JAPAN

1. GOALS FOR EFFICIENCY IMPROVEMENT

1.1. Sectoral Energy Efficiency Improvement Goals

On September 11, 2015, the Keidanren Action Plan toward Low-Carbon Society was presented. The goals of the action plan, such as CO_2 reduction targets, were individually formulated for 54 industries in the industrial, commercial, transport, and energy-conversion sectors. For more information, see http://www.keidanren.or.jp/policy/2015/031_honbun.pdf.

1.1.1. Power Sector

a) Sector

Power (Federation of Electric Power Companies).

b) Goals

Reduce the nationwide CO_2 emissions coefficient to 0.37kg-CO_2/kWh.

c) Base year

Fiscal year 2013.

d) Goal year

Fiscal year 2030.

1.1.2. Petrochemical industry

a) Sector

Industrial (Petroleum Association of Japan).

b) Goals

Reduce energy consumption by 1 million tons (crude oil equivalent) compared to business-as-usual (BAU)

c) Base year

Fiscal year 2005.

d) Goal year

Fiscal year 2030.

1.1.3. Iron and Steel industry

a) Sector

Industrial (Japan Iron and Steel Federation).

b) Goals

Reduce CO_2 emissions by 9 million tons compared to BAU.

c) Base year

Fiscal year 2005.

d) Goal year

Fiscal year 2030.

1.1.4. Cement industry

a) Sector

Industrial (Japan Cement Association).

b) Goals

Reduce specific energy consumption by 49 MJ/ton cement to 3,410 MJ/ton cement.

c) Base year

Fiscal year 2010.

d) Goal year

Fiscal year 2030.

1.1.5. Chemical industry

a) Sector

Industrial (Japan Chemical Industry Association).

b) Goals

Reduce CO_2 emissions by 2 million tons compared to BAU.

c) Base year

Fiscal year 2005.

d) Goal year

Fiscal year 2030.

1.1.6. Paper industry

a) Sector

Industrial (Japan Paper Association).

b) Goals

Reduce CO_2 emissions by 2.86 million tons to 18.84 million tons compared to BAU.

c) Base year

Fiscal year 2005.

d) Goal year

Fiscal year 2030.

1.2. Institutional Structure

The lead energy agency is the Ministry of Economy, Trade and Industry and supported by the Agency of Natural Resources. Continuous information exchange for necessary coordination is conducted among relevant divisions of the energy-related ministries as follows:

1.2.1. Lead energy agency

a) Name

Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry (ANRE/METI)

b) Status of organization

Policymaker, regulator, and implementer.

c) Roles and responsibilities

Policymaking, regulation, and implementation.

d) Covered sectors

Energy matters in general.

e) Established data

1973.

f) Number of staff members

No information is available.

1.2.2. Support agency in transport

a) Name

Ministry of Land, Infrastructure, Transport and Tourism (MLIT)

b) Status of organisation

Policymaker, regulator, and implementer.

c) Roles and responsibilities

Policymaking, regulation, and implementation.

d) Covered sectors

Transport and building.

e) Established date

2001.

f) Number of staff members

No information is available

1.3. Information Dissemination, Awareness-Raising and Capacity-Building

a) Information collection and dissemination

Relevant information is available from the websites of ANRE/METI, the Energy Conservation Center, Japan (ECCJ), and major industrial associations.

b) Awareness raising

Relevant information is available from the websites of ANRE/METI, the Energy Conservation Center, Japan (ECCJ), and major industrial associations.

c) Capacity building

The Energy Conservation Center, Japan (ECCJ) has been providing a training course for energy managers who will be in charge of the management of energy (heat, electricity) at large energy-using businesses.

1.4. Research and Development in Energy Efficiency and Conservation

1.4.1. Policies on Energy Efficiency Research, Development, and Demonstrations

a) Level of government

Central.

b) **Name of policy**

Strategy for Energy Efficiency and Conservation Technologies

c) Responsible department/agency

The Ministry of Economy, Trade and Industry (METI) and the New Energy and Industrial Technology Development Organization (NEDO)

d) Applicable sectors

Energy supply, residential/commercial, industrial, and transport sectors as well as cross sectors.

e) Financial resources (total amount, unit USD)

No information is available.

f) Outputs

Research and Development (R&D) is performed and relevant assistant measures are provided.

g) Outcomes

Become the worldôs most energy-efficient and conservational economy through the steady reduction of energy consumption toward 2030.

h) Description

Among the wide range of energy efficiency and conservation technologies, fourteen key technologies are identified:

1) Energy supply sector
   - High-efficiency thermal power-generation/next-generation supply and distribution technology.
   - Cogeneration/heat utilization system.
2) Residential/commercial sector
   - ZEB and ZEH.
   - Energy efficiency and conservation information technology devices/systems.
   - Comfort and energy efficiency and conservation human factors.
3) Industrial sector
   - Energy efficiency and conservation technologies for production processes.
   - Energy efficiency and conservation systems and processing technologies.
   - Technologies for accelerating realization of energy efficiency and conservation products.
4) Transport sector
   - Next-generation vehicles, etc.
   - Intelligent transport systems.
   - Smart logistics systems.
5) Cross sector
   - Next-generation energy management systems
   - Power electronics.
   - Next-generation heat pump systems.

1.4.2. Programs on Energy Efficiency and Conservation Research, Development, and Demonstrations

a) Level of government

Central.

b) Name of program

Several R&D programs have been conducted on the basis of strategies such as the Strategy for Energy Efficiency and Conservation Technologies.

c) Responsible department/agency

The METI and other relevant ministries, the NEDO, the National Institute of Advanced Industrial Science and Technology (AIST), and relevant companies, universities, and colleges.

d) Objectives and period

Each project includes its own objective and R&D period.

e) Applicable sectors

All relevant sectors.

f) Financial resources (total amount, unit USD)

A certain portion of these projects is funded by the METI or relevant ministries.

g) Outputs

Relevant R&D reports will be published and uploaded to websites of the responsible organizations.

1.4.3. Research, Development, and Demonstration as a Driver for Continuous Energy Efficiency Improvement

The Japan Revitalization Strategy (Growth Strategy) 2015 (June 2015) emphasizes science and technology as a priority investment for the future and sets the amount of more than 4% of the GDP for investments by the public and private sectors by fiscal year 2020. Based on the fact that innovations in science and technology are important pillars supporting the revitalization of Japan, investment targets and key performance indicators (KPIs) will be considered in the Fifth Science and Technology Basic Plan in order to effectively promote science and technology policies. In this process, severe fiscal conditions and the characteristics of R&D will be taken into consideration.

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2. MEASURES FOR ENERGY EFFICIENCY IMPROVEMENTS

2.1. Government Laws, Decrees, and Acts

a) Name

Law Concerning the Rational Use of Energy (the Act on the Rational Use of Energy)

b) Level

Central.

c) Purpose

The law was enacted in 1979 to ensure effective use of fuel resources (in response to the economic and social environments surrounding energy issues), and promote the rational use of energy by industries, business establishments, and others. The law was revised in May 2013 and enacted in April 2014.

d) Applicable sectors

Industrial, transport, residential, and commercial.

e) Outline

See Section 2.2 below.

2.2. Regulatory Measures

A number of programs have been implemented to ensure effective use of fuel resources (in response to the economic and social environments surrounding energy issues) and promote rational use of energy by industries, business establishments, etc.

2.2.1. Business Energy Reporting

Business organizations (manufacturers, service companies, etc.) of which the energy usage in each fiscal year amounts to 1,500 kiloliters (crude oil equivalent) or more are required to do the following: report annually on the amount of energy they actually consume, prepare and submit medium-term (3ï 5 year) plans for the rational use of energy, and assign responsible persons for energy management. The measure aims to reduce energy consumption intensities by 1% or more a year (on average) over the medium term.

The headquarters of franchise chain business operators in whose stores the energy usage in each fiscal year totals 1,500 kiloliters (crude oil equivalent) or more are also required to perform the abovementioned activities.

2.2.2. Minimum Energy Performance Standards (MEPS) and Labeling

a) Name

Top Runner Program

b) Purpose

To improve energy efficiency of machinery, equipment, and other items.

c) Applicable sectors

Machinery, equipment, and other items.

d) Outline

The Top Runner Program sets target standard values for energy-using machinery, equipment, and other items in order for manufacturers and importers to enhance the energy efficiency of their products. Manufacturers are required to achieve such targets (by a weighted average method) for all of their products per category for each predetermined target year. This is one way of setting energy efficiency target values for machinery, equipment, and other items. It is also based on the concept that ñmanufacturers should produce/import products that have better energy efficiency performance than all the products in the same category currently available on the market.ò

The following 31 categories of products are designated in the program, as of March 2015: passenger vehicles; freight vehicles; air conditioners; electric refrigerators; electric freezers; electric rice cookers; microwave ovens; lighting equipment; electric toilet seats; TVs; video cassette recorders; DVD recorders; computers; magnetic disk units; copy machines; space heaters; gas cooking appliances; gas water heaters; oil water heaters; vending machines; transformers; routers; switching units; multifunction devices; printers; electric water heaters; air-conditioner motors; self-ballasted LED lamps; insulation materials; sashes, and multi-paned glazing. For more information, see: http://www.enecho.meti.go.jp/category/saving_and_new/saving/data/toprunner2015e.pdf.

e) Financial resources and budget allocation

No information is available.

f) Expected results

No information is available.

a) Name

Energy Saving Labeling Program

b) Purpose

To provide consumers with energy efficiency information.

c) Applicable sectors

Machinery and equipment.

d) Outline

The Energy Saving Labeling Program was introduced to provide consumers with necessary information concerning the energy efficiency performance of products covered by the Top Runner Program. The labels affixed to the products indicate the achievement ratio of the energy efficiency and conservation standards. The scope of products under the system has been expanded, and 19 categories of products are subject to the labeling, as of March 2015.

The Uniform Energy Saving Label, another labeling program that applies to retailers, indicates a multistage rating of energy-saving performance based on an achievement ratio. Currently, six categories of products (air conditioners, TVs, electric refrigerators, electric freezers, electric toilet seats, and lighting equipment for fluorescent lamps) are covered by this program.

e) Financial resources and budget allocation

No information is available

f) Expected results

No information is available

2.2.3. Building energy codes

Construction business organizations are required, when they construct, extend, reconstruct or repair a large house/building with a floor area of 2,000 square meters or more (newly defined as Type 1 House/Building), to report their energy conservation measures to the relevant authority beforehand, and periodically (every three years) report on the state of maintenance of the house/building. The relevant authority is able to give orders or penalties (in addition to official announcements) to the construction business organizations, especially when they are unable to achieve satisfactory performance on energy conservation.

Construction business organizations are also required, when they construct, extend, reconstruct or repair a house/building with a floor area of 300 to 2,000 square meters (newly defined as Type 2 House/Building), to report their energy conservation measures to the relevant authority beforehand, and periodically (every three years) report on the state of maintenance of the building. Note that there is no need to periodically report on the state of maintenance regarding a house.

2.2.4. Transport

Transport business organizations (freight-transport companies, passenger-service companies, and consignors) that are larger than a certain size (i.e., freight-transport companies with 300 railway cars or more, 200 trucks or more, 200 buses or more, 350 taxis or more, gross tonnage of ships of 20,000 tons or more, and a maximum takeoff weight of 9,000 tons or more for aircrafts) are defined as Specified Carriers. Such carriers are required to prepare and submit energy conservation plans as well as an annual report on their energy consumption amounts and other related matters.

Business organizations that consign their own freights with 30 million ton-kilometers are defined as Specified Consignors. Such consignors are required to prepare and submit energy conservation plans as well as annual report on their energy consumption amounts.

2.3. Voluntary Measures

a) Name

Keidanren Voluntary Action Plan

b) Level

N/A.

c) Purpose

As stated earlier, on September 11, 2015, the Keidanren Action Plan toward Low-Carbon Society was presented. Its goals, such as CO_2 reduction targets, were individually formulated for 54 industries in the industrial, commercial, transport, and energy-conversion sectors (see Section 1.1.).

d) Applicable sectors

N/A.

e) Outline

The Keidanren Action Plan set a goal of reducing average CO_2 emissions from targeted businesses towards fiscal year 2030. The plan also set different goals according to business types, and it encouraged voluntary actions by different industries.

f) Financial resources and budget allocation

No information is available.

g) Expected Results

No information is available.

2.4. Financial Measures Taken by the Government

2.4.1. Tax Scheme

a) Name

1) Tax scheme to promote investments in structural reforms of energy supply and demand

The business operators (industrial and commercial sectors) that introduce the building energy management systems (BEMS) are able to choose either of the following options:

A) A tax exemption that is equivalent to 7% of the equipment acquisition cost for small- and medium-sized companies.

B) A special depreciation of 30% of the equipment acquisition cost in the year of acquisition, in addition to ordinary depreciation. This applies to all companies including large-sized companies.

2) Vehicle greening tax scheme

The vehicle greening tax scheme is composed of the following taxation measures for automobiles:

- Reductions of automobile taxes, based on emission levels and fuel efficiency.
- Imposition of heavy taxes on automobiles that have been used for several years since receiving their new car registration, and are becoming harmful to the environment.
- The owner of the target automobile would pay an automobile tax in the year following its acquisition.

In fiscal year 2015, the following tax benefits will be granted (in the case that the automobiles are registered in fiscal year 2014):

- For electric vehicles, fuel-cell vehicles, and plug-in hybrid vehicles, the automobile tax is reduced by 75%.
- For natural-gas vehicles with a weight of less than 3.5 tons (which have achieved at least a 75% reduction of exhaust gas, compared to 2005), the automobile tax is reduced by 75%.
- For natural-gas vehicles with a weight of more than 3.5 tons (which have achieved at least a 10% reduction of nitrogen oxide (NO_X) or particulate molecular (PM), compared to 2005), the automobile tax is reduced by 75%.
- For gasoline and liquefied petroleum gas (LPG) vehicles (which have achieved at least a 75% reduction of exhaust gas and a fuel-efficiency target of 25% or higher, compared to 2005), the automobile tax is reduced by 75%.
- For gasoline and LPG vehicles (which have achieved at least a 75% reduction of exhaust gas (compared to 2005) and a fuel efficiency target of 10% (compared to 2015)), the automobile tax is reduced by 50%.
- For diesel vehicles (which have achieved at least a 75% reduction of exhaust gas and a fuel efficiency target of 25%, compared to 2005), the automobile tax is reduced by 50%.
- For diesel vehicles (which have achieved at least a 75% reduction of exhaust gas (compared to 2005) and a fuel efficiency target of 20% (compared to 2020)), the automobile tax is reduced by 25%.

3) Eco-car tax reduction

When purchasing automobiles with excellent exhaust-gas performance and high fuel-efficiency, the automobile acquisition tax and automobile tonnage tax is exempted or reduced in the following conditions:

- The conditions for exemption (100% reduction) of the automobile acquisition and automobile tonnage tax include the following:
  - Electric vehicles, fuel-cell vehicles, and plug-in hybrid vehicles.
  - Natural-gas vehicles with a weight of more than 3.5 tons, which have achieved at least a 10% reduction of nitrogen oxide (NO_X), compared to 2010.
  - Hybrid vehicles with a weight of less than 3.5 tons, which have achieved at least a 75% reduction of exhaust gas (compared to 2015) and a fuel efficiency target of 15% or higher (compared to 2010).
  - Hybrid vehicles with a weight of less than 3.5 tons, which have achieved at least a 10% reduction of NOx or PM (compared to 2005), and a fuel efficiency target of 2015.
  - Diesel passenger vehicles with a weight of less than 3.5 tons.
- The conditions for a 75% reduction of the automobile acquisition and automobile tonnage tax include the following:
  - Diesel vehicles with a weight of more than 3.5 tons, which have achieved both the target of regulation of exhaust gas emissions for fiscal year 2014-2015 and the fuel efficiency target for fiscal year 2020.
  - Trucks and buses (diesel-driven) with a weight of 2.5-3.5 tons, which have achieved both the target of exhaust gas emissions for fiscal year 2014-2015 and the fuel efficiency target for fiscal year 2020.
  - Truck and buses (gasoline-driven) with a weight of 2.5-3.5 tons, which have achieved both 75% reduction or more of exhaust gas emissions for fiscal year

2014-2015 and the fuel efficiency target for fiscal year 2020. In this case, the automobile tonnage tax is reduced by 50%.

- The conditions for a 50% reduction of the automobile acquisition and automobile tonnage tax include the following:
  - Diesel vehicles with a weight of more than 3.5 tons, which have achieved both 10% reduction or more of NOx or PM and the fuel efficiency target for fiscal year 2020.
  - Trucks and buses (gasoline-driven) with a weight of 2.5-3.5 tons, which have achieved both 50% and more of exhaust emissions and the fuel efficiency target for fiscal year 2020.

Unlike the vehicle greening tax scheme, the eco-car tax reduction is applied for purchasing both new and used vehicles.

a) Name

A tax scheme to promote investments for housing renovation in order to improve energy efficiency and conservation

b) Level

Central.

c) Purpose

To promote investments and various efforts aimed at realizing energy efficiency and conservation (in response to the economic and social environments surrounding energy issues), and to further promote the rational use of energy by relevant sectors.

d) Applicable sectors

Residential sector.

e) Outline

When renovating a house aimed at improving energy efficiency and conservation at a certain level (e.g., thermal insulation of windows, thermal insulation of floors, walls, and ceilings or installation of solar photovoltaic facilities), 10% of the renovation cost (maximum amount of the cost: JPY 2.5 million or JPY 3.5 million when installing solar photovoltaic facilities) will be deducted from that yearôs income tax.

f) Financial resources and budget allocation

No information is available.

g) Expected Results

No information is available.

2.4.2. Low-Interest Loans

a) Name

Environment and Energy Measures Loans

b) Level

Central.

c) Purpose

To provide low-interest loans to small- and medium-sized businesses planning to install energy efficiency and conservation equipment or designated pollution-control equipment.

d) Applicable sectors

Industrial.

e) Outline

Low-interest loans to a maximum amount of JPY 72 million are provided to small- and medium-sized businesses planning to install high-efficiency energy conservation equipment in their facilities.

f) Financial resources and budget allocation

No information is available.

g) Expected Results

No information is available.

2.4.3. Subsidies and Budgetary Measures

a) Name

1) Subsidy project for business operators promoting the rational use of energy.

   The introduction of energy-saving facilities (as a replacement for existing facilities) by business operators are subsidized if the new facilities are considered highly significant in terms of three aspects: ñthe possibility of the technology becoming widely used in the future and the advanced nature of the technologyò; ñthe effectiveness in energy conservationò; and ñcost-effectiveness.ò Priority is given to the introduction of leading-edge facilities and technologies as well as efforts by small- and medium-sized companies. Budget allocation is JPY 41.0 billion (for fiscal year 2015.

2) Subsidy project for promoting the introduction of energy-efficient systems into houses and buildings.

   In order to help achieve net-zero energy in houses and buildings by 2030, subsidies are provided to those who plan to introduce high energy-efficient systems and/or high-performance insulating materials (capable of reducing annual energy consumption by at least half) for non-residential buildings. In the case of houses, subsidies are provided to those who plan to archive a ñnet-zero energy houseò by introducing high-performance insulation and energy-efficient materials/equipment. In addition to the above, subsidies are provided to those who plan to renovate existing houses using high-performance insulation and windows. Budget allocation is JPY 15.7 billion for fiscal year 2015.

3) Support for the dissemination and promotion of solar photovoltaic equipment.

   Subsidies are provided for the introduction of solar photovoltaic equipment in residential houses and buildings for which JPY 70,000 per kW is subsidized under this scheme. This scheme was updated to accelerate the dissemination of solar photovoltaic equipment for residential houses and buildings. Budget allocation is JPY 22.0 billion for fiscal year 2009.

4) Promotion of the development of energy conservation technology.

   This project pursues energy conservation technology development over a medium- and long-term basis, with three phases consisting of the incubation phase, the practical application phase, and the demonstration phase. The overall goal is to contribute to the reduction of total energy consumption. Budget allocation is JPY 7.5 billion for fiscal year 2015.

b) Level

Central.

c) Purpose

To promote investments and various efforts aimed at realizing energy conservation (in response to the economic and social environments surrounding energy issues), and to further promote the rational use of energy by relevant sectors.

d) Applicable sectors

Industrial, transport, residential, and commercial.

e) Outline

See above.

f) Financial resources and budget allocation

See above.

g) Expected results

No information is available.

2.4.4. Other Incentives

No information is available.

2.5. Energy Pricing

Outline of electricity prices

JPY 25.51 (USD 0.21) per kWh (for the households sector) and JPY 18.86 (USD 0.15) per kWh (for the industrial sector) (fiscal year 2014 averages).

As for those in the contract category of 50 kW or larger, the electricity rates are freely decided between the customers and the suppliers. As for the customers in the contract category of less than 50 kW, it is necessary to receive the ñapprovalò of the central government in order to raise their electricity rates, and submit a ñnotificationò to the central government to reduce their electricity rates. Moreover, the ñfuel cost adjustment systemò is introduced to reflect fossil fuel price fluctuations in the electricity rates. While promoting demand leveling by discounting the electricity rates during slow-demand hours and periods with ñoptional time-of-use lighting services,ò the electricity usage is divided into three tiers by the ñthree-tier rate system.ò In addition, energy conservation is promoted by imposing higher rates on customers with large electricity usage.

Outline of gasoline prices

JPY 133.9 (USD 1.09) per liter of regular gasoline (as of October 2015).

Gasoline prices are decided by the oil price (A) (which is decided by price components other than taxes, such as crude oil prices and refining and distribution costs), the petroleum tax and coal tax (B = JPY2.54 per liter), the gasoline tax (C = JPY53.8 per liter), and the tax on transactions of gas oil (D = JPY32.1 per liter).

- Gasoline = (A + B + C) x 1.08*
- Gas oil = (A + B) X 1.08 +D
- Kerosene = (A + B) x 1.08

* Consumption tax = 8%

2.6. Other Efforts for Energy Efficiency Improvements

2.6.1. Cooperation with Non-Government Organizations

N/A.

2.6.2. Cooperation through Bilateral, Regional, and Multilateral Schemes

N/A.

2.6.3. Other Cooperation/Efforts for Energy Efficiency Improvements

N/A.