Updates on key developments related to energy efficiency improvement: Japan

Outline

- Energy demand trends in Japan
- Recent developments relating to energy efficiency & conservation
- Amendments on the energy conservation law
- Building energy conservation – reporting system

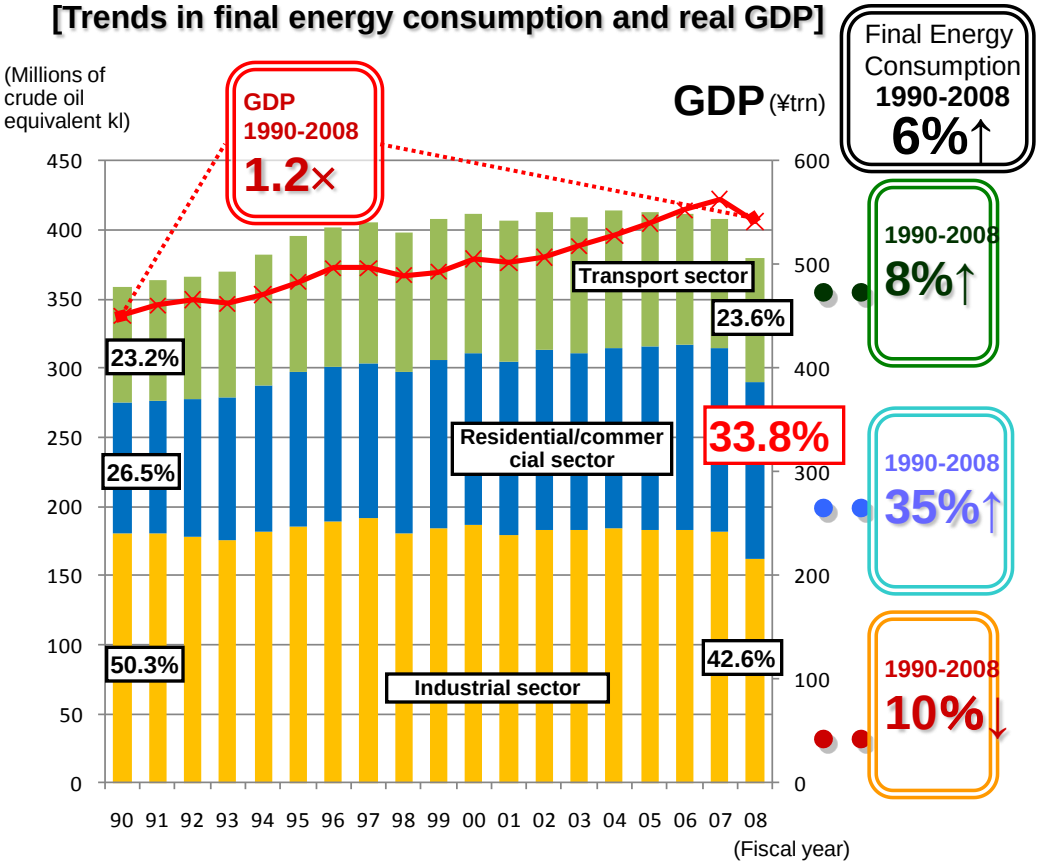
Recent Developments on Energy Efficiency & Conservation

- Amendments on the energy conservation law in 2009.
- Japanese cabinet decided – the Guideline on Policy Promotion for the Revitalization of Japan on the 17th of May, 2011.
  - The Council on the Realization of the New Growth Strategy will start making considerations for revising the strategy for becoming an environment and energy power.
  - To consider an innovative strategy for energy and the environment consisting of a short, medium, and long-term plans.
- The interim report on Innovative Energy and Environmental Strategies was announced by the Energy and Environment Council at its second meeting on the 29th of July, 2011.
  - It was stressed that "Safety and security" should be added as the 4th pillar to the traditional 3Es (energy security, economic efficiency, and environmental compliance) as the future energy and environmental strategy in Japan.
- The legislation to promote the use of renewable energy was passed on the 26th of August, 2011.

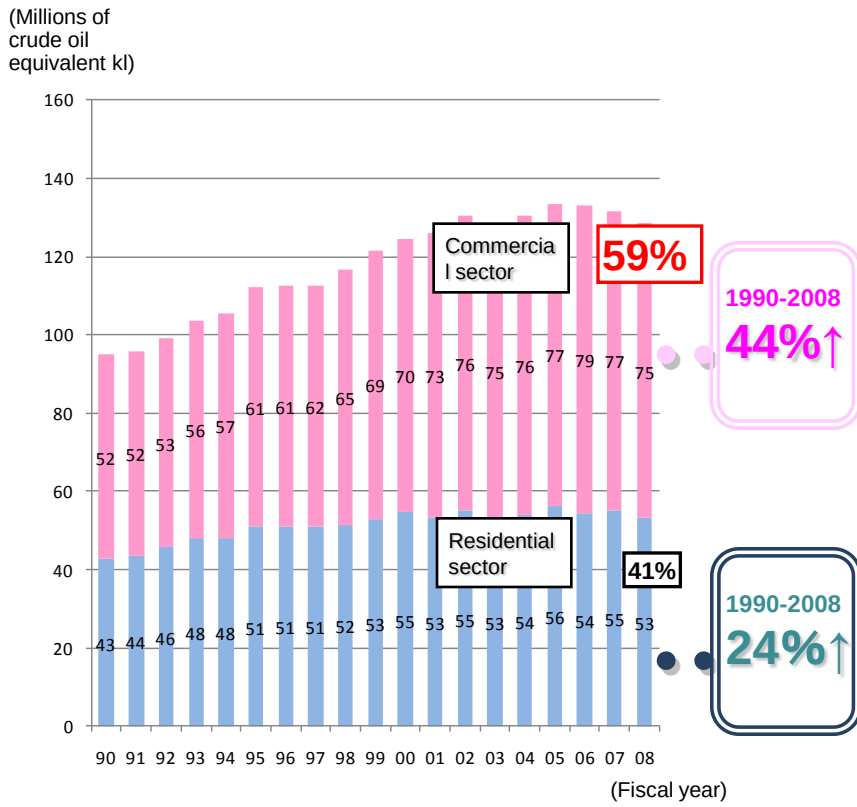
Trends in Japan's Final Energy Consumption and Residential/Commercial-Sector's Energy Consumption

- Residential/commercial-sector accounts for 30% or more of final energy consumption and has grown remarkably compared to the industrial and transportation sectors.
- Energy saving measures for commercial buildings are urgently required, since the commercial sector including office buildings consumes more than half of total energy consumption in the residential/commercial sector. Moreover its growth has been more striking than that of the residential sector.

[Trends in final energy consumption and real GDP]



[Breakdown of commercial and residential sectors]



Source: Energy Balances in Japan (Processed Statistics), Annual Report on National Accounts of Japan
Note: Owing to the revision of the method for compiling Energy Balances in Japan (Processed Statistics), it should be noted that figures for fiscal 1990 onward are based on a different compilation method from that used for previous figures.

Overview of the Energy Conservation Law

Factories/Business Establishments

-Specified business organizations
Energy management is made obligatory for organizations that are using more than prescribed energy in factories, etc.

- Franchise chains are viewed as business organizations and the same regulations are introduced for them.
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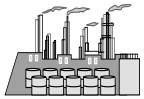
・Obligation to appoint energy management supervisors.
・Obligation to submit mid-term and long-term plans.
・Periodic report of the state of energy use.



Transportation

○ Specific transport business organizations (Freight , passengers)
(Number of cars owned: 200 trucks or more, 300 trains or more)
- Obligation to submit mid-term and long-term plans
- Obligation to periodically report the state of energy use

○ Specific cargo owners
(Transport volume a year, 30 million ton kilo or more)
- Obligation to submit plans
- Obligation to periodically report the state of energy used for consigned transport

Residences and Buildings

○ Specific buildings
(Total floor area, 2,000m^2 or more)
- Obligation of construction owners who build or reform specific buildings to report energy conservation measures to administrative bodies

- Obligation to report the state of periodic maintenance

Measures for Machinery and Equipment

Top runner program
- Energy conservation criteria for passenger cars, air conditioners, TV, etc. From among the products currently available in the market, the product the energy conservation efficiency of which is the best in the same product category is selected, and other products in the same product category are asked to make their performance the same as or better than the product thus selected.

Provision of Information

- Announcement of energy conservation products introduced by electricity and gas companies, and announcement of activities, including implementation and achievement, to provide information
- Provision of understandable energy conservation information (yearly energy consumption, fuel efficiency, etc) by retail stores of hole electric appliances, etc.

Regulations Related to Energy Conservation Performance of Residences/Buildings

＜Before FY2008 Revision＞

Those who are planning to construct large-sized (2000m^2 or above) residences/buildings must submit notification concerning relevant energy conservation measures etc.

Revision

＜After FY2008 Revision＞

①Orders and fines are introduced for large-sized (2000m^2 or more) residences/buildings

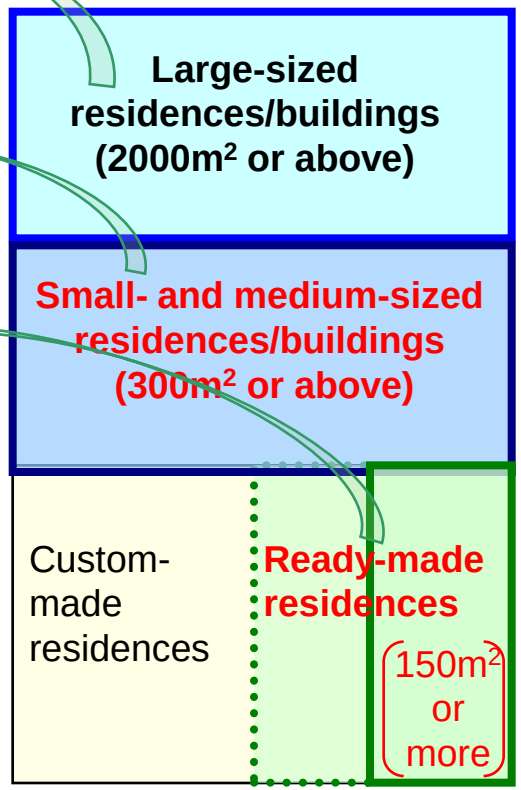
②To include small- and medium-sized (300m^2 or above) residences/buildings for the regulation

③Introduction of "Top Runner Standards for residences" ※
→Applicable to new residences sold by business operators engaged in supplying residences (housing manufacturers etc.)

④Promotion of labeling of energy conservation performance of residences/buildings

※② was enforced in April, 2010 while others were enforced in April, 2009.

〈Framework of the revised Energy Conservation Law〉

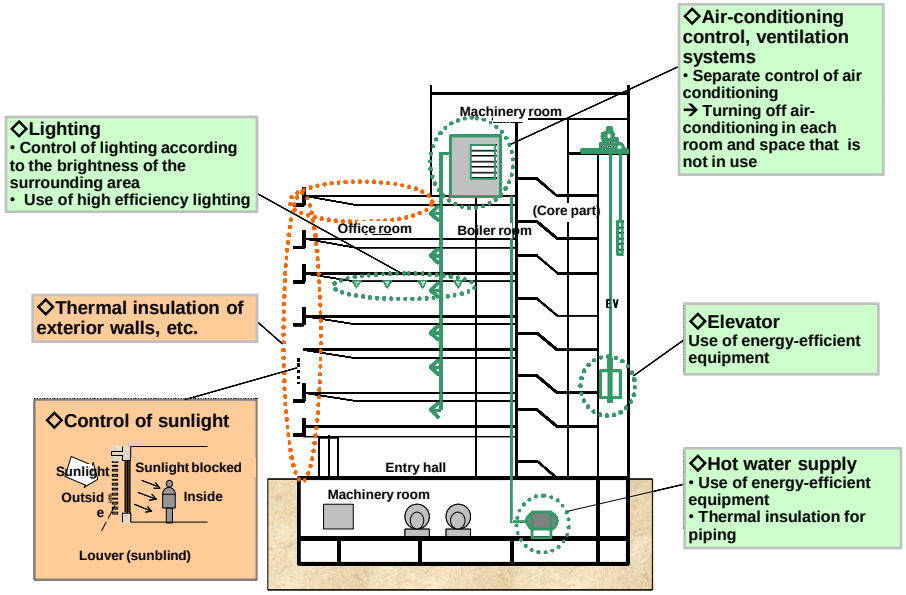


※ FY2010 revisions shown in red

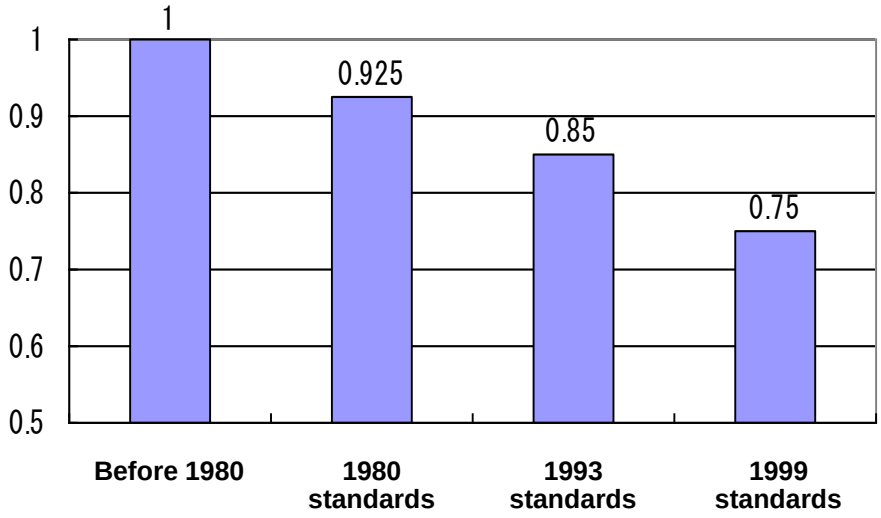
Energy efficiency standards for buildings

- Building Owners are required to meet energy efficiency standards under the Energy Conservation Law.
- The energy efficiency standards for buildings consist of ones for heat insulation performance like envelope design (specifications of glass, thickness of heat insulator) and ones for energy efficiency of building equipment.
- Energy efficiency standards were enacted in 1980, and were then revised in 1993 and again in 1999.

- **Examples of energy efficiency measures for buildings**



- **Comparison of building energy consumption* in each energy efficiency standards**



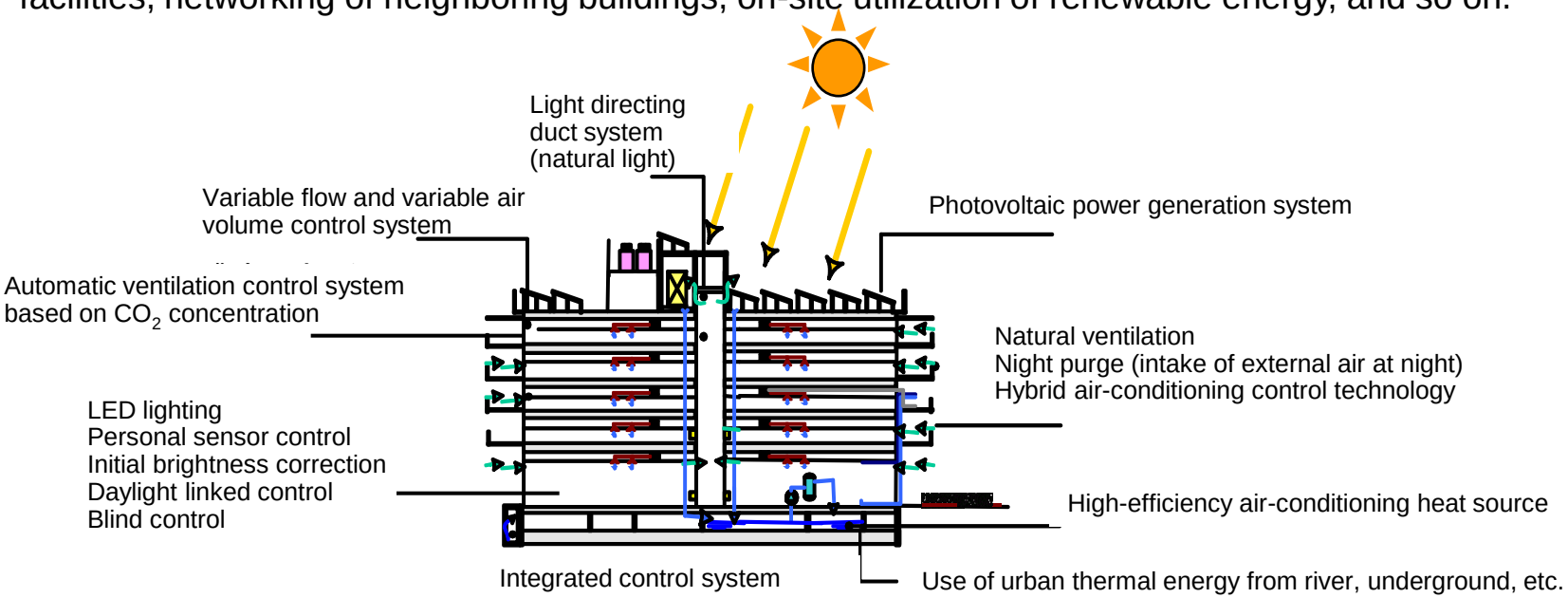
*** Assuming energy consumption in buildings before 1980 (before the establishment of the standards) as 1, energy needed for an in-room environment equivalent to that before1980**

Committee on Realization and Dissemination of ZEB

- Potential for improving energy efficiency is high in the commercial sector. The International Energy Agency (IEA) recommended acceleration of the “Net-Zero Energy Buildings” (ZEB) at the G8 Hokkaido Toyako Summit. In April 2009, Japan determined to accelerate ZEB development with a view to making newly constructed public buildings ZEB by 2030.
- In order to examine the roadmap to realization and dissemination of the “Net-Zero Energy Buildings (ZEB),” a “Committee on Realization and Dissemination of ZEB” (chaired by Prof. Yuzo Sakamoto, the School of Engineering, the University of Tokyo) has been held after May 2009 (8 times in total). The committee members also visited Europe and the United States to understand their policies and technological trends of ZEB.

[Definition of ZEB]

A building that consumes zero or nearly zero energy on an annual net basis by reducing primary energy consumption in the building through enhanced energy efficiency performance of the building envelop and facilities, networking of neighboring buildings, on-site utilization of renewable energy, and so on.



Measures for Realization and Dissemination of ZEB (1)

- To promote market transformation for realization and dissemination of ZEB, it is essential to carry forward 1) regulations, 2) supportive measures and 3) information dissemination to and enlightenment of the society in a balanced manner.
- It is required to accelerate three innovations in 1) institutional, 2) technological and 3) working style aspects.
- Achievement of ZEB should be considered as an opportunity to enhance our industrial competitiveness.

1) Regulations

- Strengthen the current standards for the buildings in the Energy Efficiency Act. (formulated in 1999 and almost all of newly constructed buildings now achieve them)
- Evaluate energy consumption of the entire building in a comprehensive manner in the regulation.

  Inclusion of power consumption of the OA equipment, lighting, etc., and making the energy efficiency standards mandatory are also envisaged in the future.
- Define the milestone on to what extent and when the energy efficiency standards will be strengthened toward ZEB in the future.
- Set benchmarks to determine the operational performances, and promote tenants' moving into more energy-efficient buildings.

2) Supportive measures

- Enhance tax incentives, budgetary supports.
- Support technological innovation.

Promotion of ZEHs and ZEBs (Residential &Commercial sectors)

Future visions

【House】

- Making net-Zero-Energy Houses (ZEH) available by 2020.
- Realizing ZEHs in new average houses by 2030.

【Building】

- Realizing net-Zero-Energy Buildings (ZEB) in new public buildings by 2020.
- Realizing ZEBs in new average buildings by2030 .