Policy for Energy-Efficient Freight Transportation in Japan

May 10, 2010
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1.(1) Current situation of GHG emission

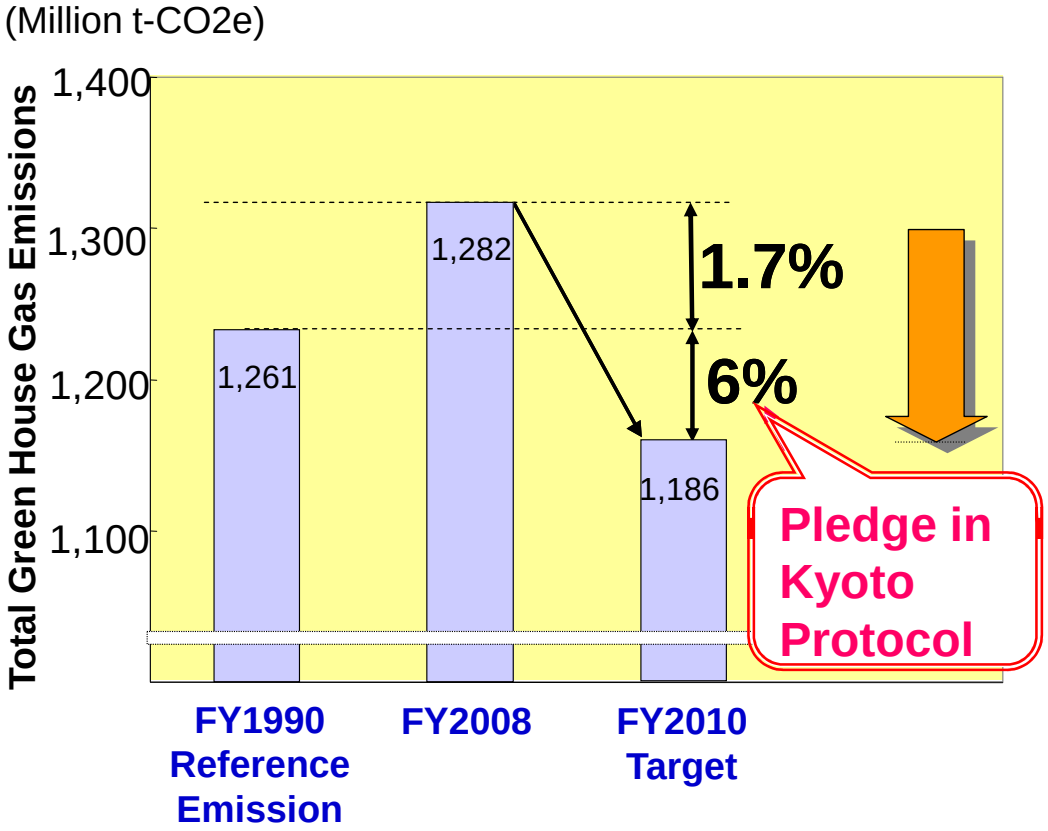
① Overview of greenhouse gas emission in Japan

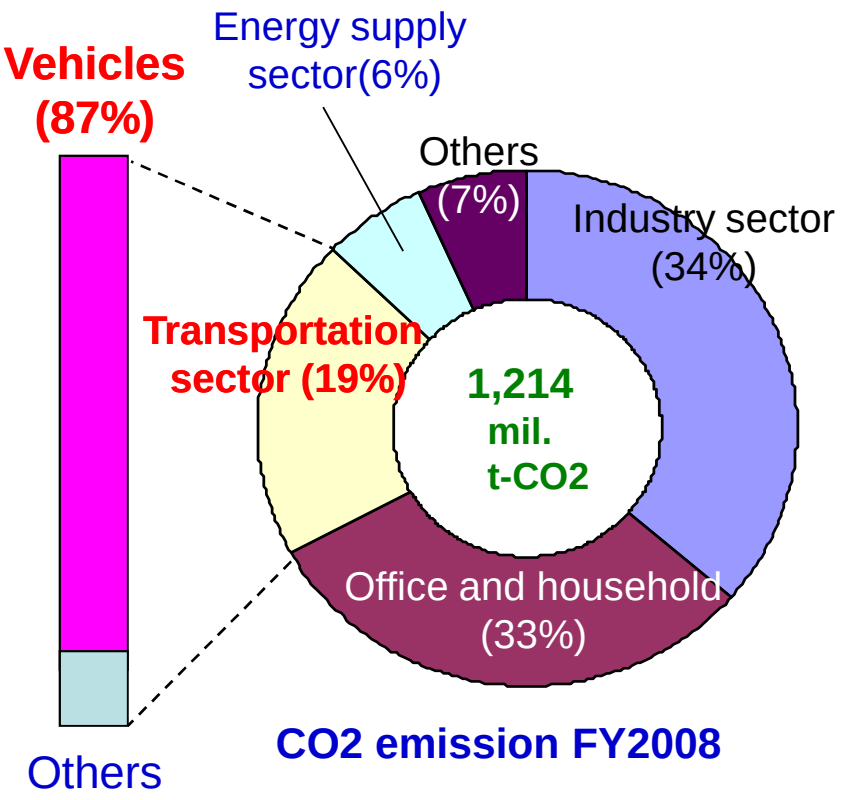
Overview of the national total

To achieve the **6%** reduction committed in Kyoto Protocol, Japan needs to reduce **7.6%** in FY2006-2010.

Overview of the transportation sector

CO2 emissions from the transportation sector account for **19%** of the nation's total, of which **87%** is from vehicles.





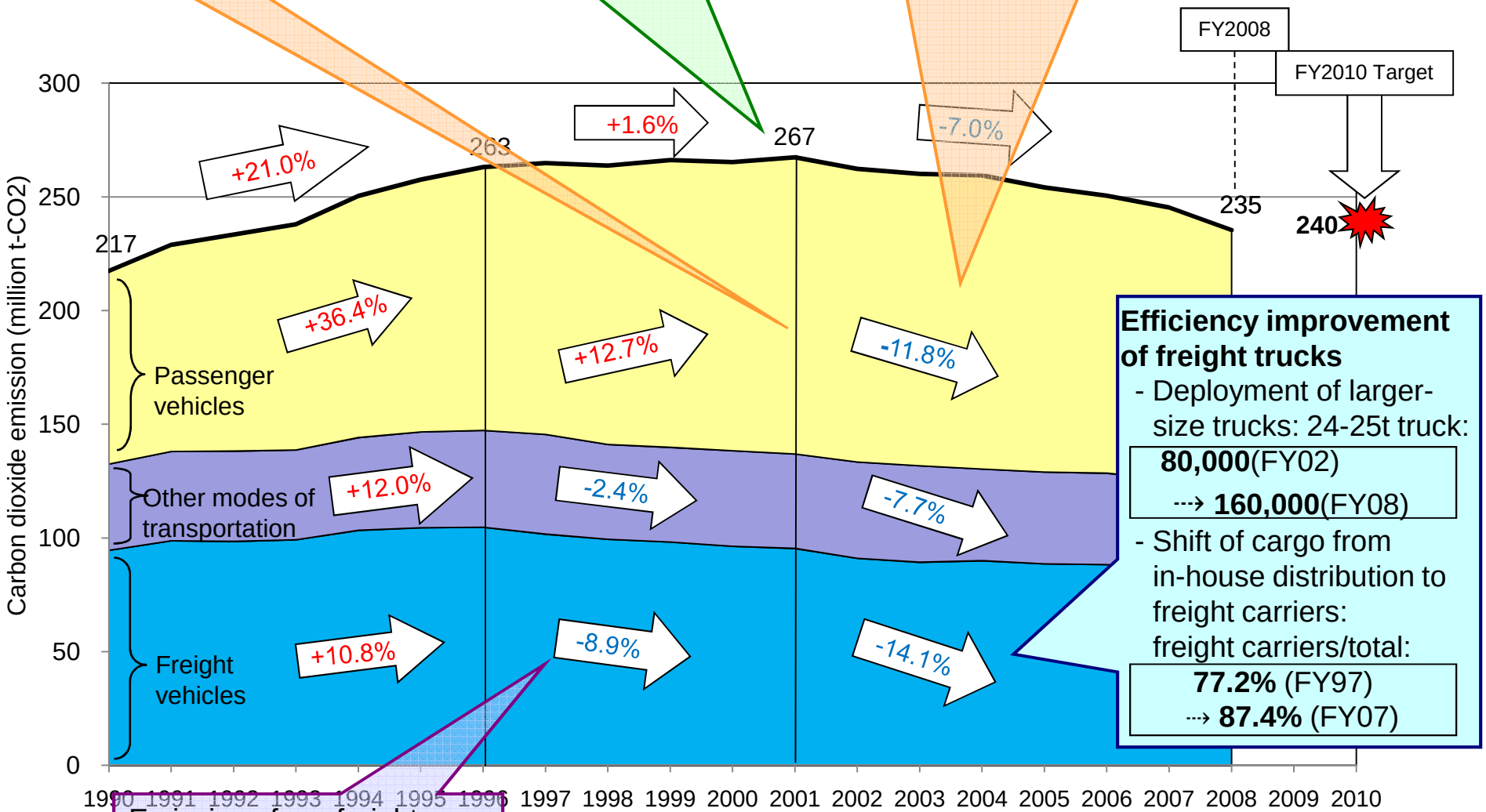
(Ministry of Environment)

② CO2 emission in the transport sector

Emissions from passenger vehicles peaked in **FY2001**.

Since **FY2001**, emissions from the transportation sector have been on a downward trend.

Improvement of mileage of passenger vehicles
- The Top-runner (Best-in-Class) Standard
- Vehicle Green Tax (Since **FY2001**)
  14.4mil./57.5mil. registered vehicles are GREEN



Efficiency improvement of freight trucks
- Deployment of larger-size trucks: 24-25t truck:
  80,000(FY02)
  ⇢ **160,000**(FY08)
- Shift of cargo from in-house distribution to freight carriers:
  freight carriers/total:
  77.2% (FY97)
  ⇢ **87.4%** (FY07)

Emissions from freight vehicles peaked in **FY1996**

(Other transportation: bus, taxi, train, ship, and aircraft)

1.(2) Countermeasures in the transport sector

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Vehicle traffic measures

Measures for vehicles and eco-friendly driving style
(▾27.6 – 29.6 mil. t-CO2)

- Top-runner fuel efficiency standards
- Promotion of energy-saving vehicles
- Promotion of eco-friendly driving styles
- Introduction of bio-fuel

Improvement of traffic flow
(▾5.5 mil. t-CO2)

- Improvement of traffic speed by alleviating traffic jams

Others

- Technical Innovation of efficiency in railway/ aviation sector

- Promotion of teleworking

(▾2.8 mil. t-CO2)

Transition to more efficient transportation system

Improvement of cargo transportation efficiency
(▾17.5 – 18.6 mil. t-CO2)

- Green Distribution Partnership
- Modal shift to railroads and shipping
- Use of efficient vehicles (ex. larger trucks, co-use of a single truck)

Promotion of use of public transportation
(▾2.7 – 3.8 mil. t-CO2)

- Build new commuter lines, subways, LRTs, etc.
- Promotion through IC cards
- Traffic demand management

Total:
▾60 mil. t-CO2

1.(3) Approach for efficient freight transport

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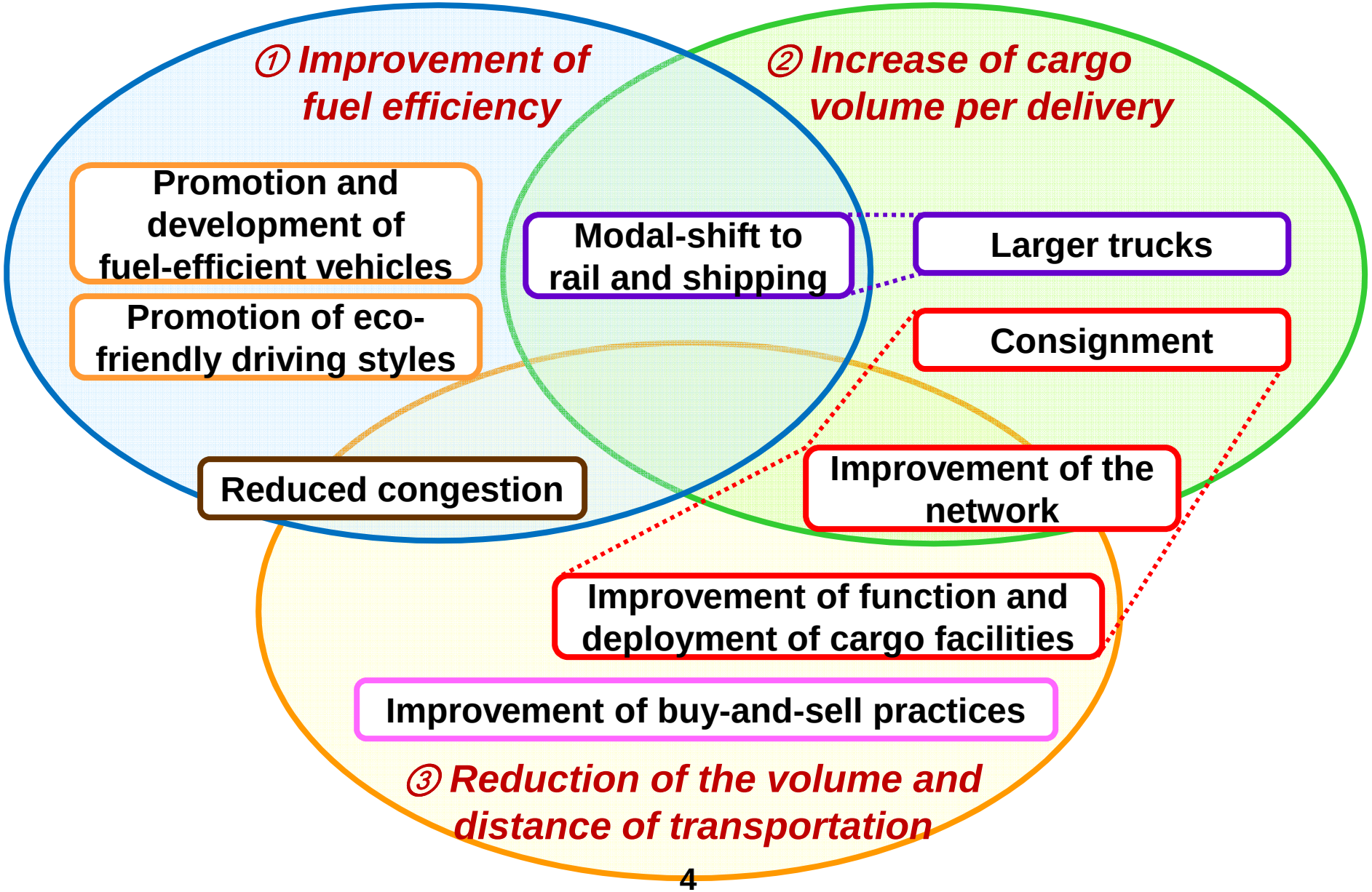
3 key elements to reduce environmental impacts



2.(1) Regulation on vehicles

① Fuel Efficiency Improvement based on the Top-runner Standard

1998 Energy-Saving Law introduced **Top-runner** (Best-in-Class) **Standard** on energy efficiency for some products including vehicles.

Top-runner Standard of Mileage for Small Vehicles (rev.) (7/2007-)

- **Target**: passenger cars, small buses, small freight vehicles ≦3.5t.
- **Target year**: FY2015
- **Improvement**: Mileage in FY2015 will be improved by 23.5% compared to FY2004.
- New standard requires more improvement than that of FY1995-2004 (22%).

Top-runner Standard of Mileage for Large Vehicles (NEW) (3/2006-)

- **Target**: freight vehicles > 3.5 t and passenger cars≧11 people, fueled by light oil.
- **Target Year**: FY2015
- **Improvement**: Mileage in FY2015 will be improved by 12.2% compared to FY2002.
- The world's **first** mileage standard for large vehicles (trucks and buses).

Vehicle Green Tax System promotes fuel-efficient vehicles, including hybrid vehicles and clean-diesel vehicles

24.5mil. t-CO2 reduction compared to BAU in 2010

2.(2) Promotion of eco-friendly vehicles

① Vehicle Green Tax

☆: 75% less emission than 2005-standard for small vehicles ◇: 50% less emission
★: cleared 2005-standard for large vehicles ★-09: cleared 2009-standard for large vehicles

1XX%e: efficiency compared to 2010-standard
e-2015: cleared 2015-standard
(Large : 3.5t <L
Medium: 2.5t <M≦3.5t
Small : S≦2.5t)

	Annual Vehicle Tax (1 yr) Tax based on capacity: (ex. 2t-business truck: \11,500)	Annual Vehicle Tonnage Tax (1 yr) Tax based on weight (ex. Truck over 2.5t: \12,600/t)	Vehicle Acquisition Tax Full tax on vehicle price: 3 to 5%
Electric Vehicle, Fuel-Cell Vehicle, Plug-in Hybrid Vehicle	▾100%	▾100%	▾100%
CNG Vehicle [★] (L)	▾50%	▾100%	▾100%
CNG Vehicle [☆] (M/S)	▾50%	▾100%	▾100%
Clean Diesel Vehicle [★-09]	-	▾100%	▾100%
Hybrid Vehicle [e-2015 + ★] (L)	-	▾100%	▾100%
Hybrid Vehicle [125%e + ☆] (M/S)	-	▾100%	▾100%
Diesel Vehicle [e-2015 + ★-09 / ★] (L)	-	▾75% / ▾50%	▾75% / ▾50%
Diesel Vehicle [e-2015 + ★-09] (M)	-	▾75%	▾75%
Diesel Vehicle [125 / 115%e + ☆] (S)	▾50% / —	▾75% / ▾50%	▾75% / ▾50%
Gasoline Vehicle [e-2015 + ☆ / ◇] (M)	- / -	▾50% / ▾50%	▾75% / ▾50%
Gasoline Vehicle [125 / 115%e + ☆] (S)	▾50% / —	▾75% / ▾50%	▾75% / ▾50%

② Assistance for introduction of low-emission heavy duty vehicles

1) Government subsidy for introduction of low-emission bus/trucks

Help money

Help money

	OR	Rates
Purchase of new low-emission vehicles	**CNG** bus/truck	**1/4** of the price **or** **1/2** of the price-gap between these vehicles and normal vehicles
	Hybrid bus/truck	
	Electric vehicle	
Retrofitting of the existing vehicle		**1/3** of the cost

2) Government subsidy for purchase of clean business truck/bus

During the **recession**, demands for replacement of vehicles are very weak
>>**New ambitious incentives** are introduced to promote replacement of business vehicles

-Promotion of replacement **from old** and **less-clean** vehicles

- Discount on vehicles to stimulate demands on replacement **to clean/efficient** vehicles

Help money

	Small (3.5t)	Medium (8t)	Large (12t)
1. Replacement of vehicle of older than **13-year** to vehicles meeting **2005 emission standard**	**JPY400K ($4,000)**	**JPY800K ($8,000)**	**JPY1.8M ($18K)**
2. Replacement to the vehicles meeting: - **2015 efficiency standard** and - **2005 emission standard**	**JPY200K ($2,000)**	**JPY400K ($4,000)**	**JPY900K ($9,000)**

2.(3) Development of new low-emission vehicles

Now checking the vehicles' quality, durability, operational cost, convenience, etc.

FTD fuel for diesel vehicles

In operation

DME truck

Test run on public roads

LNG truck

Test run on public roads

CNG larger truck

In operation

Hybrid bus

In operation

DME water wagon

In operation

3.(1) Efficiency improvement of trucking

① Improvement in operation

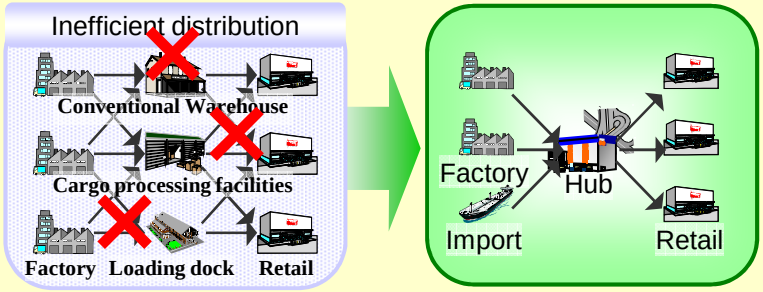
Reduction target FY2010: 13.9 mil. t-CO2

○**Use of Large trucks:**
increase of large trucks (24-25t)
(160,000 vehicles as of FY2008)

○**Shift of cargo from in-house trucks to carrier trucks: business truck 3%up**

○**Improvement of loading efficiency: 2%**

cooperation in distribution through the use of larger trucks and separated rack for individual shippers

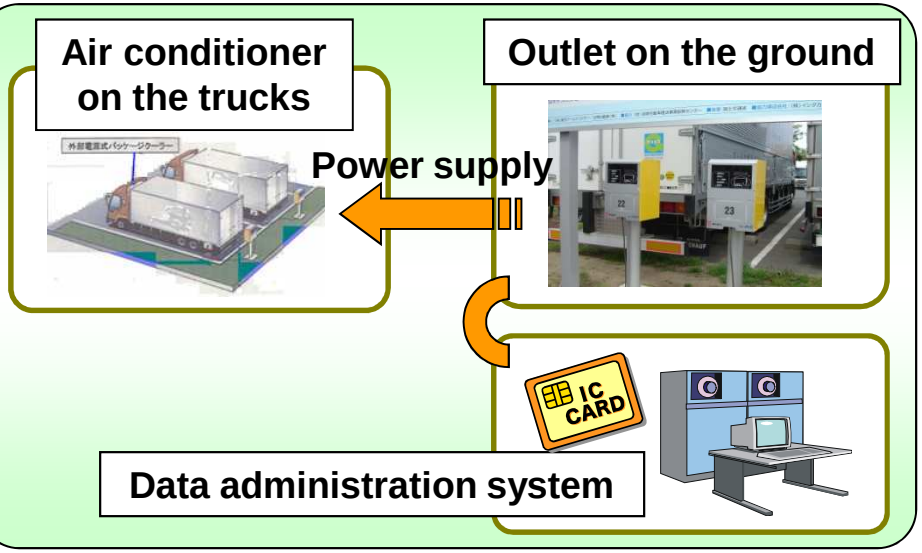


Integrated handling of freight **at the hub**

② Use of energy-saving apparatus

- There are apparatus helpful to stop idling during waiting/breaking time such as an air conditioning system by ground power supply
- Government offers subsidy for purchasing these

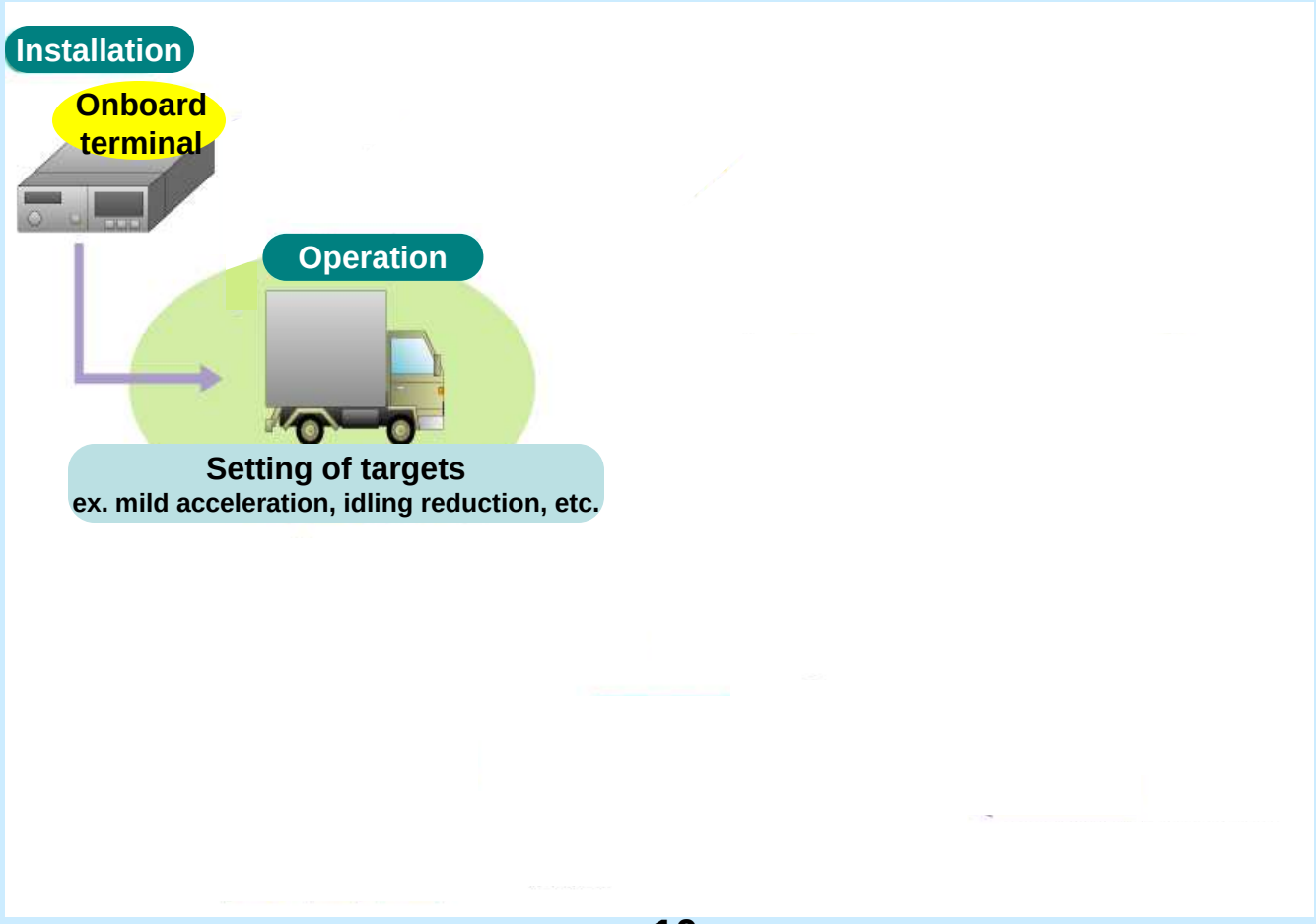
- **air conditioner with grand power supply**
- ice/heat –pack style air conditioner
- energy-saving freezer
- air curtain
- insulating film



③ Promotion of Eco-friendly Driving Management System

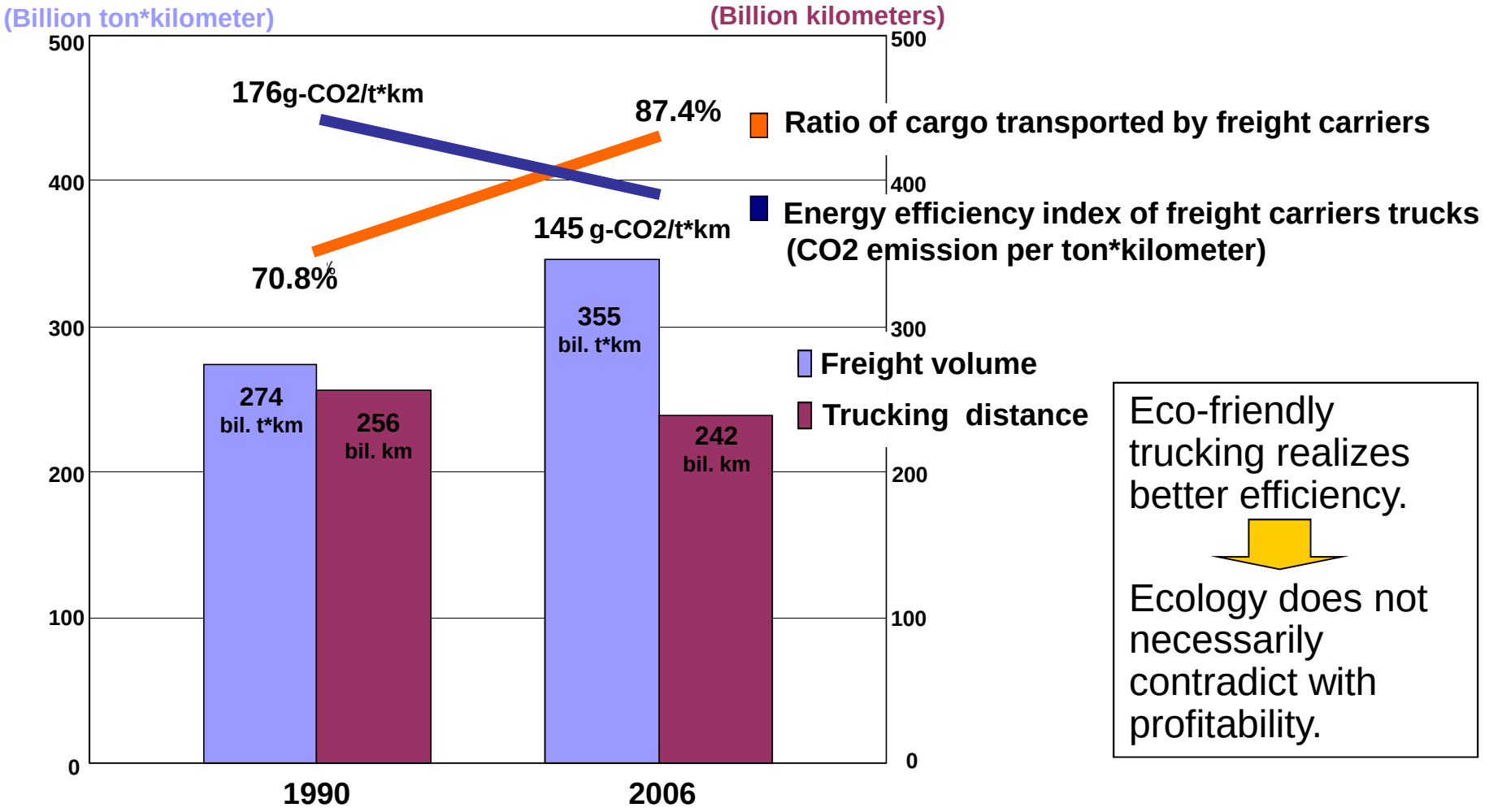
- Promotion of **eco-friendly driving** for trucking business
- Centralized management of operation →Introduction of **EMS**
- National subsidy to the trucking business for the purchase of related systems

Outline of Eco-friendly Driving Management System (EMS)



④ Improvement of efficiency of trucking industry in Japan (1990-2006)

- **Freight volume** (ton*kilometer) increased, but **trucking distance** decreased.
- The **ratio of cargo** transported by freight carriers increased.
- **CO2 emission** per ton*kilometer from freight carriers' trucks reduced.



Eco-friendly trucking realizes better efficiency.

Ecology does not necessarily contradict with profitability.

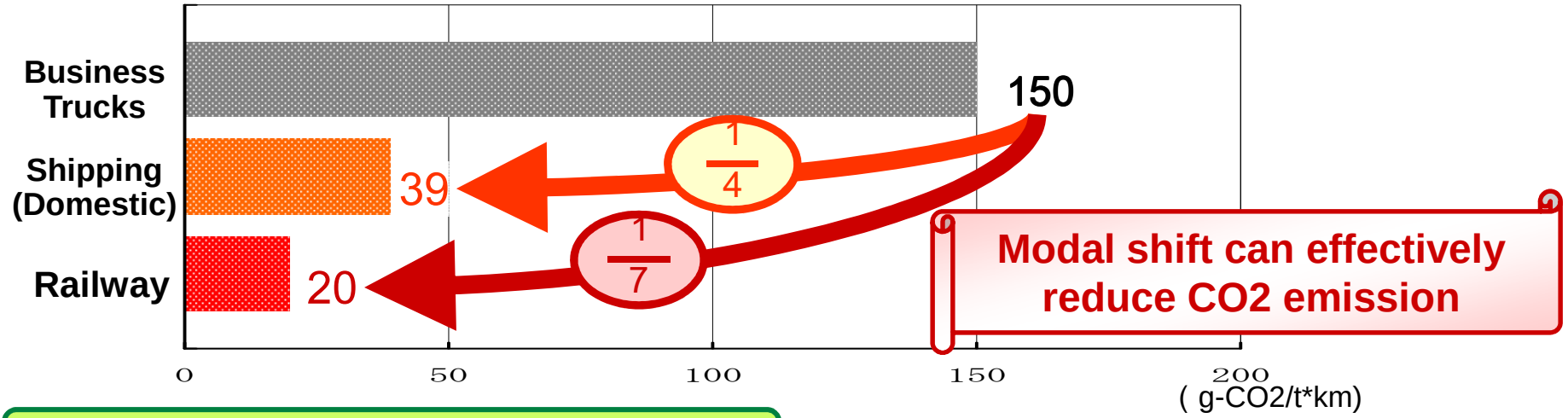
(Source: Ministry of Land, Infrastructure, Transport and Tourism)

3.(2) Efficient combination of transportation modes

① Modal shift

The Effect of Modal Shift

(Energy Efficiency Index: emission of CO2 per ton*kilometer of freight transportation, FY2006)



Modal shift to freight trains

▼ **0.8 million t-CO2**

- Improvement of rail infrastructure and service
- Development of new technology for freight trains
- Campaign for wider recognition of eco-friendly freight trains

Comprehensive measures for greener shipping

▼**1.3 million t-CO2**

- Development and promotion of new technology
- Promotion of modal shift to coastal shipping
- Introduction of energy-saving shipping and facilities

Super-eco cargo-ship “Shineimaru”

② Promotion of Third Party Logistics

Third Party Logistics business undertakes **the whole process of distribution**.
It realizes **optimum arrangement** of cargo transportation, and maximizes efficiency
It contributes to lower costs and reduction of impact on environment.

Promotion of Third Party Logistics

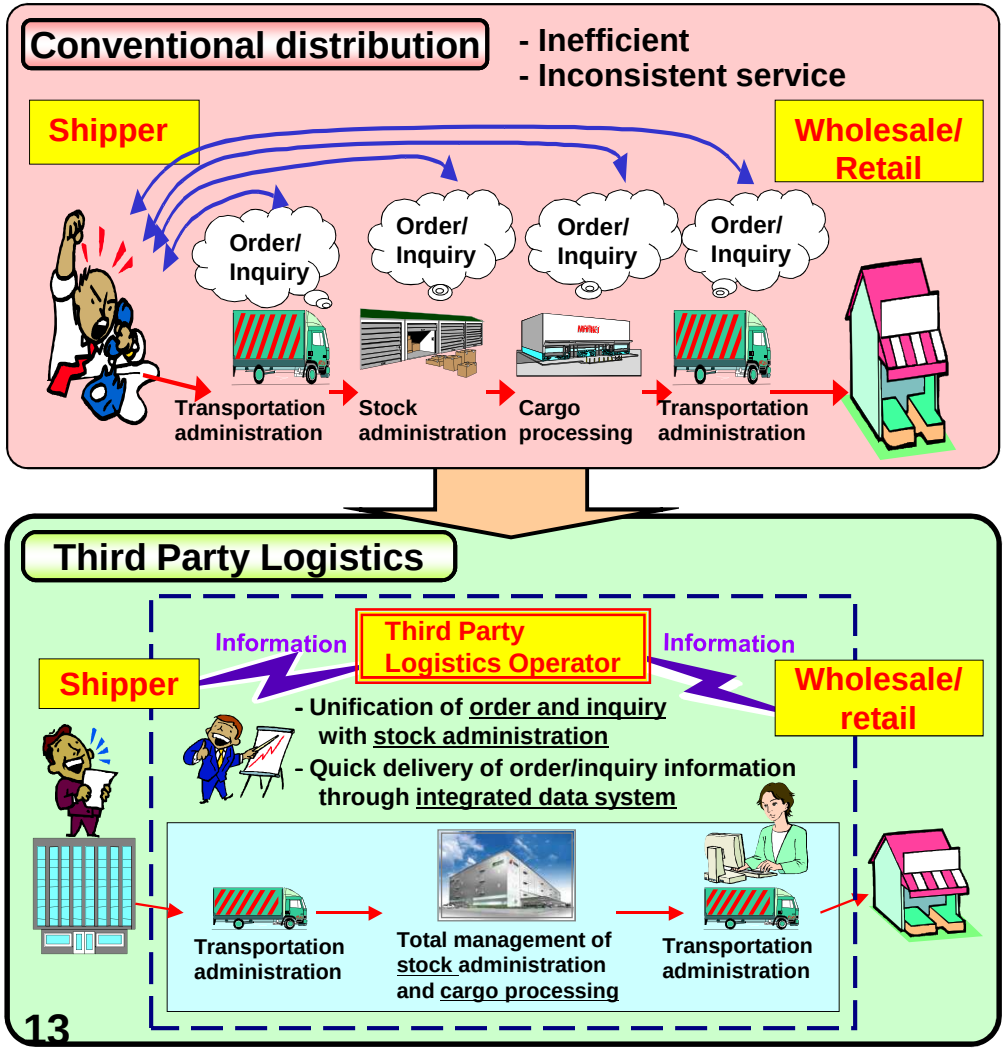
National government's assistance

- Standardization of contracts
- Establishment of Information Security Guidelines
- Research on the third party logistics businesses

Comprehensive Distribution Efficiency Law (2005)

Realization of comprehensive and efficient distribution at the hub facilities, including transportation, storage and cargo-processing

- tax reduction on warehouse facilities
- preferential permission for hub development
- low interest loan etc.



3. (3) Cooperation with shippers

① Green Distribution Partnership

- To overcome the deference of views between shippers and carriers, **the Green Distribution Partnership** was established (4/2005).
- The Partnership helps cooperation between shippers and trucking carriers through arrangements for Government grants, establishing the calculation method for CO2 emission, introduction of best practices, and recognition of efforts.

Green Distribution Partnership

- **Organizers:** Japan Institute of Logistics Systems, Japan Federation of Freight Industries, METI, MLIT (Cooperation: Nippon Keidanren)
- **Members:** 3,100 members, including carriers, shippers, related associations, think tanks, researchers, branches of national gov., municipal gov. etc.

Assistance for related research
(FY2008 : $1.5 mil.)

Establishment of calculation methods for CO2 emission

Gov.'s Grants for purchase of facilities (- 1/3 of total costs)
(FY2008 : $20 mil.)

Recognition by the Ministers of advanced efforts

【CASE 1】 Modal shift combined with the “milk run” scheme

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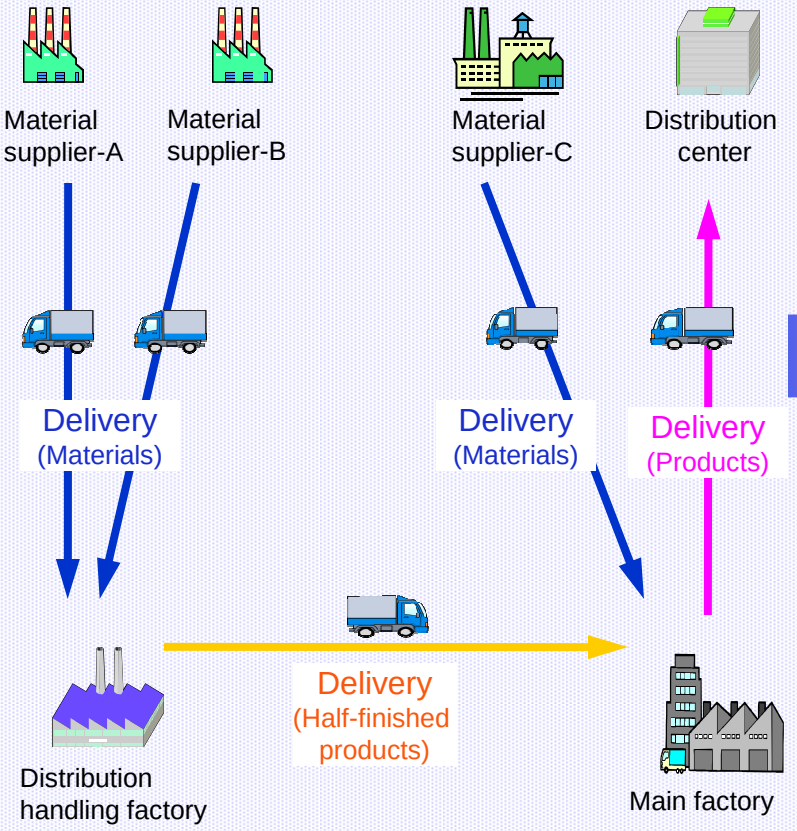
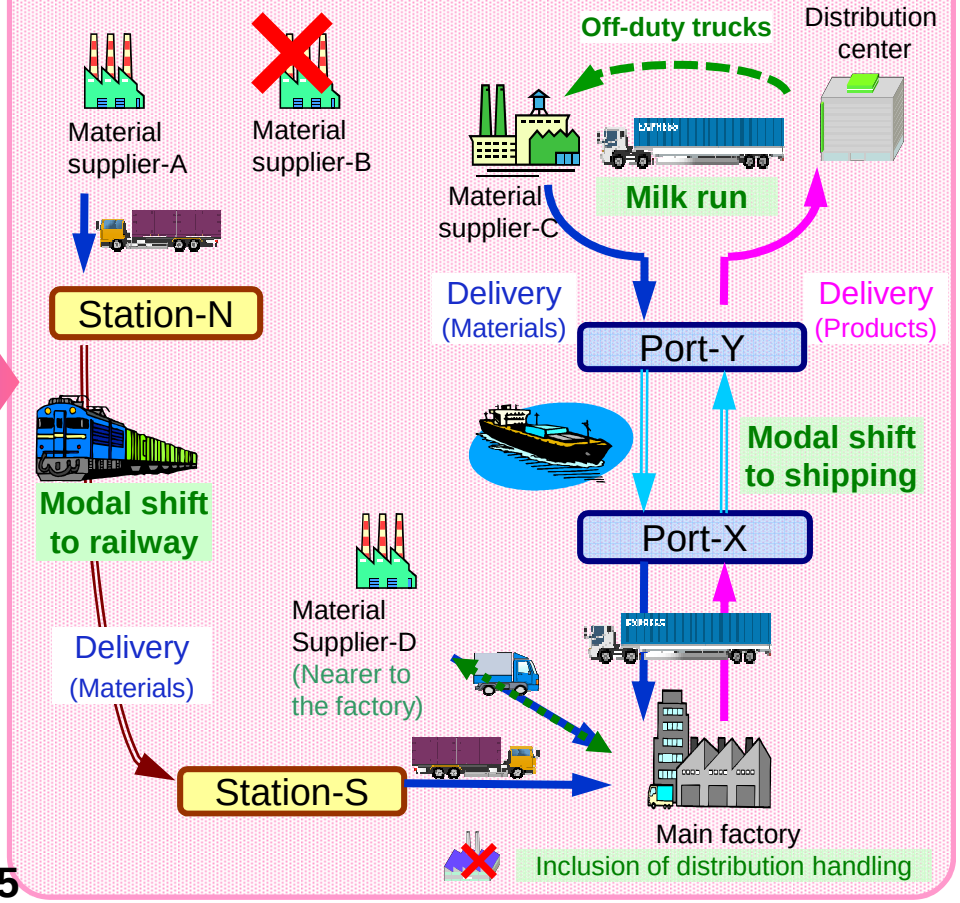
Points

Wide participation	The cargo handling company, trucking company, freight railway company, shipping company, and manufacturer all participate.
Modal shift	Shifting from trucking to more efficient modes reduces environmental impacts.
“Milk run” scheme	Returning trucks are used more effectively through “**milk run**” operation.
	Delivery costs become **visible** to the manufacturer by operating their own trucks, which can lower the costs through efficient operation.

Before： Long-distance trucking



After： Modal shift and efficient operation

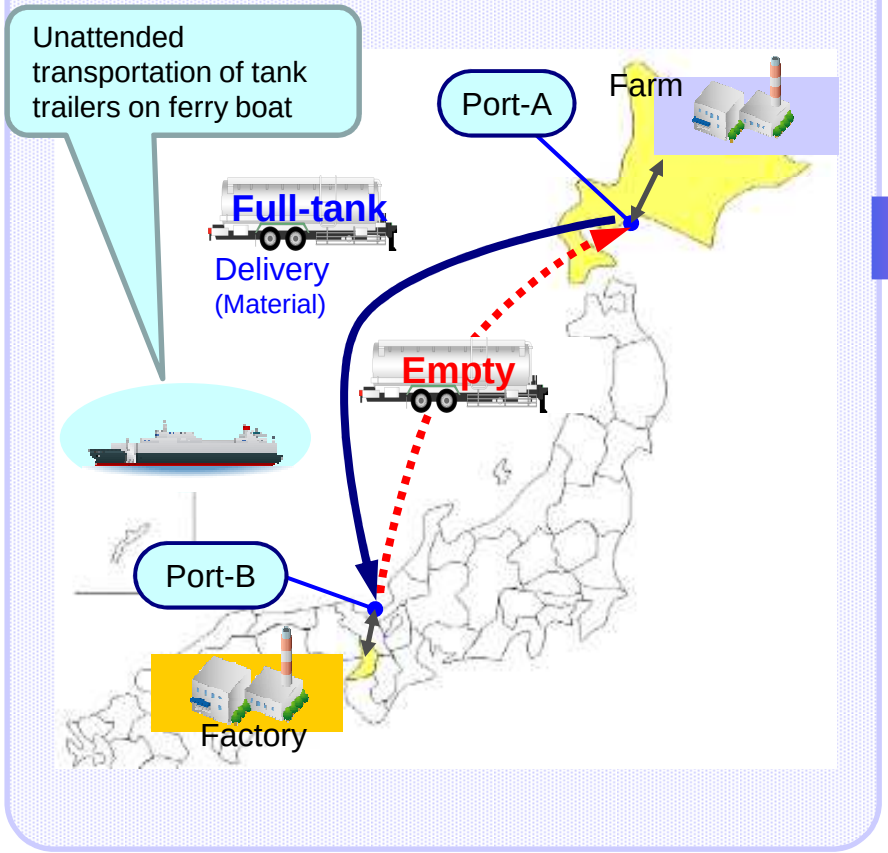


【CASE 2】New tools for efficient use of trucks

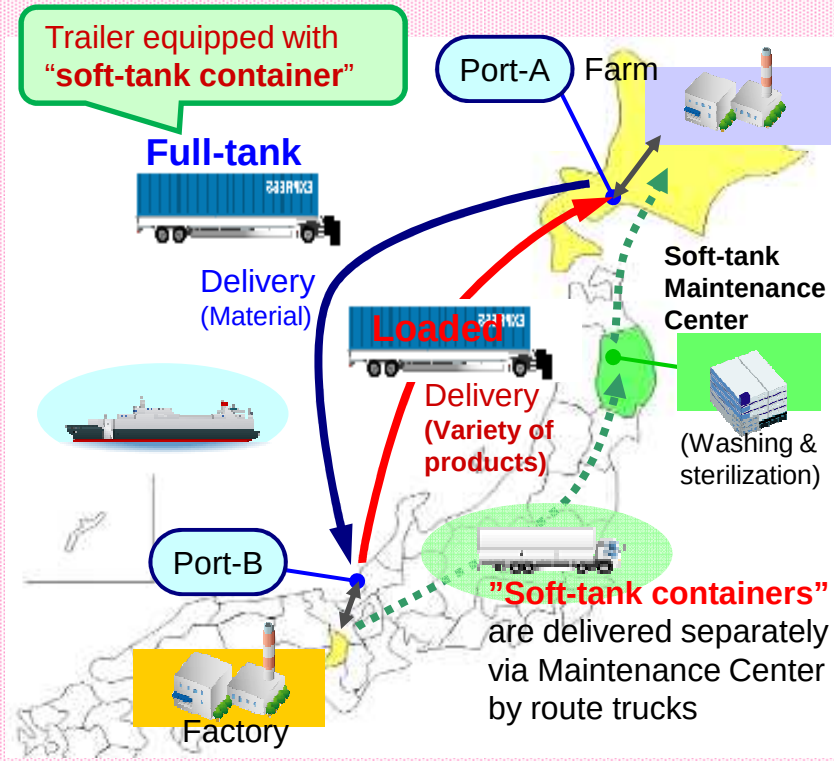
Points

Participation	The cargo handling company, trucking company, and manufacturer participate.
New equipment	"**Soft-tank**" equipment enables an ordinary container to act as a tank trailer. Therefore, the returning trailer without soft-tank can be loaded with various products.

Before：One-way transportation by tank trucks



After：round-trip transportation using soft-tank container



② 2005 Energy Saving Law

- In addition to carriers, the Law **obliged** large **shippers** to energy-efficient operation
- In mid-long term, it targets 1% improvement of energy efficiency annually

Designated Carriers
(FY2006 -)

Large carriers

ex. with trucks ≧200 (417 carriers)
with ships ≧20,000 GWT (34 carriers)

(**452** carriers as of 03/2009)

○ Submission of **Energy-Saving Plan**
- Use of Energy efficient vehicles
- maximum use of space
- eco-friendly driving etc.

○ **Annual report** of energy consumption

Other carriers

Designated Shippers
(FY2007 -)

Large Shippers

Freight amount ≧ : **30 mil. t*km**

incl. ・ Food Processing ・ Chemical ・ Steel ・ Machinery ・ Wholesale/retail

(**865** shippers as of 06/2008)

○ Submission of **Energy-Saving Plan**
- Modal shift
- transfer from in-house to business truck
- cooperation in delivery etc.

○ **Annual report** of energy consumption

Now shippers must consider environment

Consignment? **(Eco-friendly)**

In-house Transport? **(LESS efficient)**

4. Combination of policy tools

Fuel-efficient Vehicles

- **Top-runner efficiency standards** — Regulation
- **Promotion of energy-saving vehicles**
  - Green Tax
  - Gov.'s support (for the regional pilot projects)
  - *Hojo-kin*
- **New LEV technology** — Tech. development

Energy saving plan & annual report [carriers] <Energy Saving Law>

Efficiency improvement of trucking

- **Larger Trucks**
- **Shift from in-house trucks to business trucks**
- **Efficient handling and networking**
  - Special permission
  - Tax reduction
  - Low-interest loan
- **Energy-saving apparatus** — *Hojo-kin*
- **EMS** — Gov.'s au… *Hojo-kin*
- **Speed limiter** — Regulation

Improvement of intermodal transportation

- **Promotion of modal shift**
  - *Hojo-kin*
  - …g stocks, cargo facilities)
  - Certification system (eco-friendly business)
  - Technological development (ship/rail)
- **Promotion of third party logistics**
  - Special permission
  - Tax reduction
  - Low-interest loan
  - Establishment of the business framework

Cooperation with shippers

- **Energy saving plan & annual report [shippers]** <Energy Saving Law> — Regulation
- **Green Distribution Partnership**
  - Gov.'s … *Hojo-kin*
  - Establishment of the business framework
  - Recognition by the Minister

LEGEND: regulations | incentives | R&D | set-up | PR

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