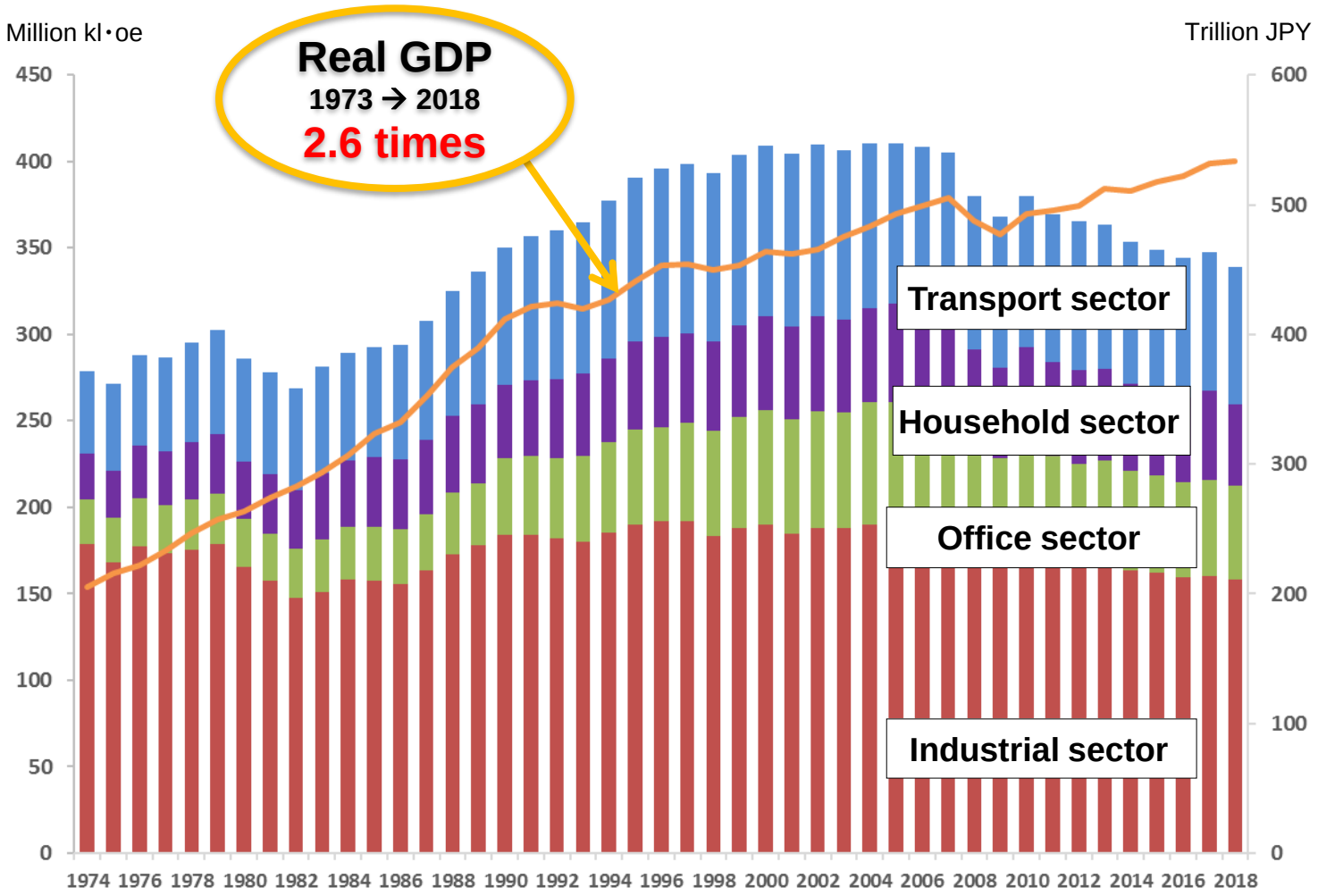
METI
Ministry of Economy, Trade and Industry

Energy Efficiency Policy
&
Transportation-related policies for CN in Japan

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

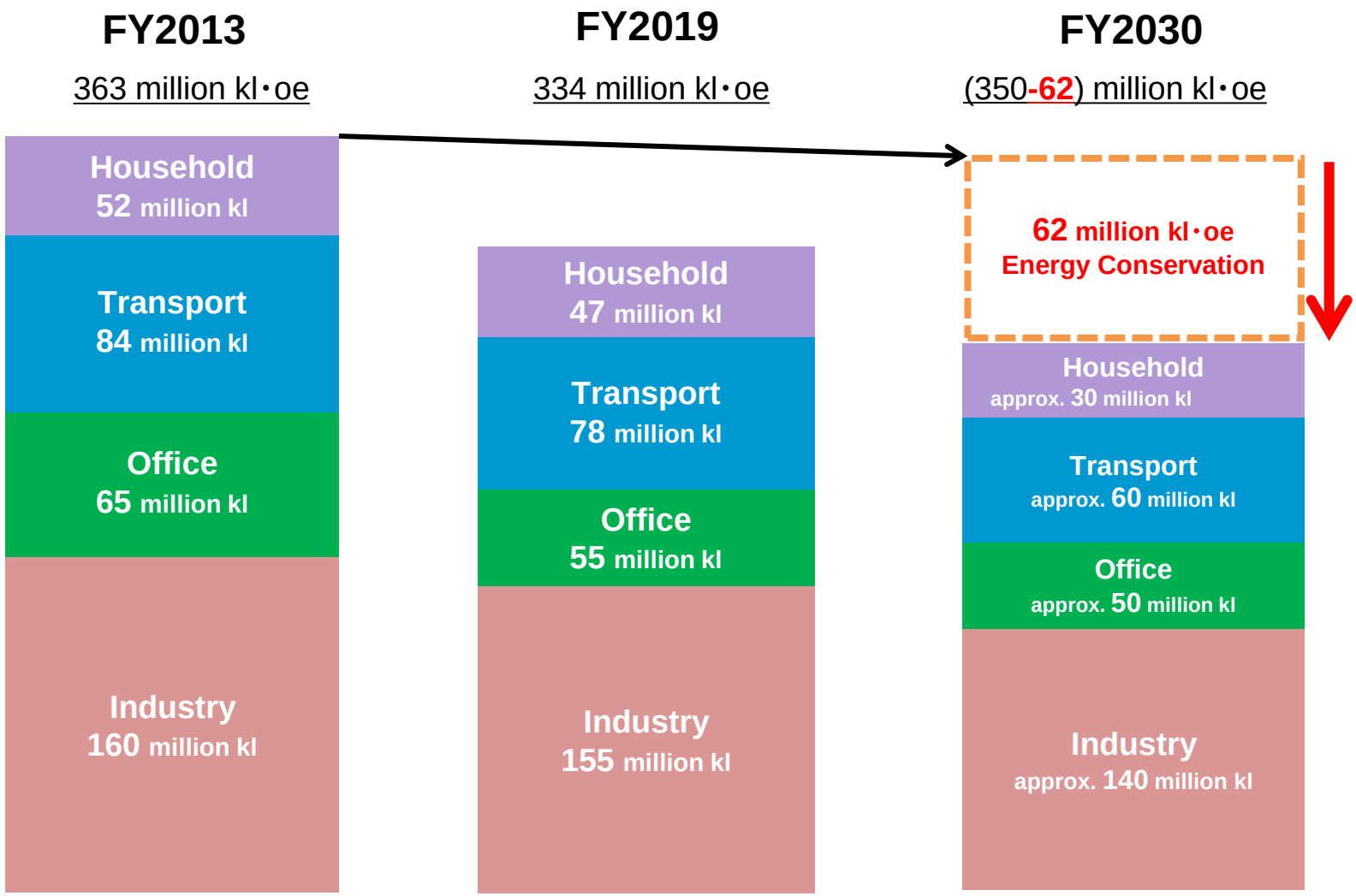
Final energy consumption

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

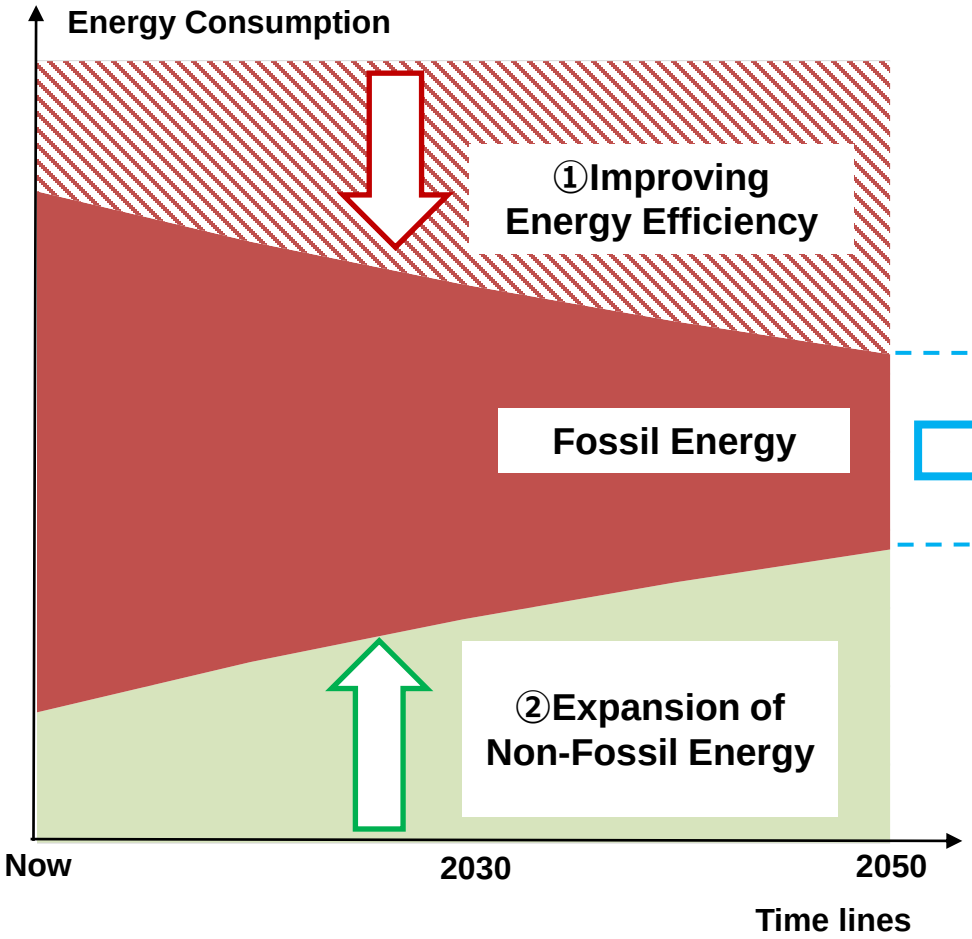


Final energy consumption	
Total	1973 → 2018 **1.2 times**
Transport	1973 → 2018 **1.7 times**
Household	1973 → 2018 **1.9 times**
Office	1973 → 2018 **2.1 times**
Industry	1973 → 2018 **0.8 times**

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 （For reference）

Regulation

Energy Conservation Act

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

Buildings Energy Conservation Act

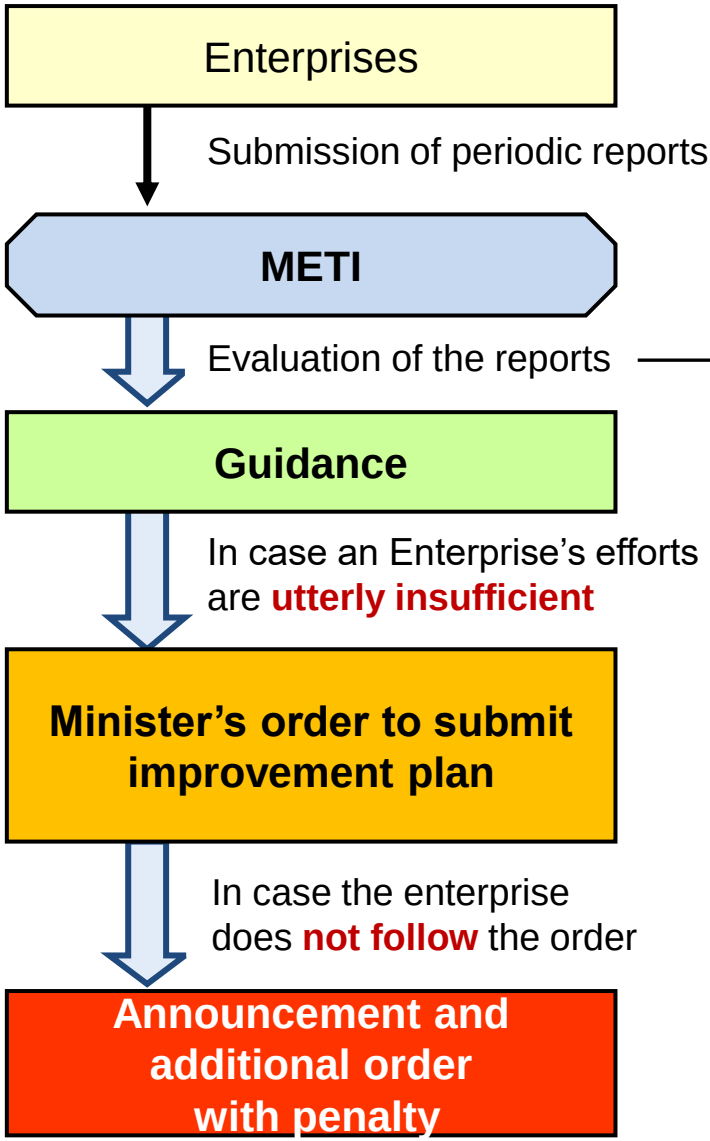
- Requirement to comply with the energy performance standard(EPC)

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



○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.

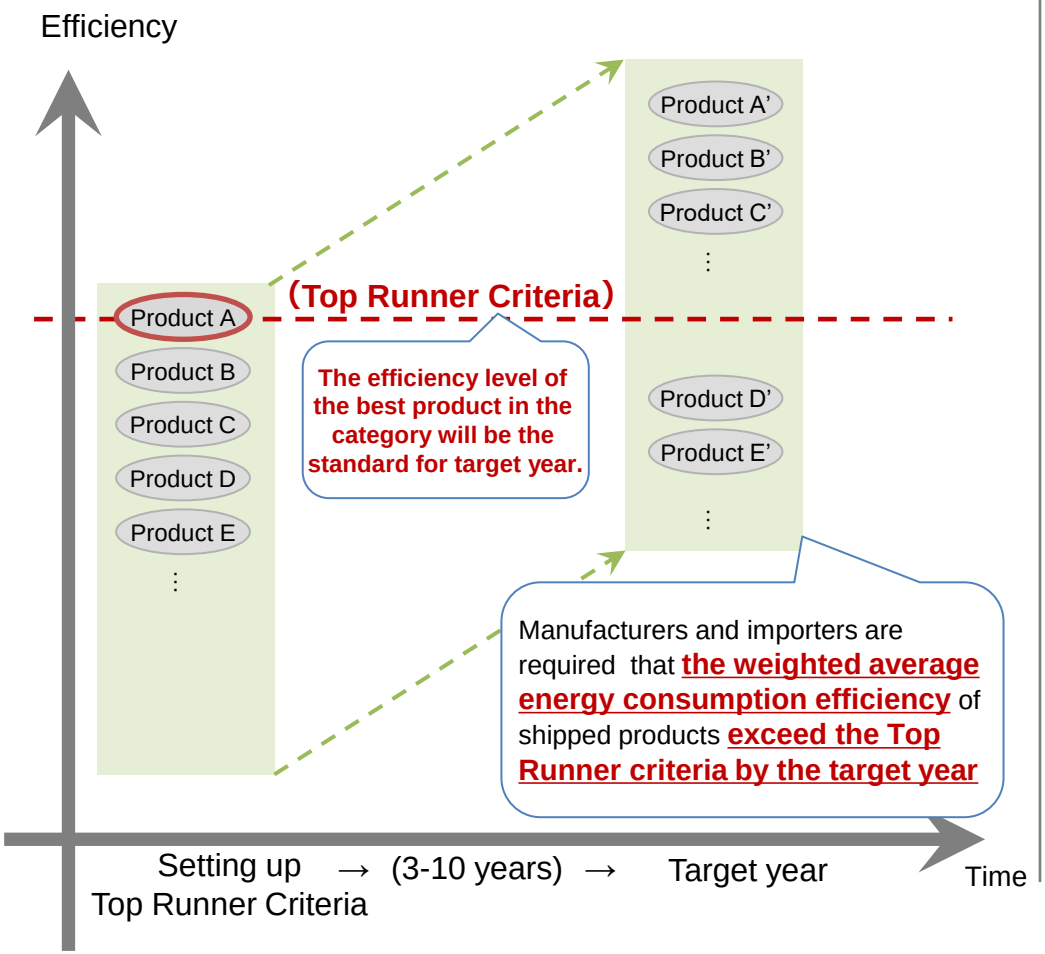
○**Benchmark index/Target levels**
(only for applicable sectors*)
Target level: Level met by the best operators in each industry

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

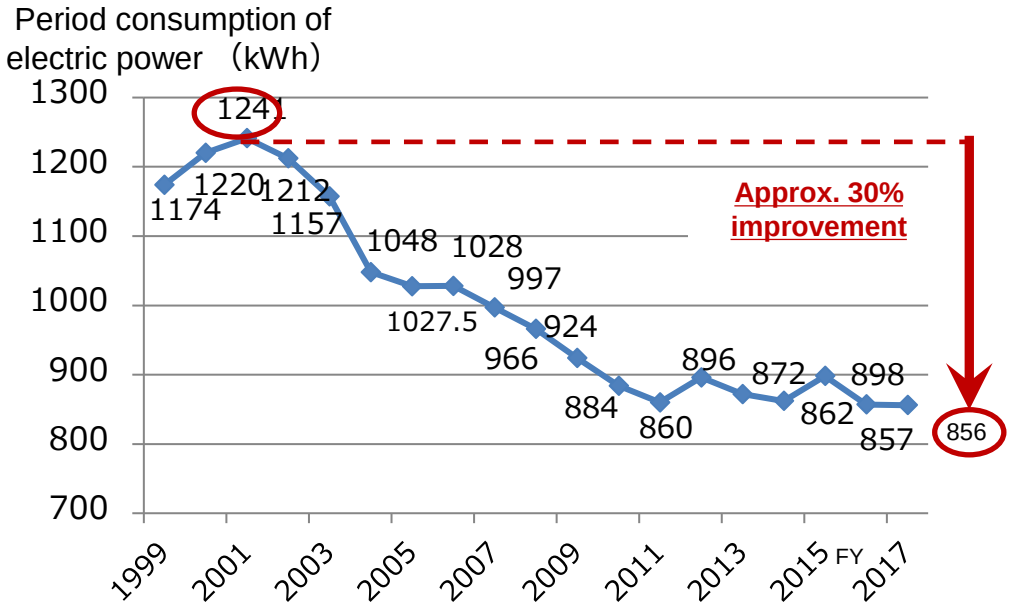
○As the result,
- Achievers are evaluated as **excellent (S-class) businesses**.
- For large companies, **the acquisition of S-Class is required for subsidies.**

Energy Conservation Act: (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 = **3.2 billion USD** (the amount of next 3 years)	700 billion JPY = **4.5 billion USD** (the amount of next 3 years)
	Experts' advice for SMEs	2 billion JPY = **12.8 million USD**	2.1 billion JPY = **13.5 million USD**
Households	Insulation Retrofitting	280 billion JPY = **1.8 billion USD**	420 billion JPY = **2.7 billion USD**
	Residential Water Heater		

*Exchange rate: 1 USD = 156 JPY (as of May. 9, 2024)

Incentives for businesses : Replacing inefficient facilities

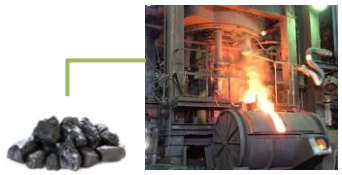
Type 1: Energy efficiency improvement throughout the plant or building

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

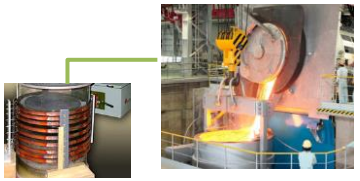
New

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

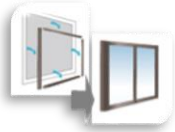
*Facilities example

Incentives for existing residential buildings in 2024

Renovation Subsidy

- Support up to 300,000 JPY for home renovations, including heat insulation of windows, floors, and other house envelops.

250* billion JPY



Window insulation Subsidy

- Support up to 2 million JPY for window insulation retrofitting by adding interior windows or replacing glasses.
- Eligible models must meet the criteria of the Top Runner Program.

135 billion JPY

Water heater Subsidy

- Support of approximately 100,000 to 200,000 JPY for installation of heat pump water heaters, household fuel cells, and hybrid (gas + heat pump) water heaters
- Eligible models must meet the criteria of the Top Runner Program.

58 billion JPY

Water heater Subsidy
(specialized for rental apartment buildings)

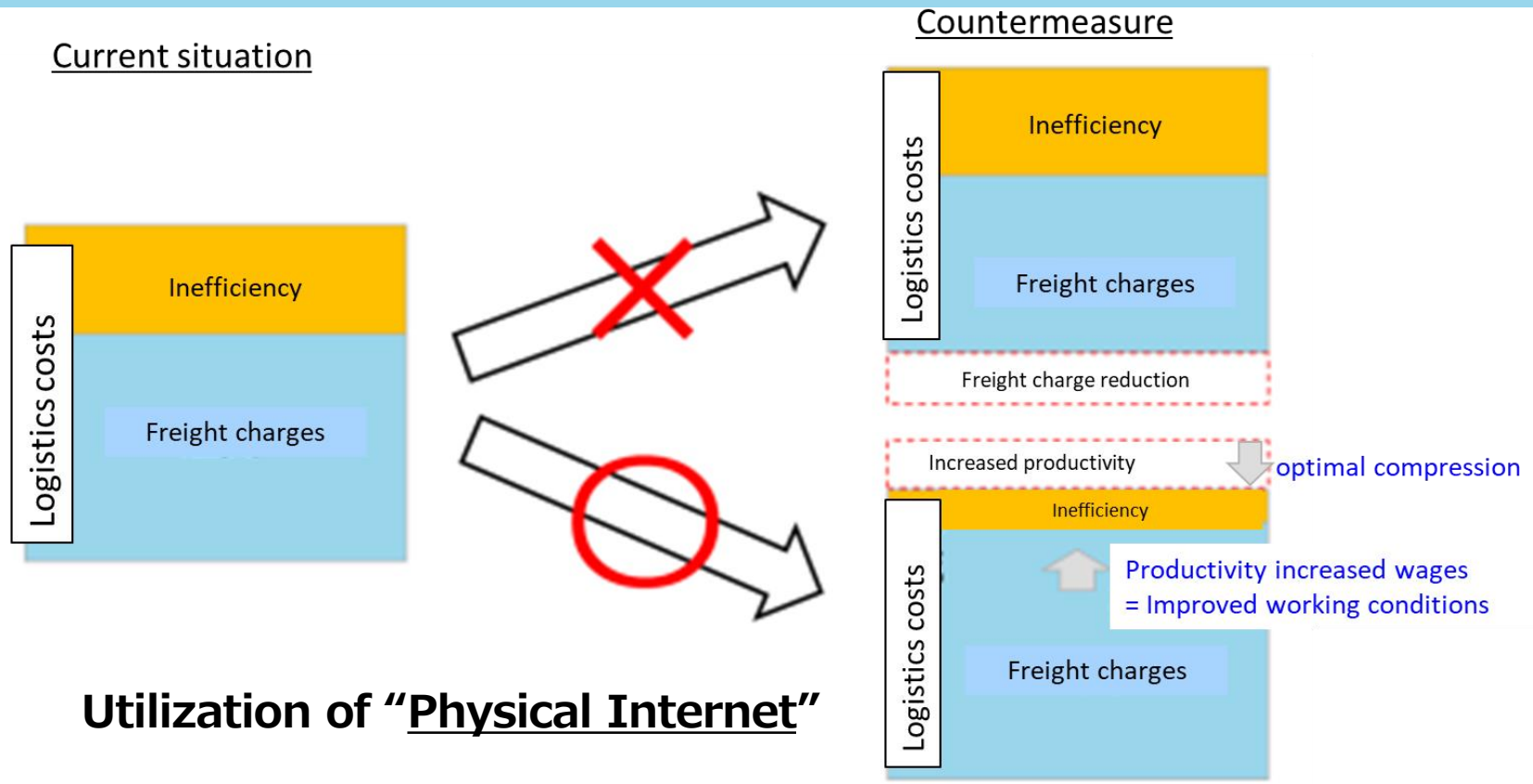
- Support of up to 70,000 JPY for the installation of a high energy consumption efficiency gas water heater with latent heat recycling in rental housing complexes where it is difficult to install a heat pump water heater due to the small size of the dwelling unit, etc.
- Eligible models must meet the criteria of the Top Runner Program.

18.5 billion JPY

*Total amount of support for home renovation and for the acquisition of new energy-efficient homes.

Response to the Logistics Crisis

- For the transportation sector, the government aims to reduce greenhouse gas emissions in FY2030 by 35% from the FY 2013 level.
- In the process of achieving this climate change target, it will lead to inflation in the cost of logistics. **="Logistics Crisis."**
- It is necessary to construct a next-generation logistics system that balances the needs of shippers to control the cost-to-sales ratio and the needs of logistics providers.

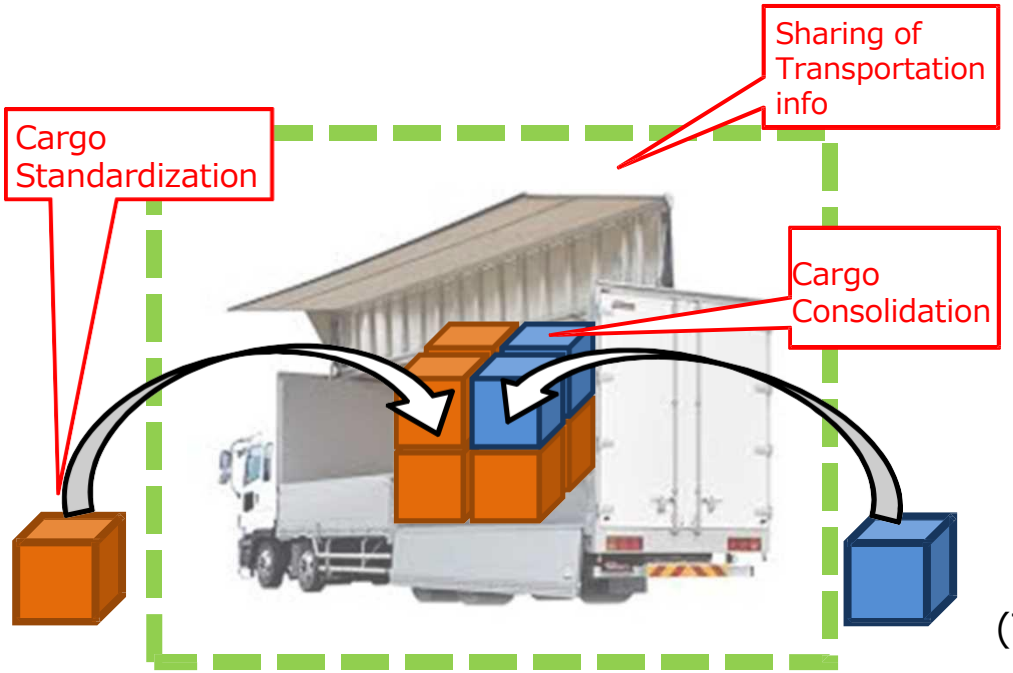


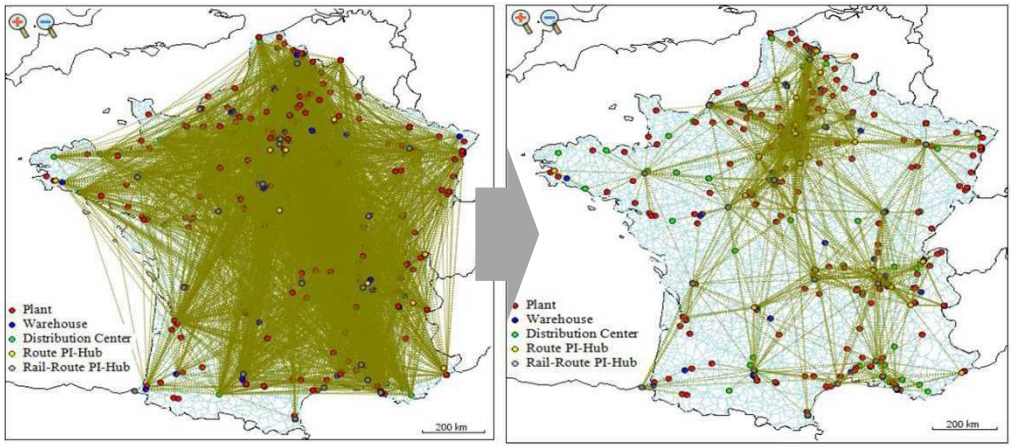
Utilization of "Physical Internet"

Physical Internet (next-generation logistics system)

- **“Physical Internet”** was proposed in Europe around 2010 as a **new logistics mechanism that applies the concept of Internet communications.**

- A joint transport and delivery system that uses digital technology to visualize information on the availability of goods, warehouses, and vehicles, and to transport cargo packed in standardized containers through a network in which multiple companies share logistics resources (warehouses, trucks, etc.).



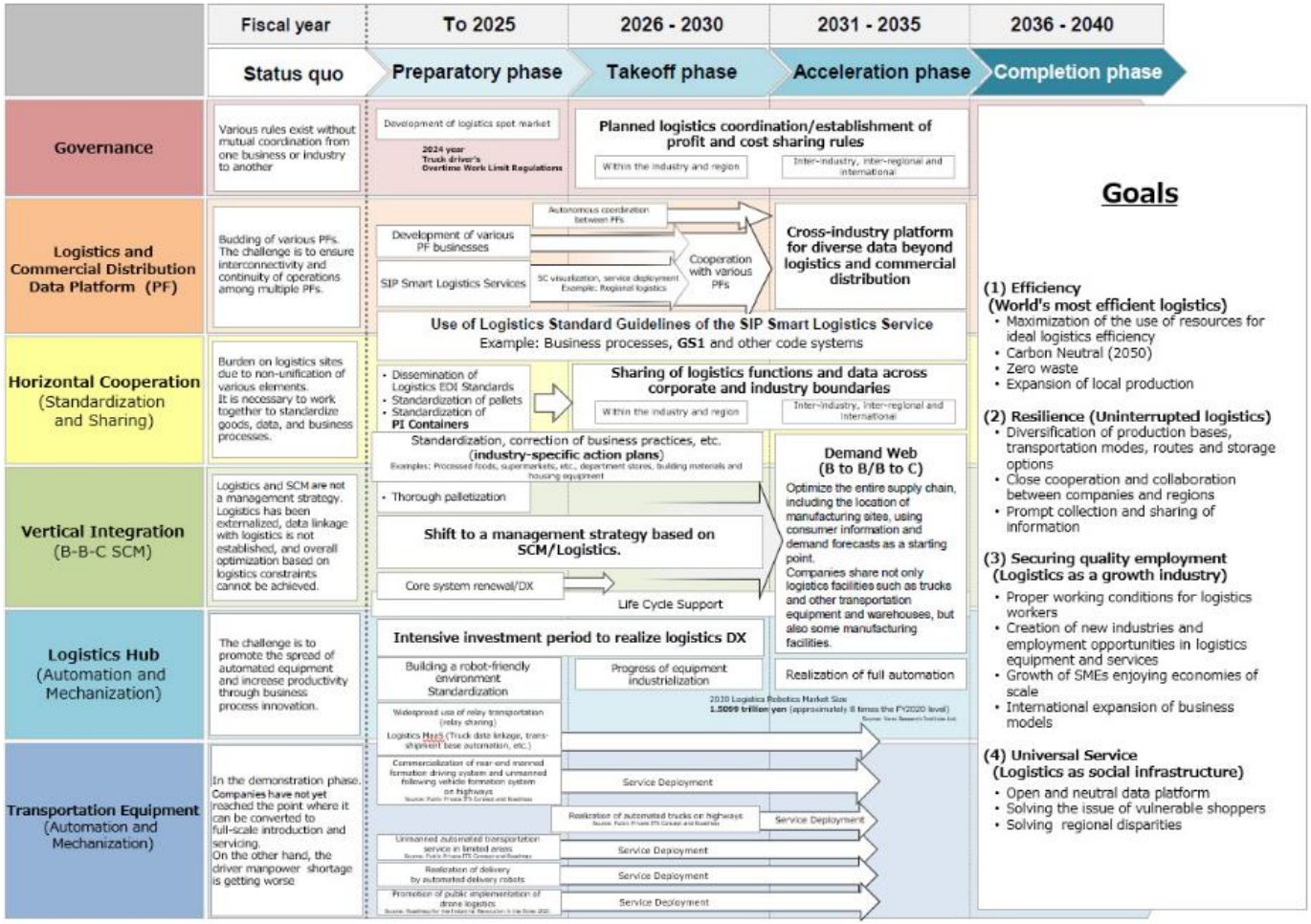


<u>Reduce 20% (total Transportation distance)</u>
Stacking to maximize loading efficiency
(The number of short-distance transfers will be increased from distribution hubs.
Total Transportation distance will be reduced.)

（出典）国際フィジカルインターネット会議（IPIC） 2018 Eric Ballotプレゼン資料より

Enabling Council for Physical Internet

- Ministry of Economy, Trade and Industry (METI) and the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) collaborated to hold the Physical Internet Conference in order to realize the Physical Internet by 2040 in Japan.
- The meeting was held six times since October 2003, and in March 2022, the "**Physical Internet Roadmap**" was formulated and published.



Progress of Efforts Toward Physical Internet in Various Industries

- Industry-specific working groups (“WGs”) were established based on the Physical Internet Roadmap.
- “Supermarkets WG” “Department Stores WG” and “Building Materials/Housing Equipment WG”

■ Enabling Council for Physical Internet

Supermarkets WG (For Processed Foods & Daily Sundries)	Department Stores WG	Building Materials /Housing Equipment WG
Study and demonstration by production, distribution, and sales WGs -Standardization of logistics materials -Discussion on introduction of menu pricing, etc. -Establishment of below WGs for priority items 1. Standardization of code system in commercial distribution and logistics 2. Study standardization and operation of logistics materials 3. Study business practices for transaction transparency 4. Study logistics efficiency through data sharing	**Study and demonstration by WG with industry participation** -Conducted study and discussion on digitization of paper vouchers。 -Department stores, suppliers, and logistics companies collaborate on a cloud-based platform.	**Survey** -Review of business practices and supply chain efficiency. -Develop guidelines for building materials and housing equipment supply chain stakeholders to ensure appropriate delivery terms and conditions

Examples of Initiatives for Realization of Physical Internet/ Initiatives for Efficient Supply Chain Utilizing IoT Technology

- Logistics materials are standard with RFID : Assuming a situation where smart boxes are rented and used jointly, organize the items to be considered for rulemaking of operation data.
- For other logistics materials, pallets will be used by manufacturers and wholesalers, and cartons will be used by wholesalers and retailers, to be examined and tested.

Utilization of RFID embedded in logistics materials

■Products and logistics materials such as smart boxes

Standardizing the size,shape and operation of Smart boxes

Standardization of RFID data linkage

Radio waves are emitted from the RFID reader, and the radio waves returned from the electronic tag are read to identify the product.

<Reference> Status of Demonstration Experiment

RFID on the back of stickers on both sides

・The demonstration experiment was conducted in each distribution channel for daily commodities and processed foods.

Support measures that can be utilized to improve the efficiency of logistics facilities. (related to METI)

- Support for efforts to reduce energy consumption by improving transportation efficiency .
- (1) To promote the efficiency of the entire supply chain through the use of new technologies

- Establishment of a common system for joint efforts by originating and destination shippers and carriers, etc.

- (2) To promote further energy conservation in truck transportation

- Investment by carriers in transportation efficiency improvement systems, vehicles, etc.

(It is necessary to measurement and reporting of energy consumption before and after the initiatives)

補助対象

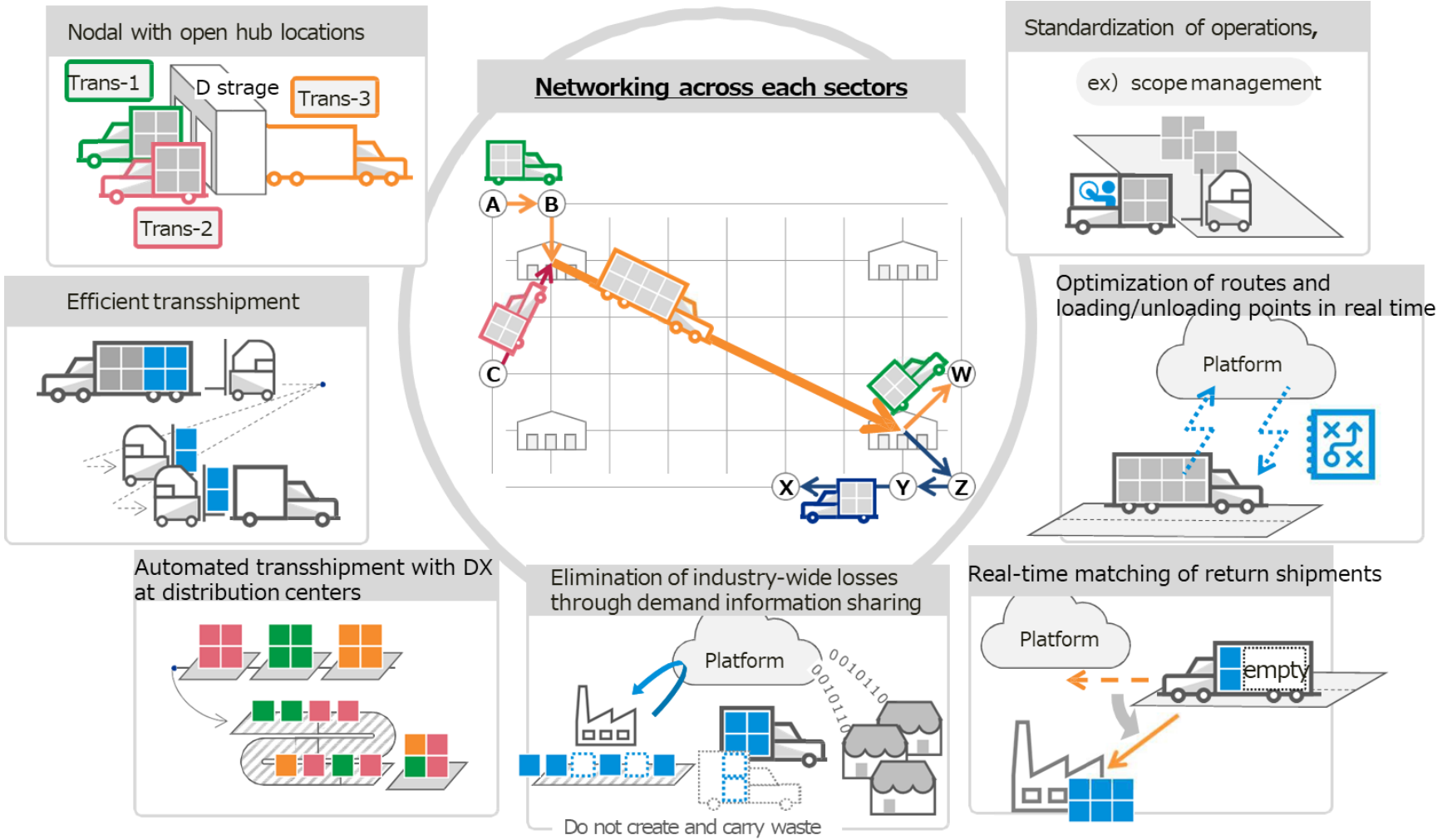
補助対象区分	補助対象となる経費	補助率
共通システム事業費 （物流全体効率化システム導入費）	発荷主・輸送事業者・着荷主等の事業者間における輸送情報等の連携にあたり必要な共通システムに要する経費	1／2以内
サプライチェーン 輸送効率化機器事業費 （輸送効率化機器導入費）	共通システムと情報連携する輸送効率化機器※の導入により輸送計画全体の最適化実証に要する経費 ※ 共通システムと連系して作動又は共通システムより出力されたデータ等を活用して作動することにより、高度な輸送効率化を可能とする機器に限る。	1／2以内
充電・充填タイミング 最適化実証事業費 （充電・充填インフラ導入費）	共通システムと連携することにより、EV トラックや FCV トラックへの充電・充填タイミング等の最適化実現に向けた実証に要する経費	1／2以内

補助対象経費となる経費については、本事業の交付決定後に契約・発注をしたものに限ります

※補助対象事業者の詳細については事業ホームページをご確認ください。

Physical Internet Realization Image

- This will be realized together with a network that transcends operators and industry sectors as follow.
- “Open and highly efficient transshipment hub,”, “Standardization of operations and optimization of business practices of shippers and logistics companies” ,and “Platform to orchestrate transportation across businesses”



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