Transformation to Energy Efficient and Sustainable Supply Chain and Logistics Network

Policies of the Japanese Government

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Overview of the Logistics Sector in Japan

Dependent on road transport

Policy Issues

• Focus 1: “The 2024 Problem”
• Focus 2: “Carbon Neutral Port” Initiative
Domestic Freight Transport by Mode (2016)

**Volume (thous. Ton)**
- Coastwise Vessels, 364,485, 8%
- Railways, 44,089, 1%
- Motor Vehicles, 4,378,268, 91%

**Turnover (mil. Ton-kilometer)**
- Coastwise Vessels, 180,438, 44%
- Railways, 21,265, 5%
- Motor Vehicles, 210,316, 51%
- Aviation, 1,057, 0%
A comprehensive road network is about to be completed, except for some remote/mountainous sections.
Railway Freight Service Network

Outline of Railway Services

1. Nemuro Line
2. Sekihoku Line
3. Muroran Line
4. Hakodate Line
5. Kaikyo Line
6. Tohoku Line
7. Ou Line
8. Uetsu Line
9. Joban Line
10. Musashino Line
11. Takasaki Line
12. Joetsu Line
13. Shinkansen Line
14. Shinkansen Line
15. Tokaido Line
16. Chuo Line
17. Kosei Line
18. Sanyo Line
19. Hakubi Line
20. Honshibisen Line
21. Yosan Line
22. Kagoshima Line
23. Nagasaki Line
24. Nippo Line

Freight Service Routes
Exclusive Passenger Service Routes
(FT) Freight Terminal
(FS) Freight Station

Challenges

Freight trains cover the limited areas.

JFR has its own standard for containers, not the ISO standard.

Source: Japan Freight Railway Company
Seaports in Japan

- International Strategic Ports (5)
- International Major Ports (18)
- Major ports (102)
- Other ports (869)
Various Policy Domains Affecting Sustainable Logistics

- Transport Policy
- Labor Policy
- Energy Policy
- Environment Policy

Why does the labor policy matter?
The 2024 Problem

From April 2024,
Overtime work cap for truck drivers = 960 hours/year

• No limitations currently
• A moratorium for drivers from 2020

Foreseeable consequences

• Decline of transport capacity
• Delivery delay
• Higher transport costs
• Etc.

“A driver” for efficient/sustainable supply chain and logistics

>>> “Policy Package for Innovative Logistics”
   (Cabinet of Japan, June 2, 2023)
### Three Directions of the “Policy Package”

#### (1) Reviewing business practices
- Introduction of regulatory measures to reduce time losses and other burdens between shippers and logistics providers
- Review of delivery deadlines (the “one-third rule”, short lead time), transaction prices, including logistics costs, etc.
- Introduction of regulatory measures to correct the multiple subcontractor structures in the logistics industry
- Strengthen monitoring of shippers and prime contractors, publicize the results, continuous follow-up, and strengthen the organization for this purpose
- Measures to improve the wage level of logistics bearers by collecting appropriate freight rates and facilitating cost transfer
- Expand and thoroughly implement the "standard freight rate" system for trucks.

#### (2) Improving logistics efficiency
- Promotion of immediate capital investment (e.g., berth reservation systems, forklifts, automation, and mechanization)
- Promotion of "Logistics GX" (modal shift by increasing transportation capacity of railroads and coastal shipping; decarbonization of vehicles, ships, ports, etc.)
- Promotion of "Logistics DX" (automated driving, drone logistics, automated delivery robots, AI terminals at ports, cyber ports, physical Internet, etc.)
- Promotion of "logistics standardization" (standardization of pallets and containers, etc.)
- Functional enhancement of logistics hubs (including relay transport) by roads and ports, optimization of land use, and support for the formation of logistics networks
- Raising the speed limit for trucks on expressways (from the current 80km/h)
- Reviewing and improving the efficiency of the special vehicle traffic regulation
- Reviewing the highway tariff for trucks to facilitate the labor productivity of drivers
- Promoting the introduction of double-articulated trucks
- Reviewing road parking regulations for vehicles collecting and delivering cargo
- Promoting joint transportation and delivery in regional logistics
- Strengthening efforts through shippers, prime contractors, etc., to ensure proper operation of light truck business and transportation safety
- Utilizing and developing diverse human resources, including women and young people

#### (3) Changing the shipper and consumer behaviors
- Introduction of regulatory measures to promote awareness and behavior change at the management level of shippers
- Establishment of a system to evaluate and publicize logistics improvements by shippers and logistics companies
- Efforts to promote awareness and behavior change among consumers
- Efforts to reduce redelivery (including measures to halve the redelivery rate)
- Promotion of logistics-related PR

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**B2B SCM oriented measures**

**Logistics oriented measures**

**B2C SCM oriented measures**
Comprehensive Physical Distribution Policy (2021)

The contents of both documents are similar.

I. Optimization of the entire supply chain by promoting logistics DX and logistics standardization

1. Strong promotion of logistics digitalization
2. Promotion of automation and mechanization initiatives that contribute to labor shortages countermeasures and non-contact/non-face-to-face logistics (e.g. support for the introduction of robots and other equipment into warehouses and other logistics facilities)
3. Acceleration of logistics standardization initiatives
4. Logistics and commercial distribution data infrastructure, etc.
5. Developing and securing advanced logistics human resources

II. Measures to address labor shortages and promote logistics structural reform

1. Establishment of a working environment necessary for truck drivers to comply with overtime work limit regulations
2. Promotion of measures to ensure stable transportation in coastal shipping
3. Promotion of innovative measures to improve labor productivity
4. Rationalization of distribution of agricultural, forestry, marine, and food products
5. Sustainability of the last mile delivery in underpopulated areas
6. Measures to secure new labor force
7. Strengthen public relations on logistics

III. Building a strong and sustainable logistics network

1. Establishment of a robust and sustainable logistics network that can function in the event of contingencies such as infectious diseases and large-scale disasters
2. Establishment of a logistics network that contributes to the international competitiveness and sustainable growth of Japanese industry
3. Establishment of a logistics network to ensure global environmental sustainability (e.g., carbon neutrality)
Some Measures in the documents

From Section III.(3) Establishment of a logistics network to ensure global environmental sustainability in “Comprehensive Physical Distribution Plan”

Early commercial operation of zero-emission vessels

- Hydrogen-fueled ship
- Ultra-efficient LNG + wind propulsion ship
- Ammonia-fueled ship
- CO₂ Capture vessel

Further promotion of modal shift

- Transportation by rail or ship with low environmental impact

Promotion of next-generation vehicles

- FCV Truck
- EV Truck

Transportation by rail or ship with low environmental impact
“Carbon Neutral Port” Concept

Decarbonizing Port Operations

Hub for Clean Fuels

- Blue Carbon
- Offshore Wind Power
- Coal Power Plant (Ammonia co-firing)
- FC Cargo Handling Machines
- Independent Hydrogen Power supply
- Hydrogen Station
- Hydrogen Pipeline

Ammonia and hydrogenation plants derived from coal mines, gas fields, renewable energy, etc.

- Ammonia Carrier
- LNG Carrier
- Hydrogen Carrier
- LNG Power Plant (Hydrogen co-firing)
- Hydrogen/Ammonia Tanks
- FC Truck

Abroad

Japan

LNG Power Plant (Hydrogen co-firing)
Ongoing CNP Initiatives

54 ports have established public-private consultation platforms.
(as of Jan. 31, 2023)
On-dock Rail Project in Niigata Port

The idea of extending the existing railway line by 0.8km to Niigata port has been discussed for over 10 years but has yet to be realized.

It should become the first on-dock rail in Japan, if it will be finally constructed this time.
Various Policy Domains Affecting Sustainable Logistics

- Transport Policy
  - 2nd Basic Plan on Transport Policy (May. 2021)
    - Low-emission vehicles, vessels, fuels, etc.
    - Green Logistics, CNP

- Energy Policy
  - 6th Strategic Energy Plan (Oct. 2021)
    - Freight Transport Optimization
    - EV, AI & IoT, etc.

- Labor Policy
  - Plan for Global Warming Countermeasures (Oct. 2021)
    - Low-emission vehicles, vessels, fuels, etc.
    - Modal shift, de-carbonization of ports

- The Environment Policy

The measures are repeated in various policy documents.
Wrap-up

- The high dependence on truck transport is not sustainable in Japan, partly due to labor force restrictions.

- To overcome the “2024 problem,” Japan is taking a comprehensive approach. The targets are:
  A) The logistics industry itself,
  B) Their direct clients (shippers), and
  C) Their indirect customers (consumers).

- An example on a smaller scale is the CNP initiative, which assumes the transition to the hydrogen/ammonia society.
Thank you for your attention!