

Making Energy Efficiency Work in Japan

**(Japan's Energy Efficiency Policy
and the Top Runner Program)**



省エネのシンボルです
SMART CLOVER

May 28th, 2008

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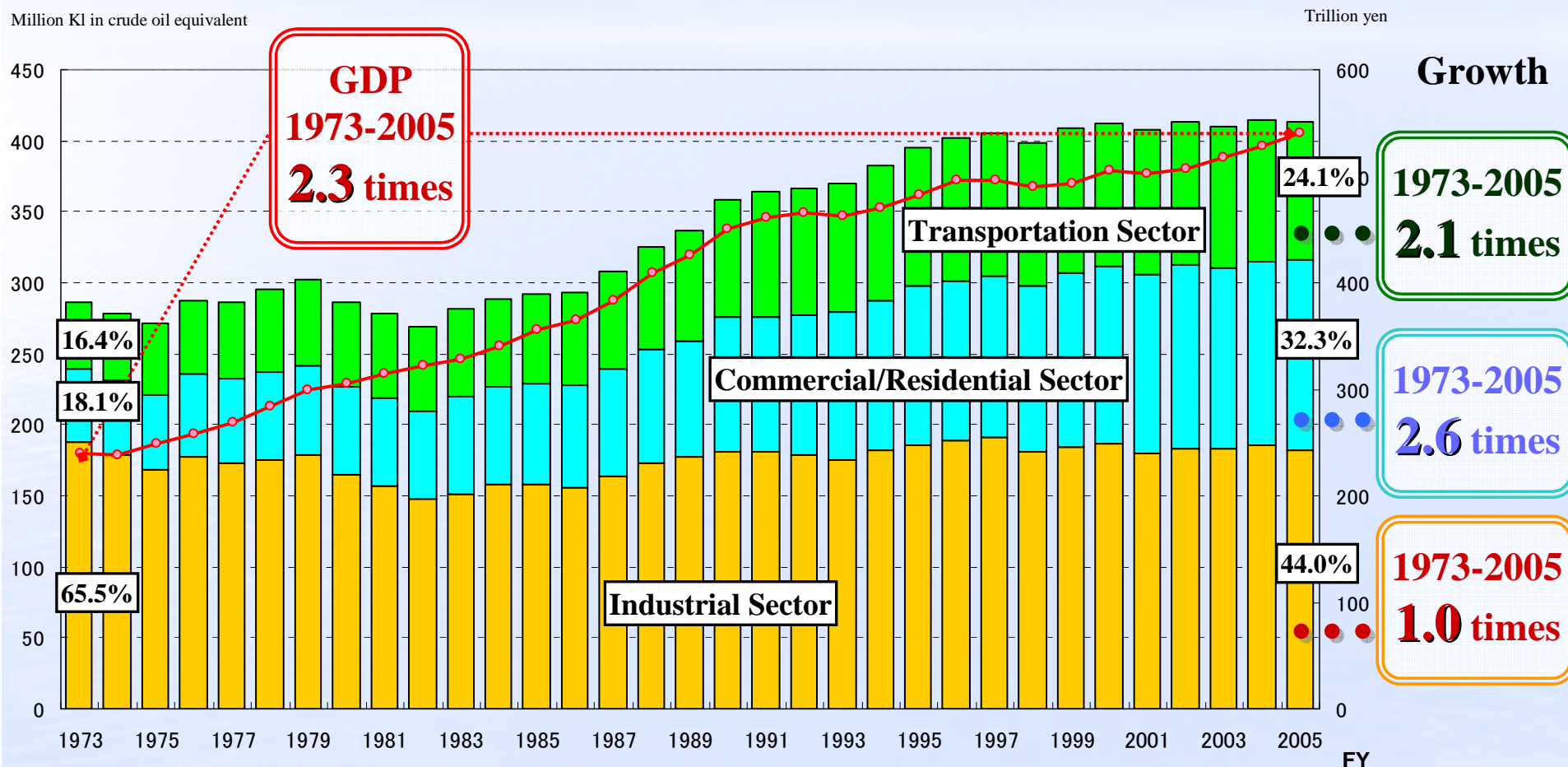
**Energy Efficiency and Conservation Div.
Agency for Natural Resources and Energy**

METI

1. Present Status of Energy Consumption

Final Energy Consumption in Japan (1973-2005)

- Transition of Japan's final energy consumption and real GDP

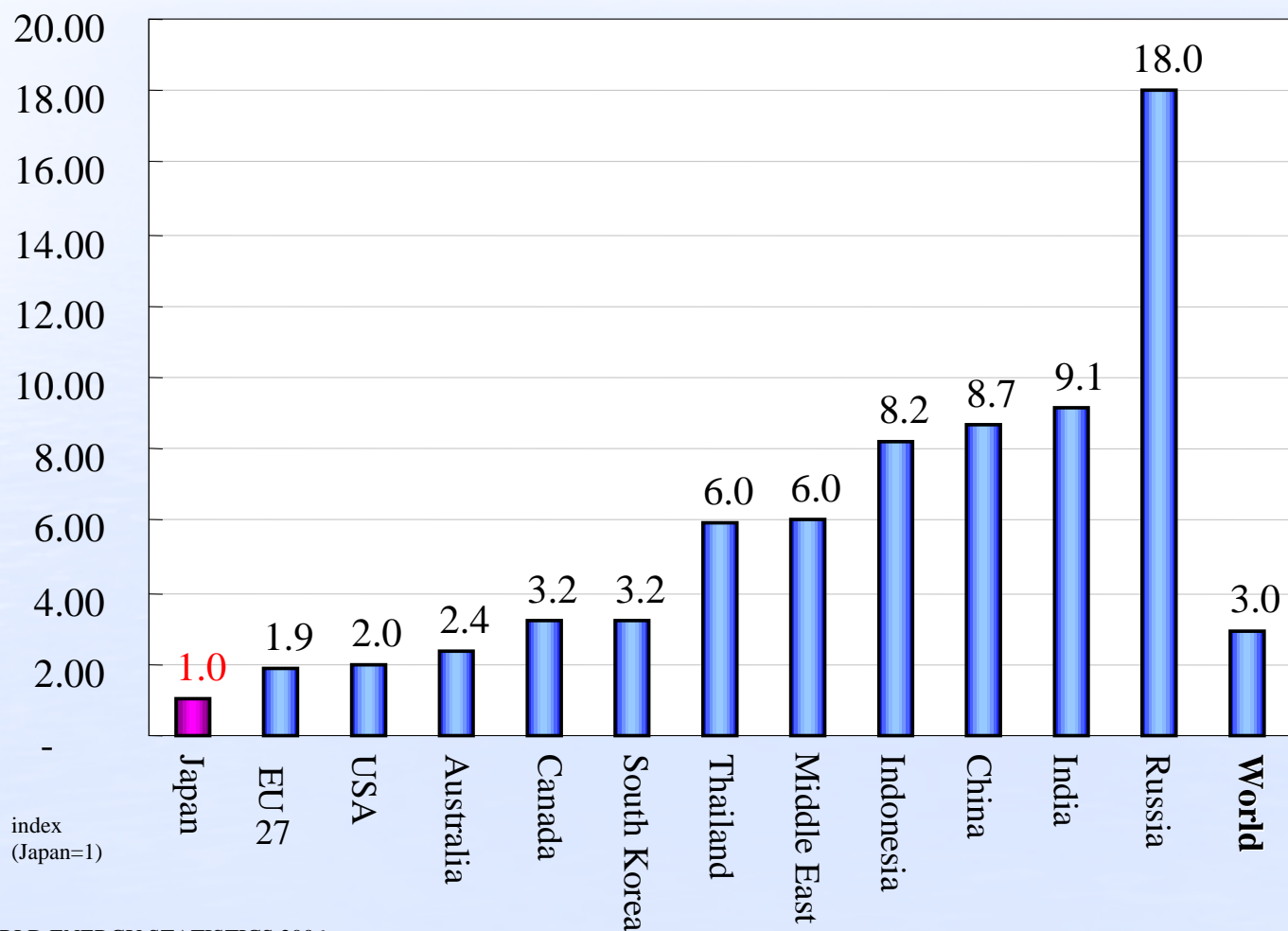


Source: Energy Balance Tables in Japan, Annual Report on National Accounts

(Note) Note that, due to revision of the aggregation method in Energy Balance Tables in Japan, values for FY1990 onwards and values for preceding years are the results of utilizing different methods.

International Comparison of Energy Efficiency

Primary energy supply per GDP



(Source) IEA KEY WORLD ENERGY STATISTICS 2006.

Energy Efficiency Improvement

Energy Efficiency Improvement is ;

- **A most efficient way to**
 - enhance energy security
 - deal with global warming
- **The easiest way to implement**
 - using existing and proven technologies
 - everybody can do it
- **Consistent with economic growth**
 - improving productivity
 - enhancing industrial competitiveness

Energy Efficiency Policy in Japan

○Energy Conservation Law ; first enforced in 1979,
last amended in 2005

- Regulation for factories and business establishments
- Regulation for transportation
- Regulation for buildings and residences
- Regulation for equipments and vehicles
→ Top Runner Program

○Financial Assistance
(tax incentives, subsidies, etc.)

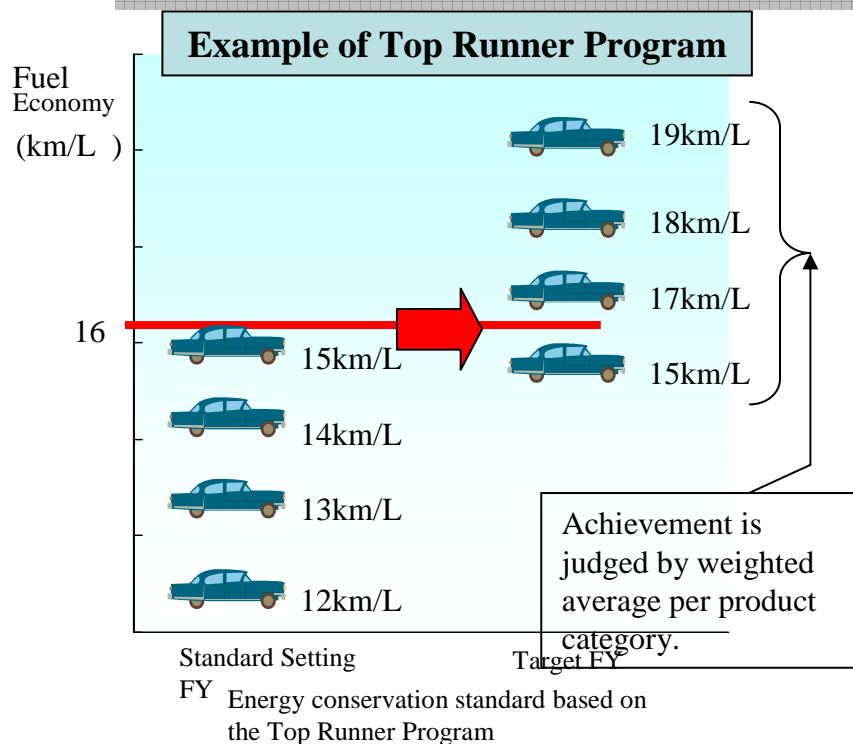
2. Top Runner Program

- Top Runner Program -

- **Concept**
 - To find the most energy efficient product commercially available in the market (= “top runner”)
 - To set the energy efficiency standards at the target year higher than the performance of the “top runner” in the same product category
 - Target year differs by product categories, but usually 4 to 6 years later from the year when the standard is set
 - Manufacturers and importers are requested to comply with standards
→ If fail to do so, fine (s) will be imposed
 - This program was introduced in 1999 and now covers 21 products

Top Runner Program

- The Energy Conservation Law stipulates energy conservation standards for electric appliances and motorcars according to the Top Runner Method. Manufacturers and the like have to comply with the standards, and if they don't, they are imposed recommendation, publication, order or penalty (one million yen or less).
- LCD, plasma TV, rice cookers, microwave ovens, etc., were added in FY2006, and the applicable products are 21 items at present.



Specific Equipment (21)

- | | |
|----------------------------|----------------------------|
| 1. Passenger vehicles | 12. Space heaters |
| 2. Freight vehicles | 13. Gas cooking appliances |
| 3. Air conditioners | 14. Gas water heaters |
| 4. TV sets | 15. Oil water heaters |
| 5. Videocassette recorders | 16. Electric toilet seats |
| 6. Fluorescent lights | 17. Vending machines |
| 7. Copying machines | 18. Transformers |
| 8. Computers | 19. Rice cookers |
| 9. Magnetic disk units | 20. Microwaves |
| 10. Electric refrigerators | 21. DVD recorders |
| 11. Electric freezers | |

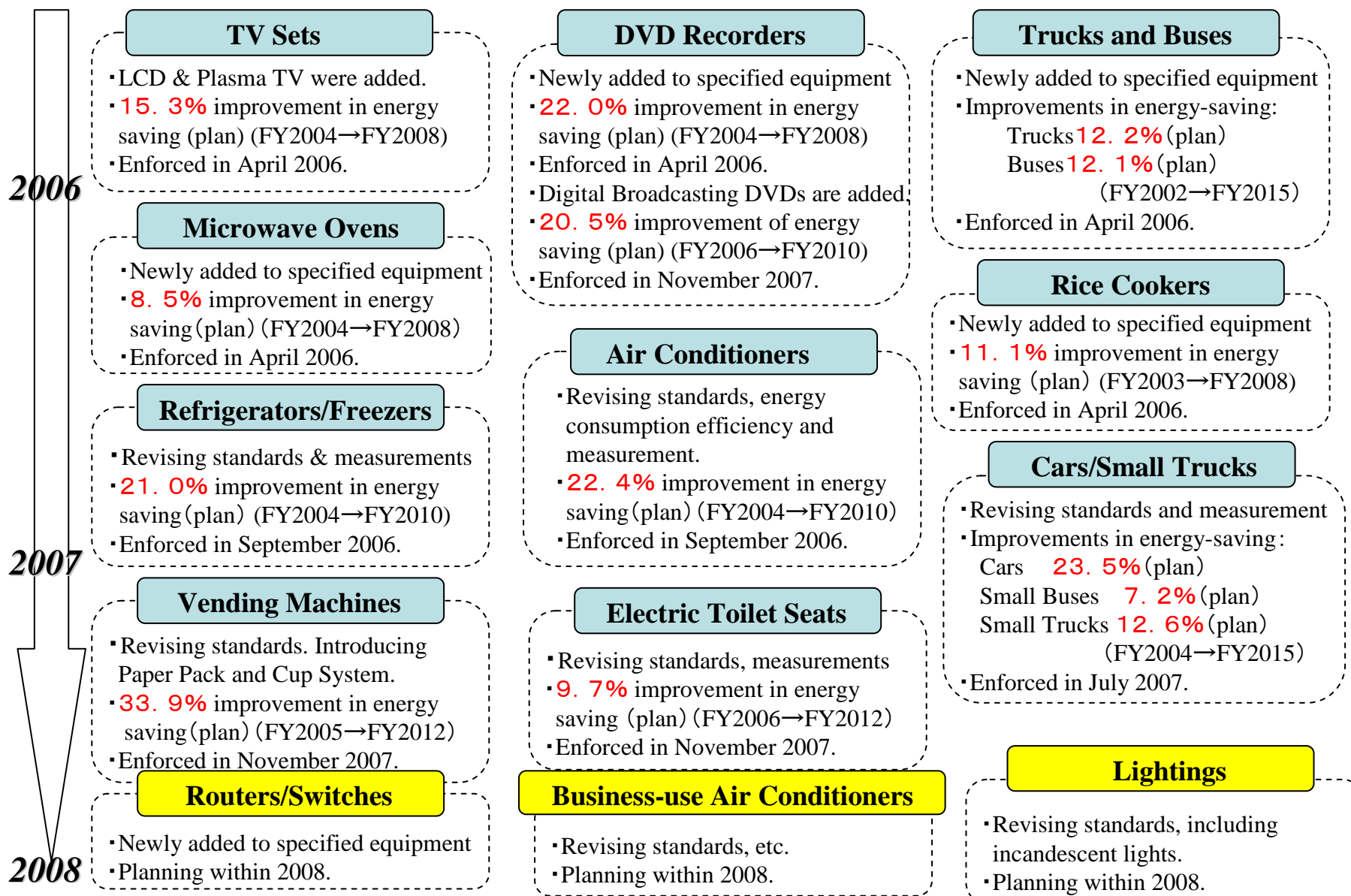
***Top Runner Program:** The concept of the program is that fuel economy standards for vehicles and energy conservation standards for electric appliances, etc. shall be set exactly the same as or higher than the best standard value of each product item currently available on the market.

Energy-saving Effects from Top Runner Program

Equipment	Improvement of energy consumption efficiency (Results)	Improvement of energy consumption efficiency (Initial expectation)
TV sets (CRT-based television)	25.7% (FY1997→FY2003)	16.4%
Videocassette recorders	73.6% (FY1997→FY2003)	58.7%
Air conditioners*	67.8% (FY1997→FY2004)	66.1%
Electric refrigerators	55.2% (FY1998→FY2004)	30.5%
Electric freezers	29.6% (FY1998→FY2004)	22.9%
Gasoline passenger vehicles*	22.8% (FY1995→FY2005)	22.8% (FY1995→FY2010)
Vending machines	37.3% (FY2000→FY2005)	33.9%
Fluorescent lights*	35.6% (FY1997→FY2005)	16.6%

Energy-saving standards for equipments with ✕marks are defined by energy consumption efficiency per unit (ex: km/l), and those for equipments without ✕marks are defined by energy consumption quantity (ex: kWh/year). “Improvements of energy consumption efficiency” in the above Table are judged by standards of each equipment (ex: If 10km/h changes to 15km/h, this is 50% improvement. (It is not calculated by fuel quantity of 10 liter/100km and improved quantity of 6.7 liter/100km to say the improvement is 33%.). And if 10kWh/yr changed to 5kWh/yr, this is also 50% improvement.)

Revisions of Top Runner Standards (since 2006)



Moreover, business equipments such as copier/fax composite equipment, business use refrigerators, and showcase refrigerators are considered to be added to specified equipment.

Energy-Saving Labeling Program

- Energy-Saving Labeling Program was started in 2000. The purpose of this program is to promote sales of highly energy efficient products, by means of providing information to consumers on their energy efficient performance.
- Although it is a voluntary program based on JIS standards, Energy-Saving Labels are actively utilized in product catalogs by manufacturers and point-of-purchase displays at retail stores.

Display Examples of Energy-Saving Labels

(Product catalog by manufacturers)



Energy conservation
standard achievement
percentage

Annual energy
consumption



省エネ基準達成率
108%

年間消費電力量
175kWh/年

目標年度 2006年度

Target fiscal year



省エネ基準達成率
91%

年間消費電力量
206kWh/年

目標年度 2006年度

○As of April 2007, labeling is applied to the following 16 products: air conditioners, refrigerators, freezers, fluorescent lights, TV sets, space heaters, gas cooking appliances, gas water heaters, oil water heaters, electric toilet seats, computers, magnetic disks, transformers, DVD recorders, rice cookers and micro wave ovens..

Energy-Saving Labeling System for Retailers

- The Revised Energy Conservation Law enforced in April 2006 stipulates that retailers shall make efforts to provide information. In light of this, a guideline was formulated, including providing information by using uniform energy-saving labels.
- The system started in October 2006. Uniform energy-saving labels shall be attached to TV sets, air conditioners and refrigerators.

Uniform Energy-saving Label

【Multi-stage rating system】

- Energy-saving performance is indicated in 5 stages, from 1 to 5 stars, from low to high performance of products offered on the market.
- In order to clarify the compliance level with the Top Runner standard, arrows are placed under the stars, showing achievement and non-achievement.

【Energy-saving labeling system】

- Products which achieved the Top Runner standard carry a green “e” mark, while others carry an orange “e” mark.
- Achievement level and energy consumption efficiency (annual electricity consumption) are also indicated.

【Estimated annual electricity rates】

- The estimated annual electricity rates are indicated to show the energy consumption efficiency (annual electricity consumption) clearly.

Energy Efficient Product Retailer Assessment System

- In order to promote energy efficient products, it is essential to introduce measures for retailers, who are the contact point between manufacturers and consumers.
- Recognition should be extended to retailers who actively promote energy-efficient products or provide appropriate energy conservation information.
- The energy efficient product retailer assessment system was introduced in FY2003.

Logo

2005年度

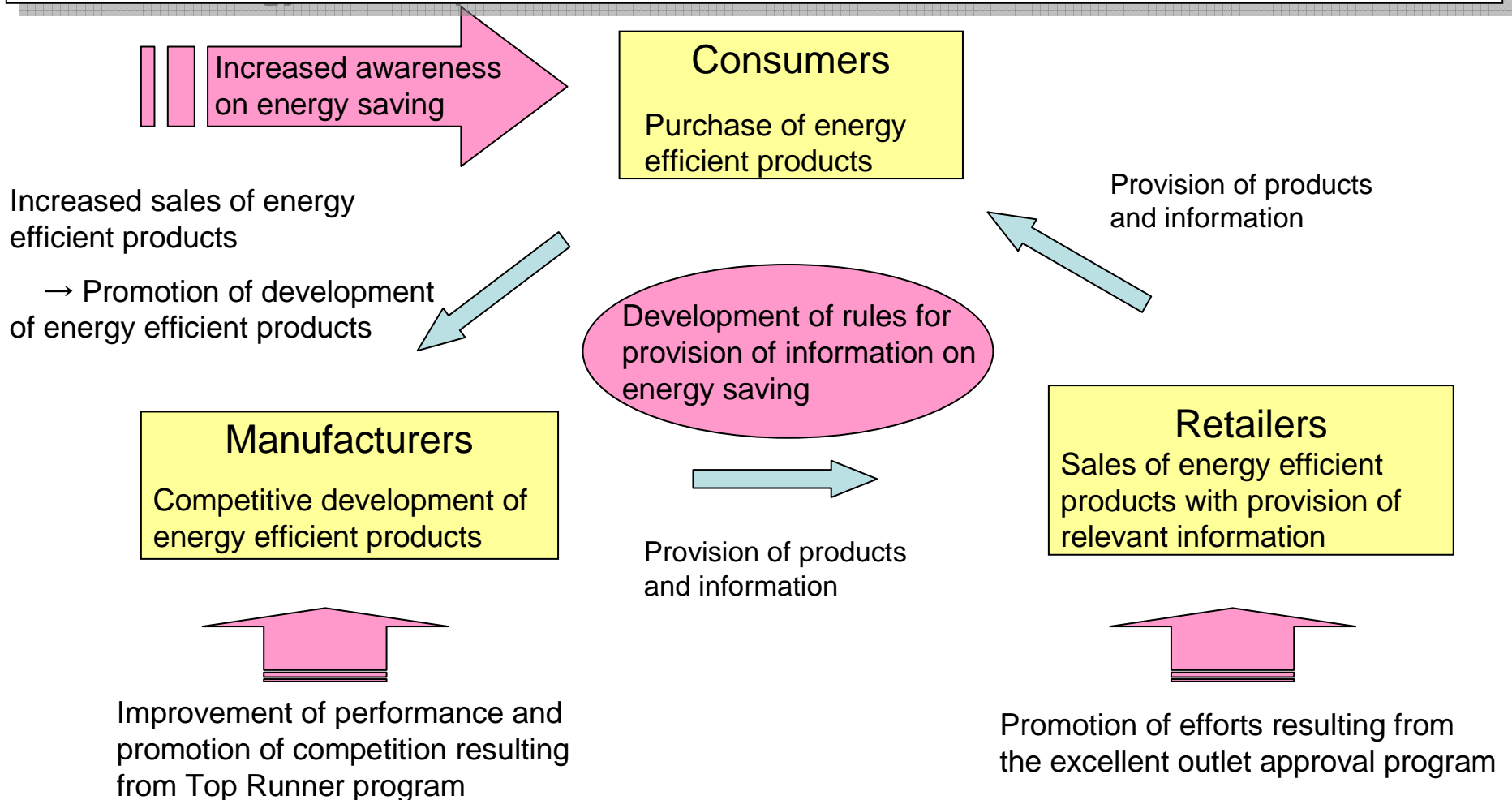


省工之型製品普及推進優良店

- Targeted retailers:
 - All home appliance retailers whose sales coming from home appliances account for 50% or more of total sales
- “**Outlets that Excel at Promoting Energy-Efficient Products**” are selected each year and publicized along with their rankings.
 - Effective FY2004, Minister of Economy, Trade and Industry Award and Minister of Environment Award are awarded to large stores.
- From FY2005, medium and small stores are also awarded.
- Selected retailers are authorized to carry a special logo.
- 469 stores applied for evaluation in FY2006 (409 stores applied in FY2005.)

Positive Growth Cycle in Promoting Energy Efficient Products

- By providing relevant information to consumers, encourage them to select energy efficient products.
- Promotion of energy efficient products will act as incentives for development of further energy efficient products.



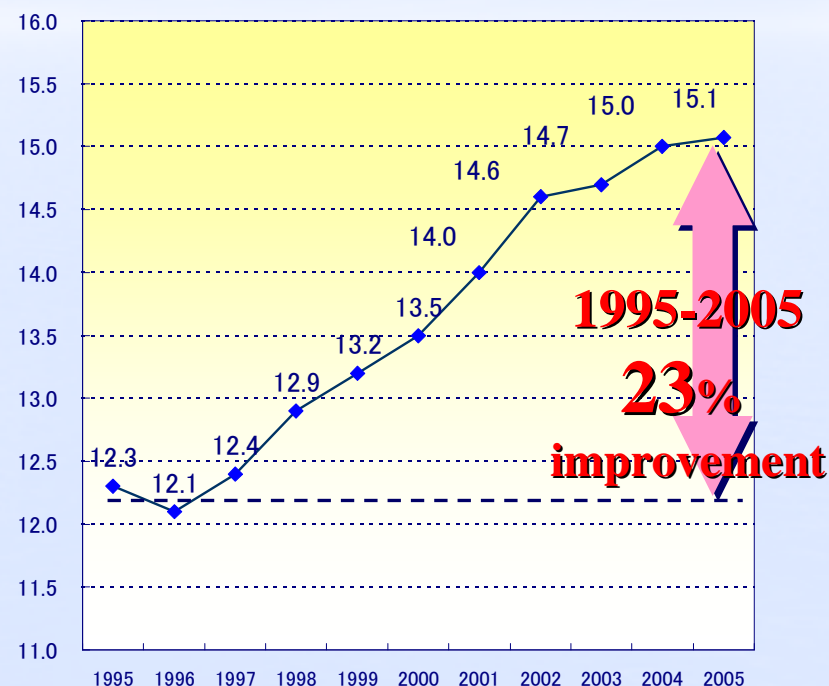
- Top Runner Program for Vehicles -

- **The Top Runner Program for vehicles regulating fuel economy standards was introduced in 1999 with the target year 2010.**
- **The fuel standard in 2010 was almost achieved in 2004.**
- **New fuel efficiency standard**
 - **Target year: 2015 (base year 2004)**
 - **Coverage: automobiles, trucks, buses both gasoline and diesel**
 - **Efficiency target**

Average fuel economy of gasoline passenger vehicles

Fuel economy (Km/L)

Source: Vehicle Fuel Economy List



Type	Efficiency target [2004 → 2015]
Automobiles	13.6km/l → 16.8kn/l 23.5% improvement
Small-size Buses	8.3km/l → 8.9kn/l 7.2% improvement
Small-size Trucks	13.6km/l → 16.8kn/l 12.6% improvement

3. The Energy Conservation Law and Present Status of Energy Efficiency and Conservation Measures

Policies for the Industrial Sector

- Number of factories with large energy consumption is limited
→ Regulatory measures work effectively
- Regulation (Energy Conservation Law)
 - Designate factories with annual energy consumption of more than 1500kl (crude oil equivalent) [about 13,000 factories]
 - Request the factories to;
 - improve energy efficiency by 1% annually
 - submit annual reports and mid-to-long term energy efficiency improvement plans
 - appoint energy experts (energy managers) in the factories
 - If the improvement is significantly insufficient administrative order will be issued → fine will be imposed
- Incentive measures for investment in energy efficiency facilities and equipment
 - Tax reduction and subsidies

Factory/Workplace Measures Under the Energy Conservation Law

○ Plan-based and voluntary energy control at relevant factories and workplaces shall be thoroughly and strictly managed in accordance with the Energy Conservation Law. Those factories and business establishments shall submit **periodical reports** on the use of energy, prepare and submit **mid- and long-term plans** for measures to achieve energy conservation targets, and appoint energy managers in accordance with the Law.

Factories/workplaces with high energy consumption
(Type 1 Designated Energy Management Factories)

• Annual fuel use: 3000 kl in crude oil equivalent or larger

Factories/workplaces with medium energy consumption
(Type 2 Designated Energy Management Factories)

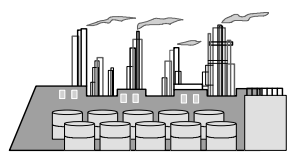
• Annual fuel use: 1500 kl in crude oil equivalent or larger

○Factories

- Measures**
- Appointment of Energy Manager (Mandatory to possess a license for a qualified person for energy management of type 1 designated factory)
 - Preparation & Submission of Periodical Reports
 - Formulation & Submission of Mid- and long-term Plans

○Workplaces

- Measures**
- Appointment of a qualified person for energy management of type 2 designated factory (Training Required)
 - Preparation & Submission of Periodical Reports
 - Preparation and Submission of mid- and long-term plans (Participation by a qualified person required)

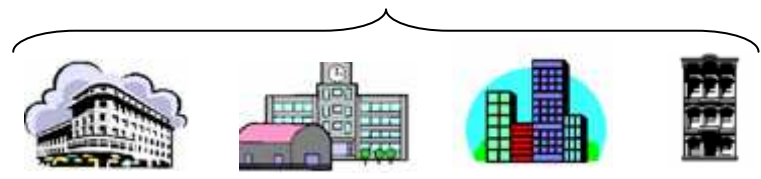


Factories

○Factories and workplaces

- Measures**
- Appointment of a qualified person for energy management of type 2 designated factory
 - Preparation & Submission of Periodical Reports

Workplaces



Department Store School Office Building Hotel

Policies for the Industrial Sector

- Energy Managers -

- **Human resources are the key to improve energy efficiency**
 - **Energy management is a daily activity finding energy inefficiency, providing options, introducing appropriate facilities or equipment, measuring the effect, etc.**
 - **Energy management requires expertise**
 - Ex. burner- appropriate mixing ratio of fuel and air**
- **Designated factories are required to appoint energy managers in the factories(1-4 people, according to the amount of energy usage)**
 - there are more than 30,000 energy managers in Japan**
- **To become a qualified energy manager, passing of a national examination and one year's practical experience are necessary**

Policies for Buildings and Residences

- Two important points:
 - To decrease loss of heat from buildings and residences
Regulation of standard on insulation and air-tightness
 - To improve energy efficiency of home appliances such as air-conditioners and refrigerators
Top Runner Program

Policies for Buildings and Residences

- Regulation of standard on housing energy efficiency -

Regulation of standard on housing energy efficiency
(Energy Conservation Law)

- **The standard for housing energy efficiency has been decided and strengthened**
- **To implement the regulation effectively**
 - request buildings with a floor space of more than 2,000m² to report on energy performance of buildings/residences at the time of construction or renovation
 - if the improvement is significantly insufficient, an administrative instruction shall be given and the status shall be publicize



Policies for the Transportation Sector

- Regulation of carriers and consigners -

Regulation on carriers and consigners

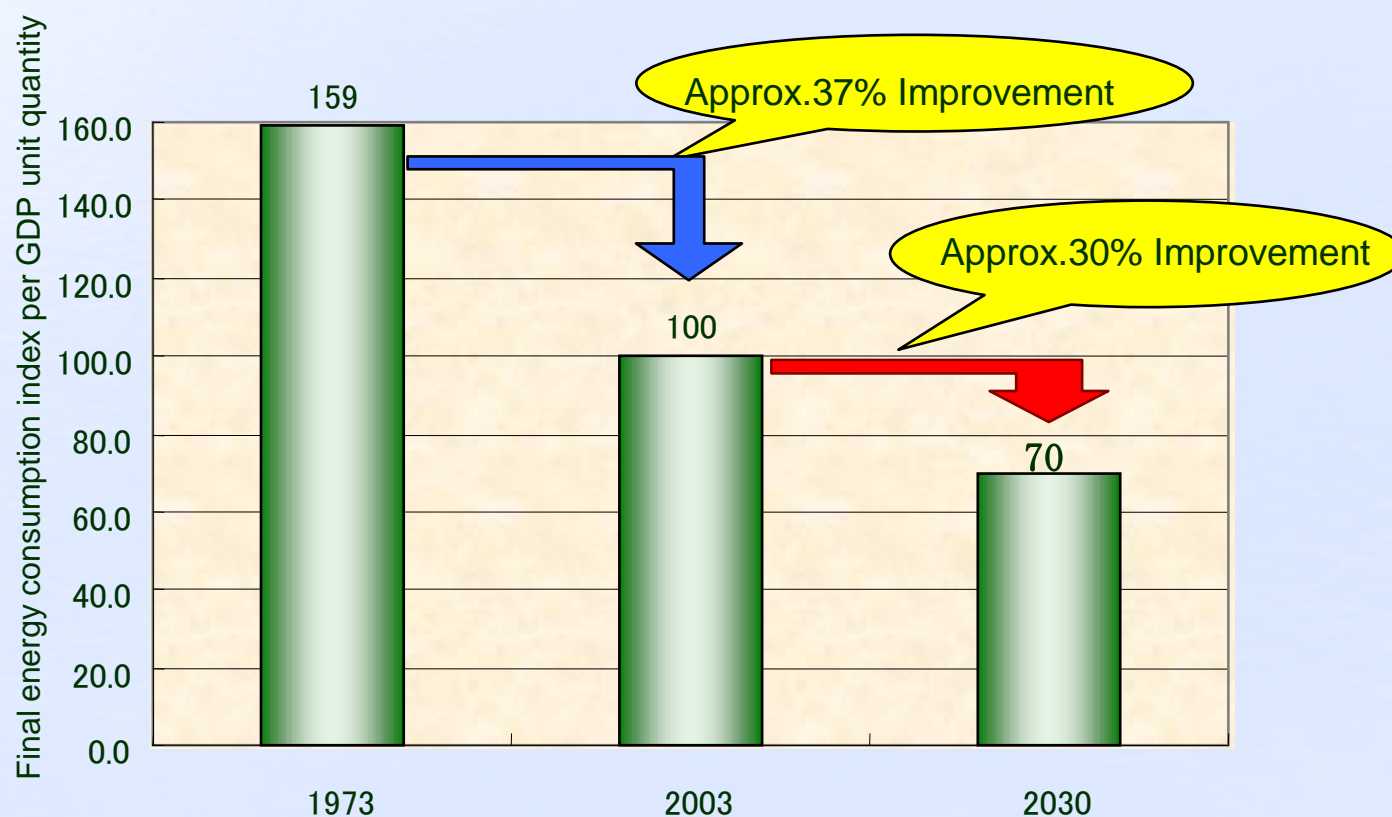
(Energy Conservation Law)

- **Designate carriers with ownership of 200 trucks or more and consigners with annual cargo of 30 million ton-kilometers or more**
- **Request the carriers and consigners to submit annual reports and mid-to-long term energy efficiency improvement plans**
- **If the improvement is significantly insufficient administrative order will be issued:**
 - **fine (s) will be imposed**

4. Expansion of Energy Efficiency Policies

Japan's new Target for Energy Efficiency

- Japan decided to aim to improve energy efficiency by at least 30% by 2030 ("New National Energy Strategy," May 2006)



Revise energy-efficiency policies and fundamentally strengthen measures with regulations and support

- Regulation

- Strengthening energy management of an overall company by introducing company-based energy management

- *Many supermarkets, hotels and food service shops are not subject to regulation because of low energy consumption.

- Strengthening energy-saving measures for buildings and residences

- Support

- Expanding supports for energy-saving measures to buildings and residences (new tax incentives)

- National campaign to promote energy-saving appliances

- <http://www.shouenekaden.com/>