the business operators that will be newly regulated by the revision of the Energy Conservation Act to the current levels of the second class designated factories -Implementation of around three or four projects annually under cooperation among multiple business operators in major industrial complexes, starting from priority ones
○ Implementation of Emissions Reduction Measures for Small and Medium Sized Enterprises						
Implementation of emissions reduction measures for small and medium sized enterprises	No. of verifications 2008: 485 2009: 1,455 2010: 2,910 2011: - 2012: -	Large enterprise: -Purchasing domestic credits -Providing financial support to the efforts to reduce greenhouse gas emissions by small and medium sized enterprises Small and medium sized enterprise: -Reducing greenhouse gas emissions Third-party body: -Verifying the volume of emissions reductions	-Establishing a system to enable the transfer of the volume of emissions reductions from small and medium sized enterprises to large ones -Urging large enterprises to raise the targets of their voluntary action plans through this scheme (anticipating raises equivalent to at least 1.69 million t-CO_2)	-	($10,000t\text{-}CO_2$) 2008: 30 2009: 91 2010: 182 2011: - 2012: -	-Percentage of the enterprises carrying out equipment investment with payout time of over three years: 7.65% -Percentage of the enterprises that have used subsidies or public financing for equipment investment: 27.9% -Reduction volume per project for CO_2 emissions reduction by a small or medium sized company: 313t-CO_2/year-project

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
					Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
○ Efforts in the Agriculture, Forestry and Fisheries Industry						
Measures to reduce greenhouse gas emissions in greenhouse horticulture /agricultural machinery	(1) No. of energy-saving devices introduced (2) No. of energy-saving equipment introduced (3) No. of energy-saving model facilities introduced (4) No. of energy-saving agricultural machinery 2008: (1) 22,400 (2) 21,344 (3) 18 (4) 52,418 (5) 5 2009: (1) 30,420 (2) 28,514 (3) 33 (4) 71,718 (5) 5 2010: (1) 38,440 (2) 35,684 (3) 48 (4) 90,418 (5) 5 2011: (1) 45,790 (2) 42,854 (3) 48 (4) 110,818 (5) 5	Manufacturer: -Developing equipment, device and material contributing to greenhouse gas emissions reduction Dealer: -Selling equipment, device and material contributing to greenhouse gas emissions reduction National private organization: -Rating energy efficiency for equipment, device and material contributing to greenhouse gas emissions reduction -Providing information to farmers Farmer: -Choosing energy-saving equipment, device and material -Practicing energy-saving production management techniques	-Supporting the model introduction of advanced energy-saving heating systems -Supporting the rating of energy-saving material and device -Supporting the utilization of methane fermentation from domestic animal waste to greenhouse horticulture -Supporting the introduction of oil-free greenhouse horticultural systems -Establishing an Exploratory Committee on Energy-saving Measures for Greenhouse Horticulture to formulate Check Sheet for Energy-saving Production Management in Greenhouse Horticulture and Manual for Energy-saving Production Management in Greenhouse Horticulture -Requesting relevant organizations to create a campaign policy to accelerate energy-saving efforts in greenhouse horticulture -Promoting the dissemination of agricultural machinery contributing to greenhouse gas emissions reduction -Supporting the establishment of local models to utilize biodiesel for agricultural machinery	-Familiarization -Promoting policies for oil-saving or oil-free greenhouse horticulture	($10,000t\text{-}CO_2$) 2008: 10 2009: 13.7 2010: 17.4 2011: 20.6	Assumptions made in calculation (cumulative in FY2010 relative to FY2005 as base year) (1) Introduction of energy-saving greenhouse horticulture equipment -No. of areas with energy-saving greenhouse horticulture equipment introduced: 45 (2) Introduction of oil substitution systems -No. of areas with oil substitution systems introduced: 3 (3) Introduction of high-efficient heaters -No. of high-efficient heaters introduced: 3,490 (4) Introduction of energy-saving equipment and material a. No. of multiple-staged, variable temperature devices introduced: 34,950 b. No. of locations with an air circulation device introduced: 32,630 c. No. of locations with a multilayer coated device introduced: 3,054 (5) Dissemination of energy-saving agricultural machinery -No. of energy-saving agricultural machines (grain FIR dryer, high speed tiller) disseminated: 90,418 -Rate of reduction in energy consumption by introducing energy-saving agricultural machinery: 10%, 15% (6) Utilization of biodisel for agricultural machinery -No. of model areas: 5

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
	2012	(1) 53,140 (2) 50,024 (3) 48 (4) 131,718 (5) 5				2012	23.8	
Energy-saving measures for fishing vessels	Increasing rate of the fishing vessels with energy-saving technology introduced out of all fishing vessels (compared to		Manufacturer, dealer: -Developing energy-saving vessels, equipment, etc. -Providing information to fishery operators Fishery operator: -Choosing energy-saving equipment in renewing fishing vessels	-Promoting development and practical application of energy-saving technologies for fishing vessels -Promoting their dissemination by acquiring energy-saving and labor-saving substituting vessels or other measures.	- Familiarization	(10,000t-CO_2)		-Emissions volume based on the fuel consumption by fishing vessels in FY2005: 6.78 million t-CO_2 -Annual replacement rate of fishing vessels: approx. 1%/year -Energy-saving effect by replacing fishing vessels: 10% compared to a substituted vessel
	2008	4.2				2008	approx. 2.8	
	2009	5.6				2009	approx. 3.8	
	2010	7				2010	approx. 4.7	
	2011	8.4				2011	approx. 5.7	
	2012	9.8				2012	approx. 6.6	
○ Efforts by the Industrial Community in the *Consumer* and *Transport* Sectors								

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect: Estimated Volume of Emissions Reductions	Countermeasure Effect: Assumption Made in Calculating the Estimated Volume of Emissions Reductions*

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

B. Efforts in the *Commercial and Other* Sector

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

○ Promotion and Reinforcement of Voluntary Action Plans of Industry (Businesses in the *Commercial* Sector)

(10,000t-CO_2)	
2008	
2009	
2010	130*
2011	
2012	

- It is assumed that the targets in the voluntary action plans by all businesses will be achieved.
- The calculations of reduction effects have been conducted for the 19 businesses marked with a circle(○).

These effects are duplicative with those of other energy-saving

Businesses Within the Jurisdiction of the Financial Services Agency			
Business (Plan Formulator)	Performance Indicator	Base Year	Target Level
○ Japanese Bankers Association	energy consumption	FY2000	-12%
○ Life Insurance Association of Japan	energy consumption	FY2006	-2%
○ General Insurance Association of Japan	energy consumption	FY2000	-18%
Businesses Within the Jurisdiction of the Ministry of Internal Affairs and Communications			
Business (Plan Formulator)	Performance Indicator	Base Year	Target Level
○ Telecommunications Carriers Association	energy consumption intensity	FY1990	-30%
○ Telecom Service Association of Japan	energy consumptionintensity	FY2006	-1%
○ National Association of Commercial Broadcasters in Japan	CO_2 emissions intensity	FY2004	-10%
○ NHK (Japan Broadcasting Corporation)	CO_2 emissions intensity	FY2006	-8%
○ Japan Cable and Telecommunications Association	energy consumption intensity	FY2006	-6%
○ Japan Satellite Broadcasting Association	energy consumption intensity	FY2006	-10%
Businesses Within the Jurisdiction of the Ministry of Education, Culture, Sports, Science and Technology			
Business (Plan Formulator)	Performance Indicator	Base Year	Target Level
○ Federation of All Japan Private Schools	CO_2 emission	FY2007	-1% (annual rate)
Businesses Within the Jurisdiction of the Ministry of Health, Labor and Welfare			
Business (Plan Formulator)	Performance Indicator	Base Year	Target Level
○ Japanese Consumers' Co-operative Union	CO_2 emissions intensity	FY2002	-3.4% (FY2009)
Businesses Within the Jurisdiction of the Ministry of Agriculture, Forestry and Fisheries			
Business (Plan Formulator)	Performance Indicator	Base Year	Target Level
○ Japan Processed Foods Wholesalers Association	energy consumption	FY2000	-10%

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
					Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
	Businesses Within the Jurisdiction of the Ministry of Economy, Trade and Industry					
	Business (Plan Formulator)		Performance Indicator	Base Year	Target Level	
	○ Japanese Chain Stores Association		energy consumption intensity	FY1996	-4%	
	○ Japan Franchise Association		energy consumption intensity	FY1990	-23%	
	○ Japan Department Stores Association		energy consumption intensity	FY1990	-7%	
	○ Meeting of Large Household Appliance Retailers		energy consumption intensity	FY2006	-4%	
	○ Japan DIY Industry Association		energy consumption intensity	FY2004	±0%	
	○ Japan Information Technology Services Industry Association		energy consumption intensity	FY2006	-1%	
	○ Japan Association of Chain Drug Stores		energy consumption intensity	FY2004	-15%	
	○ Japan Foreign Trade Council, Inc.		CO_2 emissions	FY1998	-40%	
	○ Japan LP Gas Association		energy consumption intensity	FY1990	-7%	
	○ Japan Leasing Association		energy consumption intensity	FY2002	-3%	
	Businesses Within the Jurisdiction of the Ministry of Land, Infrastructure, Transport and Tourism					
	Business (Plan Formulator)		Performance Indicator	Base Year	Target Level	
	○ Japan Warehousing Association Inc.		energy consumption intensity	FY1990	-8%	
	○ Japan Association of Refrigerated Warehouses		energy consumption intensity	FY1990	-8%	
	○ Japan Hotel Association		energy consumption intensity	FY1995	-6%	
	○ Japan Ryokan Association		CO_2 emissions intensity	FY1997	-6%	
	○ Japan Ryokan & Hotel Association		energy consumption intensity	FY1999	-4%	
	○ Japan Automobile Service Promotion Association		CFCs destroyed	FY2004	-10%	
	○ Real Estate Companies Association of Japan		energy consumption intensity	FY1990	±0%	
	Businesses Within the Jurisdiction of the Ministry of the Environment					
	Business (Plan Formulator)		Performance Indicator	Base Year	Target Level	
	○ National Federation of Industrial Waste Management Associations		greenhouse gas emissions	FY2000	±0%	
	○ Japan Newspaper Publishers & Editors Association		CO_2 emissions	FY2005	-5%	
	○ Zenkoku Pet Kourigyou Kyoukai (National Retail Pet Association)		CO_2 emissions	FY2006	-6%	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
(ii) Measures and Policies by Sector (Industrial, Consumer, Transport, etc.) B. Efforts in the Commercial and Other Sector (b) Initiatives by Public Organizations								
○ Initiatives by the National Government								
Emissions reductions by public organizations (all government ministries)	Reduction rate compared to FY2001 levels (%)		National government: -Implementing necessary measures toward the target achievement based on the National Government Action Plan and each ministry's implementation plan under this Plan	-Implementing and inspecting the National Government Action Plan -Implementing and inspecting each ministry's implementation plan (Major specific efforts) -Promoting intensively *greening* of national government buildings across the country by means of photovoltaic power generation, building planting, etc. -Promoting the pioneering introduction based on the Green Purchasing Act (including disseminating highly-efficient lighting)	－	(10,000t-CO_2)		This estimated volume of emissions reductions has been caluculated by summing up the volumes of emissions reductions by all ministry's reduction plans in their implementaion plans
	2008	－				2008	－	
	2009	－				2009	－	
	2010	8				2010	16	
	2011	8				2011	16	
	2012	8				2012	16	
○ Initiatives by Local Governments								
○ Promotion of the Initiatives by Other Public Organizations								
(ii) Measures and Policies by Sector (*Industrial, Consumer, Transport,* etc.) B. Efforts in the *Commercial and Other* Sector (c) CO_2 saving of Buildings, Equipment and Devices								

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
						Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
○ Improvement of the Energy Efficiency Performance of Buildings							
Improvement of the energy efficiency performance of buildings	Relevance ratio of FY1999 energy-saving criteria for new buildings (%)		Client: -Constructing buildings with high energy efficiency performance in new construction, expansion or renovation -Using the CASBEE Owner: -Improving energy efficiency performance through repair, maintenance, etc. -Using the CASBEE Architect: -Implementing and using the CASBEE -Providing information to clients or other stakeholders Builder: -Supplying buildings with high energy efficiency performance -Developing and using energy-saving technology -Using the CASBEE -Providing information to clients or other stakeholders Manufacturer of building material and equipment: -Promoting technology development -Providing information to clients or other stakeholders	-Improving energy efficiency performance of buildings by the amendment of the Energy Conservation Act: ...Expanding the coverage of buildings subject to notification obligation concerning energy-saving measures to include certain small- to medium-sized buildings; and ...Reinforcing regulations regarding energy-saving measures for large-scale buildings -Providing support through the Tax System for Promoting Investment in Energy Supply-and-demand Structure Reform -Developing and disseminating the CASBEE -Promoting the introduction of construction technologies related to energy-saving measures for small and medium sized enterprises -Providing assistance for leading technology developments by private business operators and model projects introducing CO_2-saving technologies -Fostering technical experts on architecture and construction -Subsidizing energy saving of commercial buildings -Implementing school eco-renovations -Promoting voluntary efforts by related industries	-Appropriately enforcing the notification system concerning energy-saving measures under the amended Energy Conservation Act -Using the CASBEE -Implementing energy-saving measures for local government buildings -Providing information to clients, architects or other stakeholders.	($10,000t-CO_2$)	The effects by the bill to amend the Energy Conservation Act, submitted to the 2008 ordinary Diet session, have been estimated, assuming that the energy efficiency performance of new and existing buildings will be improved further -Relevance ratio of FY1999 energy-saving criteria for new buildings: 85% (FY2010) -Amount of energy saved: approx. 8.6 million kL (crude oil equivalent)
	2008					2008	
	2009					2009	
	2010	85				2010	approx. 2,870
	2011					2011	
	2012					2012	
○ Decarbonization of Urban Areas Through Improving the Thermal Environment by Urban Greening and Other Heat Island Countermeasures							

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
○ Dissemination of Energy Management Systems								
Energy management systems	Energy-saving effect (10,000kl; crude oil equivalent)		Business operator: -Introducing an energy management system	-Providing support measures for the introduction and tachnology development of energy management systems by business operators	-Taking the initiative in introducing energy management systems	($10,000t-CO_2$)		−Energy saving effects by energy management systems in grant-aided projects
	2008					2008	−	
	2009					2009	−	
	2010	158-220				2010	520-730	
	2011					2011		
	2012					2012		
○ Improvement of the Efficiency of Devices Based on the Top-runner Standards								
Improvement of the efficiency of devices based on the Top-runner standards	Crude oil equivalent (10,000kl)		Manufacturer: -Developing and supplying highly energy-efficient devices Dealer: -Selling highly energy-efficient devices -Providing information to consumers Consumer: -Choosing a highly energy-efficient device at the time of replacement	-Expanding the range of products subject to the Top-runner standards and toughening up the standards for the products already designated -Promoting the reduction of standby power	-Familiarization -Promoting pioneering introduction based on the Green Purchasing Act	($10,000t-CO_2$)		Improvement of the efficiency of devices based on the Top-runner standards -Energy efficiency of devices -No. of households (*residential* sector), floor area (*commercial* sector) -Device ownership ratio -Average tenure of device use Reduction in standby power consumption -Dissemination rate per household
	2008	-				2008	−	
	2009	-				2009	−	
	2010	740				2010	2,600	
	2011	-				2011	−	
	2012	-				2012	−	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
○ Support for the Development and Dissemination of High-efficient Energy-saving Devices								
Dissemination of high-efficient energy-saving devices	Countermeasure evaluation index		(High-efficient water heater) Manufacturer: -Developing, producing and selling high-efficient water heaters Business operator, consumer: -Actively introducing high-efficient water heaters (High-efficient air conditioner) Manufacturer: -Developing, producing and selling high-efficient air conditioners Commercial facility client: -Actively introducing high-efficient commercial-use air conditioners (High-efficient lighting) Manufacturer, dealer: -Developing, producing and selling high-efficient lighting Business operator, consumers: -Actively introducing high-efficient lighting	(High-efficient water heater) -Implementing support measures for the introduction of high-efficient water heaters -Subsidizing the introduction to the houses with greatly reduced CO_2 emissions compared to ordinary houses -Promoting the pioneering introduction based on the Green Purchasing Act (High-efficient air conditioner) Manufacturer: -Developing, producing and selling high-efficient air conditioners Commercial facility client: -Actively introducing high-efficient commercial-use air conditioners, etc. (High-efficient lighting) -Supporting technology development toward further efficiency improvements and cost reductions of high-efficient lighting -Supporting the introduction in Regional Councils on Global Warming Countermeasures and the pioneering introduction by local governments	-Familiarization -Promoting their pioneering introduction based on the Green Purchasing Act	($10,000t-CO_2$)		(High-efficient water heater) -Cumulative no. of CO_2 refrigerant heat pump water heaters disseminated -Cumulative no. of latent heat recovery type water heaters disseminated -Coefficients of performance(COP) of heat pump water heaters, latent heat recovery type water heaters and traditional water heaters *Note: Gas engine water heaters are regarded as a type of high-efficient water heaters as well as CO_2 refrigerant heat pump water heaters and latent heat recovery type water heaters. however, the estimates for the introduction of gas engine water heaters are calculated as part of those for cogeneration. (High-efficient air conditioner) -Energy consumption efficiency of traditional combustion-type air conditioners -Energy consumption efficiency of traditional electrical-type air conditioners -Annual operating time of air conditioners (High-efficient lighting) -Amount of energy saved by LED lighting
	2008					2008	－	
	2009					2009	－	
	2010	Cumulative no. of heat pump water heaters introduced to the market: 4.46-5.20 million Cumulative no. of latent heat recovery type water heaters introduced to the market: 2.91-3.26 million Vol. of high-efficient air conditioners introduced (10,000 refrigeration tons): 92.5-141 Dissemination rate of high-efficient lighting (%):				2010	640-720	
	2011					2011		
	2012					2012		

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect			
						Estimated Volume of Emissions Reductions			Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
Dissemination of commercial-use energy-saving refrigerator-freezer	No. of facilities with energy-saving refrigerator-freezers introduced		Manufacturer: -Introducing natural refrigerant freezer units to low-temperature refrigeration equipment -Actively introducing energy-saving refrigerator-freezers	-Implementing the project for promoting the introduction of energy-saving natural refrigerant freezer units -Subsidizing energy saving for small- and medium-scale commercial facilities		($10,000t-CO_2$)			-No. of disseminated energy-saving integrated systems of refrigerator, freezer and air conditioner: approx. 10,000-16,000 facilities (FY2010) Amount of reduced electricity consumption per unit: approx. 43,000-62,000kwh -No. of energy-saving natural refrigerant freezer units introduced to low-temperature refrigeration equipment: approx. 260 facilities (FY2010), Amount of reduced electricity consumption per unit: approx. 140,000kwh
	2008	6000-8000				2008	20-30		
	2009	8000-12000				2009	20-50		
	2010	10000-16000				2010	30-60		
	2011	12000-20000				2011	30-80		
	2012	14000-24000				2012	40-90		
(ii) Measures and Policies by Sector (*Industrial, Consumer, Transport,* etc.) B. Efforts in the *Commercial and Other* Sector (d) Thorough Energy Management, etc.									
○ 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									
Implementation of energy-saving and renewable energy measures in waterworks	Vol. of emissions reductions ($10,000t-CO_2$)		Water supplier: -Implementing energy-saving and renewable energy measures	-Implementing energy-saving and renewable energy measures in waterworks -Monitoring the implementation of energy-saving and renewable energy measures in waterworks -Providing information on energy-saving and renewable energy measures		($10,000t-CO_2$)			-Surveys have been carried out for water suppliers nationwide concering the implementation of energy-saving and renewable energy measures. -The total volume has been calculated by adding up the amounts of energy saved and the amounts of renewable energy in each water supplier. -It is assumed that CO_2 emissions will be reduced by the amount of energy rationalized for energy saving and by the amount of electricity or other energy used at renewable energy facilities.
	2008	35				2008	35		
	2009	36				2009	36		
	2010	37				2010	37		
	2011	37				2011	37		
	2012	37				2012	37		

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
Implementation of energy-saving and renewable energy measures in sewerage systems	Rate of energy use of sewage sludge (%)		Local government: -Implementing energy-saving and renewable energy measures through the usage of sewage sludge/heat as the operator of sewage business	-Supporting local governments' efforts through government subsidies for the establishment of sewage facilities -Supporting the joint efforts by sewage managers and private enterprises on the utilization of sewage sludge as resource or energy source -Providing technology information on energy-saving measures	-Implementing energy-saving and renewable energy measures through the usage of sewage sludge/heat	($10,000t-CO_2$)		Energy consumption at sewage plants: 0.91 million kl (FY2010, without any countermeasures) Amount of sewage sludge produced: 2.41 million t-DS (FY2010) Percentage of organic matter in sewage sludge: 80% Digestive efficiency of sewage sludge: 50%
	2008	15				2008	56	
	2009	19				2009	73	
	2010	22				2010	90	
	2011	25				2011	108	
	2012	29				2012	126	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
					Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
Implementation of measures in waste management	-	Industrial waste management business operator: -Promoting facility improvement for waste power generation (included in the National Federation of Industrial Waste Management Associations' voluntary action plan on the environment) Consumer: -Contributing to BDF usage such as cooperating to collect waste cooking oil -Contributing to separated collection of plastic containers and packaging Business operator: -Recycling containers and packaging wastes	'-Providing the Subsidies to Promote the Establishment of a Sound Material-Cycle Society -Supporting industrial waste management business operators through global warming countermeasure projects in waste management facilities -Providing information on the promotion of the National Federation of Industrial Waste Management Associations' voluntary action plan on the environment -Creating and distributing a "manual on vehicle measures" -Enforcing the Containers and Packaging Recycling Act	-Introducing power generation facilities by subsidies when renewing or augmenting waste management facilities -Improving the system for BDF manufacturing, introducing BDF to packing trucks or other vehicles, and practicing eco-driving -Collecting container and packaging wastes separately -Promoting residents' voluntary activities and implementing familiarization and environmental education for the 3Rs -Promoting the pioneering introduction based on the Green Purchasing Act	(10,000t-CO_2)		-Emission coefficient 0.425kg-CO_2/kWh -Oil substitution 2.62kg-CO_2/L
	Increase in electricity from waste power generation: 1,125GWh Volume of BDF used for waste collection and transport by local governments: 1,117kL Estimated volume of separately collected plastic container and packaging (through designated corporations): approx. 869,000 tons				2008		(Recycling of container and packaging waste*) *Out of the effects by recycling plastic containers and packaging based on the Containers and Packaging Recycling Act, those by its material or fuel use not included in "Promotion of Measures to Reduce CO_2 Emissions Derived from Waste Incineration"have been calculated here. -Estimated volume of plastic containers and packaging collected separately (estimated volume of those delivered to designated corporations in the fifth period municipal separated collection plan): 869,000 tons (FY2010) -Percentage of material or fuel use (FY2007 bid results) (note) The actual volume of separated collection by municipalities might be smaller than the estimates due to emission control based on the Containers and Packaging Recycling Act
					2009		
					2010	70	
					2011		
					2012		

<table>
<tr><th rowspan="2">Specific Countermeasure</th><th rowspan="2">Countermeasure Evaluation Index (Estimates of FY2008-FY2012)</th><th rowspan="2">Measure by Each Actor</th><th rowspan="2">National Policy</th><th rowspan="2">Example of Policies Expected to be Implemented by Local Governments</th><th colspan="3">Countermeasure Effect</th></tr>
<tr><th>Estimated Volume of Emissions Reductions</th><th>Assumption Made in Calculating the Estimated Volume of Emissions Reductions*</th></tr>
<tr><td colspan="8">(ii) Measures and Policies by Sector (Industrial,Consumer,Transport,etc.)
B. Efforts in the Commercial and Other Sector
(e) Development of National Campaigns</td></tr>
<tr><td colspan="8">○ Information Provision/Familiarization</td></tr>
<tr><td rowspan="6">Implementation of national campaigns</td><td colspan="2" rowspan="2">Executing rate of Cool Biz and Warm Biz (commercial sector)
Upper: Executing rate of Cool Biz
Lower: Executing rate of Warm Biz</td><td rowspan="6">-Implementing the measures to reduce CO_2 emissions by Cool Biz (with air conditioning set at 28°C) and Warm Biz (with air conditioning set at 20°C) in the commercial and other sector</td><td rowspan="6">-Project to promote and strengthen local activities to stop global warming
-Project to promote the "National Campaign" to stop global warming
-Project to promote the national movement to reduce CO_2 by 1kg 1 day 1 person</td><td rowspan="6">-Implementing the measures described in the "Measure by Each Actor" section</td><td colspan="2" rowspan="2">(10,000t-CO_2)</td><td rowspan="6">(The estimated volume of CO_2 emissions reductions has been calculated from *1 below)
*1 Executing rate of Cool Biz and Warm Biz estimated from yearly surveys

*2 This estimated volume of emissions reductions is an approximate target figure calculated after organizing the overlapping effects of other countermeasures. It partially includes the effects of measures to reduce CO_2 emissions practiced at home, as typified by the six actions</td></tr>
<tr><td>2008</td><td>61-63%
64-66%</td><td>2008</td><td rowspan="5">approx. 100</td></tr>
<tr><td>2009</td><td>64-68%
67-71%</td><td>2009</td></tr>
<tr><td>2010</td><td>66-73%
69-76%</td><td>2010</td></tr>
<tr><td>2011</td><td>67-78%
70-81%</td><td>2011</td></tr>
<tr><td>2012</td><td>69-83%
72-86%</td><td>2012</td></tr>
</table>

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
						Estimated Volume of Emissions Reductions		
Implementation of national campaigns	*six actions* at home		-Each household will implement CO_2 emissions reduction measures possible at home, as typified by the *six actions* : setting air conditioning at 28°C in summer and at 20°C in winter; turning on the shower only when needed; practicing eco-driving; replacing products with more energy-saving ones; carrying a shopping bag/using simple packaging; and reducing standby power consumption -Selling energy-saving products and services -Choosing and purchasing energy-saving products and services (Household appliance manufacturer) -Providing information on energy saving, developing and advertising highly energy-efficient devices (Small and medium sized retailer) -Explaining about energy-saving effects and highly energy-saving devices and selling those devices by visiting consumers' homes (Mass retailer) -Explaining about and selling highly energy-saving devices	-Making efforts to disseminate nationally the measures which provide people or environmental preservation groups with positive incentives, especially economic incentives, accoding to the amount of their environmentally considerate behavior, such as "Eco action point," to prompt environmental action by citizens -Supporting the regional sales system model project to introduce domestic versions of ESCO by fostering experts or creating a diagnostic tool -Assiting the promotion of dissemination of energy-efficient household appliances by supporting the establishment of the Energy-efficient Household Appliances Promotion Forum by mass retailers and household appliance organizations, and cooperating with the events held by the Forum	-Implementing the measures described in the "Measure by Each Actor" section	($10,000t-CO_2$)		*3: The executing rates for the *six actions* at home will be monitored through monthly surveys in the project to promote the "National Campaign" to stop global warming. Note: Implementation of national campaigns supports other countermeasures. With the effects of such other countermeasures included, the effects of implementation of national campaigns are estimated to reach 6.78 million to 10.5 million t-CO_2 (based solely on quantifiable actions).
	2008	*3				2008	-	
	2009					2009	-	
	2010					2010	-	
	2011					2011	-	
	2012					2012	-	
	Information provision by energy suppliers and others (10,000kl; crudel oil equivalent)		Energy supplier, energy-efficient appliance retailer: -Providing general consumers with information contributing to rationalization in energy use	-Institutionalizing energy suppliers' information provision to general consumers by the Energy Conservation Act -Promoting the dissemination of energy-efficient household appliances through the Energy-efficient Household Appliances Promotion Forum -Actively providing information on energy saving to consumers through the Energy Saving Labeling Program, the Energy Efficient Product Retailer Assessment System, etc.		($10,000t-CO_2$)		
	2008	−				2008	−	
	2009	−				2009	−	
	2010	50-100				2010	150-300	
	2011	−				2011	−	
	2012	−				2012	−	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
					Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
Encouragement of replacing appliances with less energy-consuming ones	No. of energy-saving devices introduced (10,000 units) a) energy-saving electric pot, b) dishwasher, c) compact fluorescent lamp, d) water-saving showerhead, e) energy-saving control device for air conditioning	Household appliance manufacturer, mass retailer: -Providing information on energy saving -Explaining about energy-saving effects (especially on electric pots and dishwashers) Consumer: -Actively choosing an energy-saving device at the time of replacement	-Encouraging familiarization by "seminars for disseminating energy-saving household appliances," etc. -Providing information about "stores cooperating with the dissemination of energy-saving household appliances"	-Familiarization	($10,000t-CO_2$)	-Cumulative no. of appliances introduced in FY2010: Electric pot (approx. 11.8 million), dishwasher (approx. 9.2 million), compact fluorescent lamp (approx. 191.4 million), water-saving showerhead (approx. 18.4 million), energy-saving control device for air conditioning compressor (approx. 0.11 million) -Energy-saving effects through replacing these appliances: Electric pot (approx. 54%), dishwasher (approx. 56%), compact fluorescent lamp (approx. 80%), water-saving showerhead (approx. 20%), energy-saving control device for air conditioning compressor (approx. 13%)
	2008 a) 990 b) 740 c) 14,430 d) 1,580 e) 8				2008 a) 219 b) 51 c) 310 d) 59 e) 10	
	2009 a) 1,080 b) 830 c) 16,540 d) 1,710 e) 10				2009 a) 238 b) 57 c) 356 d) 64 e) 12	
	2010 a) 1,180 b) 920 c) 19,140 d) 1,840 e) 11				2010 a) 259 b) 63 c) 412 d) 68 e) 14	
	2011 a) 1,290 b) 1,020 c) 22,220 d) 1,970 e) 13				2011 a) 284 b) 71 c) 478 d) 73 e) 16	
	2012 a) 1,390 b) 1,140 c) 25,750 d) 2,100 e) 15				2012 a) 307 b) 79 c) 554 d) 78 e) 18	
○ Environmental Education, etc.						

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
					Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
(ii) Measures and Policies by Sector (*Industrial*,*Consumer*,*Transport*, etc.) C. Efforts in the *Residential* Sector (a) Development of National Campaigns						
○ Information Provision/Familiarization						
○ Environmental Education, etc.						
(ii) Measures and Policies by Sector (*Industrial*,*Consumer*,*Transport*, etc.) C. Efforts in the *Residential* Sector (b) CO_2 Saving of Houses, Equipment and Devices						

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
○ Improvement of the Energy Efficiency Performance of Houses								
Improvement of the energy efficiency performance of houses	Revelance ratio of FY1999 energy-saving criteria for new houses (%)		Client: -Constructing houses with high energy efficiency performance in new construction, expansion or renovation -Using the CASBEE Owner: -Improving energy efficiency performance through repair, maintenance, etc. -Using the CASBEE Architect: -Implementing and using the CASBEE -Providing information to clients or other stakeholders Builder, housing supplier: -Supplying houses with high energy efficiency performance -Developing and using energy-saving technology -Using the CASBEE -Providing information to clients or other stakeholders Manufacturer of building material and equipment: -Promoting technology development -Providing information to clients or other stakeholders	Improving energy efficiency performance of houses by the amendment of the Energy Conservation Act: ...Expanding the coverage of houses subject to notification obligation concerning energy-saving measures to include certain small- to medium-sized houses; ...Reinforcing regulations regarding energy-saving measures for large-scale houses ...Introducing measures to urge business operators who construct or sell houses to improve their energy efficiency performance. -Encouraging energy-efficient houses by loans through securitization framework -Promoting the dissemination of energy-efficient houses by creative and original local efforts through the Regional Housing Grant -Improving energy efficiency through tax relief for renovations to improve energy efficiency -Promoting the introduction of construction technologies related to energy-saving measures for small and medium sized enterprises -Providing assistance for leading technology developments by private business operators and model projects introducing CO2-saving technologies -Developing and disseminating the CASBEE and the Housing Performance Indication System -Promoting the development of comprehensive energy efficiency evaluation methods including ones for housing equipment -Fostering technical experts on architecture and construction -Promoting voluntary efforts by related industries -Subsidizng energy saving of houses -Familiarizing the public with eco-reforming of houses	-Appropriately enforcing the notification system concerning energy-saving measures under the amended Energy Conservation Act -Promoting the dissemination of the Housing Performance Indication System -Using the CASBEE -Promoting the dissemination of energy-efficient houses by creative and original local efforts through the Regional Housing Grant -Providing information to clients, architects or other stakeholders	(10,000t-CO_2)		The effects by the bill to amend the Energy Conservation Act, submitted to the 2008 ordinary Diet session, have been estimated, assuming that the relevance ratio of FY1999 energy-saving criteria for new houses will increase and that the energy efficiency performance of existing houses will be improved further. -Relevance ratio of FY1999 energy-saving criteria for new houses: 66% (FY2010) -Amount of energy saved: approximately 3.3 million kL (crude oil equivalent)
	2008					2008		
	2009					2009		
	2010	66				2010	approx. 930	
	2011					2011		
	2012					2012		

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
					Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
Leading measures for CO_2 saving of houses through partnership between house manufacturers, consumers, etc.	Included in "Improvement of the energy efficiency of houses" and "Improvement of the efficiency of devices based on the Top-runner standards"	House manufacturer, builder, model house exhibitor: -Providing information on energy saving concerning houses Consumer: -Actively taking energy-saving measures in building a new house	-Promoting the dissemination of energy efficient houses, energy-saving materials and equipment, etc.	-Providing information on energy saving through prefectural and major municipal Promotion Centers	($10,000t-CO_2$)	-Included in "Improvement of the energy efficiency of houses" and "Improvement of the efficiency of devices based on the Top-runner standards"
	2008				2008	
	2009				2009	
	2010				2010	
	2011				2011	
	2012				2012	
○ 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						

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
(ii) Measures and Policies by Sector (*Industrial*,*Consumer*,*Transport*, etc.) D. Efforts in the *Transport* Sector (a) Automobile/Road Traffic Measures								
○ Improvements in the Fuel Efficiency of Automobile, etc.								
Improvements in the fuel efficiency of automobile, etc.	(a) Energy-saving effect by the Top-runner standards (10,000kL) (b) No. of CEVs disseminated (10,000 vehicles) (c) Ownership ratio of sulphur-free fuel diesel vehicles in all diesel vehicles (%)		Manufacturer, importer: -Developing, manufacturing, selling or importing vehicles with excellent fuel efficiency Dealer: -Actively selling vehicles with excellent fuel efficiency Consumer: -Introducing vehicles with excellent fuel efficiency	-Subsidizing the introduction of clean energy or idling stop vehicles -Favorable tax treatments -Accelerating the development and dissemination of low-emission vehicles with the opportunity of replacing general official government vehicles with low-emission ones -Providing information to consumers concerning fuel efficiency through assessment and publication systems on vehicle fuel efficiency performance and display on vehicle body -Promoting the pioneering introduction based on the Green Purchasing Act -Promoting introduction of fuel-efficient vehicles through low-interest loan systems -Encouraging vehicle transport business operators to introduce fuel-efficient vehicles by the Energy Conservation Act -Promoting development and practical application of low-emission vehicles with an eye to the next generation -Considering measures to encourage the introduction and disseminatation of clean diesel passenger vehicles in the "Advisory Panel on Clean Diesel"	-Familiarization -Promoting the pioneering introduction based on the Green Purchasing Act -Supporting for the introduction	(10,000t-CO_2)		-Avg. theoretical fuel effciency for new vehicles in 2010 -Avg. theoretical fuel efficiency in the case of taking the measures for vehicles with fuel efficiency standards -Avg. theoretical fuel efficiency in the case of not taking the measures above -Total travel distance (passenger-kilometer or ton-kilometer) -Cumulative no. of introduced hybrid, hydrogen/fuel cell, diesel-substituting LP gas, natural gas and electric vehicles -Energy saving rates for each type of vehicles above -Ownership ratio of sulphur-free fuel diesel vehicles in all diesel vehicles
	2008					2008		
	2009					2009		
	2010	(a) approx. 940 (b) 69-233 (c) 0-10				2010	2470-2550	
	2011					2011		
	2012					2012		

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
					Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
○ Promotion of Traffic Flow Management						
Diverse and flexible expressway toll policies	Volume of traffic paying discounted tolls (travel distance (vehicle-kilometer)) (hundred million km/year) 2008 approx. 200+ β (annual average of five years between FY2008 and FY2012) 2009 2010 2011 2012	Citizen, business operator: -Using toll discounts Expressway company: -Implementing its own toll discount	-Implementing toll discounts		(10,000t-CO_2) 2008 approx. 20+ α (annual average of five years between FY2008 and FY2012) 2009 2010 2011 2012	-Conversion ratio of vehicles shifting from an ordinary road to its parallel expressway -CO_2 emission coefficient for each speed (About "approx. 20+ α ": Since the privatization of highway-related public corporations in FY2005, expressway tolls have been discounted by an avarage of 10%, thus reducing approximately 0.2 million t-CO_2; Further reduction in tolls will start from FY2008, which is estimated to lead to the reduction of CO_2 emissions by approximately α ten thousand tons-CO_2)

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
Traffic demand management for automobiles	Length of improved bicycle paths (10,000km)		Traffic business operator: -Promoting measures for traffic demand management (TDM) Citizen: -Using a bicycle	-Promoting measures for traffic demand management (TDM) -Improving and supporting the environment for cycling -Implementing and supporting pilot programs contributing to the promotion of cycling	-Promoting measues for traffic demand management (TDM) -Improving the environment for cycling -Implementing pilot programs contributing to the promotion of cycling	($10,000t-CO_2$)		-Passenger cars' travel distances shorter than 5km -Conversion ratio to cycling -CO_2 emission coefficients for each speed
	2008	approx. 2.6				2008	approx. 26	
	2009	approx. 2.8				2009	approx. 28	
	2010	approx. 3.0				2010	approx. 30	
	2011	approx. 3.2				2011	approx. 32	
	2012	approx. 3.4				2012	approx. 34	
Implementation of Intelligent Transport Systems (ITS): Electronic Toll Collection systems (ETC)	Utilization rate of ETC (%)		Citizen, business operator: -Using ETC Expressway company: -Implementing measures to promote the dissemination of ETC	-Implementing measures to promote the dissemination of ETC	−Promoting the pioneering introduction based on the Green Purchasing Act	($10,000t-CO_2$)		-Vol. of traffic jams for each toll booth -No. of vehicles passing through each toll booth -CO_2 emission coefficients for each speed
	2008	approx. 77				2008	approx. 19	
	2009	approx. 79				2009	approx. 19	
	2010	approx. 81				2010	approx. 20	
	2011	approx. 83				2011	approx. 20	
	2012	approx. 85				2012	approx. 21	
Implementation of ITS: Vehicle Information and Communication Systems (VICS)	Dissemination rate of VICS (%)		Citizen, business operator: -Using VICS	-Promoting the dissemination of VICS	-Promoting the collection and provision of traffic information -Promote the pioneering introduction based on the Green Purchasing Act	($10,000t-CO_2$)		'-Improved speed through dissemination of VICS -CO_2 emission coefficients for each speed
	2008	approx. 19.0				2008	approx. 225	
	2009	approx. 19.5				2009	approx. 230	
	2010	approx. 20.0				2010	approx. 240	
	2011	approx. 20.5				2011	approx. 245	
	2012	approx. 21.0				2012	approx. 250	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
Implementaion of ITS: central control of traffic signals	Central control of traffic signals (no. of controlled signals)		-	-Promoting central control of traffic signals -Upgrading the central processing system and sophisticating traffic control centers by introducing a new traffic signal controlling system (MODERATO) -Implementing model projects concerning the sophistication of traffic signal controlling through traffic signal profile control methods -Promoting the Environment Protection Management Systems (EPMS) -Developing the Mobile Operation Control Systems (MOCS) for commercial vehicles -Prompting traffic information suppliers to provide accurate, appropriate traffic information -Operating traffic information examination systems adequately -Operating traffic control information management systems adequately	-Central control of traffic signals	($10,000t-CO_2$)		-Volume of CO_2 saved per traffic signal controlled centrally (FY2005 criteria)
	2008	approx. 38,000				2008	approx. 100	
	2009	approx. 40,000				2009	approx. 110	
	2010	approx. 42,000				2010	approx. 110	
	2011	approx. 44,000				2011	approx. 120	
	2012	approx. 47,000				2012	approx. 130	
Roadworks reduction	Annual roadwork hours per kilometer (hour/km/year)		Implementing concentrated roadworks and joint construction	-Coordinating for concentrated roadworks and joint construction at meetings for roadworks coordination (consisting of road administrators, enterprises occupying roads, etc.) -Developing joint ditches -Refraining from roadworks at the end of December and March	-Developing joint ditches -Implementing concentrated roadworks and joint construction -Coordinating for concentrated roadworks and joint construction at meetings for roadworks coordination	($10,000t-CO_2$)		-Difference in speeds between in traffic jams and in free flowing traffic -Length of traffic tie-ups caused by roadworks -CO_2 emission coefficients for each speed
	2008	approx. 116				2008	approx. 64	
	2009	approx. 112				2009	approx. 66	
	2010	approx. 108				2010	approx. 68	
	2011	approx. 105				2011	approx. 69	
	2012	approx. 101				2012	approx. 71	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
Countermeasures against bottleneck railroad crossings	Reduction in time loss caused by traffic jams (person-hour/year)		National and local governments, railroad company: -Accelerating countermeasures against railroad crossings	-Overhauing the traffic at railroad crossings (selecting railroad crossings needing an emergency countermeasure), -Accelerating countermeasures against railroad crossings	-Accelerating countermeasures against railroad crossings	($10,000t-CO_2$)		-Duration for which railroad crossings are closed -Traffic volume at railroad crossings -No. of retired railroad crossings -CO_2 emission coefficients for each speed
	2008	approx. 8 million				2008	approx. 12	
	2009	approx. 10 million				2009	approx. 13	
	2010	approx. 14 million				2010	approx. 18	
	2011	approx. 21 million				2011	approx. 25	
	2012	approx. 31 million				2012	approx. 40	
Development of traffic safety facilities (sophistication of traffic signals)	No. of sophisticated traffic signals		-	-Promoting cordinated and actuated traffic signals -Sophisticating traffic control -Developing illegal parking prevention system -Developing parking guidance system -Promoting countermeasures against bottlenecks by guiding traffic with traffic information boards and developing traffic signals at railroad crossings	-Sophisticating traffic signals	($10,000t-CO_2$)		-Volume of CO_2 saved per sophisticated traffic signal (FY2005 criteria)
	2008	approx. 33,000				2008	approx. 30	
	2009	approx. 35,000				2009	approx. 40	
	2010	approx. 38,000				2010	approx. 40	
	2011	approx. 40,000				2011	approx. 40	
	2012	approx. 42,000				2012	approx. 50	
Development of traffic safety facilities (promotion of the use of LEDs for signal lights)	No. of LED signal lights		-	-Promoting the use of LEDs for signal lights	−Improving signal lights (using LEDs)	($10,000t-CO_2$)		-Volume of CO_2 saved per LED signal light
	2008	approx. 14,600				2008	approx. 0.1	
	2009	approx. 29,200				2009	approx. 0.4	
	2010	approx. 43,800				2010	approx. 0.7	
	2011	approx. 58,400				2011	approx. 1	
	2012	approx. 73,000				2012	approx. 1.3	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
					Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
○ Promotion of the Environmentally-friendly Usage of Vehicles						
Promotion of the environmentally-friendly usage of vehicles (greening of vehicle transport business through such measures as dissemination and promotion of eco-driving)	No. of eco-driving devices disseminated (10,000 units) 2008: 28 2009: 31 2010: 34 2011: 37 2012: 40 Dissemination rate of vehicles with advanced GPS-AVM system (%) 2008: 20% 2009: 24% 2010: 28% 2011: 32% 2012: 36%	Manufacturer: -Developing and selling eco-driving devices Carrier: -Introducing eco-driving devices -Practicing eco-driving -Improving taxi pools -Implementing effective dispatch of vehicles with advanced GPS-AVM system -Creating and implementing a mid- to long-term plan based on the Energy Conservation Act Consumer: -Introducing eco-driving devices -Practicing eco-driving	-Promoting the dissemination of eco-driving by implementing EMS dissemination projects -Conducting idling stop demonstration experiments by improving taxi pools -Supporting the development of advanced GPS-AVM system -Familiarizing the public with eco-driving including idling stop (promoting the dissemination of eco-driving based on the initiatives by the Eco-driving Dissemination Liaison Meeting) -Applying the Energy Conservation Act to motor carriers -Promoting the efforts through the Green Logistics Partnership Conference	-Familiarization -Promoting idling stop compliance measures	($10,000t-CO_2$) 2008: 110 2009: 122 2010: 134 2011: 145 2012: 157 ($10,000t-CO_2$) 2008: 4 2009: 4 2010: 5 2011: 6 2012: 6	-Volume of CO_2 saved per vehicle with an eco-driving device introduced: approx. 10% -Travel distance for dispatch saved with advanced GPS-AVM system: approx. 1km
Limit on the maximum speed of large trucks on expressways	No. of vehicles with a speed control device (10,000 vehicles) 2008: 61.4 2009: 66.6 2010: 71.8 2011: 77 2012: 80	Business operator: -Installing a speed control device to its large truck	-Requiring a speed control device to be installed to large trucks based on the Road Trucking Vehicle Act	–	($10,000t-CO_2$) 2008: 42.2-87.4 2009: 44.6-92.1 2010: 47.1-101 2011: 49.1-101 2012: 50.9-104	-Changes in the speed distribution through limit on maximum speed on expressways along with installation of speed control devices based on the Road Trucking Vehicle Act (traveling at the speed of less than 90km/h)
○ Development of National Campaigns (concerning eco-driving, promotion of public transport utilization, etc.)						

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
(ii) Measures and Policies by Sector (*Industrial*,*Consumer*,*Transport*, etc.) D. Efforts in the *Transport* Sector (b) Promotion of Public Transport Utilization, etc.								
○ Promotion of Public Transport Utilization								
Promotion of public transport utilization	(million people)		Traffic business operator: -Developing public transport systems -Improving service and convenience Business operator: -Encouraging its employees and customers to utilize public transport systems Citizen: -Utilizing public transport systems	-Implementing development of new railway lines -Implementing development of LRT -Promoting the introduction of BRT -Promoting public transport utilization through improving service and convenience by promoting IC card introduction or other computerization, facilitating connections, realizing seamless public transport, etc. -Implementing projects for revitalization and revival of local public transport -Implementing and supporting pilot programs contributing to further public transport utilization -Promoting public transport utilization based on the Energy Conservation Act -Familiarization -Promoting development of Public Transport Priority Systems (PTPS) by controlling the priority signals for the bus	'-Developing public transport systems -Promoting public transport utilization through improving service and convenience -Familiarization	(10,000t-CO_2)		-It is assumed that a certain percentage of passengers carried by public transport systems, on which development of new railway lines or other measures are estimated to have improvement effects, will have switched from personal passenger vehicle users. Based on the assumption, the volume of emissions reductions has been calculated by summing up all the volumes calculated for each area. -It is assumed that around 10% of automobile commuters in the business places with 100 or more employees will switch to public transport commuters.
	2008	2,020				2008	213	
	2009	2,198				2009	255	
	2010	2,528				2010	375	
	2011	2,638				2011	397	
	2012	2,889				2012	452	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
					Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
Dissemination and development of Environmentally Sustainable Transport (EST)	-	Traffic business operator: -Developing public transport systems -Improving service and convenience -Reducing environmental burdens of transport vehicles Business operator: -Encouraging its employees and customers to utilize public transport systems Local government: -Promoting public transport utilization -Developing transport infrastructure -Controlling illegal parking -Establishing bus-only lanes, etc. User: -Refraining from automobile use -Utilizing a bicycle and public transport systems -Walking	-Supporting areas promoting EST -Providing information concerning the measures and evaluation methods for promoting EST -PR activities	-Promoting public transport utilization in local areas -Developing transport infrastructure contributing to the reduction of environmental burdens -Creating the environment -Familiarization	($10,000t\text{-}CO_2$)		Included in "Promoting the dissemination of clean energy vehicles," "Traffic demand management for automobiles," "Promotion of public transport utilization," etc.
					2008	-	
					2009	-	
					2010	-	
					2011	-	
					2012	-	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
○ Promotion of the Development and Introduction of Energy-efficient Railways, Ships and Aircrafts								
Improvement of energy consumption efficiency of railways	Energy consumption intensity		Railway operator: -Voluntary action plan -Creating and implementing a mid- to long-term plan based on the Energy Conservation Act	-Supporting introduction of new vehicles -Applying the Energy Conservation Act to railway operators	-	($10,000t-CO_2$)		-Introduction of energy-saving vehicles: approximately 75%
	2008	2.44				2008	37	
	2009	2.43				2009	41	
	2010	2.42				2010	44	
	2011	2.41				2011	48	
	2012	2.4				2012	51	
Improvement of energy consumption efficiency of aircrafts	Energy consumption intensity (L/passenger-km)		Airline: -Voluntary action plan -Creating and implementing a mid- to long-term plan based on the Energy Conservation Act	-Supporting introduction of new machinery -Upgrading air traffic control and landing gear -Promoting eco-airports -Applying the Energy Conservation Act to airlines	-	($10,000t-CO_2$)		−Amount of domestic air transport in FY2010: 101.9 billion passenger-km
	2008	0.052				2008	187	
	2009	0.052				2009	189	
	2010	0.0519				2010	191	
	2011	0.0518				2011	194	
	2012	0.0517				2012	196	
(ii) Measures and Policies by Sector (*Industrial*,*Consumer*,*Transport*, etc.) D. Efforts in the *Transport* Sector (c) Promotion of Telework and Other Transport Substitution by Information and Communications Technology								
Promotion of telework and other transport substitution by information and communications technology	Teleworking population (10,000 persons)			-Steadily implementing the 36 items listed in the Action Plan to Double the Number of Teleworking Population (established by the Ministries Concerned Liaison Conference on Teleworking Promotion and approved by the IT Strategy Headquarters on May 29, 2007; Cabinet Secretariat, Ministry of Internal Affairs and Communications, Ministry of Health, Labour and Welfare, Ministry of Economy, Trade and Industry, Ministry of Land, Infrastructure, Transport and Tourism, and the other ministries and agencies)		($10,000t-CO_2$)		−Teleworking population (20% of employees: approx. 13 million in 2010)
	2008	approx. 970				2008	approx. 37.8	
	2009	approx. 1140				2009	approx. 43.9	
	2010	approx. 1300				2010	approx. 50.4	
	2011	approx. 1460				2011	approx. 56.5	
	2012	approx. 1630				2012	approx. 63	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect: Estimated Volume of Emissions Reductions	Countermeasure Effect: Assumption Made in Calculating the Estimated Volume of Emissions Reductions*

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

D. Efforts in the *Transport* Sector

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

○ Promotion and Reinforcement of Voluntary Action Plans of Industry (Businesses in the *Transport* Sector)

(10,000t-CO_2)	
2008	
2009	
2010	1310*
2011	
2012	

-It is assumed that the targets in the voluntary action plans by all businesses will be achieved.
-The calculations of reduction effects have been conducted for the 14 businesses marked with a circle (○)
*These effects are duplicative with those of other energy-saving countermeasures.

BusinessesWithin the Jurisdiction of the Ministry of Land, Infrastructure, Transport and Tourism

Business (Plan Formulator)	Performance Indicator	Base Year	Target Level
◯ Japanese Shipowners' Association	CO_2 emissions intensity	FY1990	-15%
○ Japan Trucking Association	CO_2 emissions intensity	FY1996	-30%
◯ Scheduled Airlines Association of Japan	CO_2 emissions intensity	FY1990	-12%
○ Japan Federation of Coastal Shipping Associations	CO_2 emissions intensity	FY1990	-3%
○ Japan Passenger Boats Association	energy consumption intensity	FY1990	-3%
○ Japan Federation of Taxicab Associations	CO_2 emissions	FY1990	-11%
○ Nihon Bus Association	CO_2 emissions intensity	FY1997	-12%
○ Association of Japanese Private Railways	energy consumption intensity	FY1990	-15%
○ East Japan Railway Company	CO_2 emissions	FY1990	-22%
	energy consumption intensity	FY1990	-19%
○ West Japan Railway Company	energy consumption intensity	FY1995	-6.2%
○ Central Japan Railway Company	energy consumption intensity	FY1995	-15%
◯ Japan Harbor Transportation Association	CO_2 emissions intensity	FY2005	-6%
○ Japan Freight Railway Company	energy consumption intensity	FY1995	-2%
○ Kyushu Railway Company	energy consumption intensity	FY1990	-10%
○ Hokkaido Railway Company	energy consumption intensity	FY1995	-6.9%
○ All Japan Freight Forwarders Association	CO_2 emissions	FY1998	-11%
○ Shikoku Railway Company	energy consumption intensity	FY1990	-18.5%

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
(ii) Measures and Policies by Sector (*Industrial*,*Consumer*,*Transport*, etc.) D. Efforts in the *Transport* Sector (e) Improvement of the Efficiency of Logistics Systems, etc.								
○ Implementation of CO_2 Saving by Cooperation Between Shippers and Logistics Operators								
○ Promotion of Modal Shifts, Increase of Truck Transport Efficiency, etc								
Comprehensive measures for environmentally friendly marine transport	Volume of marine transport (volume of cargo (general merchandise) easily transportable by automobile) (hundred million ton-kilometer)		Marine transport operator: -Creating and implementing a mid- to long-term plan based on the Energy Conservation Act Shipper: -Actively utilizing domestic shipping in partnership with marine transport operator	-Implementing policies to promote the dissemination of new technologies such as Super Eco-Ships -Revitalizing marine transport through review of the regulations -Applying the Energy Conservation Act to shippers and marine transport operators -Supporting introduction of new vessels and equipment -Promoting efforts through the Green Logistics Partnership Conference -Promoting modal shifts through the Act on Promotion of Comprehensive and Efficient Logistics Operations -Promoting the dissemination of fuel-efficient vessels by utilizing indicators to evaluate the fuel efficiency performance of vessels	-	(10,000t-CO_2)		-Intensity improvement of shipping compared to trucking: approximately 14%
	2008	303				2008	102	
	2009	307				2009	114	
	2010	312				2010	126	
	2011	316				2011	136	
	2012	320				2012	148	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
Modal shift to railway freight	Ton-kilometer of railway container transport increased by switching from trucking to railway container transport (hundred million ton-kilometer)		Railway operator: -Effectively utilizing transport capacity with IT -Promoting the utilization through improving large container transport system -Improving transport efficiency by developing E&S(Effective & Speedy Container Handling System) stations -Creating and implementing a mid- to long-term plan based on the Energy Conservation Act -Improving transport quality Railway-using carrier: -Promoting the utilization through enhancement of transport equipment and materials such as large containers Shipper: -Actively utilizing environmentally friendly railway cargo transport	-Implementing projects to strengthen railway cargo transport capacity -Promoting efforts through the Green Logistics Partnership Conference -Supporting introduction of new high-performance rail cars contributing to the reinforcement of transport capacity -Supporting the efforts by railway operators to improve transport quality -Applying the Energy Conservation Act to shippers and railway operators -Promoting modal shifts through the Act on Promotion of Comprehensive and Efficient Logistics Operations -Improving the level of awareness of environmentally friendly railway cargo transport(including dissemination and promotion of the Eco Rail Mark)	-Familiarization	(10,000t-CO_2)		-Intensity improvement of railway freight transport compared to trucking: approximately 8%
	2008	28				2008	70	
	2009	31				2009	78	
	2010	32				2010	80	
	2011	35				2011	88	
	2012	36				2012	90	
Promotion of dissemination of energy-saving vessels	Cumulative no. of vessels introduced		Domestic shipping operator: -Choosing Super Eco-Ships (SES), vessels contributing to energy saving in constructing a new vessel	-Implementing policies to support dissemination of environmentally friendly, economical next-generation domestic vessels (SES)	-	(10,000t-CO_2)		-Volume of CO_2 emissions reductions per Super Eco-Ship: approximately 285t-CO_2 (An average per Super Ecco-Ship has been calculated from its FY2005 records)
	2008	19				2008	0.54	
	2009	26				2009	0.74	
	2010	33				2010	0.94	
	2011	40				2011	1.14	
	2012	47				2012	1.34	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
Improvement of truck transport efficiency	(1) No. of vehicles owned with gross weight over 24t but not exceeding 25t (2) No. of trailers owned (3) Ratio of commercial trucks (%) (4) Load efficiency (%)		Carrier: -Promoting the use of heavy or trailer trucks and the improvement of truck transport efficiency -Creating and implementing a mid- to long-term plan based on the Energy Conservation Act	-Promoting the use of heavy or trailer trucks -Constructing roads fit for heavy trucks -Applying the Energy Conservation Act to shippers and truck operators -Promoting efforts through the Green Logistics Partnership Conference -Implementing the support project for business operators rationalizing their energy use	-Promoting the dissemination -Constructing roads fit for heavy trucks	($10,000t\text{-}CO_2$)		-Fuel reduction by introducing a 25t truck: approx. 9,000L/truck -Fuel reduction by introducing a trailer truck: approx. 24,000L/trailer -Intensity improvement of a commercial truck compared to a private truck: approx. 15%
	2008	(1) 120800 (2) 71100 (3) 87 (4) 44.6				2008	1,389	
	2009	(1) 120800 (2) 71100 (3) 87 (4) 44.6				2009	1,389	
	2010	(1) 120800 (2) 71100 (3) 87 (4) 44.6				2010	1,389	
	2011	(1) 120800 (2) 71100 (3) 87 (4) 44.6				2011	1,389	
	2012	(1) 120800 (2) 71100 (3) 87 (4) 44.6				2012	1,389	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
Reduction of overland transport distances of international freight	Volume of overland transport of international freight (hundred million ton-km)		Shipper, logistics operator: -Using the most suitable ports close to producing and consuming areas	-Developing international marine container terminals in core and hub international ports -Developing multi-purpose international terminals as logistics centers -Promoting efforts through the Green Logistics Partnership Conference	-	($10,000t\text{-}CO_2$)		-Reduction of overland transport distances of international freight
	2008	82.6				2008	236	
	2009	87.4				2009	249	
	2010	92.3				2010	262	
	2011	92.3				2011	262	
	2012	92.3				2012	262	
the Certification Program for Green Management								

Specific countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect: Estimated Volume of Emissions Reductions	Countermeasure Effect: Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
(ii) Measures and Policies by Sector (Industrial, Consumer, Transport, etc.) D. Efforts in the Energy Conversion Sector (a) Promotion and Reinforcement of Voluntary Action Plans of Industry						
○ Promotion and Reinforcement of Voluntary Action Plans of Industry (oil, gas, power producers and suppliers)					($10,000t-CO_2$) 2008 2009 2010 230 2011 2012	-It is assumed that the targets in the voluntary action plans by all businesses will be achieved. -The calculations of reduction effects have been conducted for the three businesses marked with a circle (○)

Businesses Within the Jurisdiction of the Ministry of Economy, Trade and Industry

Business (Plan Formulator)	Performance Indicator	Base Year	Target Level
○ Petroleum Association of Japan	energy consumption intensity	FY1990	-13%
○ Japan Gas Association	CO_2 emissions	FY1990	-59%
	CO_2 emissions intensity	FY1990	-86%
○ Power Producers and Suppliers	CO_2 emissions intensity	FY2001	-3%

Specific countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
					Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
○ Reduction of Carbon Dioxide Emissions Intensity in the Electric Power Sector						
Reduction of carbon dioxide emissions intensity in the electric power sector through promotion of nuclear energy, etc.	Improvement rate of CO2 emissions intensity of electric utilities: (The Federation of Electric Power Companies of Japan: Environmental Action Plan targets) Reducing CO2 emissions intensity in final use in FY2008-FY2012 by an average of approximately 20% from FY1990 level (reducing the intensity to about 0.34kg-CO2/kWh)	(The Federation of Electric Power Companies of Japan) -Working toward achieving the targets in its voluntary action plan through the following efforts: (1) Improvement of the nuclear power plant's capacity factor through realization of scientific and rational operation management; (2) Further improvement of the thermal efficiency of thermal power generation, environment-conscious adjustment of the operational methods of thermal power sources; and (3) Acquisition of credits (volume of emissions reductions) under the Kyoto Protocol through utilization of the Kyoto Mechanisms.	Implementing the following measures toward the reduction of carbon dioxide emissions intensity in the electric power sector -Assessing and verifying the achievement of targets in the "Environmental Action Plan by the Japanese Electric Utility Industry" (The Federation of Electric Power Companies of Japan) -Promoting nuclear energy with the understanding of citizens under public private partnership, based on the most fundamental premise of ensuring safety -Supporting the improvement of generating efficiency of thermal power by subsidizing the costs for converting obsolete coal thermal power plants into natural gas power plants -Supporting the utilization of the Kyoto Mechanisms -Reflecting the Kyoto Mechanism credits acquired by an electric utility to the utility's CO2 emission coefficient under the Calculating, Reporting and Announcing System -Implementing measures for electrical load leveling by promoting the dissemination of thermal storage systems or the like		($10,000t-CO_2$)	CO2 emissions intensity will be reduced by apporoximately 20% from FY 1990 level by combining the following measures. The effect here includes the effects of energy-saving measures on the demand side. -Further improvement of the nuclear power plant's capacity factor -Improvement of CO2 emissions intensity through adjustment of the operational methods of thermal power source -Improvement of CO2 emissions intensity through utilization of the Kyoto Mechanisms
	2008	About 0.34 (average of five years from FY2008 to FY2012)			2008	
	2009				2009	
	2010				2010	approx. 1,400-1,500
	2011				2011	
	2012				2012	

Specific countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
					Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
(ii) Measures and Policies by Sector (*Industrial, Consumer, Transport,* etc.) D. Efforts in the *Energy Conversion* Sector (b) Efforts by Energy Type						
○ Steady Implementation of Nuclear Power Generation						
○ Introductioin 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						
(ii) Measures and Policies by Sector (*Industrial, Consumer, Transport,* etc.) D. Efforts in the *Energy Conversion* Sector (c) Measures for Renewable Energy						
○ Promotion of the Introduction of Renewable Energy, etc.						

Specific countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
Promotion of measures for renewable energy (utilisation expansion of biomass heat, photovoltaic generation, etc.)	Volume of renewable energy introduced (million kl)		Private business operator: -Actively using renewable energy -Developing technology for improving the efficiency of renewable energy equipment Electric utility: -Achieving the target volume under the RPS Act Consumer: -Actively using renewable energy	-Further Strengthening and efficiently operating projects supporting the demonstration and introduction of renewable energy and its technology development -Supporting the introduction of renewable energy by steadily enforcing the RPS Act -Promoting private-sector voluntary efforts such as green power certificates -Smoothly coordinating with all types of regulations (land use regulations including natural park regulations) -Evaluating the local efforts to introduce renewable energy by local production for local consumption and sharing best practices by introducing such leading efforts -Building a network of dispersed renewable energy -Effectively using untapped energy (in the renewable energy field) -Subsidizing the introduction and demonstration of bioethanol fuel-utilizing equipment -Subsidizing the pioneering introduction of renewable energy-utilizing equipment by local governments -Establishing a biofuel associated tax system -Supporting the cooperative efforts between people engaged in agriculture, forestry or fisheries, who produce raw material for biofuels, and biofuel manufacturers -Developing a system to ensure the quality of biofuels	-Creating, implementing and evaluating a comprehensive plan to introduce renewable energy -Promoting the introduction of renewable energy in public facilities -Supporting the introduction of renewable energy -Promoting the pioneering introduction based on the Green Purchasing Act	(10,000t-CO_2)		Introduction of 15.6 million kl of renewable energy -Utilization of photovoltaic generation: 0.73 million kl -Utilization of wind power generation: 1.01 million kl -Utilization of waste and biomass power generation: 4.49 million kl -Utilization of biomass heat: 2.82 million kl -Other: 6.55 million kl Introduction of 19.1 million kl of renewable energy -Utilization of photovoltaic generation: 1.18 million kl -Utilization of wind power generation: 1.34 million kl -Utilization of waste and biomass power generation: 5.68 million kl -Utilization of biomass heat: 3.08 million kl (including biofuel for transport use: 0.5 million kl) -Other: 7.64 million kl * This breakdown shows rough indications for each source of renewable energy.
	2008					2008		
	2009					2009		
	2010	15.6-19.1				2010	3800 -4730	
	2011					2011		
	2012					2012		

<table>
<tr><th>Specific countermeasure</th><th>Countermeasure Evaluation Index (Estimates of FY2008-FY2012)</th><th>Measure by Each Actor</th><th>National Policy</th><th>Example of Policies Expected to be Implemented by Local Governments</th><th colspan="3">Countermeasure Effect</th></tr>
<tr><th colspan="3"></th><th colspan="2">Estimated Volume of Emissions Reductions</th><th>Assumption Made in Calculating the Estimated Volume of Emissions Reductions*</th></tr>
<tr><td>Promotion of introduction of cogeneration and fuel cells</td><td>Cumulative volume of cogeneration and fuel cells introduced (10,000kW)
cogene-ration / fuel cells
2008
2009
2010: 498-503 / 1.97-10
2011
2012</td><td>Manufacturer:
-Developing technology of natural gas cogeneration and fuel cells

Dealer:
-Selling natural gas cogeneration and fuel cells
-Providing information to consumers

Consumer:
-Actively introducing natural gas cogeneration and fuel cells</td><td>-Implementing research and development of natural gas cogeneration and fuel cells
-Subsidizing the introduction of natural gas cogeneration and fuel cells
-Subsidizing the introduction of fuel cells (local goverments, Regional Councils)
-Promoting the pioneering introduction based on the Green Purchasing Act</td><td>-Taking the lead in introducing natural gas cogeneration and fuel cells
-Supporting the introduction
-Promoting the pioneering introduction based on the Green Purchasing Act</td><td colspan="2">(10,000t-CO_2)
cogeneration /fuel cells
2008
2009
2010: 1400-1430
2011
2012</td><td>-Cumulative volume of cogeneration introduced
-Cumulative volume of fuel cells introduced</td></tr>
<tr><td colspan="7">○ Promotion of Biomass Utilization</td></tr>
<tr><td>Promotion of biomass utilization (building of biomass towns)</td><td>No. of biomass towns
2008
2009
2010: 300
2011
2012</td><td>Farmer, forester, fisher, business operator:
-Actively utilizing biomass resources

Local resident:
-Actively cooperating in collection and use of biomass resources</td><td>-Promoting biomass town initiatives
-Supporting planning, building facilities, developing technology and providing information for local efforts for biomass utilization</td><td>-Formulating and implementing a biomass town initiative
-Establishing systems for production, collection, transport, conversion and utilization of local biomass</td><td colspan="2">(10,000t-CO_2)
2008
2009
2010: approx. 100 (paritally including the effects of measures for renewable
2011
2012</td><td>-Around 300 municipalities nationwide will utilize 90% of waste biomass and 40% of unused biomass.
-About 0.1 million ton of biomass plastic will be utilized.</td></tr>
<tr><td colspan="7">○ Initiatives in Water Supply and Sewerage Systems and Waste Management</td></tr>
</table>

(Appendix 1) Table-2 List of Measures and Policies on Non-energy-originated Carbon Dioxide

*This indicates an assumption other than countermeasure evaluation index and its estimate made in calculating the estimated volume of emissions reductions for each countermeasure at the time of drafting this Plan

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
							Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
○ Expansion of Blended Cement Use								
Expansion of blended cement use	Percentage of blended cement used		Manufacturer: -Supplying blended cement -Providing information to consumers	Promoting the pioneering introduction based on the Green Purchasing Act	Promoting the pioneering introduction based on the Green Purchasing Act		(10,000t-CO_2)	Projected cement production in FY2010: 68,660t -Regular cement: 51,633t -Blended cement: 17,027t -Volume of CO_2 emissions per ton of limestone: 415kg-CO_2/t-limestone
	2008	21.9				2008	76	
	2009	23.4				2009	95	
	2010	24.8				2010	112	
	2011	24.8				2011	112	
	2012	24.8				2012	112	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		Countermeasure Effect
					Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
○ Promotion of Measures to Reduce Carbon Dioxide Emissions Derived From Waste Incineration							
Promotion of Measures to Reduce Carbon Dioxide Emissions Derived From Waste Incineration	—	Business operator: -Improving the durability of the products it manufactures or sells and enhancing repair service for those -Promoting voluntary collection, handover and recycling of its products that have ended up in the waste -Implementing recycling based on the Containers and Packaging Recycling Act -Further promoting the 3Rs based on the Keidanren Voluntary Action Plan on the Environment (Section on Establishing a Sound Material-Cycle Society) which was reviewed in March 2007 Industrial waste management business operator: -Implementing measures based on the National Federation of Industrial Waste Management Associations' Voluntary Action Plan on the Environment (including reducing the amount of incineration of industrial wastes originating from petroleum) Consumer: -Giving consideration in buying and using products (e.g. using recycled goods, using for the long term) -Giving consideration in disposing of products (e.g. handing over to business operator products that have ended up in the waste, cooperating in separated garbage collection by municipalities) -Reducing garbage generation through charge for its collection -Separating garbage emissions thoroughly	-Promoting the measures towards the achievement of the targets (from March 2003 onward) determined in the Sound Material-Cycle Plan under the Sound Material-Cycle Act -Promoting the measures towards the achievement of the waste volume reduction targets (from May 2001 onward) based on the Waste Management Act -Providing information on promoting the National Federation of Industrial Waste Management Associations' Voluntary Action Plan on the Environment -Providing support to municipal -Implementing, evaluating and studying measures based on the individual recycling acts (e.g. Containers and Packaging Recycling Act) -Promoting the pioneering introduction based on the Green Purchasing Act -Disseminating guidelines for municipal separated collection and charge for collection, and promoting familiarization regarding the 3Rs	-Promoting residents' voluntary activities, familiarization and environmental education toward waste reduction and reuse and recycling of recyclable resources of manufactured goods and the like -Promoting the pioneering introduction based on the Green Purchasing Act	($10,000t-CO_2$)		Volume of CO_2 emissions per ton of waste incinerated ($kg-CO_2/t$) -Municipal waste (plastics): 2,670 -Industrial waste (waste plastics): 2,600 -Industrial waste (waste oil): 2,900
	Amount of municipal waste (plastics) incinerated: approx. 4.4 million t Amount of industrial waste (waste plastics) incinerated: approx. 2 million t Amount of industrial waste (waste oil) incinerated: approx. 2.3 million t				2008		
					2009		
					2010	580	
					2011		
					2012		
○ Development of National Campaigns (on promotion of the 3Rs)							

(Appendix 1) Table-3 List of Measures and Policies on Methane and Nitrous Oxide

*This indicates an assumption other than countermeasure evaluation index and its estimate made in calculating the estimated volume of emissions reductions for each countermeasure at the time of drafting this Plan

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
					Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
1. Methane						
○ Reduction in the Amount of Final Waste Disposal, etc.						
Reduction in the amount of final waste disposal, etc.	–	Business operator: -Improving the durability of the products it manufactures or sells and enhancing repair service for those -Promoting voluntary collection, handover and recycling of its products that have ended up in the waste -Controlling direct landfill disposal of organic waste based on the Keidanren Voluntary Action Plan on the Environment (Section on Establishing a Sound Material-Cycle Society) which was reviewed in March 2007 Industrial Waste Management Business Operator: -Implementing measures based on the National Federation of Industrial Waste Management Associations' Voluntary Action Plan on the Environment (e.g. reducing the amount of final disposal of biodegradable industrial wastes)	-Promoting the measures towards the achievement of the targets (from March 2003 onward) determined in the Sound Material-Cycle Plan under the Sound Material-Cycle Act -Providing information on promoting the National Federation of Industrial Waste Management Associations' Voluntary Action Plan for the Environment -Promoting the measures towards the achievement of the waste volume reduction targets (from May 2001 onward) based on the Waste Management Act -Providing support to municipal projects such as ones for developing waste recycling facilities	-Promoting residents' voluntary activities, familiarization and environmental education toward waste reduction and reuse and recycling of recyclable resources of manufactured goods and the like -Promoting the pioneering introduction based on the Green Purchasing Act -Strengthening litter control in immediate areas and ensuring adequate disposal of waste -Fostering excellent waste management business operators	(10,000t-CO_2) 2008 2009 2010 50	Volume of CH_4 emissions per ton of landfilled waste (kg-CH_4/t) -Food waste: 143 -Paper, textiles: 140 -Wood waste: 136 Amount of municipal waste incinerated: approx. 33.3 million t Volume of CH_4 emissions per ton of waste incinerated (g-CH_4/t) -Continuous furnace: 7.3 -Semi-continuous furnace: 68 -Batch furnace: 73
	Amount of final municipal waste disposal (food, paper, textile, wood): approx. 0.31 million t Amount of final industrial waste disposal (livestock carcass, animal and plant residue, paper, textile, wood): approx. 0.12 million t Percentages of each incinerator type: continuous furnace (85%), semi-continuous (11%), batch furnace (4%) Measures against illegal dumping of industrial wastes: Eradicating large-scale illegal dumping of industrial wastes (over 5000 tons) by early detection					

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect			
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
Reduction in the amount of final waste disposal, etc.		Consumer: -Giving consideration in buying and using products (e.g. using recycled goods, using for the long term) -Giving consideration in disposing of products (e.g. handing over to business operator products that have ended up in the waste, cooperating in separated garbage collection by municipalities) -Implementing comprehensive measures including above at each stage of waste flow (Action Plan for Eradication of Illegal Dumping)	-Implementing, evaluating and studying measures based on the individual recycling acts (e.g. Containers and Packaging Recycling Act) -Disseminating guidelines for municipal separated collection and charge for collection, and promoting familiarization regarding the 3Rs -Promoting the pioneering introduction based on the Green Purchasing Act -Implementing the Action Plan for Eradication of Illegal Dumping -Promoting the removal of obstacles to maintaining a good living environment such as illegal dumping, by providing support based on the Act on Special Measures Concerning Removal of Environmental Problems Caused by Specified Industrial Wastes			2011		
						2012		

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
○ Review of Organic Matter and Water Management in Rice Paddies ○ Optimization and Reduction of Fertilizer Application								
Optimization and reduction of fertilizer application through the promotion of environmentally-sound agriculture	(1) Organic matter management ratio ([Current ratio] rice straw:compost:no application =60:20:20) (2)Amount of chemical fertilizer demanded (FY2005 records: 471,000 tN)		Testing laboratory: -Establishing and demonstrating new methane generation control technology Producer: (Methane) Shifting from "rice straw plowing" to "compost application" (Nitrous oxide) Reducing fertilizer applied, splitting application and utilizing slow release fertilizers	(Measures to reduce methane emissions resulting from rice production (rice paddies) (1) Project for building a system to control the generation of greenhouse gas originating from soil -Providing support to promote the shift from "rice straw plowing" to "compost application" -Supporting the establishment and demonstration of newly developed methane generation control technology and its familiarization -Supporting basic data collection for greenhouse gas calculations based on the IPCC guidelines (2) Review of the methods for calculating greenhouse gas emissions from rice production	Prefecture: -Implementing policies such as dissemination and promotion of environmental rules in agriculture in collaboration with fertilizer standards review	($10,000t-CO_2$)		It is assumed that the management method of organic matter for intermittent irrigation rice paddies will be shifted from rice straw plowing to compost application because the former has a high methane emission coefficient, while the later can control methane generation with high productivity. Because the reduction in fertilizer application lessens the amount of N_2O originating from agricultural land, the policies to reduce fertilizer application will be further implemented through prefectural review of fertilizer standards. Therefore, it is assumed that the amount of chemical fertilizer demanded after 2006 onward will continue to decrease on a trend similar to between 2000 and 2005 after the introduction of the Sustainable Agriculture Act.
	2008	(1) 56:24:20 (2) 469,000 tN				2008	6,3	
	2009	(1) 52:28:20 (2) 467,000 tN				2009	12,1	
	2010	(1) 48:32:20 (2) 465,000 tN				2010	18.1	
	2011	(1) 44:36:20 (2) 463,000 tN				2011	24.1	
	2012	(1) 40:40:20 (2) 461,000 tN				2012	30	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
						Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
(ii) Nitrous Oxide							
○ Installation of Nitrous Oxide Decomposer in the Production Process of Adipic Acid							
Installation of nitrous oxide decomposer in the production process of adipic acid	Number of plant		Manufacture: -Introducing nitrous oxide decomposer (completed)	-	-	($10,000t-CO_2$)	-Amount of adipic acid produced: 120,000 t -Rate of N_2O generation: 282kg-N_2O/t -Rate of N_2O decomposition: 99.9%
	2008	1				2008 approx. 985	
	2009	1				2009 approx. 985	
	2010	1				2010 approx. 985	
	2011	1				2011 approx. 985	
	2012	1				2012 approx. 985	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
○ Sophistication of Combustion at Sewage Sludge Incineration Facilities								
Sophistication of combustion at sewage sludge incineration facilities	(%) (Upper: Ratio of sewage sludge incinerated at high temperature, Lower: Industrial waste)		Local government: -Implementing sophistication of sewage sludge combustion as the operating body of sewerage business Industrial waste management business operator: -Implementing measures based on the National Federation of Industrial Waste Management Associations' Voluntary Action Plan on the Environment	-Establishing standards concerning the sophistication of sewage sludge combustion -Providing information on promoting the National Federation of Industrial Waste Management Associations' Voluntary Action Plan on the Environment	-Implementing sophistication of sewage sludge combustion	($10,000t-CO_2$) (Upper: Sewerage business operator, Lower: Industrial waste management business operator - National Federation of Industrial Waste Management Associations)		Volume of N_2O emissions per ton of sewage sludge incinerated in a polymer fluidized-bed furnace (g-N_2O/t) -Regular combustion: 1,508 -High-temperature combustion: 645
	2008	75 -				2008	91 -	
	2009	87 -				2009	108 -	
	2010	100 -				2010	126 Included in 64.8	
	2011	100 -				2011	127 -	
	2012	100 -				2012	129 -	

<table>
<tr><th rowspan="2">Specific Countermeasure</th><th rowspan="2">Countermeasure Evaluation Index (Estimates of FY2008-FY2012)</th><th rowspan="2">Measure by Each Actor</th><th rowspan="2">National Policy</th><th rowspan="2">Example of Policies Expected to be Implemented by Local Governments</th><th colspan="3">Countermeasure Effect</th></tr>
<tr><th colspan="2">Estimated Volume of Emissions Reductions</th><th>Assumption Made in Calculating the Estimated Volume of Emissions Reductions*</th></tr>
<tr><td colspan="7">○ Sophistication of Combustion at Municipal Waste Incineration Facilities, etc.</td></tr>
<tr><td rowspan="7">Sophistication of combustion at municipal waste incineration facilities</td><td>Percentages of each incinerator type</td><td rowspan="7">Business operator:
-Improving the durability of the products it manufactures or sells and enhancing repair service for those
-Promoting voluntary collection, handover and recycling of its products that have ended up in the waste

Consumer:
-Giving consideration in buying and using products (e.g. using recycled goods, using for the long term)
-Giving consideration in disposing of products (e.g. handing over to business operator products that have ended up in the waste, cooperating in separated garbage cllection by municipalities)</td><td rowspan="7">-Providing support to municipal projects such as ones for developing waste recycling facilities
-Promoting the installation of incineration facilities with continuous furnaces along with widening the areas of waste management
-Strengthening and enforcing the standards for structure and for operation and maintenance of waste incineration facilities (from March 2001 onward)
-Promoting the measures towards the achievement of the targets (from March 2003 onward) determined in the Sound Material-Cycle Plan under the Sound Material-Cycle Act
-Promoting the measures towards the achievement of the waste volume reduction targets (from May 2001 onward) based on the Waste Management Act
-Implementing, evaluating and studying measures based on the individual recycling acts (e.g. Containers and Packaging Recycling Act)
-Promoting the pioneering introduction based on the Green Purchasing Act
-Disseminating guidelines for municipal separated collection and charge for collection, and promoting familiarization regarding the 3Rs</td><td rowspan="7">-Promoting residents' voluntary activities, familiarization and environmental education toward waste reduction and reuse and recycling of recyclable resources of manufactured goods and the like
-Promoting the pioneering introduction based on the Green Purchasing Act</td><td colspan="2">(10,000t-CO_2)</td><td rowspan="7">Amount of municipal waste incinerated: approx. 33.3 million t

Volume of N_2O emissions per ton of waste incinerated (g-N_2O/t)
-Continuous furnace: 52
-Semi-continuous furnace: 53
-Batch furnace: 64</td></tr>
<tr><td rowspan="6">Continuous furnace: 85%, semi-continuous furnace: 11%, batch furnace: 4%</td><td>2008</td><td></td></tr>
<tr><td>2009</td><td></td></tr>
<tr><td>2010</td><td>20</td></tr>
<tr><td>2011</td><td></td></tr>
<tr><td>2012</td><td></td></tr>
<tr><td colspan="7">○ Review of Organic Matter and Water Management in Rice Paddies
○ Optimization and Reduction of Fertilizer Application</td></tr>
</table>

(Appendix 1) Table-4 List of Measures and Policies on Three Fluorinated Gases

*This indicates an assumption other than countermeasure evaluation index and its estimate made in calculating the estimated volume of emissions reductions for each countermeasure at the time of drafting this Plan

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
					Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
○ Promotion of Planned Efforts by Industry						
○ Promotion of Development of Substitute Materials and Use of Substitute Products						
Promotion of planned efforts by industry	Achievement of the targets and projections set in each industry organization's voluntary action plan	Organization with a voluntary action plan (22 organizations in eight sectors): -Complying with its voluntary action plan	-Implementing assessments and verifications of the action plans in the Global Warming Prevention Measures Subcommittee of the Chemicals and Bio-industry Committee of the Industrial Structure Council -Subsidizing the introduction of equipment controlling the three fluorinated gas emissions	-Supporting the efforts by business operators	(10,000t-CO_2)	
Realization of compact urban structures	Elimination of fluorocarbons in aerosol, etc. Shipping volume of HFCs in aerosol products (t) 2008: 1,857 2009: 1,900 2010: 1,948 2011: 1,998 2012: 2,050 Estimated volume of HFCs used in MDI (t) 2008: 142 2009: 160 2010: 180 2011: 180 2012: 180				2008: Approx. 6,410 2009: Approx. 6,400	

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
Promotion of Development of Substitute Materials and Use of Substitute Products	Elimination of fluorocarbons in blowing agents and insulation materials	Estimated volume of HFC-134a used in urethane foam (t) 2008: 239 2009: 229 2010: 220 2011: 220 2012: 220	Manufacturer of the three fluorinated gases: -Developing substitute materials, etc.	-Supporting technology development of substitute materials -Promoting the pioneering introduction based on the Green Purchasing Act -Familiarizing the public with substitute products (In the case of blowing agents and insulation materials) -Appending fluorocarbon-free insulation materials standards to Japanese Industrial Standards (FY2006) -Stipulating the use of fluorocarbon-free insulation materials in standard public works specifications, etc. (FY2006) -Promoting the use of fluorocarbon-free insulation materials through the project to promote dissemination of "eco-house" and tax relief for renovations to improve energy efficiency	-Promoting procurement of substitute products -Familiarizing the public with substitute products -Promoting the pioneering introduction based on the Green Purchasing Act	2010	Approx. 6,440	It is assumed that additional recovery and disposal (destruction of PFCs and SF_6 through introduction of destructive furnaces) by subsidies will reduce PFCs and SF_6 emissions by approximately 1.2 million t-CO_2 (on an average of the period between 2008 and 2012).
		Estimated volume of HFCs used in extruded foamed polystyrene (t) 2008: 0 2009: 0 2010: 0 2011: 0 2012: 0	Manufacturer of products containing the three fluorinated gases: -Developing and selling substitute products -Providing information to consumers			2011	Approx. 6,410	
		Estimated volume of HFCs used in highly foamed polyethylene (t) 2008: 104 2009: 97 2010: 90 2011: 90 2012: 90	Business operator or consumer using products containing the three fluorinated gases: -Choosing substitute products					

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)			Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
							Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
		Estimated volume of HFCs used in phenol foam (t)							
		2008	0						
		2009	0						
		2010	0						
		2011	0						
		2012	0						
	Development and dissemination of SF_6-free magnesium alloy	Estimated volume of SF_6 gas used (t)		Manufacturer of magnesium alloy: -Developing and disseminating SF_6-free magnesium alloy technology Business operator using magnesium (manufacturers of auto parts, electronics and electrical equipment, etc.): -Using magnesium alloy manufactured with SF_6-free	-Supporting development of magnesium alloy technology without using SF_6 as protective gas				
		2008	39						
		2009	40						
		2010	9						
		2011	9						
		2012	9						

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect: Estimated Volume of Emissions Reductions		Countermeasure Effect: Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
	Substitution and appropriate disposal of liquid PFCs, etc.		Owner of machinery using liquid PFCs: -Using substitute products -Ensuring appropriate disposal of machinery using liquid PFCs	-Investigating the actual conditions on the use and emissions of liquid PFCs, etc. -Supporting the establishment of disposal technology for proper destruction	-Supporting the efforts by business operators	(10,000t-CO_2)		-Amount of liquid PFCs disposed of appropriately: approx. 3.7t (2010) -Global warming potential of liquid PFCs: 7,400 (PFC-51-14)
		2008				2008	0	
		2009				2009	3	
		2010				2010	3	
		2011				2011	3	
		2012				2012	3	
○ Recovery of HFCs Filled as Refrigerant in Equipment Based on Relevant Acts, etc.								
Recovery of HFCs filled as refrigerant in equipment based on relevant acts, etc.	(Estimated volume of HFCs recovered from air-conditioners of scrapped automobiles) 1.17 million t-CO_2 in FY2010 (Recovery rate of refrigerant in commercial refrigeration and air conditioning equipment) 60% in FY2010 (Estimated volume of HFCs recovered from household appliances) 87,000 t-CO_2 in FY2010		Citizen: -Cooperating in steady recovery and destruction of fluorocarbons	-Implementing and operating relevant acts appropriately -Familiarization	-Implementing and operating relevant acts appropriately -Familiarization	(10,000t-CO_2)		
		2008				2008	approx. 363	
		2009				2009	approx. 444	
		2010				2010	approx. 526	
		2011				2011	approx. 604	
		2012				2012	approx. 681	

(Appendix 1) Table-5 List of Measures and Policies on Greenhouse Gas Sinks

*This indicates an assumption other than countermeasure evaluation index and its estimate made in calculating the estimated volume of emissions reductions for each countermeasure at the time of drafting this Plan

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
					Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
(1) Forest Sink Measures						
Implementation of measures for greenhouse gas sinks by promoting forest and forestry measures	Area of forest maintained (10,000 ha/year)	-Undertaking 0.2 million ha per annum of additional forest management for a six year period between FY2007 and FY2012 -Promoting support measures to accelerate forest management such as tree thinning -Taking into account the progress of consideration of cross-sectoral policies, making 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)			(10,000t-CO_2/year)	Assumptions made in calculation (1) Forests subject to the calculation of sink removals under the Kyoto Protocol -*Managed forest* : forest for which forestry operations (renewal including site preparation, surface tilling and planting; nurturing including sanitary or improvement cutting); thinning; and final cutting) have been conducted since 1990 in order to keep forests in appropriate conditions -*Naturally regenerated forest* : forest for which protection and conservation measures, such as regulations for land use conversion and logging, have been taken based on laws and regulations (2) Area of forests subject to the calculation of sink removals -Managed forest estimated to be subject to forest management if the past level of forest management continues: 6.75 million ha

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
	2008	78				2008	4,767	-Naturally regenerated forest estimated to be subject to forest management if utmost efforts are given to expanding area of protection forests: 6.6 million ha (3) Average volume of removals by forests (estimated from the growth increment data of major tree species) -Average volume of removals by managed forest: 1.35t-C/ha -Average volume of removals by naturally regenerated forest: 0.42t-C/ha (4) Area needing additional forest management -Undertaking 0.2 million ha per annum of additional forest management for a six year period between FY2007 and FY2012
	2009					2009		
	2010					2010		
	2011					2011		
	2012					2012		

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments		Countermeasure Effect	
						Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
Development of sound forests		National and local governments: -Promoting forest management necessary for achieving the targets of the Basic Plan for Forest and Forestry Local government, forestry-related actor, NPO, etc.: -Implementing steady, efficient maintenance of insufficiently-managed forests	-Forest management measures including additional thinning through new legal regimes or the like -Implementing appropriate forest maintenance including tree thinning, multistoried forest management and long cutting-cycle management -Eliminating the land left denuded by investigating the renewal status of such land or other measures -Promoting proper maintenance of broadleaf forests and shift to mixed forests of broadleaf and coniferous trees -Eliminating treeless land in water source forests in the hinterland or other areas and reviving devastated *satoyama* forests -Reducing costs by effectively combining road networks and developing road networks with consideration for the conservation of natural environment -Commissioning operations and management to motivated personnel and promoting maintenance by public bodies -Promoting the efforts to secure and foster essential personnel responsible for forest development	−Promoting forest and forestry policies in accordance with the natural, economic and social conditions of the local areas, taking into account the appropriate division of roles with the national government, based on the basic philosophy of the Forest and Forestry Basic Act (the Basic Plan on Forest and Forestry) and the Act on Promotion of Global Warming Countermeasures			Assumptions made in calculation (1) Forests subject to the calculation of sink removals under the Kyoto Protocol -Managed forest: forest for which forestry operations (renewal including site preparation, surface tilling and planting; nurturing including sanitary or improvement cutting); thinning; and final cutting) have been conducted since 1990 in order to keep forests in appropriate conditions -Naturally regenerated forest: forest for which protection and conservation measures, such as regulations for land use conversion and logging, have been taken based on laws and regulations (2) Area of forests subject to the calculation of sink removals -Managed forest estimated to be subject to forest management if the past level of forest management continues: 6.75 million ha

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
					Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
Appropriate management and conservation of protection forests, etc.		National and local governments, etc.: -Developing soil conservation facilities -Appropriately implementing measures to conserve protection forests	-Promoting appropriate conservation and management through appropriate operation of the regulations under the protection forests system, systematic designation of protection forests, the protected forest system, and measures for natural vegetation protection and recovery in partnership with NPOs, etc. -Promoting development of soil conservation facilities in accordance with the characteristics of watershed -Promoting measures to prevent damage caused by forest pests or forest fires -Expanding and enhancing natural parks and nature conservation areas and strengthening conservation management within these areas			-Naturally regenerated forest estimated to be subject to forest management if utmost efforts are given to expanding area of protection forests: 6.6 million ha (3) Average volume of removals by forests (estimated from the growth increment data of major tree species) -Average volume of removals by managed forest: 1.35t-C/ha -Average volume of removals by naturally regenerated forest: 0.42t-C/ha (4) Area of additional forest management -Undertaking 0.2 million ha per annum of additional forest management for a six year period between FY2007 and FY2012

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
					Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
Implementaion of forest fostering with the participation of citizens, etc.		National and local governments, business operator, NPO: -Promoting familiarization, forest volunteer activity, forest environmental education, and diverse forest use	-Promoting familiarization through events such as a tree-planting ceremony -Implementing 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" -Improving the skills of people such as forest volunteers and upgrading safety systems -Implementing forest environmental education -Implementing the Green Worker Program to protect flora and fauna including forests in national parks or other areas			

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect	
					Estimated Volume of Emissions Reductions	Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
Use of timber and woody biomass		National and local governments, business operator, NPO: -Promoting expanded use of timber in houses or public facilities and diversification of the use of wood resources by familiarization with timber use and structural reform of the lumber industry	-Promoting utilization of locally supplied timber in houses or public facilities by developing model facilities using local timber -Implementating consumer-focused programs to expand the actual demand for locally supplied timber, such as enhancing environmental education on the use of timber -Developing production, distribution and processing systems through computerization to meet consumer needs in close coordination among all concerned from forest workers to retailers -Establishing an efficient and low-cost collection and transport system for remnant wood in forest areas and promoting the utilization of such wood for making energy and products -Developing and making practicable new technology for using forest products or new woody materials -Promoting public awareness and utilization of charcoal for new uses including water purification and humidity control			

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)		Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		
						Estimated Volume of Emissions Reductions		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
(2) Promotion of Urban Greening								
Promotion of urban greening	Area of urban parks, green space in roads, riversides, harbors, sewage treatment plants and the premises of public housing and government facilities, and green space authorized by greening facilities plans developed in the first commitment period (1,000 ha)		National and local governments: -Promoting greening in public facilities or the like -Familiarizing the public with greenery creation -Promoting greening by a wide-ranging actors Citizen, enterprise, NPO: -Proactively participating in greening activities in various lands, facilities, etc.	-Promoting 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 -Examining the calculation methods for the volume of removals by urban greening and developing a system for reporting and verifying the volume of removals -Familiarizing the public with greenery creation and promoting greening by a wide-ranging actors such as citizens, enterprises and NPOs	-Promoting 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 -Providing information for calculating, reporting and verifying the volume of removals by urban greening -Familiarizing the public with greenery creation and promoting greening by a wide-ranging actors such as citizens, enterprises and NPOs	(10,000t-CO_2/year)		
	2008	approx. 71				2008	approx. 70	
	2009	approx. 74				2009	approx. 72	
	2010	approx. 76				2010	approx. 74	
	2011	approx. 78				2011	approx. 77	
	2012	approx. 81				2012	approx. 79	

(Appendix 1) Table-6 Cross-sectoral Policies

*This indicates an assumption other than countermeasure evaluation index and its estimate made in calculating the estimated volume of emissions reductions for each countermeasure at the time of drafting this Plan

Specific Countermeasure	Countermeasure Evaluation Index (Estimates of FY2008-FY2012)	Measure by Each Actor	National Policy	Example of Policies Expected to be Implemented by Local Governments	Countermeasure Effect		Assumption Made in Calculating the Estimated Volume of Emissions Reductions*
						Estimated Volume of Emissions Reductions	
○ Promotion of Global Warming Countermeasures Through the Revisions to the Act on Promotion of Global Warming Countermeasures							
Promotion of global warming countermeasures through the revisions to the Act on Promotion of Global Warming Countermeasures	Percentage of formulation of local government action plans (*1)	National and local governments, business operator, citizen: -Implementing measures prescribed by the Act	-Introducing the following measures through the revisions to the Act: (a) Strengthening local government action plans (b) Formulating Guidelines for Controlling Greenhouse Gas Emissions (c) Enhancing the calcuating, reporting and announcing system of greenhouse gas emissions -Operating the revised Act appropriately	Prefecture, government-designated city, core city and special case city: -Stipulating, in its local government action plan, programs for controlling greenhouse gas emissions in accordance with the natural and social conditions of its local area		($10,000t-CO_2$) (*2)	*1: Prefecture, government-designated city, core city and special case city *2: This countermeasure supports other countermeasures listed in Appendix 1-5.
	2008					2008 –	
	2009					2009 –	
	2010	100				2010 –	
	2011					2011 –	
	2012					2012 –	