METI
Ministry of Economy, Trade and Industry

The Evolution of Energy Efficiency Policy to Support Clean Energy Transition in Japan

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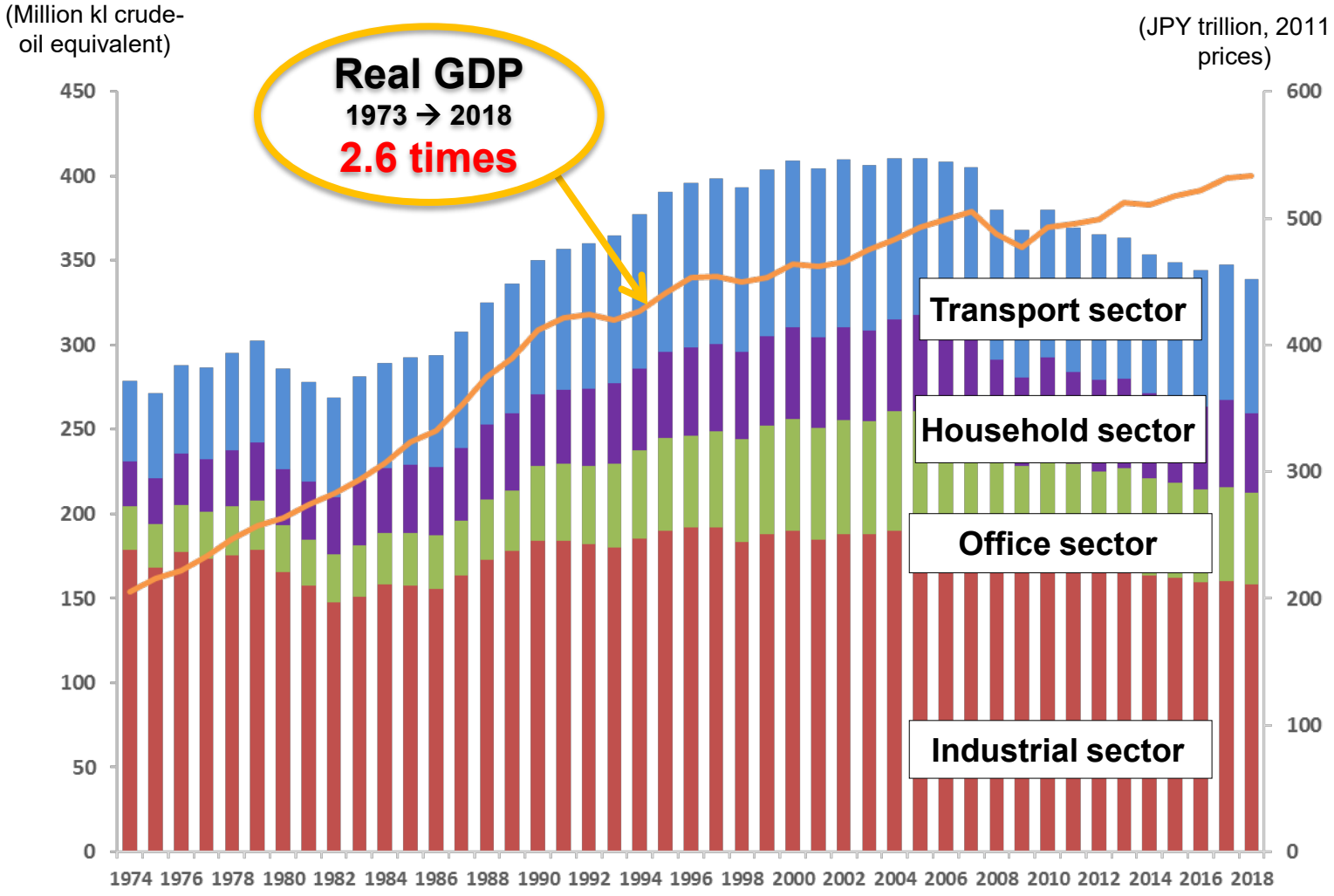
Ministry of Economy, Trade and Industry (METI), Japan

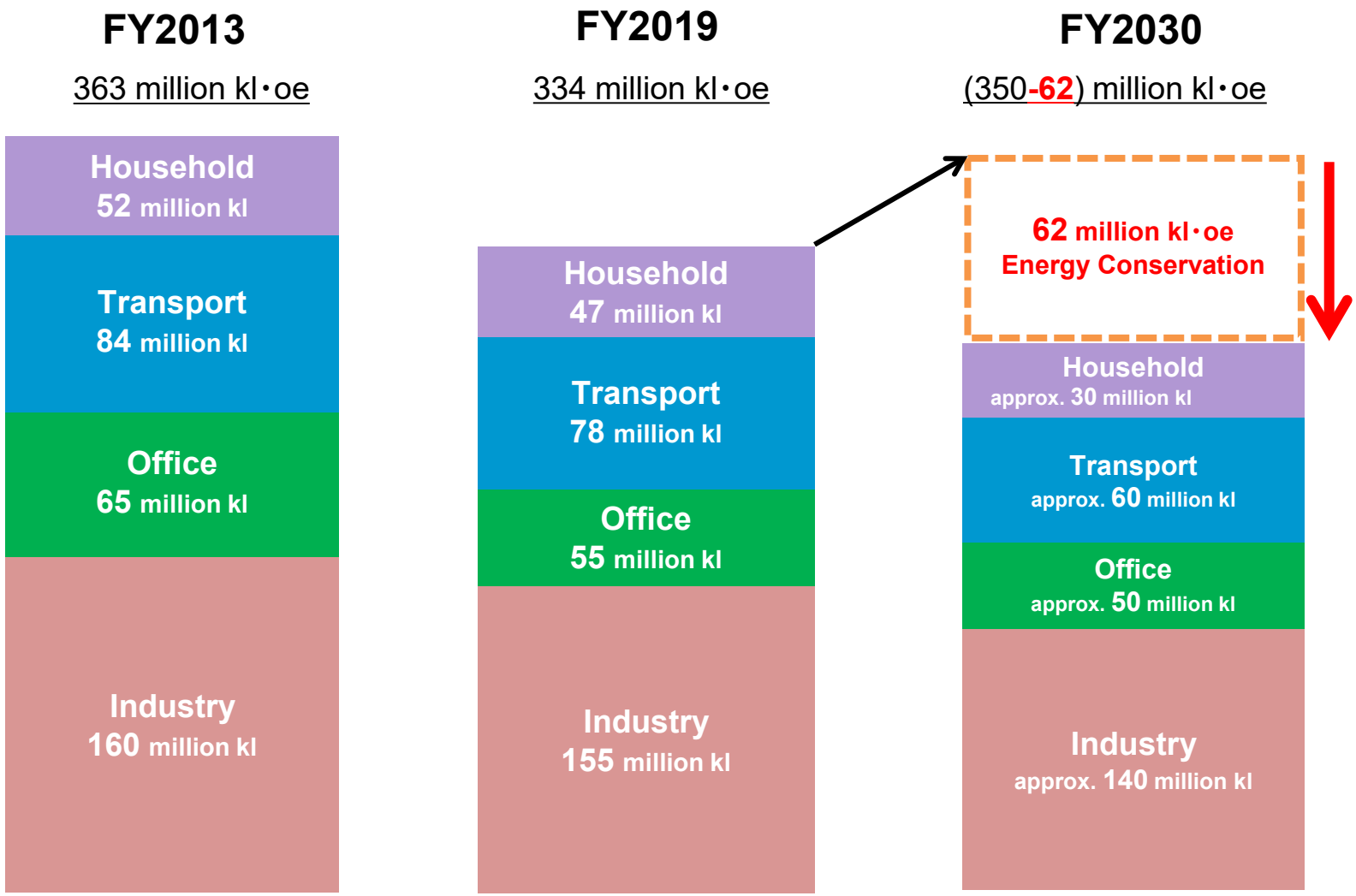
Trends in final energy consumption

➔ **Real GDP is up 2.6 times** since the oil crisis in 1970s, while **final energy consumption is up 1.2 times**.

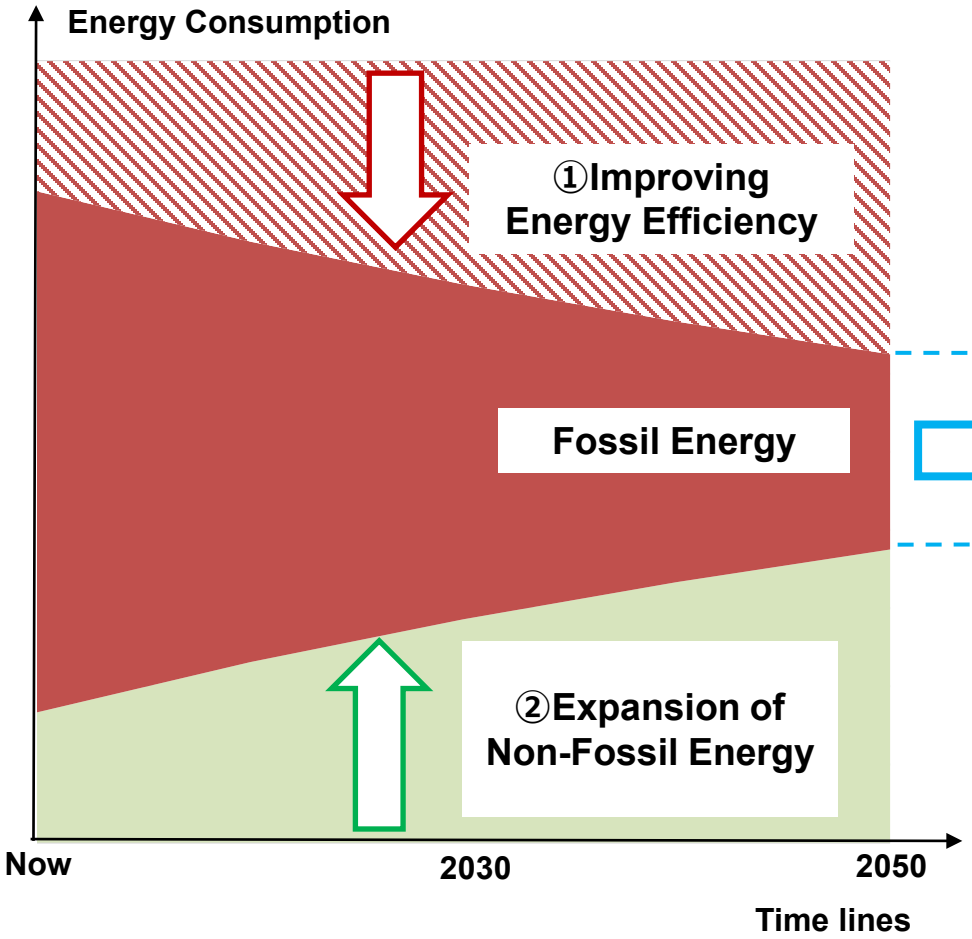


Final energy consumption	
Total	1973 → 2018 **1.2 times**
Transport	1973 → 2018 **1.7 times**
Household	1973 → 2018 **1.9 times**
Office	1973 → 2018 **2.1 times**
Industry	1973 → 2018 **0.8 times**

The policy target of energy conservation



The Evolution of Energy Efficiency Policy to Support Clean Energy Transition



＜Improving Energy Efficiency＞

[Industry]

- Expansion and revision of Industrial and Business Benchmarking
- Support for development, practical application, and introduction of energy efficiency technologies

[Building]

- Expanding ZEB/ZEH, reviewing building energy efficiency standards
- Reviewing and strengthening the Top Runner Program for equipment and building materials

[Transport]

- Reviewing system, improving logistics Efficiency

Remaining CO_2

Necessary technologies in the future: CCS, DACCS, BECCS, etc.

<Expansion of Non-Fossil Energy>

- Expand introduction of non-fossil energy such as renewable energy for self-consumption and hydrogen etc. (i.e., upgrading of demand)
- Optimization of demand according to electricity supply and demand conditions, including use of surplus renewable energy
- Utilization of on-site power generation and equipment control to stabilize the grid, etc.

The Overview of Demand-side Policies: Regulation and Incentives

Regulation

Energy Conservation Act
(the Act on Rationalizing Energy Use and Shifting to Non-fossil Energy)

- Reporting obligation for large-scale enterprises
- Requirement to achieve energy efficiency criteria for manufacturers (called “Top Runner Program”)

Incentives

Energy Conservation Subsidies Package (2022/2023)

- Replacing inefficient facilities
- Experts’ advice for SMEs
- Insulation retrofitting and residential water heater (heat pumps)

Energy Conservation Act: (1) Reporting obligation for large-scale enterprises

Enterprises

↓ Submission of periodic reports

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↓ Evaluation of the reports

Guidance

↓ In case an Enterprise's efforts are **utterly insufficient**

Minister's order to submit improvement plan

↓ In case the enterprise does **not follow** the order

Announcement and additional order with penalty

○The amount of fossil energy consumption
○The amount of **non-fossil energy consumption**
○The plan of energy conservation and **shift to non-fossil energy**

Evaluation

○**Non-binding target**
・Reduction of specific energy consumption by 1% or more on an annual average basis, etc.

○**Benchmark index/Target levels**
(only for applicable sectors*)
Target level: Level met by the best operators in each industry

* Manufacture of steel, power supply, manufacture of cement, manufacture of paper, petroleum refinery, and manufacture of chemicals

○As the result,
- Achievers are evaluated as **excellent (S-class) businesses**.
- For large companies, **the acquisition of S-Class is required for subsidies.**

Energy Conservation Act: (1) Reporting obligation for large-scale enterprises

1979.

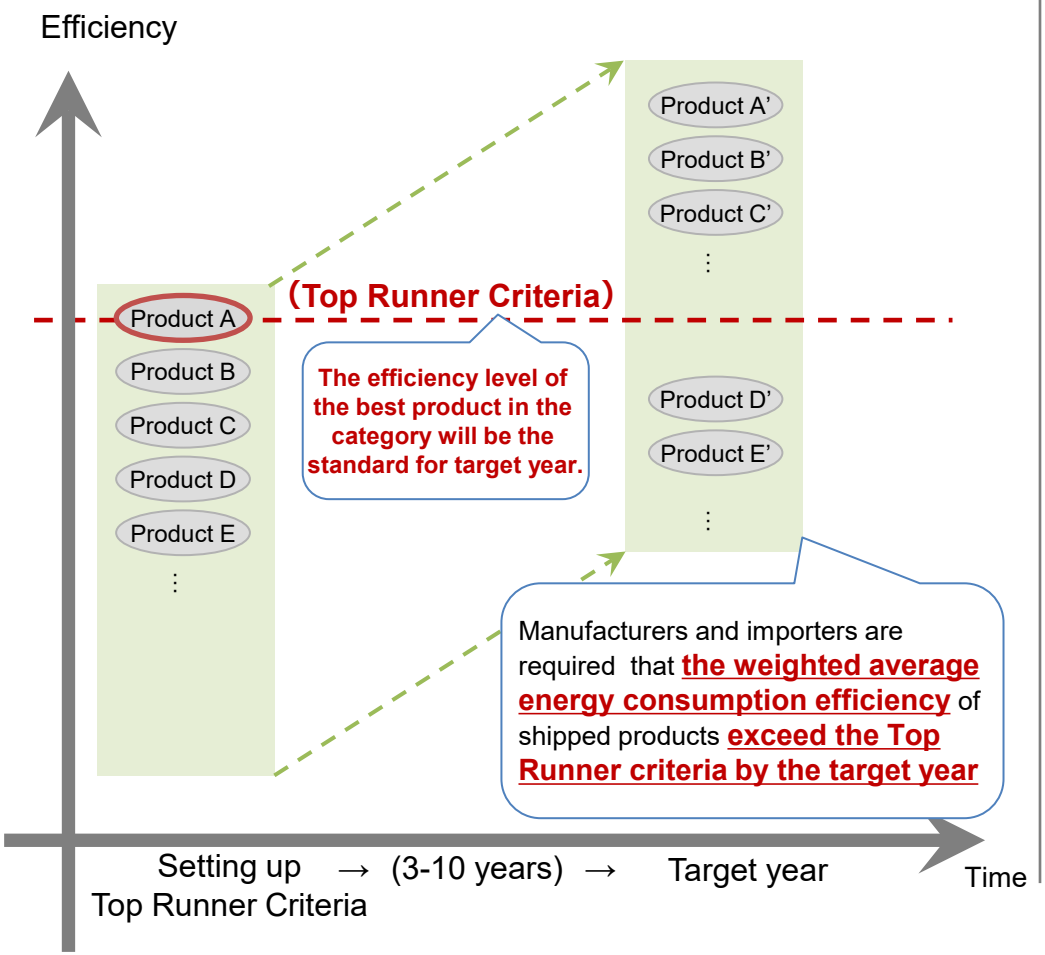
The Act on Rationalizing Energy Use

2022.

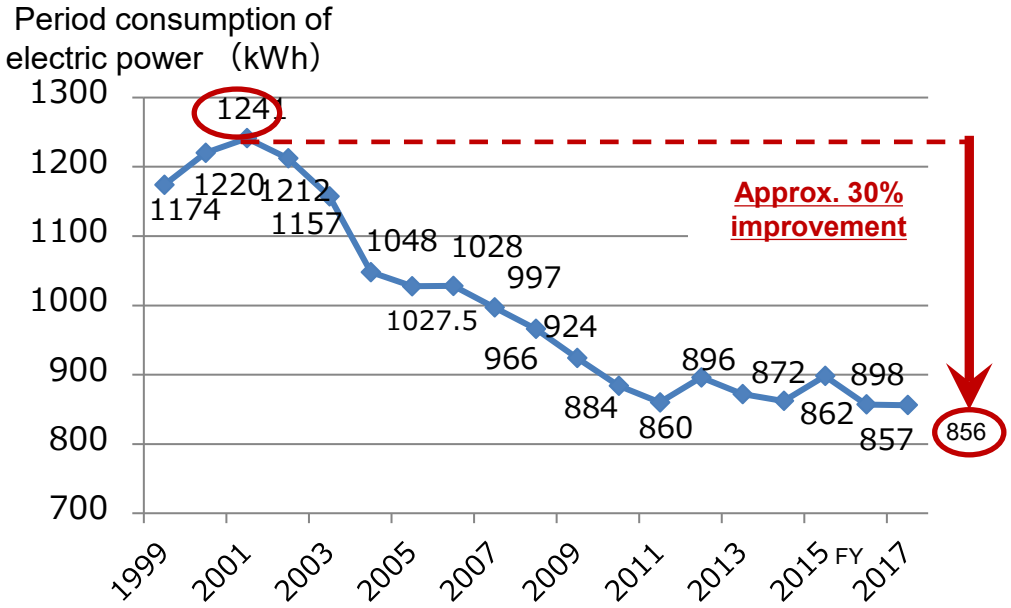
The Act on Rationalizing Energy Use and Shifting to Non-fossil Energy

Energy Conservation Act: (2) Requirement for Manufacturers

How Top Runner Program Works



The Outcome Example: Air-conditioners



- Trends in simple averages for air-conditioners (Cooling capacity 2.8kW (14.6 - 21.9m^2))
- The period consumption of electric power is based on JIS C 9612:2005

Source: Energy efficiency performance catalogs of each FY (summer, winter)

Incentives: Energy Conservation Subsidies Package

		Dec. 2022	Dec. 2023
Businesses	Replacing inefficient facilities	500 billion JPY = **3.4 billion USD** (the amount of next 3 years)	700 billion JPY = **4.8 billion USD** (the amount of next 3 years)
	Experts' advice for SMEs	2 billion JPY = **14 million USD**	2.1 billion JPY = **14 million USD**
Households	Insulation Retrofitting Residential Water Heater	280 billion JPY = **1.9 billion USD**	420 billion JPY = **2.9 billion USD**

∗ Amount assuming JPY145.0 per USD

Incentives: (1) Replacing inefficient facilities

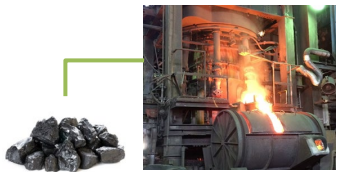
Type 1: Energy efficiency improvement throughout the plant or building

Improvement Rate: **10%** or Reduction of Energy Consumption **700kloe**

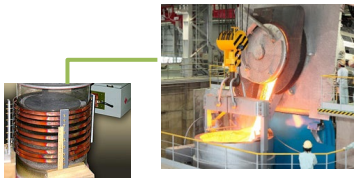
New

Type 2: Select facilities from the list
***Specialized for Electrification and Fuel Switching**

Coal Furnace



Electric Furnace



*Facilities example

Type 3: Select facilities from the list

Heat Pumps

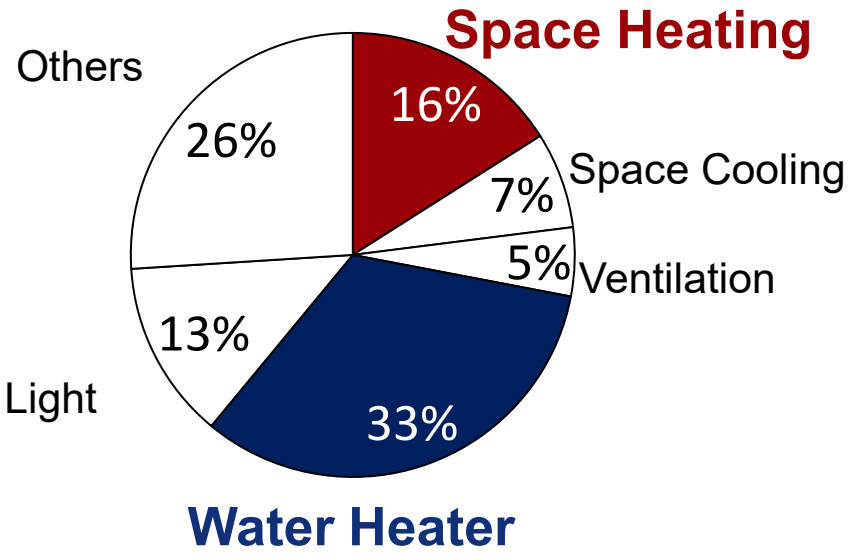
Air Conditioner

Motors

*Facilities example

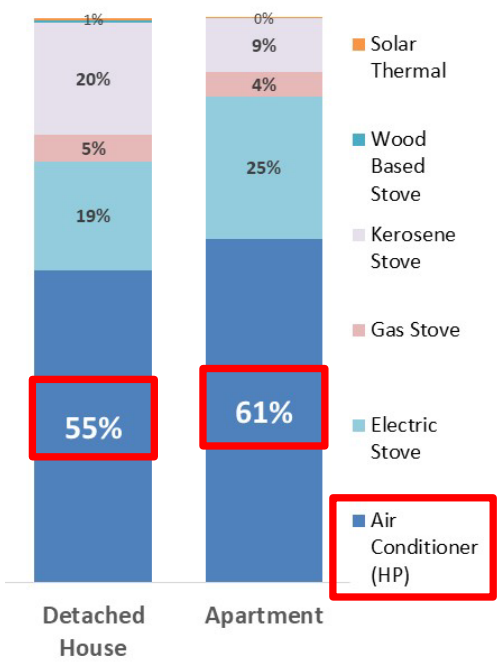
Incentives: (2) Residential Water Heater

Household Energy Consumption

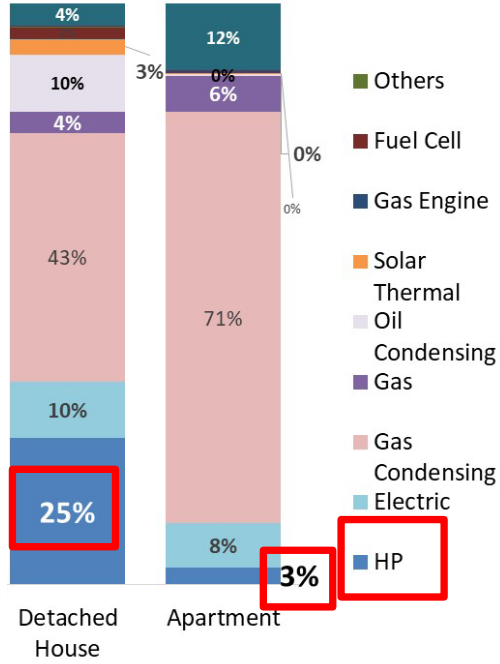


- While central-heating system (with water heater) is the main system of space heating in Europe, individual-heating system (with air conditioner) is the main system of space heating in Japan.
- Japan people habitually take a bath, so water heater occupies 33% of the household energy consumption.

Space Heating Equipment



Water Heater



*each graph shows warmer climate case

Incentives: (2) Residential Water Heater

	Subsidy for Owners (2022)	Subsidy for Owners (2023)
① Heat Pump Water Heater	50,000 Yen/unit	100,000 Yen/unit
② Hybrid Water Heater	50,000 Yen/unit	130,000 Yen/unit
③ Residential Fuel Cell	150,000 Yen/unit	200,000 Yen/unit

① Heat Pump Water Heater

Source: Panasonic

② Hybrid Water Heater

Source: Rinnai

③ Residential Fuel Cell

Source: Aisin Corp.

*Subsidy amount depends on the additional function (e.g. DR-Ready). Described is the main example of amount.

G7 Communiqué: “Energy Efficiency First” and Developing demand side policies

G7 Hiroshima Leaders’ Communiqué

Energy - 25.
“Through our experience in coping with past and current energy crises, we highlight the importance of **enhanced energy efficiency and savings as the “first fuel”**, and of **developing demand side energy policies**.”

G7 Climate, Energy and Environment Ministers’ Communiqué

63. Energy efficiency.
・・・We underline the need for ‘**energy efficiency first**’ to be recognized as a driving principle for our actions to ensure that energy efficiency and energy savings are duly taken into consideration in policy, planning and investment decisions. We also note that **energy efficiency regulations**, such as vehicle fuel efficiency regulations, building codes, minimum energy performance standards, energy performance certificates, and energy reporting systems for large scale consumers continue to gain momentum. **These measures will leverage further efforts to decarbonize energy demand**, with strategic approaches including electrification, fuel switching, grid flexibility, digitalization of energy demand information and disclosure of energy and climate related information. ・・・

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