

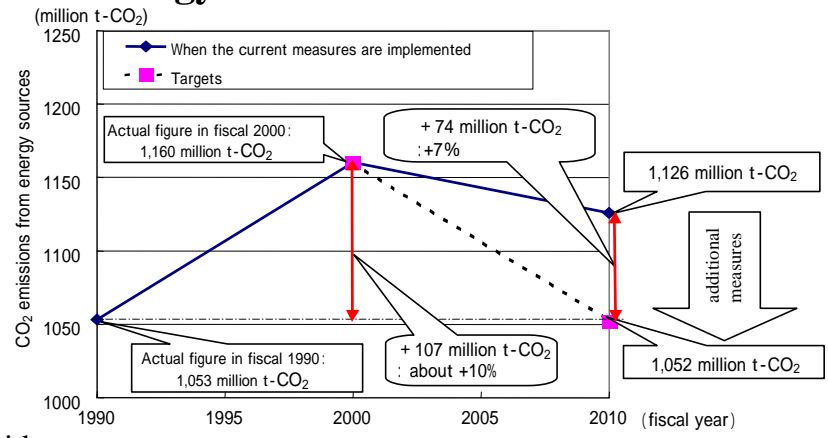
Measures to reduce CO2 emissions from energy sources

If the framework of the existing policies will be maintained, CO₂ emissions from energy sources in fiscal 2010 will be approximately 1,126 million tons of CO₂, which is 73 million tons more than fiscal 1990 (about 1,053 million tons of CO₂).

(Major reasons)

- Demand side: Energy demand mainly in the residential/commercial and transportation (passenger vehicle) sectors have increased significantly.
- Supply side: The introduction of non-fossil energy such as nuclear power has not progressed as much as anticipated when the old Guideline were established, and use of cheap coal is increased significantly.

Japan shall implement further energy conservation measures, new energy measures and other new measures such as fuel switching, as well as continuing to implement the measures stated in the old Guideline to reduce CO₂ emissions from energy sources in fiscal 2010 to the fiscal 1990 level. Japan also continues to promote its nuclear power policy.



Demand side measures

	Industrial Sector	Residential and Commercial Sector	Transportation Sector
Steady implementation and follow-up of the voluntary action plan (Target of the Keidanren Voluntary Action Plan on the Environment is to reduce CO ₂ emissions for 2010 to no more than 1990 levels.)			
Factory measures based on the Law Concerning the Rational Use of Energy Approx. 20.1 million kl Approx. 60.5 million t-CO ₂			
Since fiscal 2001, a new comprehensive check scheme has been implemented to assess standard compliance based on the Law Concerning the Rational Use of Energy. Legal action will be initiated based on the Law Concerning the Rational Use of Energy as required. The government also follows up the progress of the energy conservation measures through the voluntary action plan based on reports submitted to the government in accordance with the Law Concerning the Rational Use of Energy, and implements priority checks based on the same law for industries that have not established voluntary action plans or whose progress towards such energy conservation measures lags far behind the target.			
Promoting the introduction of high performance industrial furnaces Approx. 400,000 kl Approx. 1.1 million t-CO ₂			
Extensive support is provided for such measures in line with the voluntary action plans and so on of companies and industries with regard to assistance systems for companies to introduce energy saving facilities.			
Technological development and diffusion of its results • highly efficient boilers • highly efficient lasers Approx. 500,000 kl Approx. 1.5 million t-CO ₂			
Until fiscal 2001, support has been provided for the technological development of highly efficient lasers and so on.			
Strengthening to improve efficiency of equipment Approx. 5.4 million kl Approx. 30.4 million t-CO ₂ Through revision of the Law Concerning the Rational Use of Energy in 1998, the Top Runner Approach has been adopted for domestic electric appliances and OA equipment (i.e. air conditioners, TVs, VTRs, fluorescent lights, copiers, computers, magnetic disc systems, refrigerators, freezers).			
Expansion of equipment to which Top Runner Approach applies Approx. 1.2 million kl Approx. 2.9 million t-CO ₂ Gas oil equipment, and commercial equipment, etc. that were not previously targeted are added based on the Top Runner Approach.			
Promotion of distribution of high efficiency water heater Approx. 500,000 kl Approx. 1.1 million t-CO ₂ Assistance system to promote its spread has been established.			
Reduction of standby power consumption Approx. 400,000 kl Approx. 1.1 million t-CO ₂ A system enabling consumers to identify products with minimal electricity consumption during standby will be established in the near future.			
Technological development and result distribution • High efficiency lighting Approx. 500,000 kl Approx. 1.8 million t-CO ₂ Support is provided for technological development of highly efficient lighting, etc.			
Increasing energy conservation efficiency for housing and buildings Approx. 8.6 million kl Approx. 35.6 million t-CO ₂ [Increasing energy conservation efficiency for housing] Under the Law Concerning the Rational Use of Energy, responsibility for such efforts lies with the parties requesting construction. "Design and Construction Guidelines on the Rationalization of Energy Use for Houses" have been drawn up and published as detailed specifications and standards to assist parties requesting construction to make decisions (revised and strengthened in March 1999). Strengthening standards for energy saving housing by providing incentives through financing by the Housing Loan Corporation Implementing energy conservation measures in public housing and assistance for housing in towns that comply with energy conservation standards Promoting the distribution of systems showing clear housing efficiencies including energy conservation efficiency (Housing Performance Indication System) [Increasing energy conservation efficiency for buildings (non-residential)] Responsibility for efforts on parties requesting construction based on the Law Concerning the Rational Use of Energy. Decision standards for parties requesting construction are drawn up and published. (Revised and strengthened in March 1999) Responsibility for notifying energy conservation measures when building special new buildings and their refurbishment or addition (Revision of the Law Concerning the Rational Use of Energy) Providing incentives through financing and tax system of the Development Bank of Japan Promoting the establishment of environment-friendly government building facilities (Green Government Buildings) Endeavors to promote green assessment and renovation of existing government building facilities [Improving energy conservation efficiency for both housing and buildings] Development of engineers to handle design and construction through training courses Promotion of voluntary measures for the relevant industries involved in housing and buildings			
Promoting distribution of the Home Energy Management System (HEMS) Approx. 900,000kl Approx. 2.9 million t-CO ₂ Implementation of support for field tests			
Promotion of energy demand side management for commercial sector Approx. 1.6 million kl Approx. 7.7 million t-CO ₂ Energy management system that applies to large-scale factories is adopted for large-scale office buildings through revision of the Law Concerning the Rational Use of Energy. Assistance system for promoting distribution of the Building Energy Management System (BEMS) is established. Support measures such as assistance systems and low interest loan systems will be established for further utilization of Energy Service Company (ESCO).			
Strengthening measures to improve car fuel efficiency Approx. 5.4 million kl Approx. 13.9 million t-CO ₂ Promoting distribution of clean energy vehicles Approx. 800,000 kl Approx. 2.2 million t-CO ₂ Rapid introduction of vehicles that meet Top Runner Approach through the green automobile taxation and automobile acquisition tax reduction, and accelerating the development and distribution of low emission vehicles through the procurement of low emission official vehicles by the government Approx. 1 million kl Approx. 2.6 million t-CO ₂ Following revision of the Law Concerning the Rational Use of Energy in 1998, the Top Runner Approach has been applied to vehicles. Introduction of green automobile taxation Extension of reduction of automobile acquisition tax Establishment of fuel measuring methods to consider fuel standards of freight vehicles weighing 2.5t or more Promotion of measures to replace general low emission official vehicles within about three years following FY 2002 Promotion of technological development and practical proof testing for the earliest possible use of fuel-cell vehicles Promoting development of next generation low emission vehicles (including clean energy vehicles) Development of an IT network to promote the distribution of low emission vehicles, including clean energy vehicles Provision of assistance for low emission vehicles, including clean energy vehicles Support for practical use of electric vehicle joint-use system Promotion of assistance to establish enhanced fuel supply infrastructure (eco stations) Measures on car fuel quality to ensure sufficient functioning of the emissions post-processing system (Reduction of sulfur content from 500 ppm to 50 ppm by the end of 2004 for light oil. Further improvements such as reducing sulfur from gasoline should be pursued.)			
Motor vehicle traffic demand management Approx. 200,000 kl Approx. 700,000 t-CO ₂ Promotion of Traffic Demand Management (TDM) Utilization of Traffic Demand Management (TDM) proof tests established in FY 2001 to establish comprehensive plans for smooth urban transportation Promoting the preparation of a bicycle-friendly environment by improving cycle routes and parking areas. Implementation of social tests to contribute to promoting the use of bicycles Promotion of Intelligent Transport Systems (ITS) Approx. 1.4 million kl Approx. 3.7 million t-CO ₂ Preparing the Electric Toll Collection (ETC) System, and improving services by increasing the number of toll gates to 900 nationwide by the end of fiscal 2002. Improving traffic information collection services through preparation of infrared beacons, etc. Promotion of VICS (Vehicle Information and Communications System) (Service to be launched nationwide within fiscal 2002). Improving the central processing system and traffic control center system by introducing a new signal controlling system (MODERATO) Promotion of the Environment Protection Management Systems (EPMS), and suchlike Preparation of the Mobile Operation Control System (MOCS) for commercial vehicles Promotion of environment-friendly traffic management project Development and standardization of Internet ITS and probe information system Development of a safety support system and comfortable driving by providing information and warnings to drivers Positively promoting the introduction and distribution of ETC-enabled vehicles and triple-media VICS-enabled vehicles based on the Green Purchasing Law by the government, etc. Centralized signal control Promotion of road traffic information provision business Promoting the provision of accurate and appropriate road traffic information by road traffic data providers through revision of the law on road traffic in 2001 Appropriate operation of the traffic information verification system Promoting the preparation of a database on traffic regulation information Measures to prevent illegal parking and stopping on roads Approx. 100,000 kl Approx. 400,000 t-CO ₂ Improvement of public drains, promotion of intensive engineering work and joint implementation, appropriate operation of road use permission Preparation of traffic safety facilities Approx. 200,000 kl Approx. 700,000 t-CO ₂ Establishment, systematization, and improvement in signal induction Increasing efficiency of traffic control Promoting measures to counter bottlenecks by preparing traffic indications and rail crossing signals Promoting the change of signal lights to LEDs Promotion of commuting alternatives using data communications such as teleworking Approx. 1.3 million kl Approx. 3.4 million t-CO ₂ Improving data communication environment in companies, tax-related measures and financial support to contribute to introducing teleworking and support for SOHO. Providing information and diffusion promotion to promote teleworking and SOHO.			
Review and promotion of existing measures to promote eco drive of buses and trucks, etc. Promotion of measures to reduce impact on the environment through consideration of driving style of business vehicles, etc. • Distribution of vehicles featuring idling prevention systems Approx. 400,000 kl Approx. 1.1 million t-CO ₂ • Installation of Speed limiting device on large trucks Approx. 300,000 kl Approx. 800,000 t-CO ₂ Promotion of green management promotion by car transportation companies from FY 2002 Mandatory installation of speed limiting device on large trucks (Production vehicles: from September 2003 onward; Existing vehicles in use: from September 2003 onward)			
Promotion of domestic sea freight and rail freight Approx. 500,000 kl Approx. 1.5 million t-CO ₂ Review and steady promotion of current measures. Studying institutional arrangements to promote freight systems with reduced impacts on the environment Studying institutional arrangements including legislation to support improved efficiency of urban freight services Promotion of Traffic Demand Management (TDM) proof tests that contribute to improved efficiency of urban freight services Conducting proof tests to reduce environmental impact of trunk line from FY 2002 Submission of proposal to the ordinary session of the Diet in 2002 to revise the law on freight transportation business to relax regulations on participation and pricing Promotion of modal shift to shipping by reviewing regulations, strengthening competitiveness through introduction of new technologies and improving transport efficiency Approx. 1 million kl Approx. 2.6 million t-CO ₂ Increasing the share of domestic shipping to 44% or more by strengthening its competitiveness Development of a marine highway network to reduce time for domestic shipping operations through non-stop coastal shipping services Increasing rail convenience by increasing transport capacity Approx. 100,000 kl Approx. 300,000 t-CO ₂ Increasing rail freight transportation capacity Submitting a proposal to the ordinary session of the Diet in 2002 to revise the law on rail business to relax regulations on fare and participation Preparation of a cold chain system of foods by rail, etc. Improving efficiency of freight services Approx. 1.8 million kl Approx. 4.7 million t-CO ₂ Reviewing current measures and effects and promoting measures as follows. • Improving efficiency of transportation by truck Approx. 1.1 million kl Approx. 2.9 million t-CO ₂ • Reduction in overland transportation of international freight Approx. 700,000 kl Approx. 1.8 million t-CO ₂ Submitting proposal to the ordinary session of the Diet in 2002 to revise the law for freight vehicle transportation business to activate freight services through deregulation Promoting the use of large vehicles and trailers Strengthening bridges in line with the increase in the vehicle size Constructing international marine container terminals in main and core international harbors Development of multipurpose international terminals Preparation of joint delivery facilities of fresh foods, etc. Establishing, upgrading, and central control of signals			
Promoting use of public transportation Approx. 5.2 million t-CO ₂ Approx. 2 million kl Review and steady promotion of current measures Steady promotion of new railways and modified personal rapid transit system preparation in urban areas Promoting the use of public transport by further improving services and convenience Promoting the establishment of new railways in urban areas (new services of about 310km are planned to start between 1995 and 2010). Providing information and diffusion promotion to promote teleworking and SOHO. Promoting the preparation of the modified personal rapid transit system such as new traffic system in urban area (new services of about 100km are planned to start between 1995 and 2010) Construction of Authorized Shinkansen lines Promoting the use of public transport by improving services and convenience such as introduction of IC cards and improvements in connections Utilization of Traffic Demand Management (TDM) proof test established in FY 2001 to develop comprehensive plans for smooth urban transportation Promoting the use of public transportation through national campaigns Development of traffic junctions such as squares in front of stations Implementation of social experiments that contribute to the promotion of public transportation Promoting the preparation of Public Transportation Priority Systems (PTPS) by establishing dedicated/priority bus lanes, and priority bus signal controls			

About 22 million t-CO₂ through additional measures

Supply side measures	Measures	CO ₂ Emissions (million t-CO ₂)
New energy measures	Current new energy measures New energy measure completed in 1998 aimed at introducing 19.1 million kl worth of new energy by fiscal 2010 [Estimated introduction amount in fiscal 2010: 8.78 million kl] [Support at introduction stage] Promotion of introduction support for local authorities and businesses, etc. Promotion of introduction support for photovoltaic power generation, etc. Support with regard to taxation or financing [Support at the stages of technological development and demonstration] Promotion of technological developments and demonstration tests for fuel cells and photovoltaic power generation [Preparation of environment and awareness campaign, etc.] Preparation of regulations and systems Promotion of awareness campaign, etc. Additional new energy measures Additional new energy measure completed in 2001 aimed at introducing 19.1 million kl worth of new energy by fiscal 2010 (Estimated emission reduction) Approx. 34 million t-CO ₂ [Targeted introduction amount in fiscal 2010: 19.1 million kl] Photovoltaic power generation: 4.82 million kW (including photovoltaic power generation for housing: estimated approx. 1 million units), Wind power generation: 3 million kW, Waste power generation: 4.17 million kW, Biomass power generation: 330,000 kW, Solar thermal utilization: 4.39 million kl (including solar thermal utilization for housing: Estimated approx. 9 million units) Unutilized energy: 580,000 kl, Thermal utilization of biomass: 670,000 kl, Black liquor, refused wood, etc.: 4.94 million kl [Support at the introduction stage] Placement biomass energy and snow ice cryogenic energy in the Law Concerning Promotion of the Use of New Energy Promotion of introduction support for local authorities and companies, etc. Promotion of introduction support for photovoltaic power generation, and solar thermal utilization, etc. Promotion of green purchases and procurement [Support at the stages of technological development and demonstration] Strengthening the support for technological developments and demonstration tests, etc. concerning fuel cells, photovoltaic power generation, and biomass energy, etc. Promotion of technological development and so on bearing in mind regional characteristics [Preparation of environment and awareness campaign, etc.] Studying grid-connection system measures Promoting the establishment of a software infrastructure for practical use of fuel cells, Strengthening awareness campaign, etc. [Measures to expand new markets in the electricity sector] Proposal to establish the Bill Concerning the Use of New Energy by Electric Utilities	34 million t-CO ₂
Nuclear power, Fuel switching, etc.	Promotion of nuclear power generation (increasing nuclear-generated electricity by around 30% by fiscal 2010 compared to fiscal 2000) Additional measures for fuel switching, etc. such as electricity Approx. 18 million t-CO ₂ Subsidization towards part of the cost of converting old coal fired power generations to natural gas power generations Subsidization towards part of the cost of fuel switching such as industrial boilers expected to downsize or cut CO ₂ emissions Preparation of safety standards for natural gas pipelines Low interest financing for domestic natural gas development projects (developing wells and linked pipelines, etc.)	18 million t-CO ₂
Emission and consumptions outlook for 2010 in each sector		462 million t-CO ₂ Approx. 185 million kl
		260 million t-CO ₂ Approx. 120 million kl
		250 million t-CO ₂ Approx. 94 million kl

About 34 million t-CO₂ through additional measures

About 18 million t-CO₂ through additional measures

Total emissions 1,052 million t-CO₂

(Note) 1. Energy conversion sector is included with total emissions.
2. = Current measures, = Additional measures, = Current governmental measures, = Additional Governmental measures
3. kl: Energy conservation effect or introduction amount of new energy, t-CO₂: amounts of CO₂ emission reductions
4. Additional measures refers to extra measures established as of this Guideline review, or measures whose details have been completely reviewed and strengthened, while current measures covers all other existing measures.
5. Reduction amount indicates approximate estimated amount contributing to CO₂ emissions as of 2010 by energy conservation effects or introduction amount of new energy when the relevant measures are implemented.