Aiming for Advanced Logistics in Thailand

June 2023

Japan Transport and Tourism Research Institute (JTTRI)
ASEAN-India Regional Office (AIRO)

Supported by THE NIPPON FOUNDATION

1. Thailand's Social Conditions, and Environment Relating to Logistics

2. Theme①:Efficiency of Inland Transportation and Optimization of Connectivity among Transportation Modes

3. Theme②:Utilization of Information Technology in the Logistics Field

4. Theme③:Enhancement and Strengthening of Cooperation among Logistics Stakeholders

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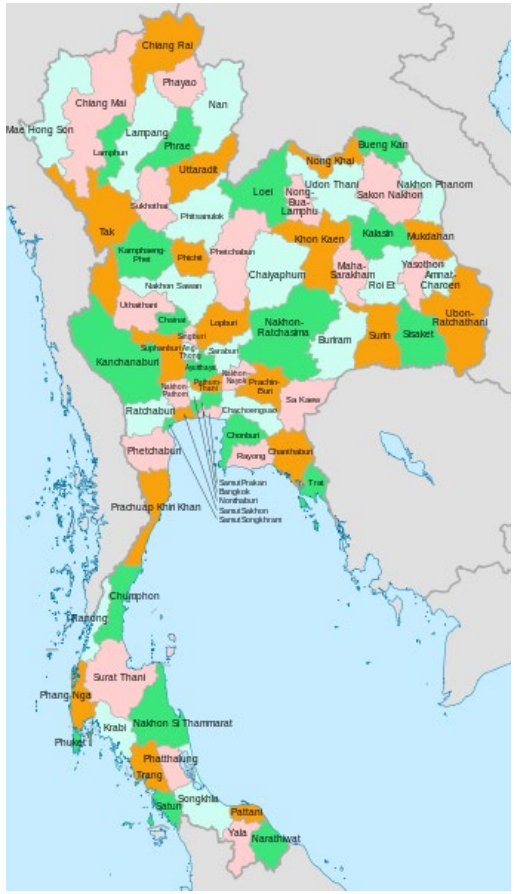
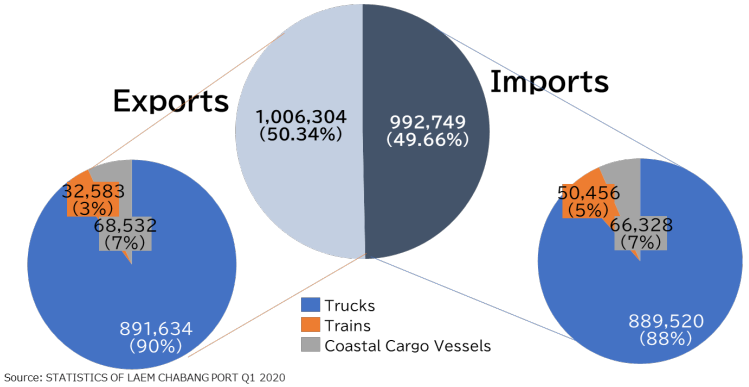
Background:
The Necessity for Efficient Inland Transport

○ In Thailand, 53 provinces out of 77 are inland (68%), and there is a high need for inland transport of cargo. (In Japan, 8 out of 47 prefectures are inland (17%))
○ Regarding the traded cargos through Laem Chabang Port, about 90% of imports and exports are delivered by trucks, while only 10% use rail or coastal freighter. So, an efficient inland transport system well connected to other modes of transport is important.

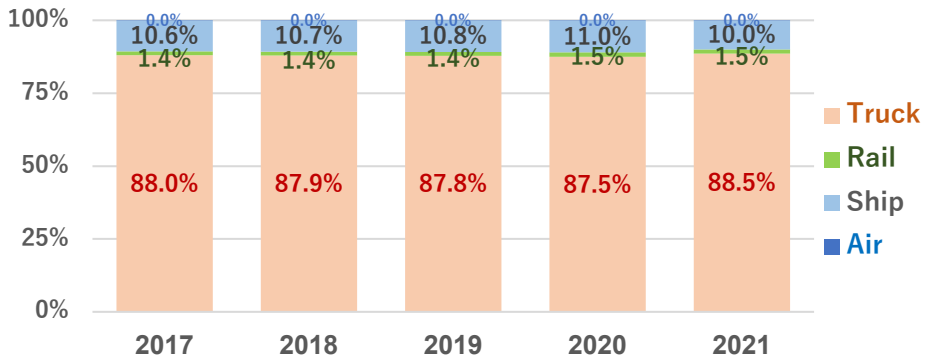


Modal Share in Drayage Volume through Laem Chabang Port[TEU]



Source: STATISTICS OF LAEM CHABANG PORT Q1 2020

Modal Share in Cargo Volume in Thailand [ton*km]



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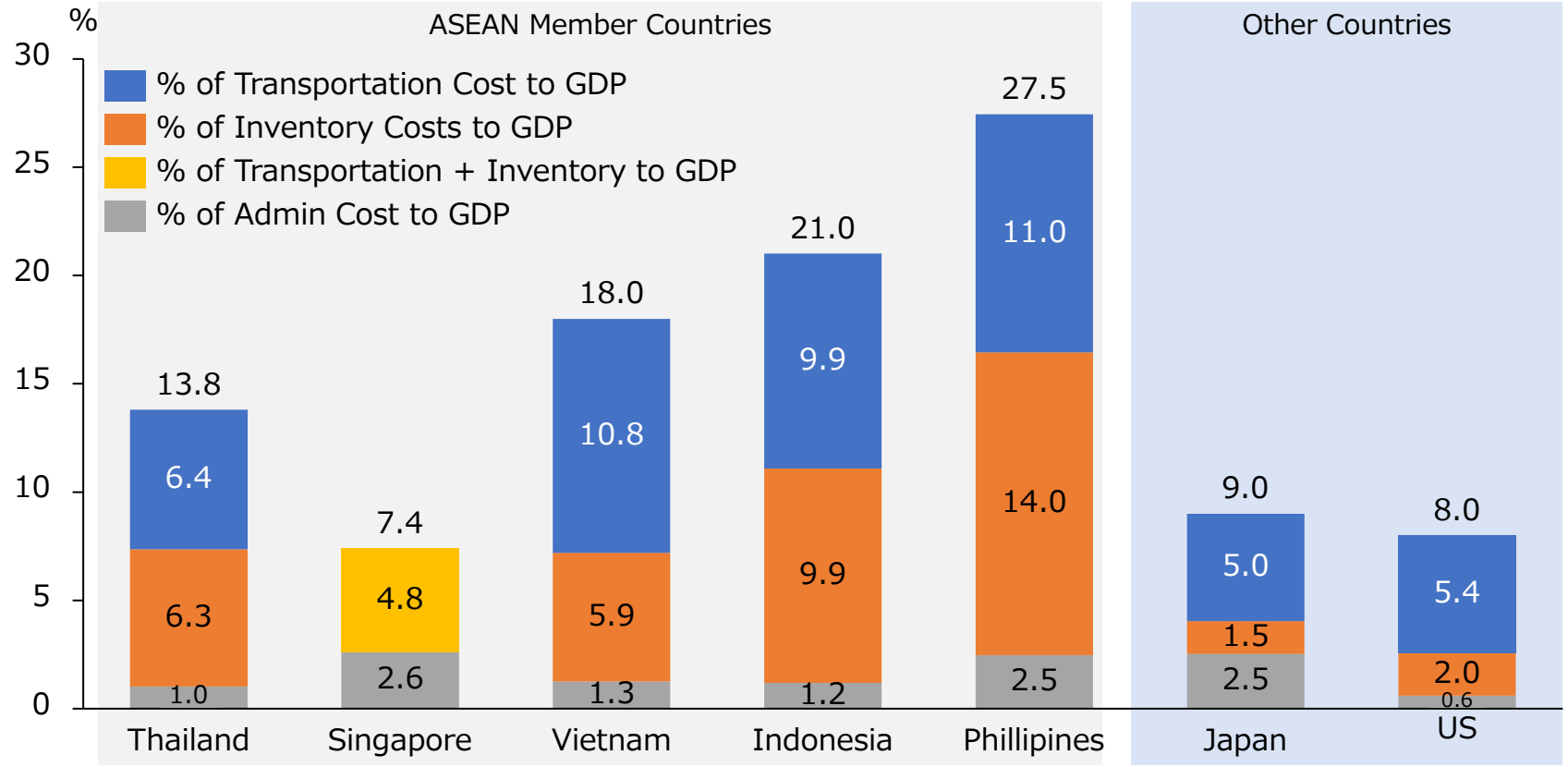
Background:
Logistics Costs Comparison across Countries and Regions

○ The logistics costs to GDP for the ASEAN countries are over 10%, which mainly derive from transportation and inventory costs not only in Thailand but also in Vietnam, Indonesia, and the Philippines.
○ The high level of inventory costs is largely due to poor punctuality in the logistics system in Thailand, thus some measures not only to reduce the transport costs but also to improve connectivity and reliability are necessary.

Comparison of Logistics cost per GDP in selected countries and economies



Source: OECD, NRI Research

3 Main Topics on the Logistics Field in Thailand (18 Discussion Points by Dr. Chackrit, Summarized by AIRO)

Theme①: Efficiency of Inland Transportation and Optimization of Connectivity among Transportation Modes	③ Rearrange route configuration ⑤ Urban planning & traffic congestion ⑥ Border checkpoint congestion & Cost of double handling ⑦ Environment, Pollution, climate change ⑨ Economy of scale of shipping ⑫ Availability of carrying capacity ⑬ Better utilization of existing transport infrastructure, such as ICD & air containers ⑮ Driving mechanisms to push forward logistics development ⑯ Value added logistics, need & Management ⑰ Energy crisis
Theme②: Utilization of Information Technology in the Logistics Field	① E-Commerce & Online communication & Digitalization ② Economy of speed ④ Transport safety & accident reduction
Theme③: Enhancement and Strengthening of Cooperation among Logistics Stakeholders	⑩ Mergers, Acquisitions & Alliances & Industrial consolidation ⑪ Shortage of personnel ⑭ Demand-driven & supply-driven projects ⑱ Changing atmospheres, economic systems, and ecosystem of logistics and supply chain
Others which are necessary for research & studies (if any)	⑧ Risk (systematic, unsystematic)

Note: Reflection of JTTRI-AIRO Committee for Logistics in Thailand on Mar. 20, 2023, shared to the Committee on Apr 19, 2023

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The Issues and Optimizing Cargo Transportation in Thailand

○ Current Situation and Issues

Road Congestion

Environmental Problems

Population Decline

○ Desirable Measures

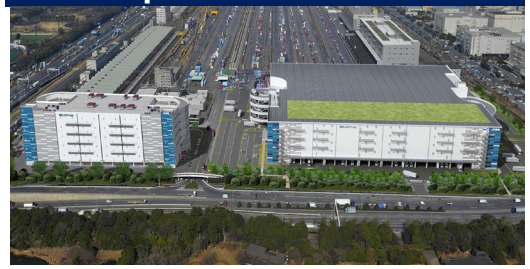
① Utilization of Mass Cargo Transport in Urban Areas and of Hub-to-Hub Transport
② Decarbonization by shifting cargo from truck to railway
③ Improving working conditions in freight transport by reducing drayage distance

○ Suggestions for Freight Railway Promotion

Promotion of Railway Cargo

Reconfiguring the Cargo Collection System

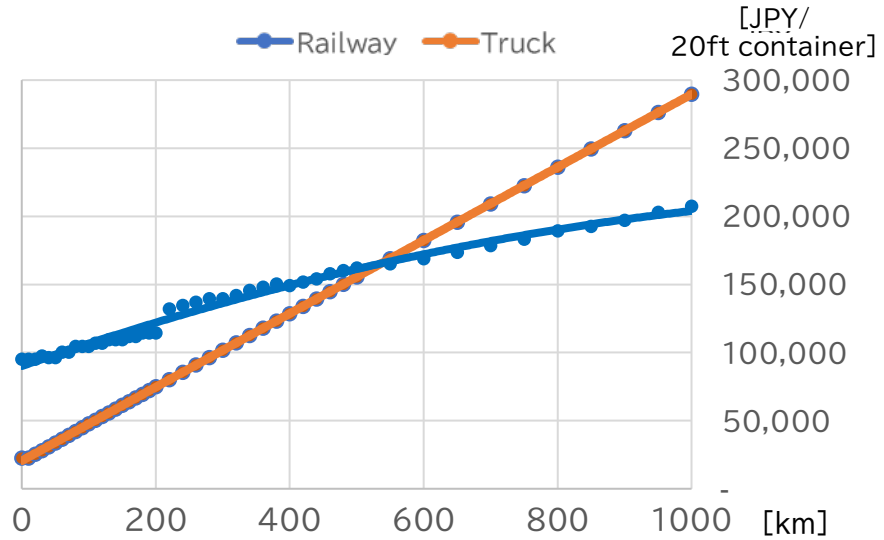
ICD Utilization & Its Development in Sub-urbans



Comparison between Truck and Railway Freight Cost in Thailand and Japan

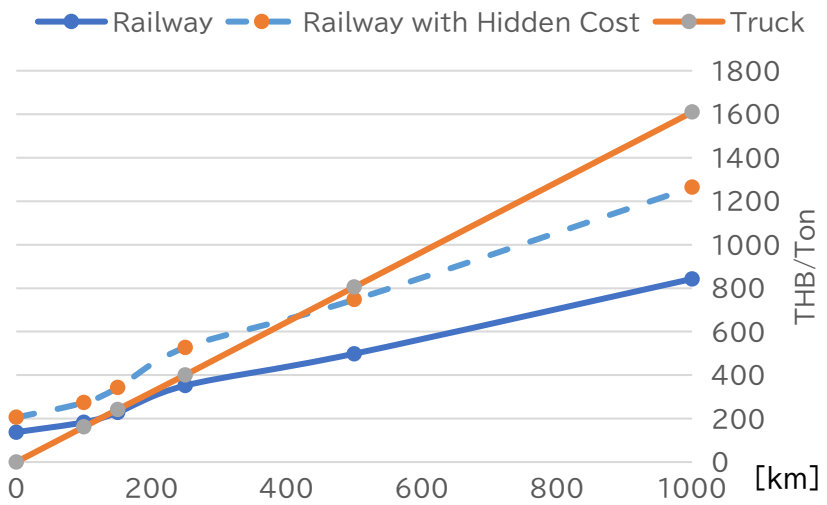
- ○ **In Japan, the freight cost of the railway will be cheaper than truck transport when exceeding 500km, with a strong cost advantage of more than 20% beyond 800km.**
- ○ **In Thailand, the freight cost of the railway will be more expensive than the freight cost by truck for distances within a 150-500 km range if hidden costs are included. (Similar cost for truck freight and railway freight at 200 km distance)**

Comparison between truck and railway freight cost(including drayage cost)* in Japan



Note*: railway freight cost includes drayage cost, assuming drayage of <5km from port to rail terminal, and drayage of <50km from rail terminal to the final destination

Comparison between truck and railway freight cost(including drayage cost)* in Thailand



Note**:Thailand railway freight cost and Japan freight cost are one trip fee
Note***; Japan fee from JR freight and Thai fee from SRT
Note****: Based on diesel price of THB32.00-32.99/Litre

Source: Japan fee based on estimates from MLIT"輸出入コンテナ貨物の鉄道輸送の促進に向けた調査" , SRT and JR freight, .
Thailand's Comptroller General's Department, Ministry of Finance

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Double Track Development

○ Following the opening of the Lao-China Railway in December 2021, the volume of cross-border freight traffic is expected to expand in line with the increase in the number of railway freight operations.

○ In Thailand, the double-track plan for the domestic rail network is underway, and double-tracking is expected to increase cargo-carrying capacity and reduce the risk of delays.

Railway	Line	Construction status	
		Regular	High speed
North	Lopburi-Pak Nam Pho	Completed in 2023	By 2028
	Pak Nam Pho-Den Chai	Completed by 2026	Planned
	Den Chai-Chiang Rai-Chiang Khong	Completed by 2028	Planned
Northeast	Map Kabao – Jira Junction	Completed in 2023	Planned
	Jira Junction-Khon Kean	Completed in 2020	Planned
South	Nakhon Pathom-Hua Hin	Completed by 2024	By 2051
	Hua Hin-Prachuap Khiri Khan	Complete by 2024	By 2051
	Prachuap Khiri Khan-Chumphon	Complete by 2024	By 2051
	Chumphon-Surat Thani	Complete by 2024	Planned
East	Chachoengsao-Khlong19-Kaeng Khoi	Completed in 2022	Planned

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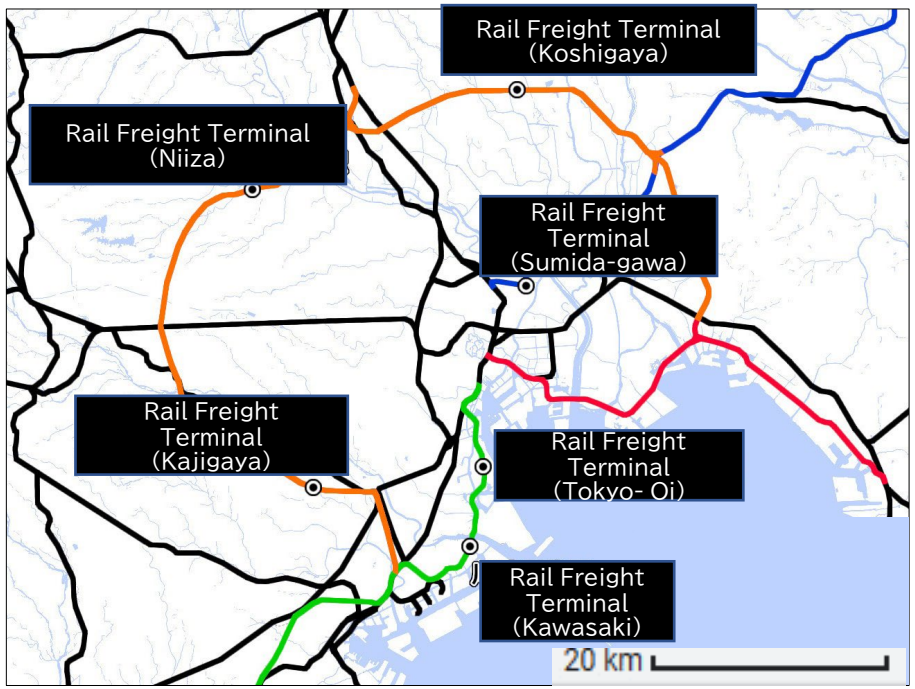
Outer Ring Railway Planning

○ Improvement of infrastructure can be considered in regard to cargo handling facilities, yards, and detour routes (like the Musashino Line in Tokyo) to avoid congestion in central Bangkok.

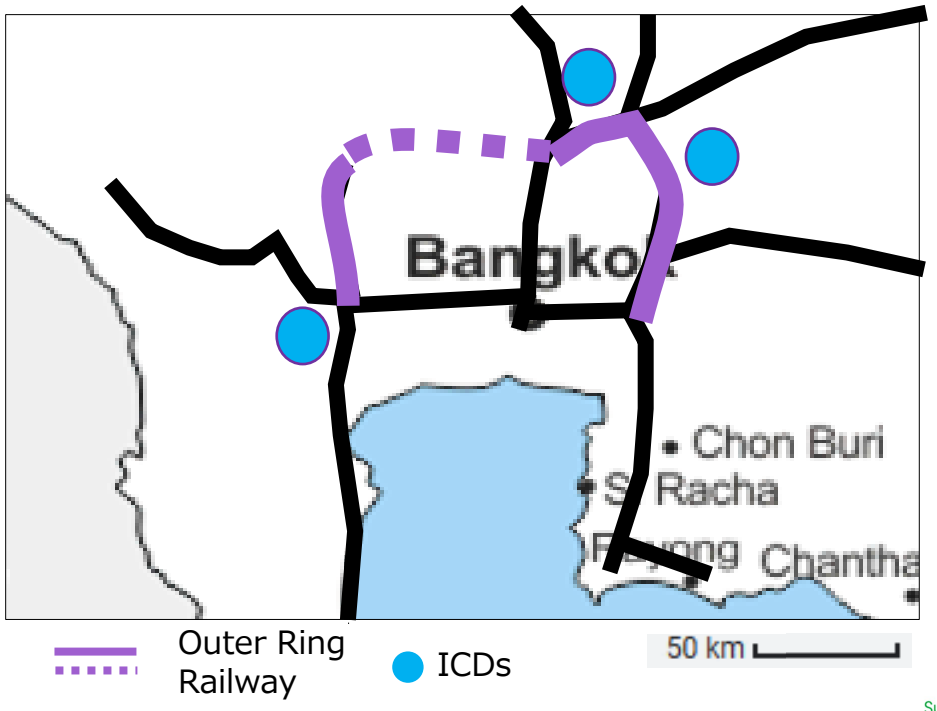
○ As traffic is concentrated around Lat Krabang ICD, many trucks wait in traffic jams in urban areas. Building LCDs in connecting suburban areas is expected to alleviate traffic congestion.

○ Tokyo Metropolitan Freight Railway Routes and Outer Ring Railway



Source: TETSUDO.COM (https://www.tetsudo.com/report/338/#)

○ Outer Ring Railway and ICD development in the Bangkok Suburban Area (JICA report)

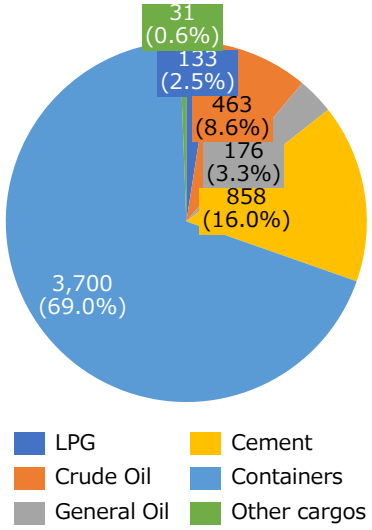


Shifting Cargos from Truck to Railway

○ From the viewpoint of the future population decline in society and to ensure environmental friendliness, it is necessary to alleviate traffic congestion in Bangkok and improve the punctuality of logistics by using railroads and inland waterways as mass transportation means, rather than truck transportation, which currently accounts for the majority of transportation.

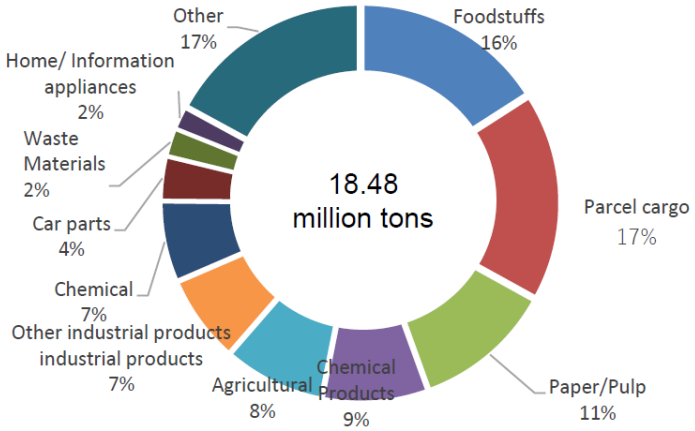
○Cargo Volume by Commodities in SRT (FY 2021)

Unit : Thousand Tons



Source : SRT (FY22)

○Cargo Volume by commodities in JR (FY 2022)



Source : JR Freight Corporate Data (April 2023)

○Proposed items forwarded by railway in Thailand

Category	Items with a large volume of Production in Thailand, and a large volume of Transportation by Rail in Japan
Agricultural Products	Rice
	Vegetables
Foodstuffs/ Commodities	Beverages/Groceries
Industrial Goods	Pulp/Paper

Source : Interview

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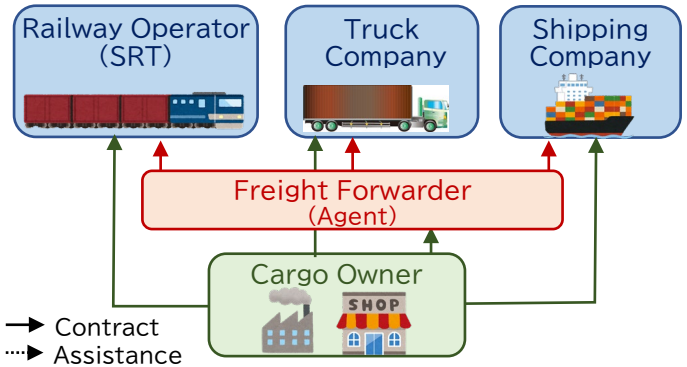
Reconfiguring Cargo Collection System by Railway in Thailand

○ To expand the use of rail freight, reconfiguring the freight collection system from “Block Train” into “Individual Cargo Collection” has the potential to enlarge the collection channel and reduce the rail freight fare.
○ In Thailand, the cargo owners generally arrange the transport services between each stakeholder such as railway operators, and truck companies with support from agents in some cases.
○ In Japan, many cargo forwarders, who coordinate between operators and cargo owners, enter the market. And they offer more choices for inland transport combinations, help save total transport costs, and increase logistics stakeholders’ variety of options.

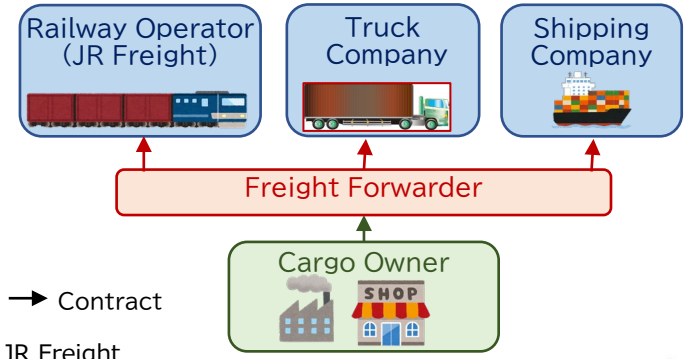
Thailand

Rail Operator	Rail Forwarder (Agent)	Impact to stakeholders*
SRT	–	• Affordable price for cargo owners with large lots of cargo • In some cases, some agents coordinate railway cargo matching between several cargo owners
	Agent	



Japan

Rail Operator	Rail Forwarder	Impact to stakeholders*
JR Freight	Nippon Express	• Friendly and competitive pricing choices for users of small lot cargo • Various cost-saving plans for end-users, e.g. free storage plan for a certain period • May increase price for large lot users due to having to pay both operator and forwarder.
	All Japan Express	
	Japan Freight Liner	
	Others…	



Note: * Potential impact incase of Japan practices ** Sagawa Express has partnership with only JR Freight
Source : Websites of each freight forwarder

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Functional Enhancement of ICD

○ To strengthen the existing ICD, adding functions such as distribution processing and expanding onto surrounding land are effective ways. And if the land acquisition is difficult or the land is limited, the possible choice is to increase the warehouse capacity and consolidate floor space by creating a multi-story building.
○ To build new ICDs at logistics crossing points, and local distribution bases, to enhance the efficiency of inland transportation by increasing connectivity between modes.

Functions of Lat Krabang ICD

- Inland Container yard and storage for international cargo
- Customs Clearance
- Warehouse, Consolidation

Source: porteconomicsmanagement.org

Multi-story expansion and examples

Ex. Tokyo Rail Gate (West/ East) in Japan
(Total floor :174,000sqm, Site area: 76,500sqm)

Expanding consolidation area in multi-story warehouse

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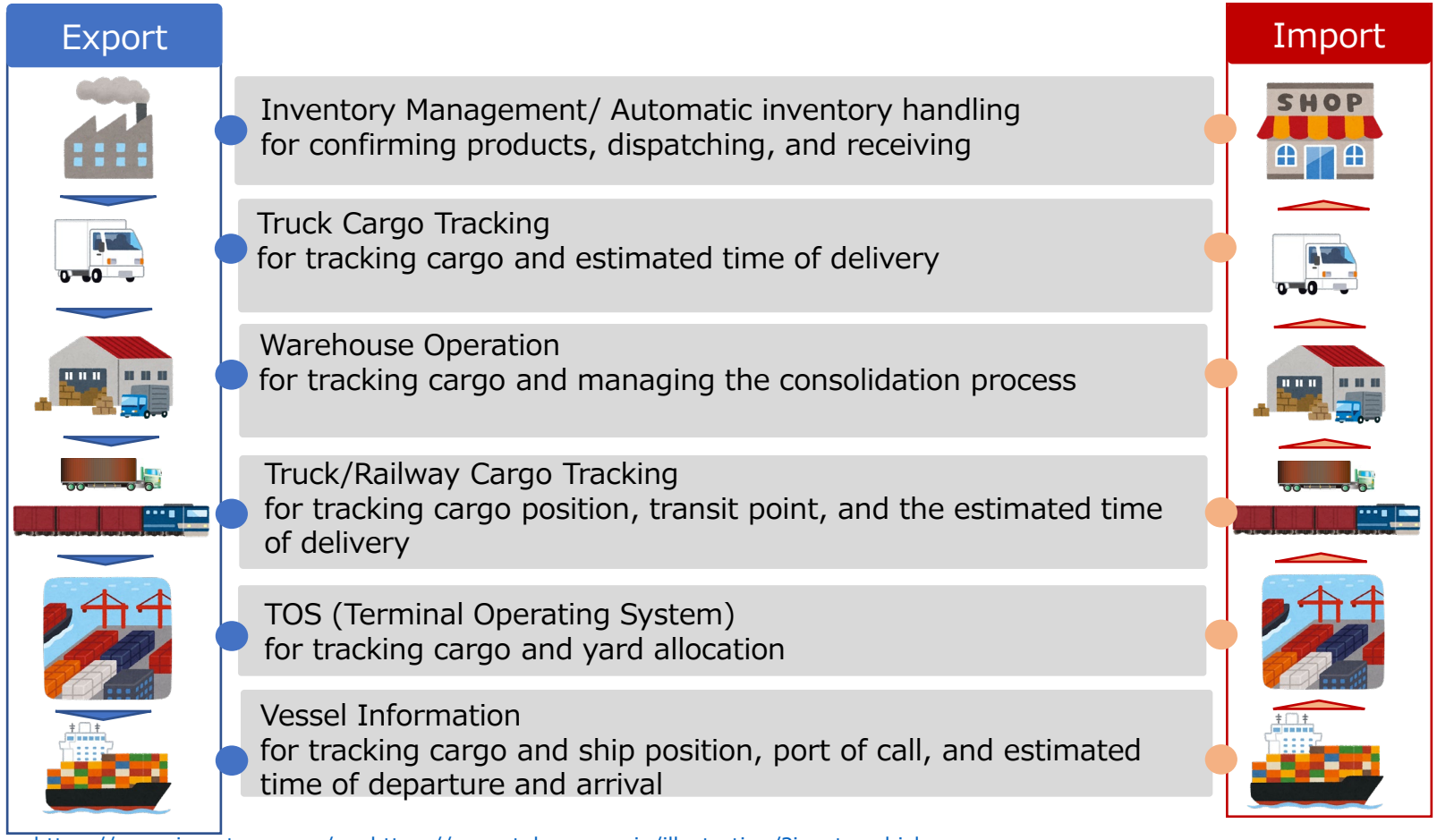
Logistics Flow and the Phases of ICT Utilization

○ **As ICT and automation are effective tools for streamlining and standardizing the operations of each logistics phase and operator, the automated handling systems and equipment of each operator promote efficient operations.**



Picture： https://www.irasutoya.com/ , https://www.takasue.co.jp/illustration/?i_cat=vehicle

Platform among Several Stakeholders for Increasing Connectivity

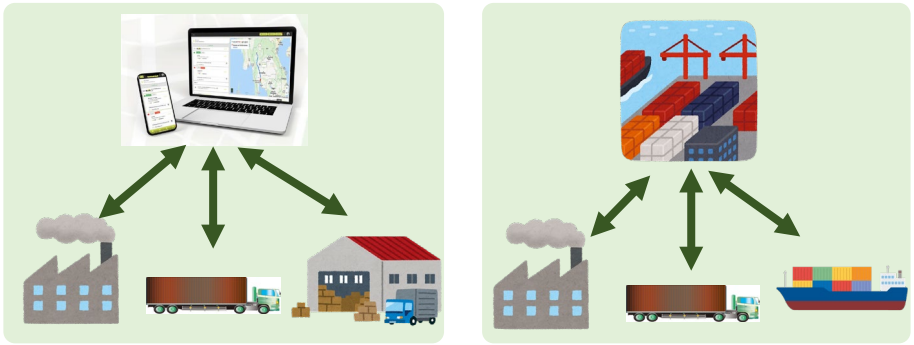
○ **The platforms, which connect multiple parties, will enable them to utilize more information and optimize logistics, which is difficult for an individual operator.**
○ **Due to the high development cost or trade-off between information connectivity and confidentiality, the government-owned systems or logistics hubs will be the preferable entities for formulating the platform.**

① National Single Window (NSW)

optimizing the declaration process through online

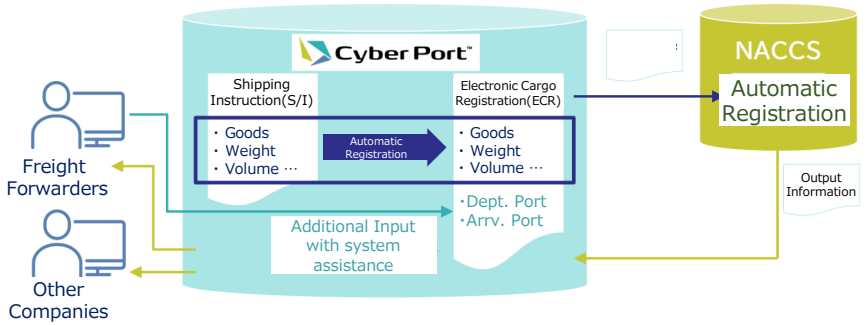
② Truck Cargo Matching/ Port Community System

connecting logistics hub and logistics companies and reducing one-way transport



○The future connection image of government system and logistics hub system (JP case)

Japanese logistics companies benefit from the one-stop service at Cyber Port System(Port/Marine Cargo System), as there is automatic registration with NACCS (Customs Declaration System) when submitting S/I (Shipping Instruction) to the Cyber Port System.



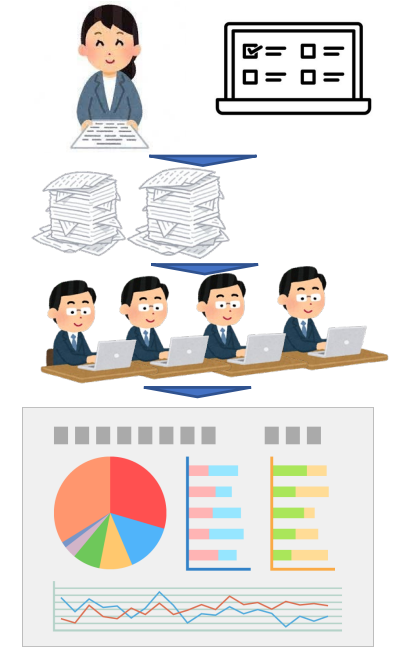
Source : https://www.mlit.go.jp/report/press/content/001602950.pdf Ports and Harbours Bureau, MLIT
Picture : https://www.irasutoya.com/ , https://www.takasue.co.jp/illustration/?i_cat=vehicle

Statistics Development Using ICT and Big Data

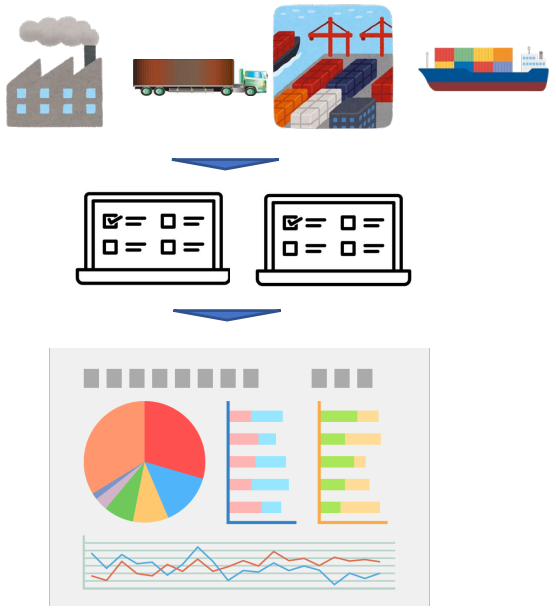
○ As logistics-related Statistics in ASEAN are not well retained overall, the governments need to collect and analyze data, organize the statistics, and educate the personnel for coordinating statistics.
○ On the other hand, ICT development may enable us to collect Big Data easily and at a lower cost and to use them in the phase of tracking, planning, and management in the logistics field instead of relying on government statistics. Also, this Big-Data can be utilized to develop government statistics.

Logistics-related Statistics (Japanese Case)	Intervals
Port Statistics	Annually
Domestic Shipping Cargo Survey	
Railway Cargo Survey	
Motor Vehicle Cargo Survey	
Aviation Cargo Survey	
Domestic Cargo Flow Survey	Every 5 years
Export and Import Container Cargo Flow Survey	

Conventional Method (JP)



Efficient Method with ICT in Future



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

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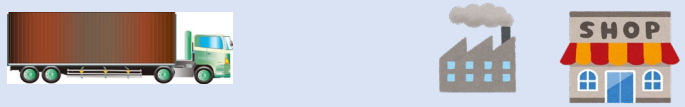
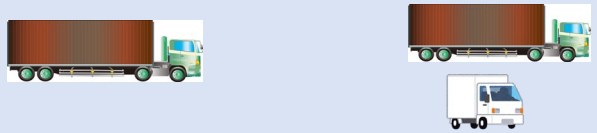
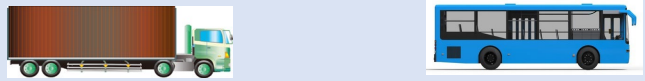
Categories of Cooperation among Stakeholders in Delivery

○ Cooperation on delivery can be categorized into several types.
○ This can reduce vehicle usage and delivery trips which help continuous logistics systems to reduce transportation costs, maintain networks in rural areas, and also generate new value to cargo transportation.

Types of Cooperation	Types of Delivery, Objectives
① Land Cargo Transporter + Cargo Owner/ Shipper 	**Mixed Loading/ Consolidation** Increase: Loading Capacity Reduce: Trucks and Their Trips, Cost → Reduce Costs
② Land Cargo Transporter + Land Cargo Transporter 	**Joint Transportation/ Joint Delivery** Increase: Loading Capacity Reduce: Trucks and Their Trips → Reduce Costs (complying with Antitrust Laws)
③ Land Cargo Transporter + Other Transport company (Bus/ Taxi) 	**Small-lot Cargo Carried by Public Transport** Public Transport Vehicles Carry Small-Lot Cargo → Reduce Costs, Maintain Logistics Network in Rural Areas

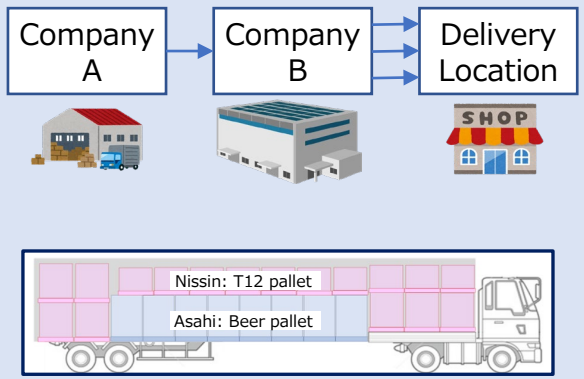
Examples of Cooperation in Delivery

○ Cooperation among companies has led to many benefits and streamlined the efficiency of delivery overall.
○ This can reduce vehicle usage and delivery trips, which compensates for truck driver shortages, eases congestion in city areas, and also benefits the environment.

Mixed Loading Consolidation

Case Study 1:
Nissin Foods, Asahi Soft Drinks, Nippon Express (Japan)

- Several companies transport their products in one truck by consolidation.

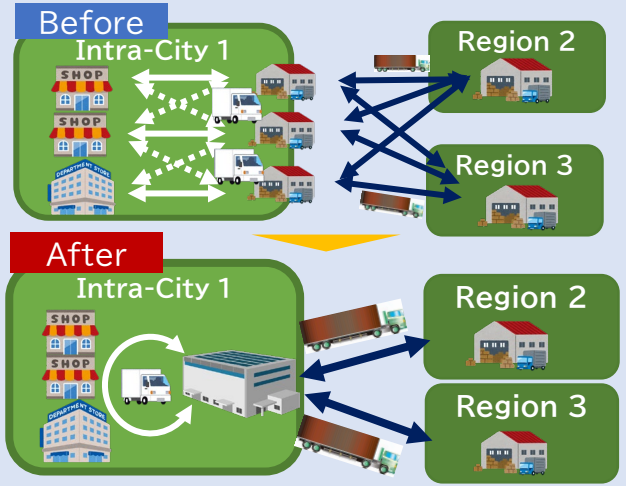


Source: Yamato, Nissin Company Website

Joint Transportation Joint Delivery

Case Study 2:
Yellow Bird Project (Tenjin Area Joint Delivery Co., Ltd: Fukuoka, Japan)

- Yellow Bird (capitalized by several logistics companies and local banks) delivers in the city, and the logistics companies deliver them between the other regions.

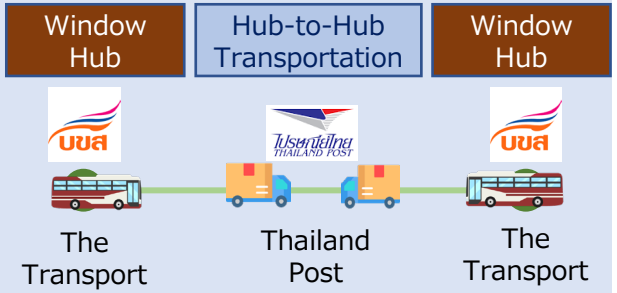


Source: Kyushu Regional Transport Bureau, MLIT (https://wwwtb.mlit.go.jp/kyushu/gyoumu/jidousya_k/index_02.htm) MILT ((https://www.mlit.go.jp/common/001098417.pdf)

Small-lot Cargo Carried by Public Transport

Case Study 3: Joint delivery scheme (Thailand)

- The Transport Co., Ltd utilizes bus terminals and agents as goods collection points, and Thailand Post operates hub-to-hub transport.



Possible Measures for Human Resources Development in Thailand

○ Current Situation

- Small to Medium Transport Companies have limited resources for staff education
- Logistics Organizations and State Enterprises provide staff training programs
- Government offers budgets for human resources development

○ Desirable Measures

① **Enlightening Small to Medium Companies to educate staff about safety measures on a daily work basis**
② **Use joint training programs at logistics organizations to train staff of small transport companies, reducing the program cost through government support**

○ Suggestions to Logistics HRD in Thailand

Self-Help by Single Company/Organization
Daily staff education/ maintenance of equipment to keep it safe, preventing accidents

Mutual Help by Logistics Organization
Provide staff training programs and financial assistance menus for member companies

Public Help from National Government
Financial Support to Logistics Organizations

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Employee Education by JILS (JP)

○ **JILS (Japan Institute of Logistics Systems) is a logistics organization consisting of cargo owners, cargo transport operators, and freight forwarders, who share and combine their knowledge and experience to optimize the logistics system in Japan.**

○ **JILS provides in-house training and consultation services according to the requirements and needs of each company, with 3 different education courses: Basic Knowledge, Practical Training, and Management (Based on the Level).**

Basic Knowledge

Overall logistics training

- Reviewing of logistics systems
- Logistics Process
- IT Processes
- Logistics sales training
- Logistics costs
- Logistics efficiency

Practical Training

Gaining practical ability

- Truck Driver Education Course
- Logistics Diagnosis Factor Course

Management Based on the Level

Deepening understanding

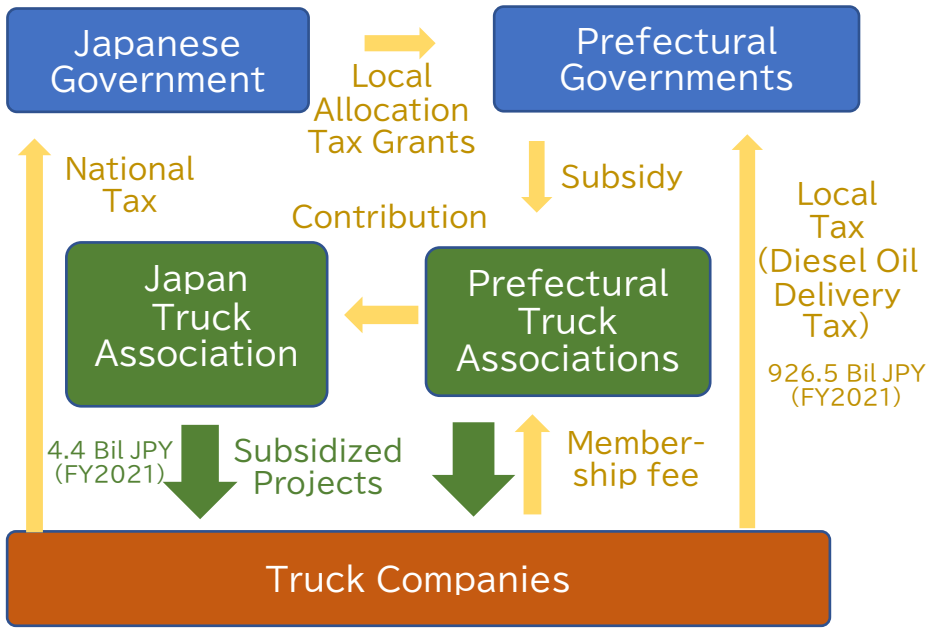
- Supervisor Course
- Senior-Level Course
- Middle-Level Course
- Freshman Course

Source: JILS Website (https://www1.logistics.or.jp/education/training.html)

Financial Assistance for Transportation Business Promotion (JP)

- ○ **The Japan Truck Association and prefectural truck associations provide Subsidized Projects for member truck companies including support for driver training, purchasing safety equipment for trucks, etc.**
- ○ **These projects are financially supported by prefectural governments with assistance from Japanese government grants, based on the "Subsidy Act for the Promotion of the Transportation Business".**

Project/Financial Framework



National Level Contents

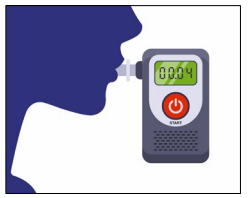
Training of Instructors

Compiling Statistics

Local Level (Osaka Truck Association)

Training Assistance

Equipment Incentives



Alcohol Checker

Drive Recorder

Source: Japan Truck Association (https://jta.or.jp/association/disclosure/kofukin.html)
Osaka Truck Association (https://www.truck.or.jp/publics/index/29/)

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Recommendations for Logistics in Thailand by JTTRI-AIRO

Efficiency of Inland Transportation and Optimization of Connectivity among Transportation Modes

① Continuous infrastructure development, such as double-track railways, proper maintenance, installation and renewal of equipment in freight stations and ports.

② Reconfiguring freight forwarder system in collecting and distributing hub-to-hub cargo transport, especially by rail.

③ Expanding the area and adding to the functions of the ICDs in Bangkok and EEC and development of ICDs in other regions.

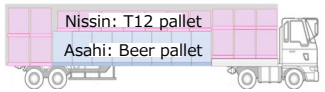
Utilization of Information Technology in the Logistics Field

④ Creating and expanding the information platform connecting multi-stakeholders at the logistics hubs.

⑤ Utilizing accumulated Big-Data as statistical data in the logistics field.

Enhancement and Strengthening of Cooperation among Logistics Stakeholders

⑥ Promoting mixed loading, consolidation, joint delivery and enlightening the cargo owners about their efficiency.



⑦ Cooperation in human resources development among companies and logistics organizations, supported by the government.

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