

for the economic growth of developing nations. Comprehensive development efforts cannot be properly measured by the shortsighted use of financial indicators.

Furthermore, current development efforts are often carried out on a piecemeal basis, one port at a time. This may result in overcapacity or other misallocation of valuable resources. Proper development should be planned on the national level and measured from the economic, not the financial, point of view. Carefully coordinated development of several ports can lead to widespread economic growth.

Comprehensive national port development plans should be drawn up, and construction should be subsidized. This sort of comprehensive national port development is crucial for the economic development of developing nations.

3-2 The Development of Container Wharves (Terminals)

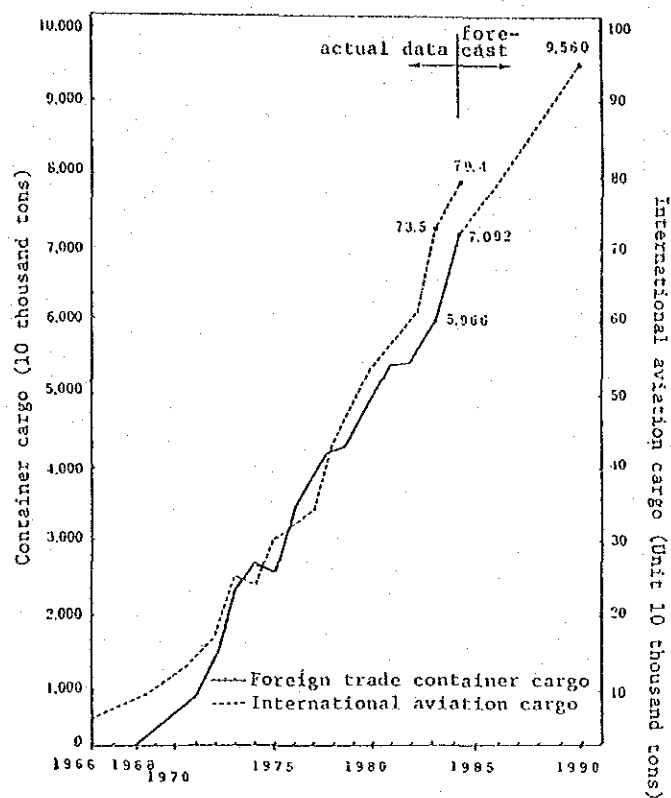
Containerization in Japan has been developing since the first container service was inaugurated between Japan and the northwest coast of the United States in 1967. At present, 7.1 million freight tons per year, which is 75% of our foreign trade cargo, is containerized.

The container cargo volume and the ratio of containerization are shown in Figures IV-3-1 and IV-3-2. The volume of total cargo, liner and containerized cargo handled in Japanese ports and an outline of ordered new large container vessels (1983) are shown in Tables IV-3-4, 5 and 6. In Japan, 15 major ports handle container cargo as of 1984. The cargo volume at each port is shown in Table IV-3-3.

As containerization progressed from 1967, a crash program for container wharf construction began. Previously, Japanese public wharfs had been constructed with national and local government funds on the premise that they should be open to public use. Therefore, it was considered inappropriate to apply such a funding arrangement to the construction of container wharfs, which have to be available for the exclusive use of particular users for operational efficiency. However, considering the public nature of container wharfs, the large amounts of funds that have to be procured for their construction and other factors, a new financial arrangement for construction of container wharfs involving use of both private and public funds was adopted.

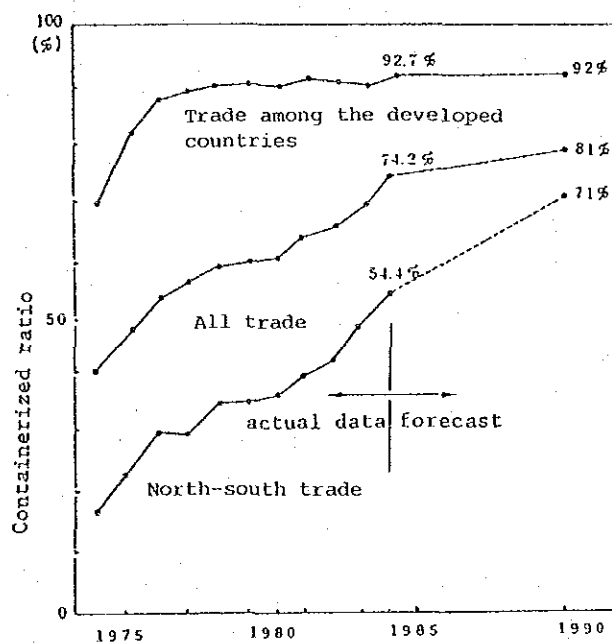
The Keihin Foreign Trade Wharf Corporation was established for the ports of Tokyo and Yokohama, the Hanshin Foreign Trade Wharf Corporation for the ports of Osaka and Kobe, and the Container Wharf Company for the ports of Nagoya and Yokkaichi, all for the purpose of construction and management of container wharfs. At present, instead of the Keihin and Hanshin Foreign Trade Wharf Corporations, Wharf Public Corporations (Tokyo, Yokohama, Osaka, Kobe) construct the container terminals. Additionally, container wharfs have been constructed at the ports of Shimizu and Kita-Kyushu as conventional public wharfs in view of the fact that the volume of container cargo handled at these ports is not great.

Figure IV-3-1 Foreign Trade Container Cargo and International Aviation Cargo



Source: Ports and Harbours Bureau

Figure IV-3-2 Containerized Ratio



Source: Ports and Harbours Bureau

Table IV-3-3 Container Cargo Volume by Port

Port	Year	Container cargo(thousand tons)			1984/1983
		1982	1983	1984	
TOKYO		9,590	10,014	11,787	117.7
YOKOHAMA		11,598	12,886	15,381	119.4
NAGOYA		3,834	4,988	6,062	121.5
YOKKAICHI		184	165	181	109.7
OSAKA		5,413	6,164	7,020	113.9
KOBE		21,408	22,702	27,248	120.0
SHIMIZU		1,014	1,349	1,511	112.0
KITAKYUSHU		235	434	625	144.0
HAKATA		58	103	317	307.8
TOMAKOMAI		28	39	23	59.0
NIIGATA		12	13	21	161.5
FUSHIKITOYAMA		0	0	2	-
IMABARI		21	55	82	149.1
SHIMONOSEKI		205	427	398	93.2
NAHA		255	321	264	82.2
TOTAL		53,855	59,660	70,922	118.9

Source: Each port authority

Table IV-3-4 Volume of Cargoes Handled at Japanese Ports

(Unit: million tons)

Year	Total	Foreign Trade		Domestic Trade (except Ferry)	Ferry
		Export	Import		
1920	77.9	6.1	10.2	61.6	-
1925	93.9	6.9	15.0	72.0	-
1930	125.7	5.1	19.1	101.5	-
1935	209.9	10.1	27.9	171.9	-
1940	222.6	-	-	222.6	-
1945	27.9	-	-	27.9	-
1950	107.6	4.2	13.6	89.8	-
1955	246.8	9.3	40.7	196.8	-
1960	439.9	14.8	92.2	326.2	6.7
1965	808.3	29.9	211.8	515.7	50.8
1970	1,852.6	59.9	493.0	883.4	416.2
1975	2,527.3	95.6	607.7	1,041.0	783.0
1980	2,908.6	152.6	675.8	1,238.2	842.0
1983	2,710.9	160.5	611.5	1,094.3	844.7

Source: Ports and Harbours Bureau, MOT

Table IV-3-5 Liner and Containerized Cargo Volume Handled at Japanese Ports

(Unit: thousand tons, 'Z)

Item	Year	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Total Volume of Liner Cargo		22,903	28,180	29,793	37,600	41,664	48,434	50,377	52,895	59,026	61,439	51,394	62,597	68,689	72,202	71,602	79,689	83,202	81,599	86,425
Volume of Containerized Cargo					181	3,439	6,364	9,328	14,007	22,580	25,295	24,332	33,513	38,464	43,293	42,917	48,800	53,468	53,673	59,660
Containerized Ratio					0.5	8.3	13.1	18.5	26.5	38.3	41.2	47.3	53.5	56.0	60.0	59.9	61.2	64.3	65.8	59.0
Exported Volume of Liner Cargo		14,317	16,635	16,990	22,670	25,790	30,462	33,680	33,227	33,626	36,749	34,347	41,143	46,328	46,432	44,531	52,323	55,356	53,322	56,174
Volume of Containerized Cargo					79	2,217	3,899	5,693	8,476	11,917	13,986	14,139	19,537	22,794	24,541	23,783	28,938	32,984	32,706	36,780
Containerized Ratio					0.3	8.6	12.8	16.9	25.5	35.4	38.1	41.2	47.5	49.2	52.9	53.4	55.3	59.6	61.3	65.5
Imported Volume of Liner Cargo		8,586	11,545	12,803	14,930	15,874	17,972	16,697	19,668	25,400	24,690	17,047	21,454	22,361	25,770	27,071	27,366	27,846	28,277	30,231
Volume of Containerized Cargo					102	1,222	2,465	3,635	5,531	10,663	11,309	10,193	13,986	15,670	18,752	19,134	19,862	20,484	20,967	22,880
Containerized Ratio					0.7	7.7	13.7	21.8	28.1	42.0	45.8	59.8	65.2	70.1	72.8	70.7	72.6	73.6	74.1	75.6

Source: Ports and Harbours Bureau, MOT

Table IV-3-6 Outline of Ordered New Large Container Vessels (As of 1983)

Owner	U.A.S.C. (Kuwait)	Evergreen (Taiwan)	Eurosal (Europe, South America)	U.S.L. (United States)	NSCSA (Saudi Arabia)	BBSL (England, Norway, Sweden)	ACL (England, France, Sweden)
Dockyard	Korea	Japan Taiwan	Japan, Korea	Korea	Sweden	Korea	England, France, Sweden
Route	ME/E ME/FE	Round-the-World	E/SAMWC	Round-the-World	ME/US	Round-the-World	E/US
Number of Vessels	9	16	7	14	4	3	5
Type of Vessels	Cellular	Cellular	Cellular	Cellular	RO/RO	Ro/RO	RO/Cellular
TEU	1,846	1,900	1,900	4,400 (Four steps)	2,000	2,400	2,200
Length (m)	198.0	188.0	191.0	279.0	232.0	246.4	232.0
Width (m)	32.2	32.2	32.2	32.3	32.26	32.26	32.26
Depth (m)	-	18.65	18.7	21.50	20.20	21.0	20.20
Draft (m)	10.0	10.50	9.5	11.65	11.00	11.70	10.80
Main Engine	Diesel	Diesel	Diesel	Diesel	Diesel	Diesel	Diesel
Speed (knots)	18	21	19	18	20	20	18

Source: Ports and Harbours Bureau, MOT

Note: ME = Middle East, E = Europe, FE = Far East, SAMWC = South America West Coast, US = United States

Between 1967 and 1985, container wharfs with a total of 48 berths were constructed: seven berths at the port of Yokohama, ten at the port of Tokyo, sixteen at Kobe, five at Osaka, five at Nagoya, one at Yokkaichi, one at Shimizu and one at the port of Kita-Kyushu. The number and size of these container berths are shown in Table IV-3-7.

We would like to explain briefly about the financing of container terminals. The national government makes no-interest loans and provides funds to the tertiary sector established around the port management bodies. These loans are granted to pay for part of the cost of projects to construct container terminals rented to specified users such as shipping companies. They are drawn from national finances and distributed through the port management bodies (Table IV-3-8).

3-3 Operation System of Container Terminals

3-3-1 Business Outline of Port Management Bodies

With the objective of maintaining orderly arrangement and adequate administration of ports and thus contributing to traffic development, appropriate utilization of resources and balanced development of the country, the port management bodies engage in the following activities:

- (a) Overall activities related to the development, utilization and maintenance of ports - preparation of port products; research and study; preparation of statistical data; promotion of facilities, and preparation and publication of tariffs.
- (b) Activities related to enhancing port facilities through construction, improvement and land reclamation.
- (c) Activities related to maintenance and administration of ports and port facilities - maintenance of port areas and port facilities; administration of national or municipal port facilities; and administration of waste oil treatment and disposal plants.
- (d) Activities controlling the use of port facilities - restrictions on utilization of water basin facilities and mooring facilities; acceptance of entrance and clearance notices; and restrictions on utilization of sheds and stevedoring machinery.
- (e) Furnishing and introducing services necessary for port operation.
- (f) Others

3-3-2 Management of Port Facilities - at the Port of Yokohama -

Port facilities are roughly classified as follows:

- (a) Facilities owned by the national government or the port management body itself and managed by the port management body (public faci-

Table IV-3-7 Present Conditions and Planning of Major Container Berths in Japan

Area & Port	Wharves	1985. 6. 24 present		Total planning		Management body
		Berth Number	length	Berth Number	length	
TOKYO BAY		19	5,450	17	4,900	
TOKYO	Shinagawa	2	550			The City of Tokyo
	Ooi	8	2,300	8	2,300	Tokyo Port Container Terminal Public Corporation
	No. 13 district	0	0	2	600	"
YOKOHAMA	HONMOKU(D pier)	2	600			The City of Yokohama
	HONMOKU(A pier)	4	1,100	4	1,100	Yokohama Port Container Terminal Public Corporation
	HONMOKU(D pier)	1	300	1	300	"
	DAIKOKU	2	600	2	600	"
SURUGA BAY		1	400			
Shimizu	No. 2 OKITSU	1	400			Shizuoka Prefecture
ISE BAY		6	1,600	4	1,130	
NAGOYA	KINJO	2	470			Nagoya Port Authority
	West 4 district	3	850	3	850	Nagoya Container Terminal K.K.
YOKKAICHI	South	1	280	1	280	Yokkaichi Container Terminal K.K.
OSAKA BAY		21	6,300	20	6,000	
OSAKA	South Port	5	1,350	6	1,650	Osaka Port Container Terminal Public Corporation
KOBE	MAYA	2	600			The city of Kobe
	Port Island	12	3,650	12	3,650	Kobe Port Container Terminal Public Corporation
	ROKKO Island	2	700	2	700	
KANMON		1	300			
KITAKYUSHU TANOURA		1	300			The city of Kitakyushu
TOTAL		48	14,090	41	12,030	

Source: Ports and Harbours Bureau, MOT

Table IV-3-8 Financing of Container Terminals

Container terminals (Operated by limited companies)

National interest-free loans	Capital subscription by port management bodies	Capital subscription by ship owners	Special bonds	Private capital
1/10	1/10	1/10	3/10	4/10

Container terminals (Operated by public corporations)

National interest-free loans	Interest-free loans by port management bodies	Treasury investments & loans	Private capital
1/10	1/10	4/10	4/10

Source: Overseas Coastal Development Institute of Japan

lities)

(b) Facilities owned by non-profit organizations and leased to others (exclusive-use facilities)

(c) Facilities owned by private enterprises (privately owned facilities)

Public facilities are available for temporary use upon approval of application. Such facilities include berths and other mooring facilities, public transit sheds, cargo sorting areas and other facilities for sorting or storage, and cranes and other types of stevedoring facilities.

Exclusive-use facilities are constructed by non-profit organizations such as the Yokohama Port Terminal Corporation and leased for 10-year periods to shipping companies, etc. They include container terminals and terminals for conventional liners.

Most privately-owned facilities are for shipping raw materials and products in and out of factories in the port area, although some are for docking.

The job of the port management body centers on planning and administration of the port as a whole, construction and management of public facilities, and promotional measures. Normal operations include control of ship movements in and out of port, allocation of berths, management of cargo facilities, etc.

Port of Yokohama's Computer System

The renovation of transportation technology in recent years requires ports not only to improve and expand their facilities but also to ensure efficient operations under superior port management. For greater management efficiency and greater convenience of port users, the Port of Yokohama has developed a computer system covering all facility, ship, and cargo operations. This system started in April, 1981.

This is an on-line system connecting the central computer with 41 terminals installed at various places such as the Port Management Division, the Marine Affairs Division, and the control offices of all piers. As a result of this systematization, information of ship entry and departure, management information on cargo sorting areas, information on cargo movement, and management information on landing stages, etc. is immediately processed and transmitted to the related parties in a timely fashion.

This has brought substantial improvement in quick and exact execution of port works, contributing to better service.

3-3-3 Handling Facilities in the Terminals

(1) Cargo Handling Equipment at Container Terminal

The cargo handling at a container terminal is achieved by the equipment specifically designed for the container handling since each container has its own weight of 30 tons and unitized shape.

The main handling equipment are those for loading/unloading operation between a quay and a ship i.e. the quay side crane for Lift-on/Lift-off container ship and the forklift truck or tractor for Roll-on/Roll-off container ship, and those for handling at a container yard i.e. the transfer crane, straddle carrier and/or trailer chassis.

(i) Equipment for Loading/Unloading Operation

In Japan the quay side container cranes are used at the major container terminals and few fork lift truck or tractor is used.

Container cranes with an expandable spreader are installed on the apron of the container terminal and unload import containers from ship and load export containers onto the apron speedily and efficiently.

There are two types as the standard of container crane, one is boom derrick gantry crane (Figure IV-3-3) and the other is low profile crane (Figure IV-3-4). Low profile crane can be made by articulated boom or shuttle (sliding) boom. When a container terminal is constructed near the airport and the height of crane is restricted by a limitation of aerial navigation, this kind of crane is usually installed since the height of low profile container crane can be limited to less than sixty (60) meters.

(ii) Equipment for Handling at Container Yard

In Japan the following handling systems at container yard are adopted:

- Chassis system
- Straddle carrier system
- Transfer crane system
- Combined system

Forklift trucks are used as an auxiliary handling equipment in some yards.

(a) Chassis system

A chassis is of a flat bed type designed specifically for marine containers with corner hardware to lock the containers. Both 20-foot and 40-foot chassis are equipped with eight wheels (double-tire type) as shown in Figure IV-3-5. This system has the following advantages and disadvantages:

Figure IV-3-3 Container Crane



Figure IV-3-4 Low Profile Container Crane



Advantages:

- Containers can be handled more easily and quickly than by any other methods. It is said that the annual turn-over of containers is about three times that of the other systems.
- The frequency of direct handling of containers is reduced and, therefore, the possibility of damage is lessened.
- Since there are no heavy vehicles, except the chassis and tractor, the surface of the container yard is not required to be the heavy duty paving as demanded by other systems.
- When a crane is used to load and unload a container at the apron, it is easy to adopt a dual loading system, which not only ensures highly efficient handling operation but also improves the efficiency of the container yard and chassis.

Disadvantages:

- It is necessary to prepare as many chassis as the containers to be stored.
- Since containers cannot be stacked in multiple layers, the surface area of the container yard must be extensive.
- Because of these factors, the initial investment is large.
- The chassis are used not only inside but also outside the container yard, requiring frequent and careful maintenance.

(b) Straddle carrier system

There are many types of straddle carriers. An example of straddle carrier is shown in Figure IV-3-6, which can stack 20-foot containers by 3 tiers and can be used for carrying 40-foot containers with an expandable spreader.

More than 600 container berths are operating in the world and about one-third of them adopt the straddle carrier system.

The system has the following advantages and disadvantages:

Advantages:

- It is very flexible in coping with changes in yard allocation and cargo quantity.
- Quick dispatching of containers is possible.
- Since containers can be stacked in multiple layers, the container yard area can be used efficiently.

Figure IV-3-5 Trailer Chassis

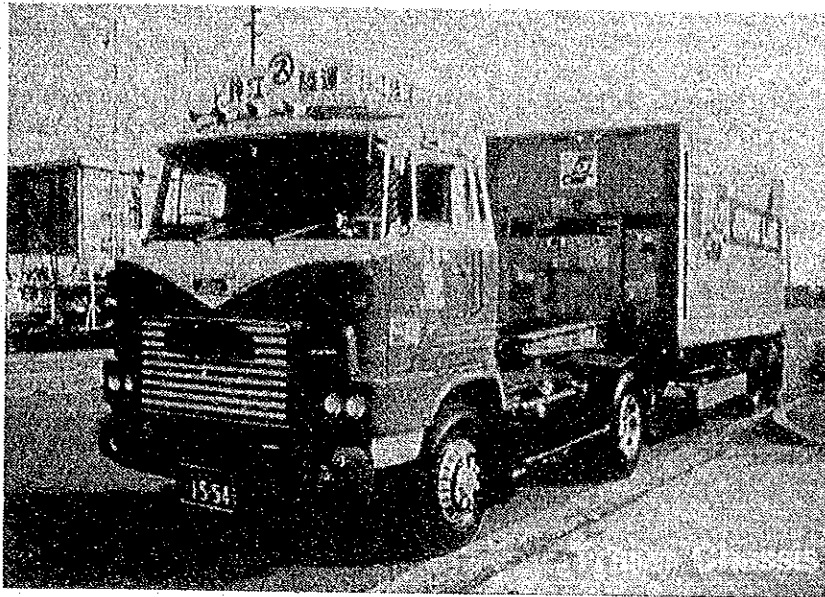
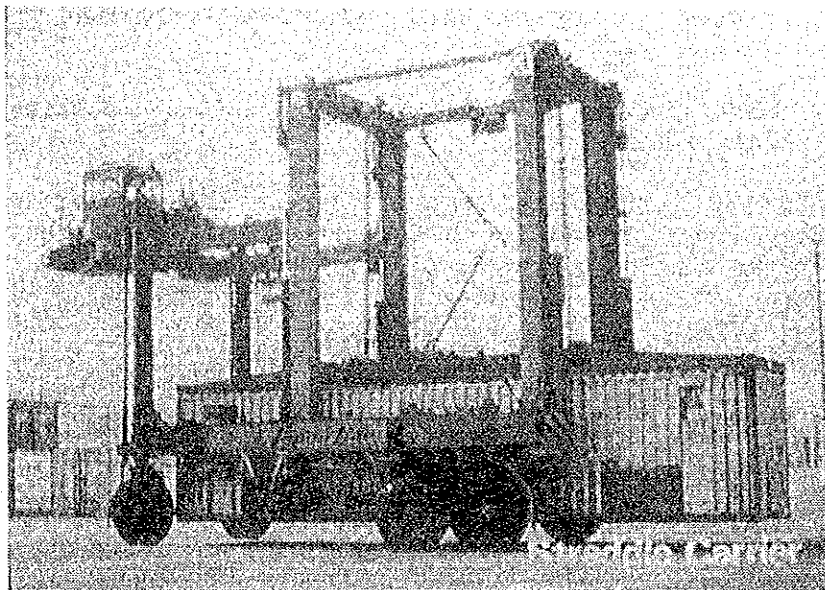


Figure IV-3-6 Straddle Carrier



Disadvantages:

- Since the wheel load is very heavy, the container terminal is required to have a thick pavement.
- As consignees arrive at the receiving point at unexpected times, containers cannot be dispatched to them as smoothly as in the case of the chassis system.
- Since the straddle carrier is an industrial vehicle which requires precision operation, special operating skills are necessary, and considerable time and cost are required for maintenance.

(c) Transfer crane system

The transfer crane is installed at container yard and is used for transferring containers from the chassis to the yard and vice-versa. Two types of transfer cranes are used, one is of travelling rail mounted type (Figure IV-3-7) and the other is of rubber type mounted type (Figure IV-3-8).

The transfer crane system has the following advantages and disadvantages:

Advantages:

- Since a multiple number of containers can be stacked, the container yard area can be used more effectively than before mentioned systems.
- The transfer crane is a technically stabilized machine with low maintenance cost.
- Since the rail-mounted transfer crane moves only in the specified location and in the specified direction, the automatic computer control system is easily applied.

Disadvantages:

- Just as in the case of the straddle carrier system, it is troublesome to move a lower layer of multiple stacked containers.
- The wheel load of the transfer crane is increased excessively and it requires very heavy duty pavement. However, since the travelling route is limited, a heavy-duty pavement is needed only for the specified area.

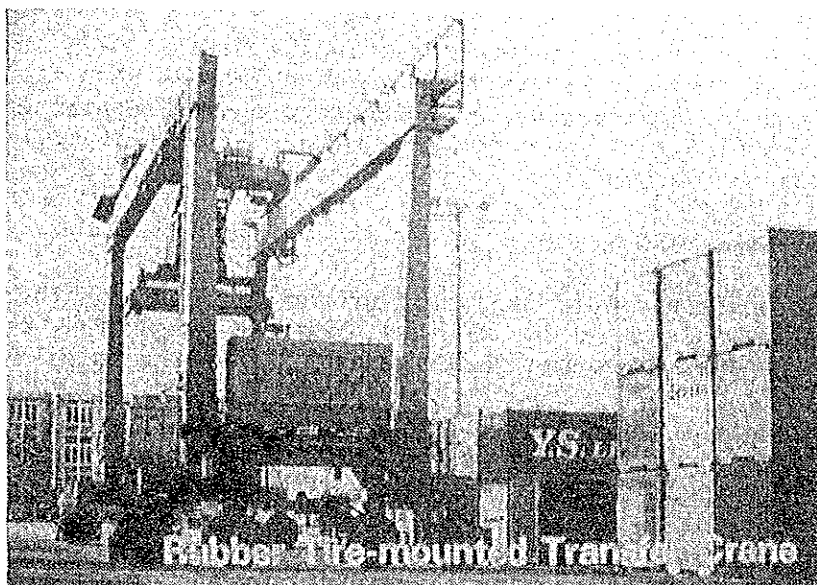
(d) Combined system

This system combines the straddle carrier system and the transfer crane system, thus taking the advantages and compensating the disadvantages of both systems.

Figure IV-3-7 Rail Mounted Transfer Crane



Figure IV-3-8 Rubber Tire Mounted Transfer Crane



(iii) Handling system in the world

The container terminals in operation in the world today are tabulated according to the handling systems as shown in Table IV-3-9. This table shows that straddle carrier system is 41 percentage of total berths and is most popularly used until now.

(iv) Comparison of systems

Table IV-3-10 gives a comparison of each system from the point of view of economy and handling.

Each system has advantages and disadvantages. Especially Rail-Mounted Transfer Crane System begins to be used as the tomorrow handling system because it fits to stock the huge amount of containers and it enables to automation by computer.

(2) Facilities of Container Terminal

The container terminal may be defined as a port facility which is designed to provide an integrated use of berthing and mooring facilities, harbor transport systems, cargo handling facilities, supplying facilities for ships and others. In other words, the container terminal is an area which is located in the port, the node of the container transport systems, and which is equipped with a series of functions such as loading and unloading of cargo, preparation thereof, storage of cargo, receipt of delivery of container cargo, and operation and maintenance of various machinery and equipment.

Facilities at the container terminal consist mainly of the such facilities as shown in Figure IV-3-9. They include such facilities as a paved apron along the quaywall which accommodates container ships, a container yard, a container freight station, a control tower, a maintenance shop and a gate.

(i) Container yard

The container yard is a vast ground provided for the accommodation of containers to be received from and dispatched to the hinterland, and to be loaded to and unloaded from the ship.

Generally, the container yard is located adjacent to the apron and is marked with grid-like cross lines drawn to the size of containers. These blocks are called "SLOT" and each block is numbered.

In this yard a sufficient space must be reserved for the containers to be received from the hinterland and to be unloaded from the ship, and empty containers to be stored.

(ii) Container freight station

In the container transport system, transport of cargo in containers from the origin to the final destination or the so-called door-to-door transport, is the most ideal. For LCL cargo (Less than

Table IV-3-9 Handling Systems in the World

Handling System Zone	Straddle Carrier	Classis	Tyre -Mounted Transfer Crane	Carrier and Transfer Crane	Rail -Mounted Transfer Crane	Forklift Other	Unknown	Total	Percentage	Port Number
Japan	27	4	13	3	2	0	6	Berth 55	% 9	8
Asia	19	2	17	34	6	24	5	107	17	35
North America	53	40	28	8	5	37	15	186	30	34
Central and South America	9	0	4	1	0	23	4	41	6	17
Europe	78	0	9	18	13	18	15	151	24	38
Oceania	10	0	7	7	5	17	4	50	8	13
Africa	15	0	3	0	3	16	0	37	6	7
Total	Berth 211	46	81	71	34	135	49	Berth 627	% 100	152
Percentage	34	7	13	11	5	22	8	% 100		

Source: Study Team

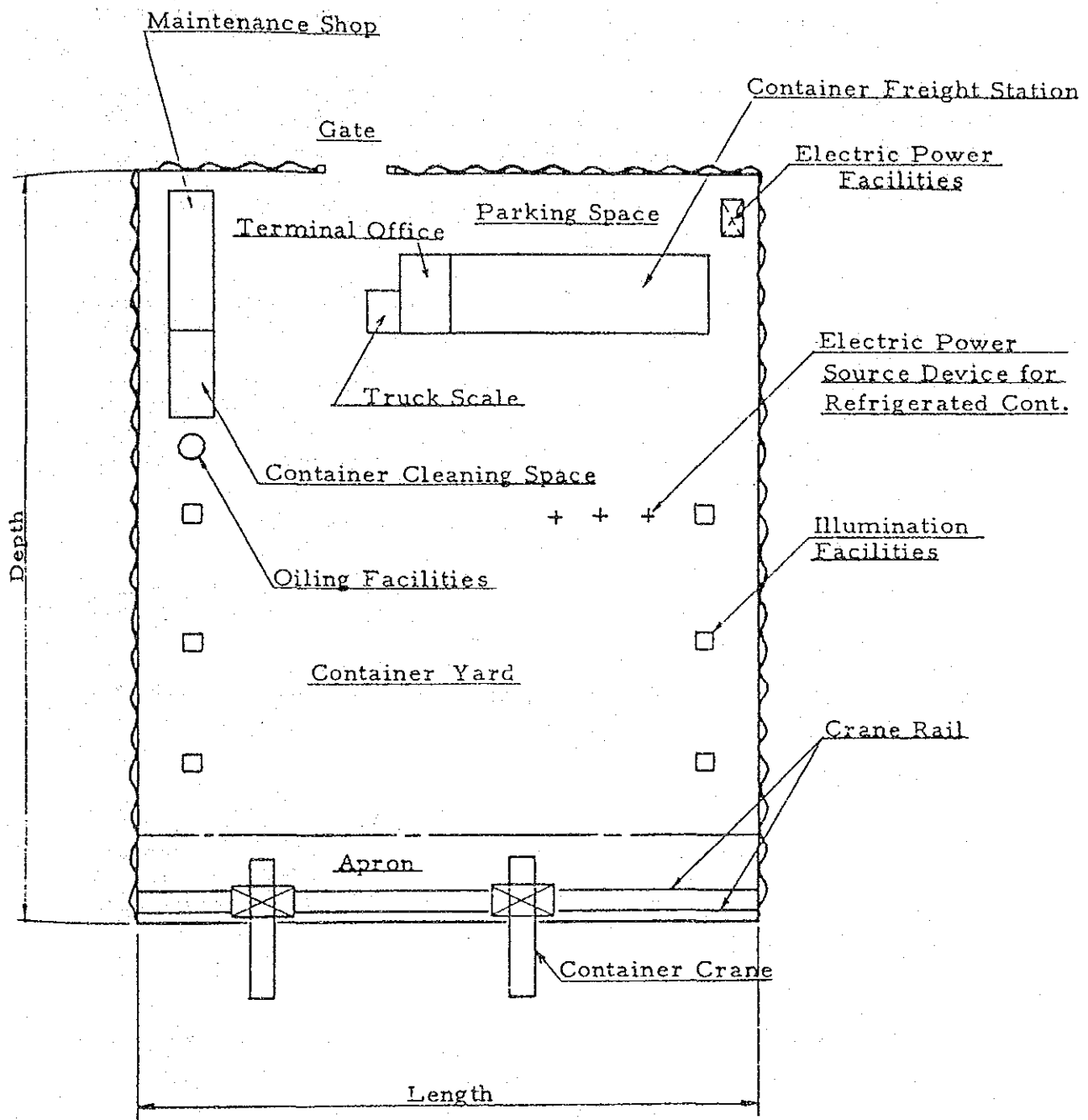
Table IV-3-10 Comparison of Systems

Item \ System	Chassis	Straddle Carrier	Tyre-Mounted Transfer Crane	Rail-Mounted Transfer Crane
Storage Capacity	△	○	◎	◎
Initial Cost	△	○	◎	◎
System Simplicity	◎	○	△	△
Handling Efficiency	◎	○	△	○
Wharf Efficiency	△	◎	△	△
Mobility of Operation	◎	○	△	△
Container Damage	◎	△	○	○
Maintenance Cost	○	△	◎	◎
Flexibility of Operation	◎	◎	△	△
Expandability	◎	○	△	△
Adaptability to Automation	△	△	○	◎
Loading to Railway	△	△	○	◎

Source: Study Team

Note: ◎: excellent, ○: good, △: questionable

Figure IV-3-9 Standard of Container Terminal



Container Loaded Cargo), however, there must be a place where these cargoes are stuffed into the container. For exports, LCL cargo must be grouped at a specific point where cargo is sorted according to the destination and then stuffed in the container. For imports, mixed cargoes are taken out of the container, sorted according to the destination and then delivered to the consignee. These works are done in the container freight station.

Customs procedures are also accomplished in the container freight station. Since the container freight station is used for packing, unpacking and storage of general cargo, the entire area is covered with a roof.

(iii) Control tower

The function of control tower is to supervise loading and unloading operations, and handling containers in the container yard, and to see if the work is progressing in accordance with the program and instructions from the terminal office. Therefore the control tower is generally located at the place which commands a whole view of containers in the terminal. The control tower carries out its functions by transmitting instructions to the operators of cargo handling equipments by radio telephone and watching the progress of the work.

(iv) Maintenance shop

The maintenance shop performs inspection, repair and cleaning of containers and maintenance of equipment and apparatus used in the container terminal. The maintenance shop is generally equipped with power source for refrigerated containers, air compressor, welding machine, battery charger and machinery and equipment required for maintenance work.

(v) Gate

A gate is provided in the terminal to process documents for the delivery and receipt of cargo, to check the condition of cargo and to designate loading and unloading points in the container yard. A truck scale is provided adjacent to the gate for weight inspection of container cargo.

(vi) Other facilities

Other facilities in the container terminal are as follows:

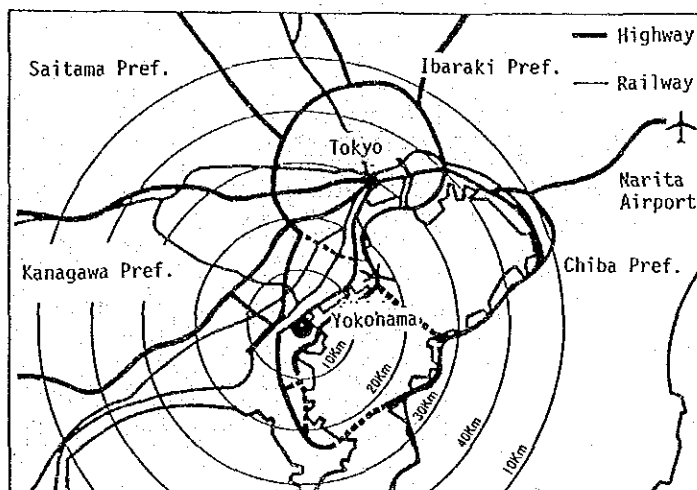
- Power reception facilities.
- Power sources for refrigerated containers.
- Illumination facilities for night work.
- Container cleaning facilities.
- Fuel oil supply stations aimed mainly at such large vehicles as straddle carriers.
- Water supply facilities for ships.

It is needless to say that the container terminal must also be equipped with a required water depth and quaywalls to accommodate container ships similar to other conventional wharves. In addition, the container terminal must provide a means to support the container cranes on its apron.

3-4 Containerization at the Port of Yokohama

The Port of Yokohama, located in eastern Japan on the west shore of Tokyo Bay, is one of the world's largest ports for international trade (Figure IV-3-10). Since its opening 126 years ago, the port, with a vast seaside industrial zone and a wide commercial zone that includes Tokyo in its environs, has been playing a leading role in Japan's development as a trading nation.

Figure IV-3-10 Location of Yokohama Port



Source: The Port of Yokohama

The Port of Yokohama entered the container age in 1968 with the arrival of the "President Tyler" (American President Lines, Ltd.), a semi-container ship, on May 24, and the "San Juan" (Sea-Land Service, Inc.), a full-container ship, on December 8 - the first container ships to berth at Honmoku Pier.

Since then, the City of Yokohama which manages the port and the Yokohama Port Terminal Corporation have expanded and improved container-related facilities through cooperation with other maritime organizations and enterprises, with the result that the port moved 15,650,000 tons of container cargo in 1984.

The volume of container cargo is expected to grow substantially, and to meet this situation the Port of Yokohama intends to expand its facilities further with rapid, exact and safe stevedoring techniques and

effective control and management by computer system, for which the port is already known.

Container Development on Honmoku Pier

Honmoku Pier, built between 1963 and 1974, is the largest public pier in the Port of Yokohama, covering almost 200 hectares. The amount of cargoes handled at this pier reached as much as 20,772 thousand tons in 1984, and 63% of these cargo were containerized cargoes. About 18% of the Port's total cargo volume is handled at Honmoku Pier, Jetties A and D were constructed at an early stage of containerization to handle container cargo exclusively. Recently Jetties B and C, which have traditionally provided berths for conventional cargo ships and Ro/Ro ships, have been handling container cargo as well. A new container terminal is being built on Jetty D (target date for starting operations is the fall of 1986), and 2 gantry cranes are being installed on Jetty C (target date for completion is spring 1986) (Table IV-3-11 and Figure IV-3-11).

Figure IV-3-11 Honmoku Pier



Table IV-3-11 Outline of Honmoku Pier

Jetty	Name of Berth	Opened from	Area (m ²)	Quay			Gantry Crane			Cargo Handling Method/ Equipment(Qty)	Owner	Type of Management and Lessees	Shipping Companies	CY Operator	Route
				Length (m)	Depth (m)	Capacity (DWT)	No. of Units	Rated Load (t)	Hoisting Load (t)						
A	A-5	Apr. 1974	125,000	300	12	35,000	2	30.5	43.5	Cassiss	Yokohama Port Terminal Corporation	SL	SL, HJCL	The Mitsui Warehouse Co., Ltd.	West Coast of North America Asia
	A-6	Jun. 1970	95,460	300	12	35,000	2	30.5	39.5	Cassiss		46	46	Utsuki Express Co., Ltd.	46
	A-7	Dec. 1969	80,799	250	12	25,000	2	30.5	39.5	Straddle Carriers		Exclusive NYK, SK	NYK, SK, MOL, YSL, AJCL, KAMTC	Kanjo Yusen Uoyu Co., Ltd.	West Coast of North America Eastern Australia
	A-8	Sep. 1969	83,477	250	12	25,000	2	30.5	39.5	Translainers		Exclusive KL	KL, NYK, MOL, ANL, KNUITSEN	Daito Transportation Co., Ltd.	Eastern Australia Western Australia
D	D-1	Mar. 1968	350,600	600	11 1 12	35,000 x 2 or 15,000 x 3	4	30.5	No.1 43.0 No.3 39.0 No.2 39.0 No.4 45.6	Straddle Carriers (Working B and C) Jetties, low 36	City of Yokohama	Public	USL, ZIM, WHS, HKI, COSCO, OOCL, NORDASIA, MSC, SAFE, OJAKARTA, UAS, CYL, Daichi Chujo, MOL, MAERSK, NSCSA, Pan Ocean, YAM, KAMTC, COSCO, CEYLON, LYNES, MISC, IAL, WIL, ACT	Suzue Corporation, Sanyo Inc., Nissin Transportation & Warehousing Co., Ltd., The Sumitomo Warehouse Co., Ltd., Mitsubishi Warehouse & Transportation Co., Ltd., Nippon Express Co., Ltd., The Mitsui Warehouse Co., Ltd., Kojin Co., Ltd., Kamigumi Co., Ltd., International Container Terminal Co., Ltd.	
	D-4	Nov. 1984	105,000	300	13	40,000 x 1	2	30.5	45.6	Straddle Carriers		Exclusive APL	APL	The Sumitomo Warehouse Co., Ltd., The Mitsui Warehouse Co., Ltd., Suzue Corporation, Maruten Shoen Uoyu Co., Ltd.	West Coast of North America Asia
	D-5	1986 (Under Construction)	105,000	300	13	40,000 x 1	2					Exclusive MOL			

Source: The Port of Yokohama

4. TRUCK TERMINALS IN JAPAN

4-1 General

Demand for truck transport increased dramatically in Japan during the fast economic growth period in the 1960s, concurrently with the rapid expansion and improvement of expressways and roads and the fast spread of motorization. This led to a heightened need for truck terminals, and hence the 1960s also saw the successive construction of large-scale truck terminals. In other words, on one hand, long-distance high-speed trucking service increased in response to the strengthened demand for truck transport at the same time that there was an increase in heavy-duty trucks and trailers, while, on the other hand, operating efficiency declined especially in urban areas due to traffic congestion and various traffic regulations, forcing motor carriers to separate inter-city transport along arterials and intra-city pickup and delivery services.

Osaka city passed a law in 1961 which prohibited large trucks from entering certain parts of the city center and from passing through certain other parts of the city in the daytime. Similar measures were introduced in Tokyo in the following year. As a result of these regulations, a need arose to upgrade truck terminals into one which would function as a relay station for large long-haul trucks moving freight between cities and small trucks picking up and delivering freight inside cities. In addition to ameliorating traffic congestion, a strong need for truck terminals was voiced by motor carriers in order to streamline their operations and to reduce trucking costs.

Trucking firms in Japan must be licensed by the government. There are three types of license:

- (a) Route Trucking --- Periodic freight transport along a specified route, serving a number of non-specific shippers, each truck hauling a mix of small-lot cargo.
- (b) Area Trucking --- Freight transport either to or from a specified area, serving a number of non-specific shippers, each truck being hired out to a single shipper.
- (c) Contract Trucking --- Freight transport within certain limits for a specific shipper with whom a transport agreement is exchanged.

Truck terminals function as a hub for route trucking networks and are categorized into private terminals established by route truckers for their own use and general terminals established by other than trucking firms for the use of truckers in general. General terminals for the most part are constructed with the aid of state or local government funds in view of the effect they have on urban planning and are thus sometimes referred to as public terminals.

As of 1964, there are 24 general truck terminals in Japan and 1,464 private terminals (Table IV-4-1). Most of the private terminals are

Table IV-4-1 Truck Terminals in Japan by Scale

No. of Berths	(March, 1985)		
	Public Truck Terminal (%)	Private Truck Terminal (%)	Total
2	-	143 (9.8)	143 (9.6)
3- 5	-	461 (31.5)	461 (31.0)
6- 10	-	465 (31.8)	465 (31.3)
11- 20	1 (4.2)	273 (18.6)	274 (18.4)
21- 50	5 (20.8)	115 (7.8)	120 (8.1)
51-100	7 (29.2)	7 (0.5)	14 (0.9)
101-200	5 (20.8)	-	5 (0.3)
201-300	-	-	-
301-	6 (25.0)	-	6 (0.4)
Total	24 (100)	1,464 (100)	1,488 (100)

Source: Ministry of Transport, "Annual Report of Physical Distribution in Japan" 1985, p.165.

small facilities with 10 berths or less, the average being 9 berths per terminal, while general terminals have an average of 154 berths each.

Table IV-4-2 gives a list of general truck terminals and Figure IV-4-1 shows their locations. As seen in the Table, there are large-scale terminals in Tokyo and Osaka. Land prices in these two cities were high and it was extremely difficult to obtain land at suitable locations. However, in order to prevent the deterioration of urban functions, it was imperative in these cities to do away with the large number of private terminals built haphazardly and to locate public terminals at effective points so that a streamlined physical distribution system could be realized. In addition, while truck terminals require vast areas of land at strategic locations and huge construction costs, as a business operation their profitability is low owing to the low frequency of land usage. For these reasons, some form of government support was provided for the construction of these terminals, as mentioned below. In addition, most of the terminals are being managed by a third-sector (composed of both public and private sectors) organization.

4-2 Construction Planning

4-2-1 Planning Process for the Construction of General Truck Terminals

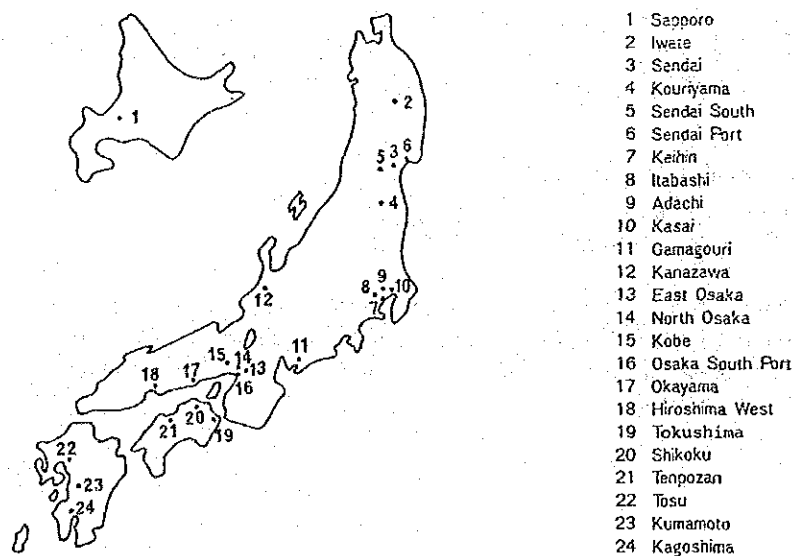
A brief description of the usual process through which general truck terminals are planned for construction in Japan is given below. In general, such plans are drawn up under the guidance of the local government concerned.

Table IV-4-2 List of Public Truck Terminals in Japan

Name	No. of Berths	Year of Establishment
1 Sapporo Truck Terminal	177	Sep. 1971
2 Iwate Truck Terminal	84	Sep. 1974
3 Sendai Truck Terminal	80	Nov. 1962
4 Kouriyama Truck Terminal	45	Aug. 1976
5 Sendai South Truck Terminal	28	Apr. 1979
6 Sendai Port Truck Terminal	30	Aug. 1979
7 Keihin Truck Terminal	433	Jun. 1968
8 Itabashi Truck Terminal	320	Oct. 1970
9 Adachi Truck Terminal	320	Apr. 1977
10 Kasai Truck Terminal	432	Apr. 1983
11 Gamagouri Truck Terminal	16	Jan. 1960
12 Kanazawa Truck Terminal	105	Dec. 1977
13 East Osaka Truck Terminal	312	Feb. 1968
14 North Osaka Truck Terminal	424	Mar. 1974
15 Kobe Truck Terminal	76	Nov. 1973
16 Osaka South Truck Terminal	90	Oct. 1976
17 Okayama Truck Terminal	180	Apr. 1975
18 Hiroshima West Truck Terminal	96	Apr. 1977
19 Tokushima Truck Terminal	67	May 1970
20 Shikoku Truck Terminal	93	Aug. 1971
21 Tenpozan Truck Terminal	34	Aug. 1974
22 Tosu Truck Terminal	40	Apr. 1981
23 Kumamoto Truck Terminal	70	Jun. 1976
24 Kagoshima Truck Terminal	144	Nov. 1977
Total	3,696	-

Source: Ministry of Transport, "Annual Report of Physical Distribution in Japan" 1985, p.166.

Figure IV-4-1 Location of Public Truck Terminals



(1) Objectives

The direct objectives of general truck terminals are:

- (a) to realize a systematic and streamlined freight transport system (Figure IV-4-2),
- (b) to reduce trucking costs,
- (c) to reduce the volume of motor traffic by decreasing unorganized and overlapping transport, and
- (d) to regulate the inflow of large trucks into urban areas.

The indirect social benefits of truck terminals are:

- (e) a stabler supply of goods,
- (f) the prevention of housing environment deterioration,
- (g) the reduction of energy consumption,
- (h) the effective utilization of idle land, and
- (i) the development of surrounding regions.

Table IV-4-3 shows who mainly benefits from the above effects.

(2) Location

In order for a general truck terminal to fulfill the above objectives, its location is a vital factor. From the standpoint of the users, the following conditions must be met:

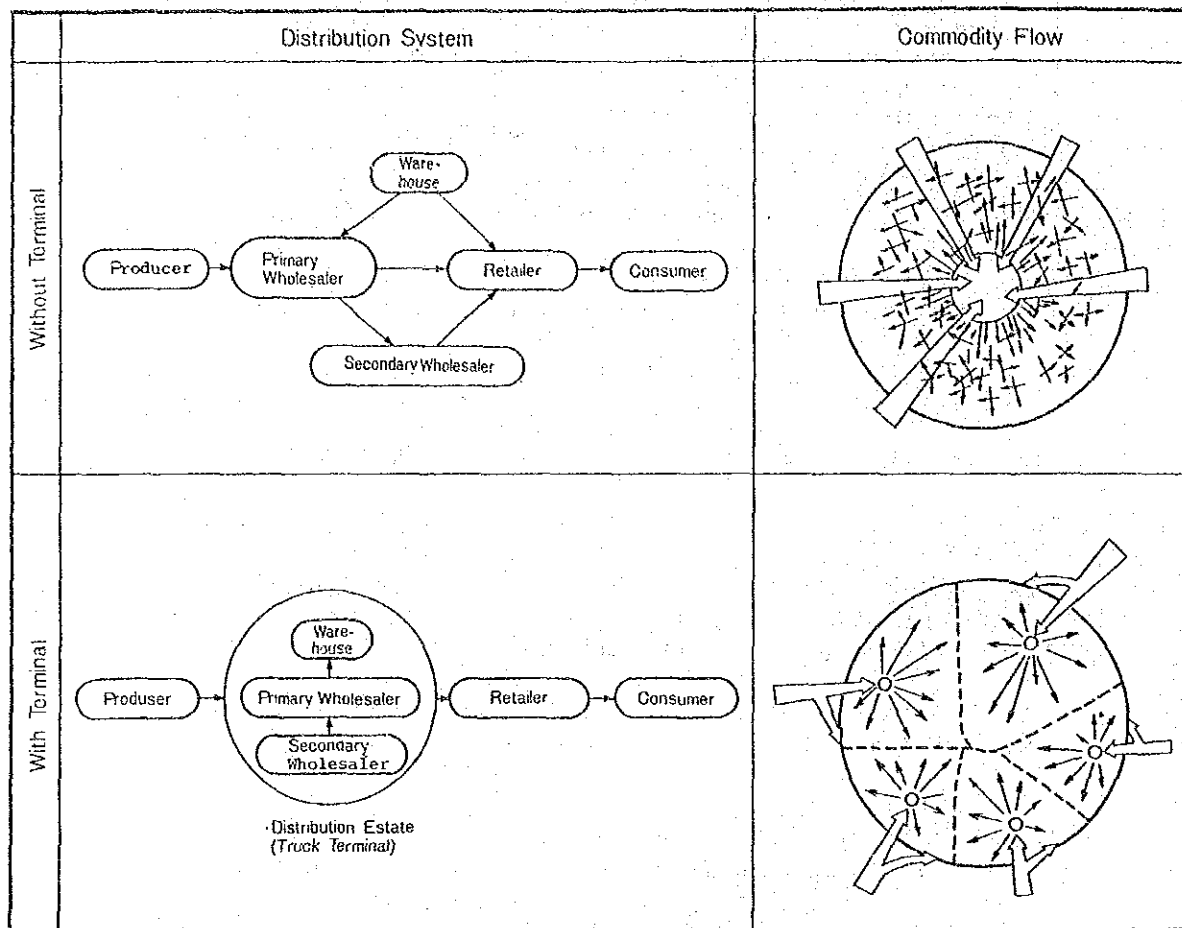
- (a) That it be located at the perimeter of an existing urban area and moreover that it be in proximity to route trucking customers,
- (b) That it be close to the intersection of an inter-city arterial and a ring road surrounding an existing urban area in order to facilitate linkage between large trucks hauling freight between cities and small trucks that pick up and deliver cargoes inside cities,
- (c) That it be located where coordinated transport is possible,
- (d) That land of an area large enough for scale merit can be obtained at a comparatively low cost, and
- (e) That harmony with the region's environment can be maintained and that employees can commute easily.

(3) Planning process

General truck terminals are planned as comprehensive systems that include various elements related to truck transport, such as commodity flow, distribution system, road network, rail network and ports and harbors.

Figure IV-4-3 gives a sample flow chart of the process by which general truck terminals are planned.

Figure IV-4-2 Functions Distribution Center/Truck Terminal



Source: Kotsu Kogaku Kenkyu-kai, "Traffic Engineering Handbook", 1984, Gihodo, p.668.

(4) Functions and facilities

Truck terminals have the following five functions: (a) reloading, (b) mixed loading, (c) storage, (d) packing and related processing, and product assortment and (e) collecting and processing information. In the past, emphasis was placed only on (a) and (b) from the standpoint of the motor carriers' need to speed up transport and reduce trucking costs, but (c), (d) and (e) are also required if the systemization of physical distribution is to be promoted. A truck terminal does not necessarily have to fulfill all five functions; consideration should be given to what is required in order to achieve the respective objectives of each terminal.

4-2-2 Facilities for General Truck Terminals

Table IV-4-4 gives the facilities needed to fulfill the above functions. The main facilities are described below.

(1) Cargo-handling platforms

Cargo-handling platforms are the central facility of a truck terminal. Their function is to allow the sorting and reloading of cargo by destination from or onto small pickup/delivery trucks, large line trucks and relay trucks. In general the platforms are rectangular in shape and have widths of 25-50 m and lengths of 50-200 m. The two longer sides are used as berths, with the trucks backing up to the platform. The platforms take up about 15-20% of the entire terminal area.

Platform heights are usually about 1.3 m for large trucks and 1.1 m for small trucks, in other words the same height as the truck bed. Some of the recently-built terminals are equipped with dock boards, which can be mechanically adjusted in height so that sorting machines and equipment on the platform can be placed onto trucks together with the cargo. Terminals that mainly handle freight in uniform shapes sometimes have low platforms so that cargoes can be placed on pallets and loaded or unloaded by forklift. And in some cases, the platforms have rampways to allow trucks to drive onto the platform, thus offering the advantages of both high and low platform heights.

The platforms are usually partially covered by an overhang of 7-8 m in order to protect workers and cargoes from rain and snow. Some overhangs are long enough to cover the entire length of a truck.

Cargo-handling capacity varies widely depending on the handling method used and type of cargo, but ordinarily it is 0.3 ton per day per square meter of platform.

(2) Warehouse (Delivery center)

Since having a warehouse within the terminal premises or somewhere close by is extremely effective for streamlining physical

Table IV-4-3 Truck Terminal Effects and Parties Affected

Effects	Shippers	Truckers	General Public	City Residents		Government	
				Near Terminal	Others	Central	Muni- cipal
1. Reduction in transportation costs	●	●	○	○		○	○
2. Stable supply of goods	●	○	○	●		○	○
3. Effective use of land					○	○	○
4. Decrease in traffic volume	○	○			●	○	○
5. Prevention of housing environment deterioration				△○	○	○	○
6. Increased traffic volume in surrounding regions				△			
7. Development of surrounding regions				●	○		○
8. Improvement of regional services				●			

Source: Y. Yoshitake, "Development and Problems of Public Truck Terminals" 1976, Expressway and Motorcar XIX No.12 P34.

Notes:

1. ● indicates positive effects, mainly direct
2. ○ indicates positive effects, mainly indirect
3. △ indicates negative effects
4. △○ indicates positive effects if appropriate measures are taken and negative effects if not taken

distribution, new terminals include warehouses as a matter of course and even old terminals often add on warehouses if space allows. To make maximum use of available land, some terminals have multi-level warehouses above or below their platforms.

(3) Incidental facilities

Having such facilities as parking, refueling, truck-washing, vehicle inspection, repair and maintenance and tire servicing within the terminal premises saves time and unnecessary movement of trucks.

(4) Administration building

The administration office controls the incoming and outgoing of line trucks and pickup/delivery trucks, supervises cargo handling and manages the various facilities in the terminal, as well as handling paperwork, and information and communications-related work. The office is equipped with various communications equipment and computer terminals to maintain contact and exchange information with the headoffice and with other truck terminals.

In most cases the office is housed in a multistory building located along either of the two shorter sides of the cargo-handling platforms, so that contact with the work site can be maintained easily. If the platforms are wide, administration offices may be located on mezzanine floors above the central areas of the platforms.

(5) Welfare facilities

For long-distance truck drivers driving through the night, resting, eating and bathing facilities are available. In addition, some terminals offer apartment housing for drivers, cargo handlers, office workers and other terminal employees.

The design and layout of all these facilities should be such that the movements of workers, cargoes and vehicles do not become entangled. The basic design specifications must adhere to the conditions stipulated in the Motor Terminal Structure and Facilities Act mentioned below.

4-3 Government Measures and Laws and Regulations

It is difficult to achieve high profitability in truck terminal operation because, in addition to the considerable amount of land and construction costs required and the low frequency of land usage, as mentioned earlier, rental charges are kept low owing to the public nature of the terminals and investment returns take time since the terminals are constructed in line with future demand. Since private capital alone is inadequate for meeting the costs of a large-scale general truck terminal, a number of laws and regulations were formulated to provide for public funds and tax benefits. Of these, the most important are the Motor Terminal Act and the Motor Terminal Structure and Facilities Act enacted in 1959, the Japan Motor Terminal Co., Ltd. Act enacted in 1965,

and the Law Concerning the Promotion of Urban Distribution Estates enacted in 1966.

(1) Motor Terminal Act

Under this act, commercial operators of general bus terminals and general truck terminals are required to obtain a license from the Ministry of Transport. When applying for a license, the operator must submit its business plans and income/expenditure estimates. In addition, the terminal facilities must be inspected prior to the opening of the terminal. Rental charges must also be approved by the Ministry of Transport.

(2) Motor Terminal Structure and Facilities Act

This act prescribes the various structural conditions that must be fulfilled by a motor terminal before a license can be obtained. For example, it stipulates areas where terminal entrances and exits may not be located, the required design motor vehicle tonnage (20 tons), the required width of truck passageways (at least 6.5 m for two-way traffic and at least 3.5 m for one-way traffic), minimum rotational radius, maximum gradient (10%), and the need for installing drainage and ventilation facilities and lighting fixtures.

(3) Japan Motor Terminal Co., Ltd. Act

This act called for the establishment of a company to engage in truck terminal business in Osaka city and its vicinity, with the government and local public organizations investing in the company together with private enterprises. At the same time, the act provided for certain tax benefits to be allowed the company. The Japan Motor Terminal Co., Ltd. (JMT) was accordingly established in 1965, and the company has so far constructed and is operating four large-scale truck terminals in Tokyo. The act was abolished in 1985 when JMT changed from a semipublic (third sector) firm to a private firm.

(4) Law Concerning the Promotion of Urban Distribution Estates

This law was enacted to promote the development of urban areas with concentrations of various distribution-related facilities such as wholesalers, warehouses, truck terminals and markets. Special consideration is given to the following two points:

- (a) Distribution-estate land preparation projects are to be undertaken by local public organizations, the Japan Housing Corporation and the Industrial Relocation and Coal Production Areas Promotion Corporation.
- (b) The right of eminent domain is to be applied for distribution-estate land preparation projects.

Truck terminals are a central element of distribution estates. Moreover, by locating a truck terminal inside a distribution estate

and linking it with other functions, it is possible to achieve the initial objectives of truck terminals more effectively. Taking these points into consideration, it was decided that all JMT terminals and all other large-scale truck terminals in major cities would be planned in integration with distribution estates.

When a private enterprise (i.e., a company with less than 50% investment by public organizations) undertakes work to prepare land or build facilities for a distribution estate, the enterprise is able to obtain funds from the Japan Development Bank equivalent to a maximum 50% of the construction costs involved, at favorable terms--repayment is within 25 years (with up to five years of deferment) and the interest rate is 8.5% per annum. In addition, government subsidies were granted from 1974 to 1978 for the upgrading of general truck terminals in outlying hub cities.

Backed by the above-mentioned measures and regulations, local public organizations, JMT, the Japan Highway Public Corporation and private enterprises proceeded to construct general truck terminals in various parts of Japan.

4-4 The Management of General Truck Terminals

The 24 general truck terminals existing at present are managed by 18 entities. Of these, one third (or 13% in number of berths) are fully private concerns and the rest are third-sector organizations. The merits of a third-sector organization managing a facility of strong public nature such as the general truck terminal are that users can expect fair and equitable treatment since management is not necessarily profit-oriented, funds procurement is easier since both public and private sources can be tapped, and it is easier to turn self-supporting through efficient management owing to its semi-private character.

For income, general truck terminals rely mostly on charges for renting cargo-handling space and berths. In addition, as their secondary business many terminals directly operate or lease to another operator such facilities as filling stations, parking space, warehouses, and resting, lodging, and eating facilities for drivers. In expenditures, capital costs such as interest and depreciation account for a major portion. Because initial investment is large, a sizeable amount goes to repaying borrowings and paying interest.

As shown in Table IV-4-5, of the 18 organizations managing general truck terminals, 12 were in the black in a single fiscal year and 10 returned profits on a cumulative basis. An increasing number of operators that initially showed losses is gradually turning profitable.

Table IV-4-4 Truck Terminal Facilities

Truck Terminal	Truck- related Facilities	Terminal entrance exit, truck passageway, truck arrival/departure space, parking, repair and maintenance space, truck- washing space, filling station
	Cargo- related Facilities	Unloading, stacking and sorting space, workers' room, belt conveyor, machinery storage room, lavatory, kitchenette
	Administration- related Facilities	Terminal administration office, drivers' room, restaurant, kiosk, barbershop, bath/shower rooms, lodgings
	Storage- related Facilities	Warehouse, office

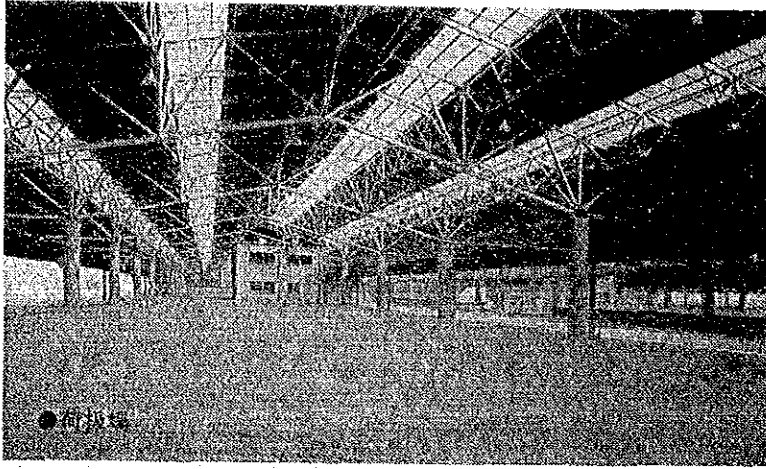
Source: Kotsu Kogaku Kenkyu-kai, "Traffic Engineering Handbook", 1984, Gihodo, p.670.

Table IV-4-5 Profit Situation of General Truck Terminals

	FY1983 Results	Cumulative Results
No. of operators in the black	12	10
No. of operators in the red	6	8

Source: Ministry of Transport, "Annual Report of Physical Distribution in Japan", 1985, p.167.

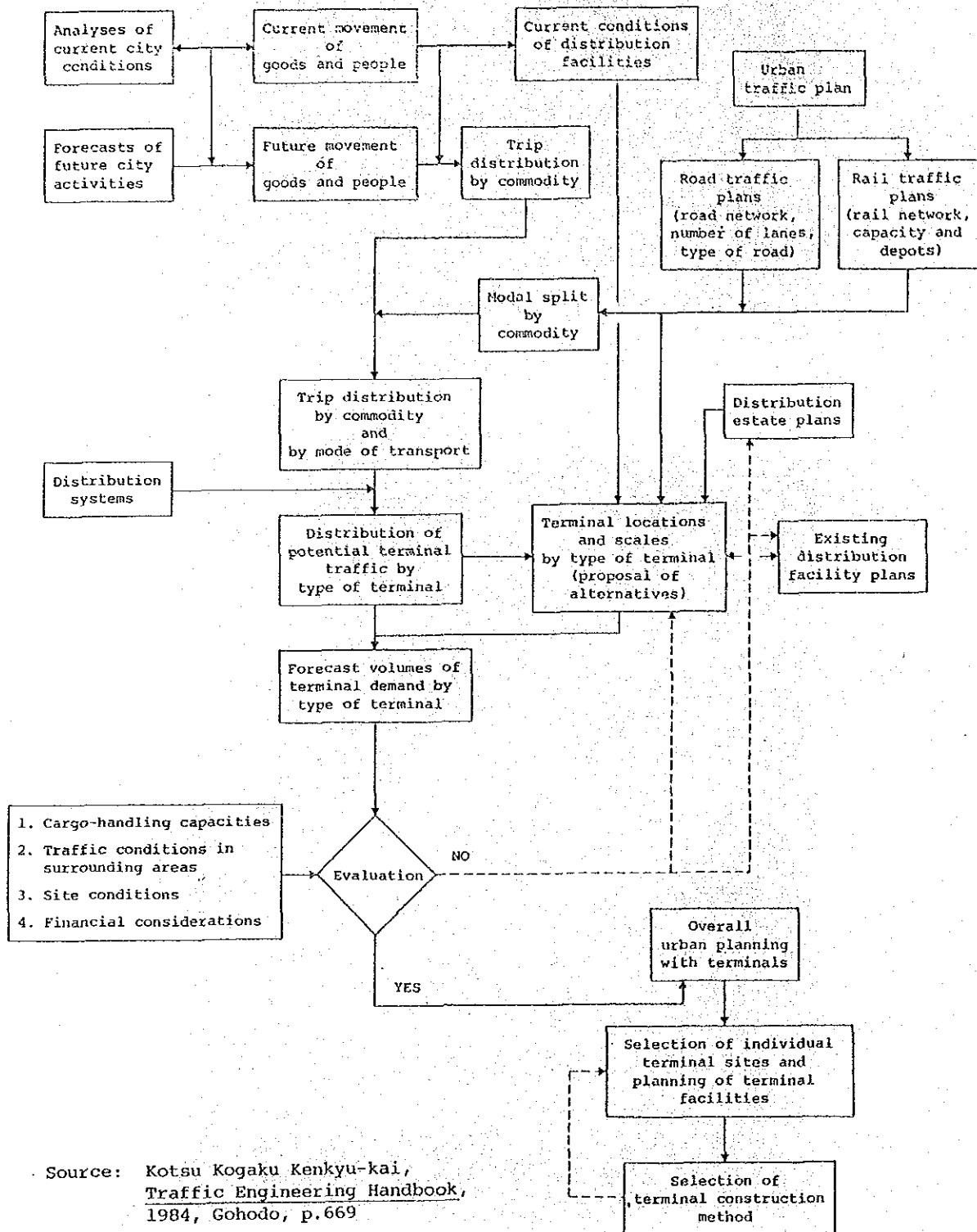
Platform



Parking



Figure IV-4-3 Truck Terminal Planning Process



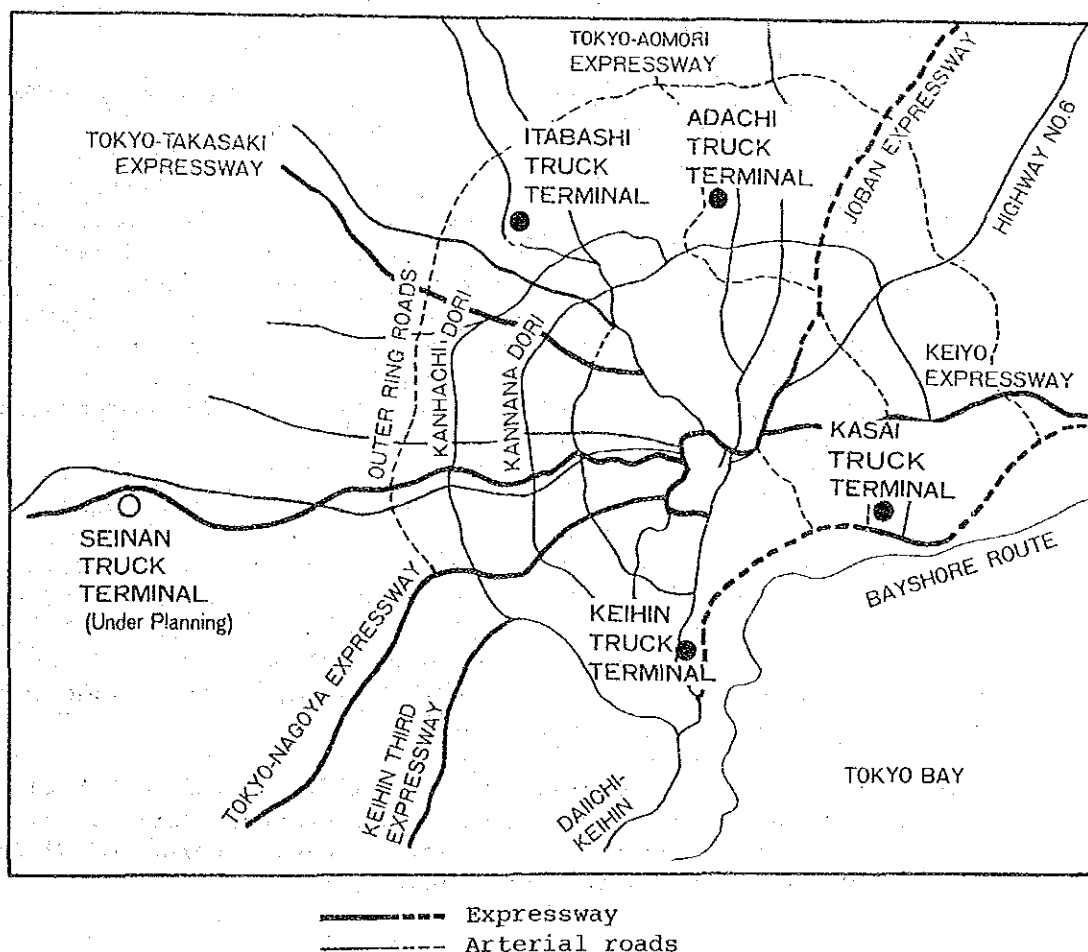
4-5 An Example of General Truck Terminal in the Tokyo Metropolitan Area

(1) Location

The Japan Motor Terminal Co., Ltd. (JMT)--a semipublic company established in 1965 as prescribed by law and under government guidance--has constructed and is operating public truck terminals in the Tokyo Metropolitan Area, where nationwide route trucking networks converge. The terminals function as the focal points of physical distribution networks and are operated in line with physical distribution policies set forth by the government.

The construction of four truck terminals covering areas to the south, west, north and east of central Tokyo, respectively, were in turn completed in 1968, 1970, 1977 and 1983. All four terminals are integrated with distribution estates and are located close to the intersections of ring roads and radial expressways or arterials. JMT is currently planning to build another terminal in southwestern Tokyo (Figure IV-4-4).

Figure IV-4-4 Location of Public Truck Terminals in Tokyo



(2) Capital

As of 1985, JMT has a capital of ¥11.23 billion (about US\$63 million). In the past, the government, the city of Tokyo and private parties (205 persons) each held one third of the company's stocks. In April 1985, however, when JMT was handed over to private management, the city of Tokyo and private parties (215 persons) bought up the government's holdings to each hold 50% interest in the company. Payment to the government for the stocks purchased is being made under a 15-year installment plan.

(3) Investment

So far, JMT has invested a total of about ¥48.1 billion (about US\$267 million), including investment in land acquisition. Of this amount, one third was covered by owned capital and the rest was covered by borrowings from the Japan Development Bank, the Industrial Bank of Japan and 10 commercial banks.

(4) Facilities

Table IV-4-6 lists the facilities available at the four JMT terminals currently in operation.

(5) Keihin Truck Terminal

As an example, the Keihin Truck Terminal, the oldest and largest of the four JMT truck terminals, is described below.

The Keihin Truck Terminal is situated within a distribution center in southern Tokyo and covers about 31% of the total center area of 72 hectares (Figure IV-4-5). The volume of cargo handled each day is 9,000-10,000 tons, of which about 40% are transit freight. About 5,800 trucks use the terminal each day, of which 1,700 are line trucks and about 3,000 are pickup/delivery trucks. About 43% of the freight brought in by line trucks are miscellaneous consumer goods in small lots, 20% are machinery, 16%, food products, 11%, textile products and 10%, other industrial products.

The terminal is located at the entrance of western Japan (to Nagoya, Kyoto and Osaka), and about 60% of freight transported to or from this terminal pass along the Tokaido Highway, one of Japan's major distribution arteries. The cargoes are picked up and delivered in Tokyo during the day by small trucks (four tons or lighter), and are transported over long distances at night by line trucks. There is a JNR container depot within the terminal premises, and linkage with freight liners and car ferrie is also possible.

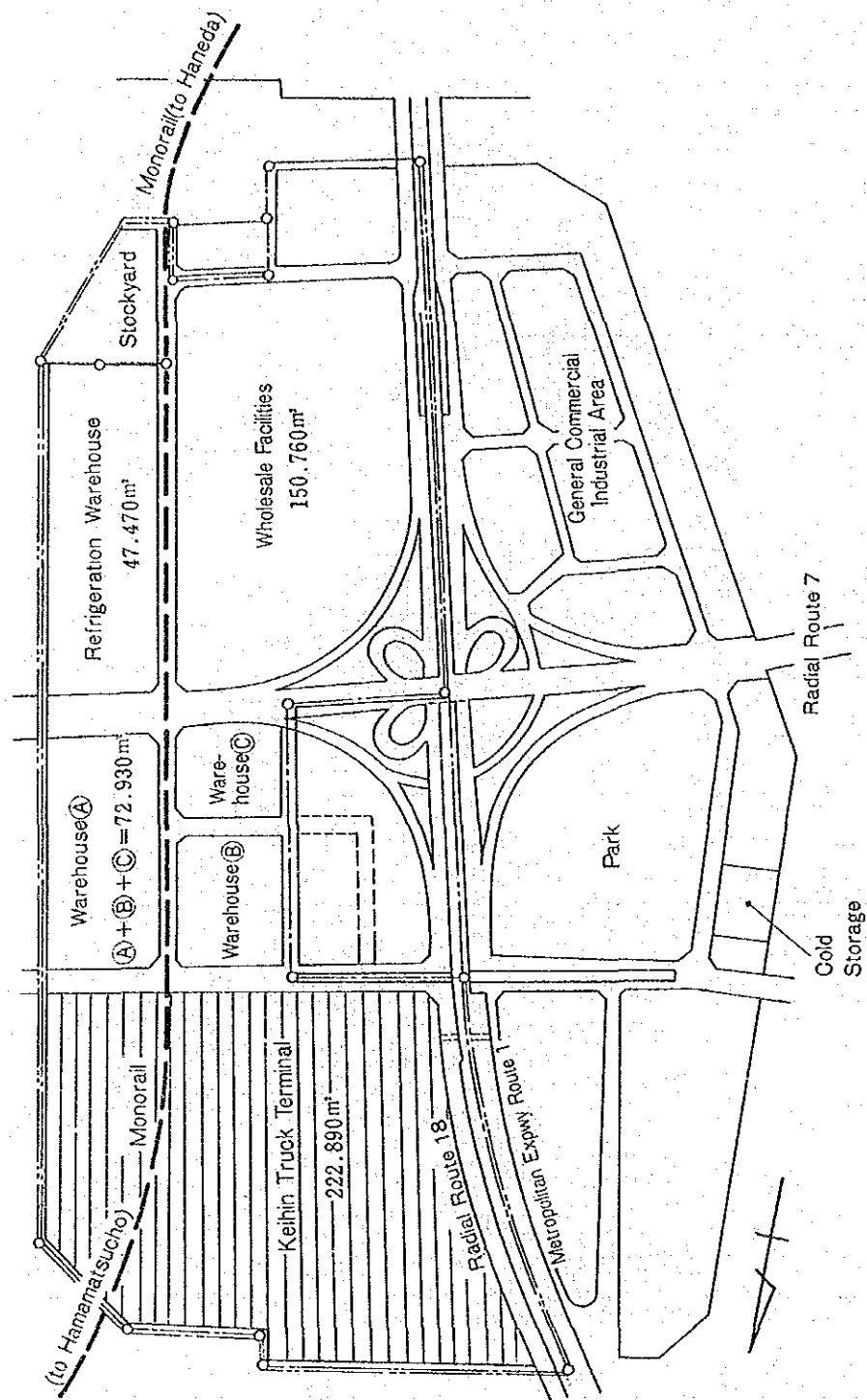
Cargo-handling space consists of 11 buildings with total floor space of 36,242 square meters and 433 arrival/departure berths, and is leased to 38 trucking firms. The current rental charge is ¥1,050 (about US\$6.00) per square meter per month.

Table IV-4-6 Outline of Facilities of Public Truck Terminals

	Keihin Truck Terminal	Itabashi Truck Terminal	Adachi Truck Terminal	Katsushika Truck Terminal
Address	1-1, 2-chome, Itewajima, Ota-ku, Tokyo	1-1, 8-chome, Takashimabara, Itabashi-ku, Tokyo	1-1, 6-chome, Utsu-cho, Adachi-ku, Tokyo	3-1, 4-chome, Rinkai-cho, Tsogawa-ku, Tokyo
Total space	222,890m ²	115,828m ²	113,318m ²	185,500m ²
Number of berths	433 berths	320 berths	340 berths (out of which 20 berths are to be added at the 2nd term construction work)	460 berths (out of which 18 berths are to be added at the 2nd term construction work)
Space for platforms	36,242m ²	22,200m ²	22,178m ²	37,959m ²
Handling capacity of cargoes	Approx. 12,000 tons (per day)	Approx. 7,000 tons (per day)	Approx. 7,000 tons (per day)	Approx. 11,500 tons (per day)
Date of completion	June 1968	October 1970	April 1977	April 1983
Total investment (including land acquisition cost)	Approx. 12.3 billion yen	Approx. 6.9 billion yen	Approx. 9.6 billion yen (only for first term construction work)	Approx. 19.3 billion yen (only for first term construction work)
Outline of facilities				
1. Platforms	No 1 to No 11 platform	No 1 to No 8 platform	No 1 to No 9 platform (No 9 platform is added at the 2nd term construction work)	No 1 to No 9 platform
(1) Total space	36,242m ²	22,200m ²	22,178m ² (out of which 1,178m ² are kept for the 2nd term construction work)	37,959m ² (out of which 6,312m ² are kept for the 2nd term construction work)
(2) Width	20m x 5 platforms 13,650m ² 25m x 5 platforms 17,062m ² 35m x 1 platform 5,530m ²	20m x 3 platforms 7,200m ² 25m x 5 platforms 15,000m ²	20m x 5 platforms 12,000m ² 25m x 3 platforms 9,000m ²	20m x 3 platforms 9,042m ² 25m x 6 platforms 22,605m ²
(3) Height from the floor	For line trucks 1.3m For local trucks 1.3m	For line trucks 1.3m For local trucks 1.1m	For line trucks 1.2m For local trucks 1.0m	For line trucks 1.2m For local trucks 1.0m
2. Total space of platform office	3,110m ²	1,611m ² (1st floor of basement)	2,638m ²	3,310m ²
3. Total space of delivery centre	No 11 to 13 platform 50,363m ²	7 platforms (underground) 10,950m ² No 9 platform 6,477m ²	No 9 platform (planned to be established at the 2nd term construction work) 11,077m ²	(planned for the 2nd term construction work) 19,731m ²
4. Space for line trucks	18,702m ²	14,400m ²	15,441m ² (1,185m ² are kept for 2nd term construction work)	19,278m ²
5. Space for local trucks	18,183m ²	10,186m ²	9,548m ²	12,960m ²
6. Space for operation of trucks	72,163m ²	35,437m ²	29,024m ²	41,653m ²
7. Space for parking	29,946m ²	17,510m ²	19,841m ² (135m ² for the 2nd term construction work)	29,795m ²
8. Depot for JNR containers	690m ²	—	—	—
9. Administration Building	Four-storied 2 buildings Space of land used 3,475m ² Space of building 15,156m ²	Five-storied 1 building 1,723m ² 8,025m ²	Ten-storied 1 building 1,429m ² 7,973m ²	Nine-storied 1 building 2,987m ² 9,715m ²
(1) Administration office	90m ² 1st floor of No. 1 Building	55m ² 1st floor	56m ² 1st floor	93m ² 1st floor
(2) Conference room	2 rooms, 153m ² 1st floor of No. 1 Building	2 rooms, 125m ² 1st floor & basement of No. 2 platform	2 rooms, 130m ² 1st & 2nd floor	2 rooms, 152m ² 2nd floor
(3) Short sleeping room	10 persons per room x 88 rooms Total accommodation: 880 persons (2nd floor of each building)	8 persons per room x 69 rooms Total accommodation: 552 persons (2nd & 3rd floor)	4 persons per room x 128 rooms Total accommodation: 512 persons (2nd-5th floor)	4 persons per room x 124 rooms Total accommodation: 496 persons (6th-9th floor)
(4) Lodging	6 persons per room x 200 rooms Total accommodation: 1,200 persons (2nd to 4th floor of each building)	5 persons per room x 120 rooms Total accommodation: 600 persons (2nd-5th floor)	2 persons per room x 180 rooms Total accommodation: 360 persons (6th-10th floor)	2 persons per room x 171 rooms Total accommodation: 248 persons (2nd-5th floor)
(5) Canteen, tea room, etc.	1,483m ² 1st floor each building	961m ² 1st floor & basement of No. 2 platform	468m ² 1st & 2nd floor	889m ² 1st floor
(6) Another facilities	Clinic, Barber shop, Bath room, Post office	Clinic, Barber shop, Bath room	Clinic, Barber shop, Bath room	Clinic, Barber shop, Bath room
10. Filling station	2,289m ² 9 pumps	950m ² 4 pumps	1,053m ² 4 pumps	1,453m ² 5 pumps
11. Truck-washing facilities	1,945m ² 5 lanes x 4 4 lanes x 1	750m ² 3 lanes x 3 1 lane x 1	518m ² 2 lanes x 4	966m ² 2 lanes x 6
12. Repair and maintenance facilities	2,278m ²	1,450m ²	—	—
13. Service station for tyres	310m ²	—	—	—
14. Weighing machine for truck	1	1	1	1

Source: Brochure of the Japan Motor Terminal Co., Ltd., 1985.

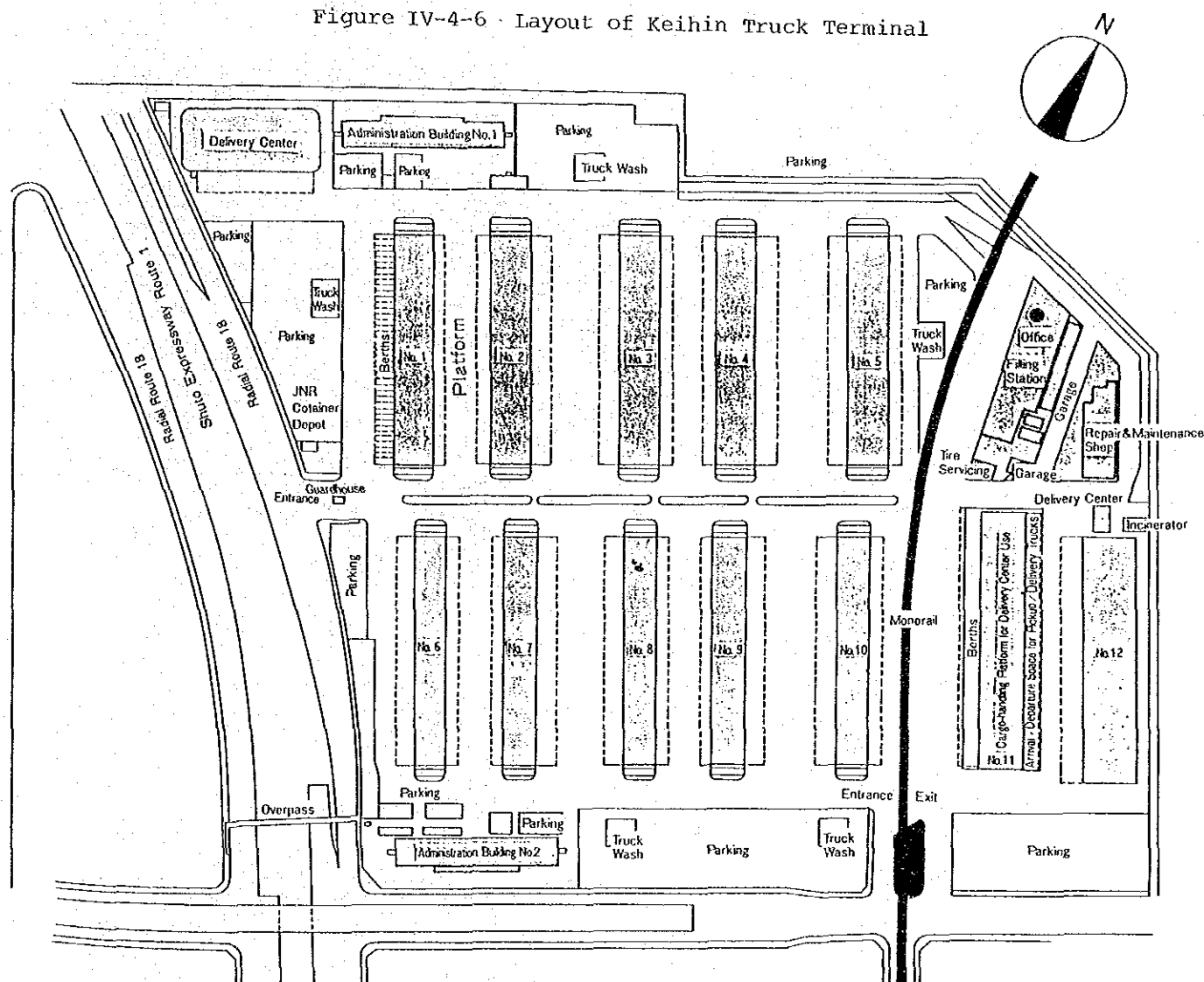
Figure IV-4-5 Location of Keihin Truck Terminal



Other main facilities are a distribution center (three buildings with total floor space of 50,363 square meters), parking space (about 30,000 square meters), filling station (gasoline storage capacity of 330 kiloliters), nine weighing machines, repair and maintenance shop, tire servicing and truckwashing facilities, substation, rooms for resting and napping (88 rooms for 10 persons each), and overnight accommodations (200 rooms for six persons each). In addition, the administration building houses an office, conference room, disaster prevention center, post office, bathrooms, first-aid room, restaurant, tea room, and barber shop. There are about 2,000 employees working in the terminal.

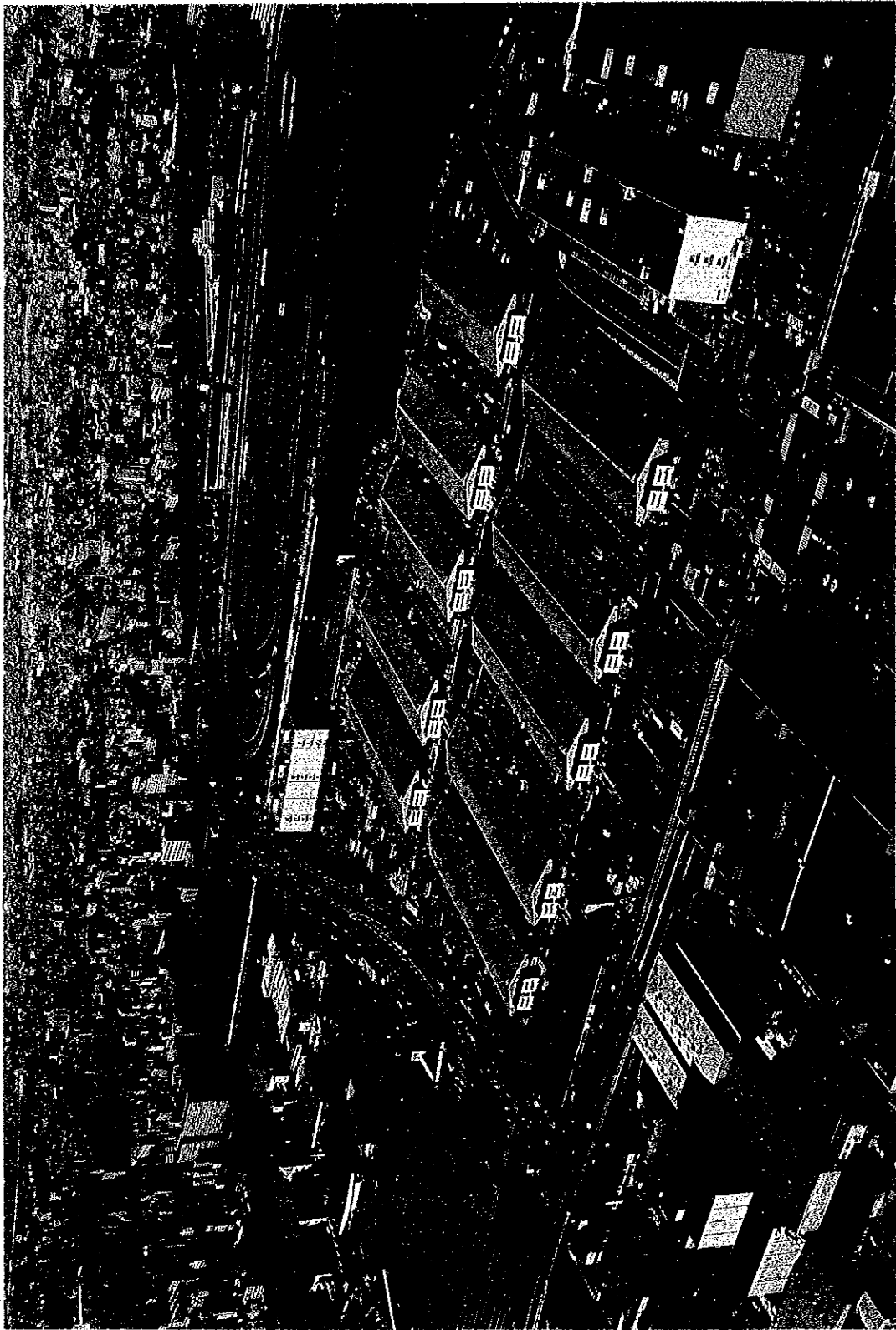
Figure IV-4-6 shows the layout of these terminal facilities.

Figure IV-4-6 Layout of Keihin Truck Terminal



Source: Brochure of the Japan Motor Terminal Co., Ltd. 1985

Perspective of Keihin Truck Terminal



V. EXPORT

V. EXPORT

1. CHANGE IN EXPORT STRUCTURE IN POSTWAR JAPAN

1-1 Export and Japanese Economy

The export sector has played an important role in postwar Japanese economic growth. Table V-1-1 shows the contribution by sector to the gross national expenditure (GNE) increases for each period. The years from 1946 to 1983 are divided into eight periods.

Table V-1-1 Contribution to GNE Increase by Sector 1)

	(%)							
	1946- 50	1950- 55	1955- 60	1960- 65	1965- 70	1970- 75	1975- 80	1980- 83
Gross National Expenditure	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Private Consumption 2)	63.2	67.5	54.0	53.7	43.0	67.6	40.8	41.2
Government Consumption	29.1	5.3	4.9	8.7	4.2	10.9	7.6	8.7
Gross Domestic Capital Formation	-2.1	26.5	43.0	34.5	51.7	13.2	33.4	12.9
Export	16.5	9.2	10.2	13.5	14.6	28.0	31.8	40.9
Import	-6.8	-8.5	-12.1	-10.3	-13.6	-18.6	-14.0	-4.3

Source: Statistics Bureau, Management and Coordination Agency, Japan Statistical Yearbook.

Notes: 1) 1946 - 1970 : at 1970 prices, 1970 - 1983 : at 1975 prices
2) for 1970 - 1983 not included final consumption expenditure of private non-profit institutions serving households.

Until the mid-1970s, the growth of the Japanese economy was greatly supported by domestic demand. In particular, from 1946 to 1950, nearly all demand increase stemmed from domestic consumption, with total private and government consumption amounting to 92.3%. From 1955 to 1960, and 1960 to 1965, domestic consumption decreased while gross domestic capital formation progressed and contributed significantly. The contribution ratios of export were 10.2% and 13.5% respectively for each period. In the first half of the 1970s, contribution by domestic demand

maintained a high level, but since the second half, domestic demand decreased by the recession after the first oil crisis and the contribution by exports began to rise. In particular, from 1980 to 1983, exports contribution to the economic growth rapidly increased to 40.9%, making the export sector the leading area of the national economy.

Figure V-1-1 illustrates the trend of Japan's balance of payments. Before the 1960s, little change occurred in the trade balance, both the invisible trade balance and the long-term capital balance, with the result that the overall balance was held at approximately zero. During this period, as described in section I-1 (Chapter I "Macroeconomy"), Japan succeeded in its postwar reconstruction, and since then it enjoyed a series of economic booms. During the booms, fixed investment continued to expand and led the high economic growth. Through the high-growth, Japanese manufactured goods became competitive in the international market. Since 1964, Japan's trade balance turned to surplus.

During the 1970s, the balance of payments became unstable due to the two oil crises. However, the trade balance quickly recovered from these two "oil shocks", and overall surplus was expanded irrespective of the great fluctuations at the time of the oil crisis.

1-2 Change of Export Structure by Commodity Group

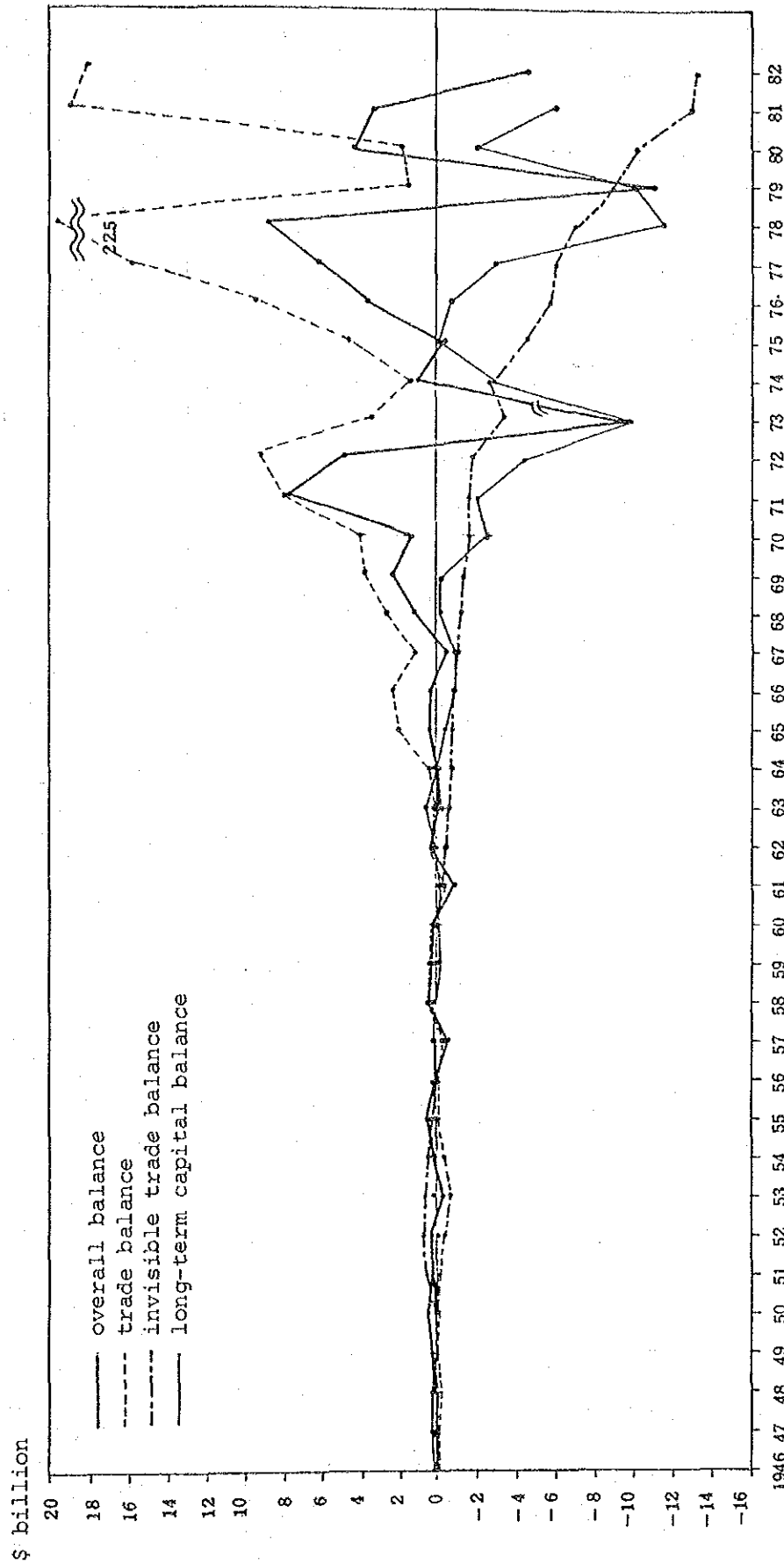
The following covers the change in export structure since the War (see Table V-1-2). A typical Japanese export commodities in the 1950s were textiles, with the greatest share being textile yarns, finished fabric products and related articles. These export commodities accounted for 29% of total exports in 1955. In the 1960s, however, the export structure became more modernized due to the accelerated industrialization in this period. Although textiles still held a major share of export items in 1960, machinery expanded to be the second largest item. Exports of machinery expanded to a 35.2% share in 1965, while textiles decreased to 18.7%. In addition, metals and metal products, with a share of 20.3%, also exceeded textiles.

In the 1970s, Japanese exports expanded rapidly. Exports increased to 130.4 billion dollars in 1980, an increase of 6.7 times the 19.3 billion dollars exported in 1970. Machinery and equipment continued to increase its share, from 46.3% in 1970 to 62.7% in 1980. In particular, transport equipment increased dramatically.

Total exports in 1984 were 169.7 billion dollars, which was approximately 1.3 times the figure in 1980. This demonstrates a steady expansion rate while the world economy was suffering stagnation. This steady performance was supported by the expansion of machinery and equipment exports, the amount of which corresponds approximately with the total additional exports for 1984.

Table V-1-3 shows the contribution to export increase by commodity group. The contribution of machinery to the total export increase is very big. It increased rapidly from the latter half of 1970s. Especially it was as high as 91.3% during the 1980s.

Figure V-1-1 Trend of Balance of Payments in Postwar Japan



Source: IMF, Balance of Payments Yearbook.

Table V-1-2 Export Structure by Commodity Group (millions of US dollar, %)

	1955	1960	1965	1970	1975	1980	1981	1982	1983	1984
Total	2,011 100.0	4,054 100.0	8,452 100.0	19,318 100.0	55,729 100.0	130,441 100.0	151,495 100.0	138,385 100.0	146,965 100.0	169,700 100.0
Foodstuffs	6.2	6.3	4.1	3.4	1.4	1.2	1.1	1.0	0.9	0.8
Textiles	37.3	30.1	18.7	12.5	6.7	4.8	4.7	4.5	4.5	4.0
Textile Fibers & their Waste	2.9	2.0	1.8	1.0	0.8	0.5	0.5	0.4	0.4	0.4
Yarn, Fabrics & Related Product	29.1	22.7	13.5	9.0	5.2	3.9	3.8	3.7	3.6	3.1
Clothing	5.2	5.4	3.4	2.4	0.6	0.4	0.4	0.4	0.4	0.5
Chemicals	5.1	4.5	6.5	6.4	7.0	5.3	4.5	4.6	4.8	4.5
Non-metallic Mineral Products	4.7	4.2	3.1	1.9	1.3	1.4	1.4	1.4	1.5	1.3
Metal and Metal Products	19.2	14.0	20.3	19.7	22.4	16.5	14.8	15.3	12.5	11.3
Iron and Steel	12.8	9.6	15.3	14.7	18.2	11.9	11.0	11.2	8.7	8.2
Non-Ferrous Metals	3.3	0.6	1.4	1.3	1.0	1.5	1.0	0.9	1.1	0.9
Metal Products	3.0	3.8	3.6	3.7	3.2	3.0	2.8	3.1	2.7	2.2
Machinery	n.a.	25.5	35.2	46.3	53.8	62.7	65.9	65.2	67.8	70.4
General Machinery	n.a.	n.a.	7.4	10.4	12.1	13.9	14.9	14.6	15.7	16.4
Electric Machinery, Apparatus	n.a.	n.a.	9.2	12.3	11.0	14.4	14.8	14.2	15.6	17.2
Transport Equipment	n.a.	n.a.	14.7	17.8	26.1	26.5	27.1	27.3	26.6	26.8
Precision Instruments	n.a.	n.a.	3.9	5.7	4.7	7.9	9.1	9.0	9.8	10.1
Others	n.a.	15.3	12.1	9.9	7.4	8.1	7.6	8.1	8.1	7.7

Source : Statistics Bureau, Management and Coordination Agency, Japan Statistical Yearbook 1985.

Table V-1-3 Contribution to Export Increase by Commodity Group

	(%)					
	1955- 60	1960- 65	1965- 70	1970- 75	1975- 80	1980- 84
Total	100.0	100.0	100.0	100.0	100.0	100.0
Foodstuffs	6.4	2.0	2.8	-0.1	1.0	-0.2
Textiles	23.1	8.1	7.6	2.5	2.5	1.6
fiber	1.1	1.7	0.4	0.7	0.2	0.0
yarn	16.4	4.9	5.6	2.5	2.2	1.0
clothing	5.6	1.5	1.6	-0.7	0.1	0.7
Chemicals	3.8	8.3	6.3	7.4	3.0	2.4
Non-metallic Minerals	3.7	2.1	1.0	0.9	1.6	1.1
Metal and Metal Products	9.0	26.2	19.2	24.4	8.8	-2.7
iron and steel	6.4	20.5	14.3	20.8	3.9	-2.0
non-ferrous metals	-2.0	2.2	1.2	0.7	2.2	-0.8
metal products	4.6	3.4	3.8	2.9	2.8	0.1
Machinery	na	44.1	54.9	59.3	74.0	91.3
general machinery	na	na	12.7	13.3	16.3	23.0
electric machinery	na	na	14.8	10.1	18.7	24.8
transport equipment	na	na	20.2	32.1	26.9	27.6
precision instruments	na	na	7.1	3.9	12.1	15.9
Others	na	9.0	8.2	5.6	9.0	6.6

Source: Statistical Bureau, Management and Coordination Agency,
Japan Statistical Yearbook 1985.

1-3 Change in Export Structure by End-use

The following covers the change in the export structure by end-use (see Table V-1-4). The item which had the largest share by end-use in 1962 was industrial materials and supplies, which consists of metals and other materials. Their exports accounted for 45.9% of total exports. Following this item, capital goods accounted for 23.1%, durable consumer goods 13.8%, non-durable consumer goods 8.6%, food and direct consumer goods 6.8%, and others 1.8%.

This structure changed gradually during the 1970s, that is, the share of the industrial materials and supplies levelled off and instead, high-value-added items such as capital goods and durable consumer goods increased their share. The total share of the two groups in 1975 was 57.6% of total exports. This was due to the fact that the competitiveness of transport equipment and general machinery had gradually

Table V-1-4 Export Structure by End-use

(millions of US dollar .%)

	1962	1965	1970	1975	1980	1981	1982	1983	1984
Total	4,916 100.0	8,452 100.0	19,318 100.0	55,729 100.0	130,441 100.0	151,495 100.0	138,385 100.0	146,965 100.0	169,700 100.0
Food and Direct Consumer Goods	6.8	4.0	3.4	1.4	1.2	1.1	1.0	0.9	0.9
Industrial Materials & Supplies	45.9	45.4	38.3	38.0	28.6	25.8	26.0	23.8	21.7
Crude Materials	3.3	2.6	1.7	1.5	1.0	0.9	0.8	0.8	0.7
Mineral Fuels	0.4	0.4	0.2	0.4	0.4	0.4	0.3	0.3	0.3
Industrial Chemicals	5.2	6.4	6.3	6.9	5.2	4.4	4.5	4.7	4.4
Metals	11.5	16.7	16.0	19.2	13.4	11.9	12.2	9.8	9.0
Textiles	17.2	12.3	8.4	5.0	3.7	3.7	3.4	3.4	3.0
Capital Goods	23.1	27.7	31.1	38.8	40.1	42.7	42.0	44.0	46.3
General Machinery	6.8	7.4	10.4	12.1	13.9	14.9	14.6	15.7	16.4
Electric Machinery	4.1	5.0	6.0	6.6	9.9	10.4	10.5	11.8	13.2
Transport Equipment	9.0	12.2	11.6	17.3	12.3	13.3	12.9	12.3	13.1
Non-Durable Consumer Goods	8.6	6.4	4.4	1.2	1.1	1.0	1.1	1.1	1.1
Textile products	5.9	4.6	3.0	0.8	0.6	0.6	0.6	0.6	0.6
Durable Consumer Goods	13.8	14.9	21.3	18.8	27.4	28.1	28.4	28.7	28.3
Household Equipment	2.3	1.9	1.6	0.8	0.9	0.9	1.0	0.8	0.7
Household Electric Appliances	4.2	3.9	6.2	4.3	4.4	4.3	3.6	3.6	3.9
Passenger Cars	0.7	2.2	2.4	2.5	2.8	2.8	2.4	2.0	1.7
Toys & Musical Instruments	3.8	3.6	4.5	2.4	4.6	5.8	6.5	7.0	7.2
Others	1.8	1.6	1.6	1.8	1.7	1.3	1.5	1.4	1.3

Source : Statistics Bureau, Management and Coordination Agency. Japan Statistical Yearbook 1985.

been reinforced, while the export of metals, conventionally the leading item, was suffering from depressed market conditions.

This phenomenon became more noticeable during the 1980s. In 1980, the share of industrial materials and supplies dropped to 28.6%, while that of capital goods and durable consumer goods rose to 40.1% and 27.4% respectively. This trend became more pronounced in 1984, that is, the share of industrial materials and supplies dropped further to 21.7% while on the other hand that of capital goods rose to 46.8%, or nearly half of the total, and durable consumer goods maintained level of 28%. According to the leading items which are changing from time to time, Japanese export structure became more and more sophisticated, that is, the leading items shifted from light manufactured goods to machinery in the 1970s.

1-4 Change in Export Destination

Japanese export structure, by commodity group and end-use, has changed greatly through the 1960s and 1970s. Export destination structure has also changed. Table V-1-5 illustrates the change in share by export destination. The share of exports to developed countries gradually increased, while the share to developing countries tended to decrease gradually, and no considerable change occurred in the share to Communist countries since 1965. In the export structure by destination, the United States is the largest destination country, taking a share of that is almost equivalent to that of South-East Asia. However, in the 1980s, exports to this region have experienced a slump, while exports to the United States have increased. To the European Community, the share has been maintained at around 12% since 1975.

As shown above, around half of the Japanese export since World War II had been to the market of the United States and South-East Asia up until the mid-1970s. Since the mid-1970s, the shares of the European Community and the Middle East markets became more than 10%. This means a characteristic of the Japanese export market for accelerated diversification of partner countries.

Table V-1-5 Export Structure by Partner Country and Area

(%)

	1955	1960	1965	1970	1975	1980	1981	1982	1983	1984
World Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Developed Area	39.1	47.5	50.8	54.0	42.1	47.1	48.5	49.0	52.1	56.7
Canada	2.2	2.9	2.5	2.9	2.1	1.9	2.2	2.1	2.5	2.5
U S A	22.7	27.2	29.3	30.7	20.0	24.2	25.5	26.2	29.2	35.3
E C	4.0	4.3	5.8	6.7	10.2	12.8	12.4	12.3	12.6	11.4
E F T A	4.4	5.6	5.5	5.5	2.6	2.4	2.3	2.3	2.1	1.9
Other W. Europe	1.4	1.9	1.7	2.8	1.8	1.3	0.8	1.0	1.0	0.8
Australia, N.Zealand, S. Africa	4.6	5.5	6.0	5.3	5.4	4.5	5.2	5.2	4.8	4.8
Developing Area	59.0	50.7	43.4	40.5	49.5	45.8	45.3	45.0	41.8	37.0
Latin America	9.3	7.5	5.8	6.1	8.5	8.8	6.9	6.5	4.3	5.0
S.E. Asia	36.2	32.2	26.0	25.4	22.5	23.8	22.6	23.0	23.5	21.6
Middle East	5.2	4.4	4.2	3.3	10.9	11.1	11.7	12.2	11.7	8.3
Africa	7.6	6.2	7.1	5.2	7.3	3.7	3.8	3.0	2.0	1.8
Others	0.7	0.3	0.4	0.5	0.3	0.3	0.3	0.3	0.3	0.3
Communist Bloc	1.9	1.8	5.7	4.0	8.4	7.0	6.2	6.1	6.1	6.3
U S S R	0.1	1.5	2.0	1.8	2.9	2.1	2.1	2.6	1.9	1.5
Eastern Europe	0.4	0.1	0.5	0.5	1.0	0.6	0.5	0.4	0.5	0.3
China	1.4	0.1	2.9	2.9	4.0	3.9	3.3	2.5	3.3	4.3
Others	0.0	0.2	0.2	0.1	0.4	0.4	0.3	0.3	0.3	0.2

Source : Statistics Bureau, Management and Coordination Agency, Japan Statistical Yearbook.

2. JAPAN'S POSTWAR EXPORT PROMOTION POLICY

2-1 Foreign Exchange and Foreign Trade Control Law

Japan's international trade, which had been conducted by the Japanese Government under GHQ (General Headquarters of Allied Occupation Forces) control since 1945, was completely transferred to private sectors in January 1950.

A series of laws and regulations had been introduced for the promotion of Japan's international trade since the Foreign Exchange and Foreign Trade Control Law was first enforced in December 1949. They are Export Credit Insurance Law (1950), Special Taxation Measures Law (1953), Export Goods Design Law, Export Inspection Law (1958, originally Export Commodity Control Law 1948), etc., and various export promotion systems, such as for export financing (1950), export inspection (1950), foreign exchange fund loan (1953), export promotion taxation, etc. had been introduced, and relevant organizations such as JETRO (1951), Japan Export Bank (1950, later Export-Import Bank of Japan 1952), Export Council (1954), etc. had been established by laws or Cabinet orders.

The Foreign Exchange and Foreign Trade Control Law followed by the Export Control Order and the Export Trade Control Regulations, made clear the framework of foreign exchange and trade control measures for the purpose of attaining the objectives as stipulated in Article 1. They are the promotion of normal development of foreign trade, the equalization of international balance and the stable growth of the economy.

Article 47 of the Law states that the exports shall be allowed under the least possible restrictions so long as they meet the purpose of the Law while Article 48 provides for the scope of export control requiring export approval of the Ministry of International Trade and Industry (MITI).

The scope requiring the export approval is classified into four categories. They are:

- (a) Certain specified commodities,
- (b) Commodities and their specified destinations,
- (c) Specified methods of transaction, or
- (d) Specified methods of payment.

Certain specified commodities for exports requiring export approvals are classified into the following five groups:

- (a) Strategic commodities such as arms and ammunition, nuclear power equipment, NC machine tools, etc.,
- (b) Commodities liable to cause price fluctuations due to the shortage of domestic supply,
- (c) Commodities, under ordinary trade control law, the Import and

Export Trading Law 1952, namely textile goods in the early 1950s,

- (d) Commodities banned under international agreements such as narcotics, counterfeit currency and others liable to harm the political, social or economic order of other countries,
- (e) Commodities infringing on industrial property rights in destination countries.

In subsequent years, the Law underwent successive revisions and restrictions had been gradually lifted on the first and the second category commodities while the third increased the number.

The specified methods of transaction include consignment processing trade and consignment sales contracts. When the approval for such transaction is obtained, there is no need to apply for export approval.

Regarding specified methods of payment, the Law and related regulations set down the standard methods of foreign exchange settlement and made it necessary to obtain the MITI's approval in the case of other methods. At the time of the implementation of the Law, the standard settlement methods were only prepayment and payment by sight letters of credit and the scope of the standard methods were widened to include documents against payment (DP) and documents against acceptance (DA) settlements and the areas where DP and DA settlements were approved were enlarged.

The Law was revised and enforced from December 1980 towards freer trade with easier trade procedures.

2-2 Export Finance

2-2-1 Short Term Finance

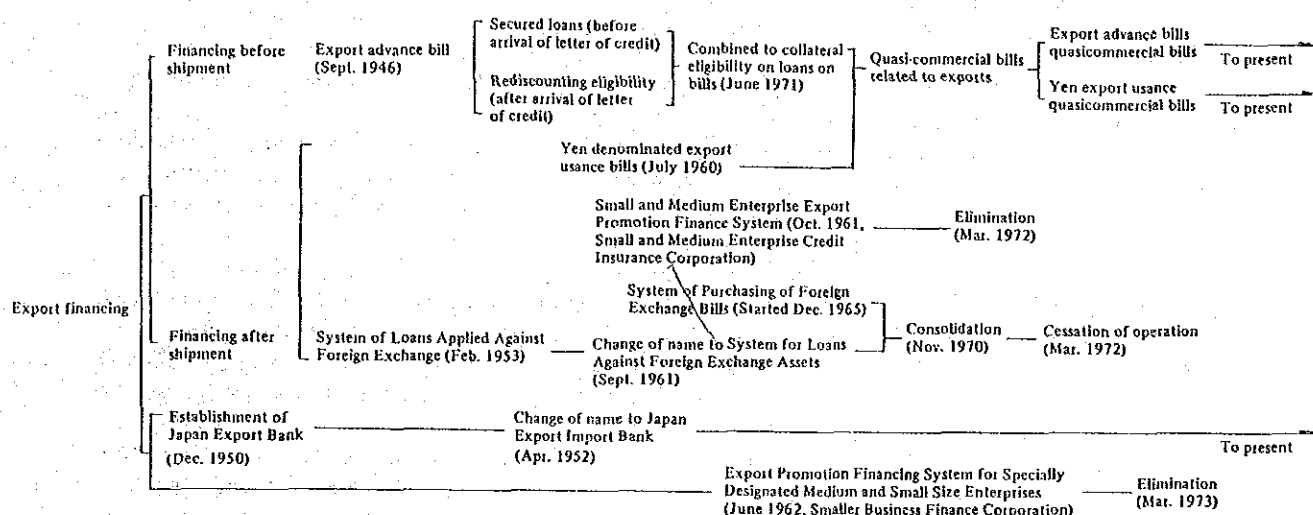
After the private trade was reopened in 1950, the Bank of Japan introduced the export advance bill system and the import settlement bill system to finance export and import fund in advance through commercial banks, which are heavily in short of loan fund, at the preferential discount interest rate.

The export advance bills supplied funds required for the production and purchasing of goods agreed upon in export contracts. The interest rate for an export advance bill was lower by 1% to 3% per annum than the discount rate for a commercial bill.

However, at the time of the "Nixon Shock" (discontinued dollar convertibility to gold and drastic revaluation of Japanese yen) in 1971, criticism mounted against Japan for the preferential export financing terms and the sharply increasing surpluses in its balance of payments in comparison with other nations, and in September 1972, this system was abolished, and in October of the same year it reappeared as export advance financing system through quasi-commercial bills.

The Bank of Japan introduced another type of export financing system in 1953. The loans against negotiations of export usance bills provide low-interest financing on a par with international levels, to commercial banks purchasing export usance bills. This system was also abolished in March 1972 and also changed to the financing through quasi-commercial bills. The outline of changes in Japan's postwar export financing system is illustrated in Figure V-2-1.

Figure V-2-1 Outline of Changes in Export Financing System



Source: MITI, White Paper on International Trade and Industry, 1950 to 1970 editions.

2-2-2 Long Term Financing

Medium- and long-term export financing is provided by the Export Bank of Japan established in December 1950 and reorganized and renamed the Export-Import Bank of Japan in April 1952, for exports of industrial plants and heavy machinery and for imports of basic raw materials.

The export advance financing was first introduced to supply funds necessary for the promotion of plants and machinery with a redemption period of more than one year. The after shipment financing was started for exports on deferred payment basis in 1952 as well as the overseas investment financing services in the same year.

In September 1962 and in June 1965, the Bank added to the list of items, covered by export financing scheme, consumer durable goods, iron and steel products in 1962 and machine tools, agricultural and other industrial machinery in 1965 so as to comply with the requirements arising from the increasing exports and patterns of trade, the terms of loans varied from 6 months to three years carrying interest rates 5.5% to 6.5% per year depending on the nature of export contracts. The Bank

started to enter the new field of financial activities to help promote Japan's economic cooperation, by extending refinancing services and debt guarantee services to commercial banks joined in the syndicate loan agreements with developing countries in April 1964.

In March 1966, the Bank's capital increased to 175.8 billion yen (about \$490 million at exchange rate ¥360 = \$1) and its liability (borrowing) stood at 359.2 billion yen (about \$1 billion). A look at its loan acceptance by type of financing services shows that export financing accounted for 80% to 90% of the total. While the share of overseas investments and direct loans to developing countries has been increasing recently, there has been little growth in export financing in industrial plants and in import financing.

In addition, the Overseas Economic Cooperation Fund was established in 1961 to provide financing for the development projects in the developing countries. The activities of the two organizations became increasingly more diverse in accordance with the changes in modes of capital exports from the initial export financing for the exporters to investment financing, bank loans and buyers credits.

Improvement of the economic cooperation system in keeping with the rise in requirements for assistance from developing countries also became an important issue. Therefore, in 1974, the Japan International Cooperation Agency was established to provide necessary assistance to social and economic development of developing countries. Further, in 1975, the fields of activities of both the Export-Import Bank and the Overseas Economic Cooperation Fund were coordinated, resulting in the Fund handling government loans with a 25% or more grant element.

2-2-3 Export Financing to Small and Medium Enterprises

In 1961, the Small Business Credit Insurance Corporation established a special export guarantee system to smoothen export financing to small and medium enterprises.

Under this system, the corporation extended a special one year loan (2.5% interest rate) to credit insurance associations implementing the export promotion special insurance system guaranteeing production and goods collection of export commodities at a special low interest rate. Credit insurance associations receiving such special loans from the corporation deposit the funds along with loans from the prefectural governments into local commercial banks. These commercial banks then add roughly the same amount of the deposit funds and provide specially guaranteed export usance loans at a fixed rate to small and medium enterprises.

The balance of special loans of the corporation grew from an initial 150 million yen at the start of the system to 300 million yen in 1962, 400 million yen in 1963, 500 million yen in 1964, and 800 million yen in 1965 (exchange rate ¥360 = \$1). Together with the loans of the prefectural governments, this means approximately twice that amount was extended.

In June 1962, the Small Business Finance Corporation established a system of preferential treatment for the promotion of the modernization of exporting small and medium businesses. The system offered two types of funding: one for long-term plant and equipment funds necessary for execution of long-term (more than one year) export contracts and the other for plant and equipment modernization necessary for the development of small and medium businesses in certain selected industries. Loans under this system were for two to seven years at 7.5% to 7.6% interest.

2-3 Export Insurance System

The Export Insurance System was enforced in March 1950, with a purpose of covering the only risk suffered by exporters in the preshipment period. In subsequent years, needs in foreign transactions led to the establishment of new types of insurance, increasing to nine types at present.

They are ordinary export insurance, export payment insurance, export financing insurance, overseas advertising insurance, export bill insurance, consignment export sales insurance, overseas investment insurance, exchange fluctuation insurance and export guarantee insurance, in order of established year (see Table V-2-1).

The different types of insurance can also be classified according to the type of risk borne. The risks covered by export insurance include (a) emergency risks such as war or import embargoes at the destination country, restrictions on exchange transactions overseas, and other events for which the parties to the export contract and the overseas investor cannot be held responsible for, (b) credit risks such as the case of bankruptcy of the buyer, delayed execution of payment, and other cases wherein the other export contract party may be held responsible for, and (c) corporate risks such as the case when sales of export cargoes do not reach the scheduled amount and other cases where corporate estimates were mistaken. Ordinary export insurance, export payment insurance, export bill insurance, and export financing insurance all deal with emergency risks and credit risks. On the other hand, overseas investment insurance covers only confiscation risks, war risks, remittance risks, and other emergency risks (amendments to the Export Insurance Law in January 1972, however, led to the establishment of overseas investment insurance for public bonds, etc. as well, for additional coverage of credit risks). Consignment export insurance and overseas advertisement insurance, further, covered principally corporate risks.

Finally, the coverage of insurance can be classified by preshipment and postshipment. Ordinary export insurance covers both preshipment and postshipment, while export payment insurance and export bill insurance cover postshipment. (More accurately, coverage of export bill insurance does not start from the point of loading. The documentary bills are purchased by officially authorized foreign exchange banks. At an appropriate time afterward, the banks notify the government of the purchase of those documentary bills. Only after the notification does the insurance start.)

Table V-2-1 Outline of Trends in Export Insurance System

Year	Item
1950	Establishment of ordinary export insurance system for losses of exporters due principally to preshipment risks
1951	Establishment of export payment insurance system for losses of exporters due to inability to reclaim payments
1952	Establishment of export financing insurance system for risks in inability of banks to reclaim the export advance funds
1952	Establishment of overseas advertising insurance system for losses due to non-settlement of overseas advertising and public relations costs
1953	Establishment of export bill insurance system for losses in cases where the documentary bills cannot be paid by bill maturity
1954	Establishment of consignment sales export insurance system for cargo reshipment losses
1956	Establishment of overseas investment principal insurance system for risks relating to acquisition of stocks or other shares overseas
1957	Establishment of overseas investment interest insurance system for risks incurred by non-remittance of fruits of overseas investments
1970	Combination of overseas investment principal insurance and overseas investment interest insurance and basic amendment of overseas investment insurance system
1972	Addition of buyers credit and funds for financing purchased mines to scope of insurance risks
1974	Establishment of exchange fluctuation insurance system to cover exchange risks caused by long term deferred export payments
1977	Establishment of export guarantee insurance system for losses incurred by demand from overseas orderers for payment of improper stocks
1979	Improvement and expansion of insurance for overseas construction projects
1981	Expansion of ordinary export insurance, export payment insurance, and overseas investment insurance

Source: JETRO, A History of Japan's Postwar Export Policy, 1983.

2-4 Export Promotion Taxation System

Japan introduced three export promotion taxation systems in 1953. They are the Export Income Deduction System, the Export Loss Reserve Fund System and the Special Depreciation System for the establishment of overseas branches.

The Export Income Deduction System allowed a deduction of certain percentage (50% to 80%) of export income from the taxable incomes of a company engaged in direct or indirect exports, resulting in lower income tax. There had been amendments through 1964 when the system was abolished upon Japan's acceptance of Declaration A of the GATT¹⁾.

The Export Loss Reserve Fund System allowed exporters to increase the reserve fund 0.5% to 1% of the export contract value to prepare against the losses to be incurred by unexpected importer's claims. The system had been in force until 1962.

The Special Depreciation System for the establishment of overseas branch offices allowed an accelerated depreciation of assets acquired overseas for the purpose. A half of the investment in buildings was made possible to depreciate over 5 years and the 50% of investment in other equipment was able to depreciate in the first year.

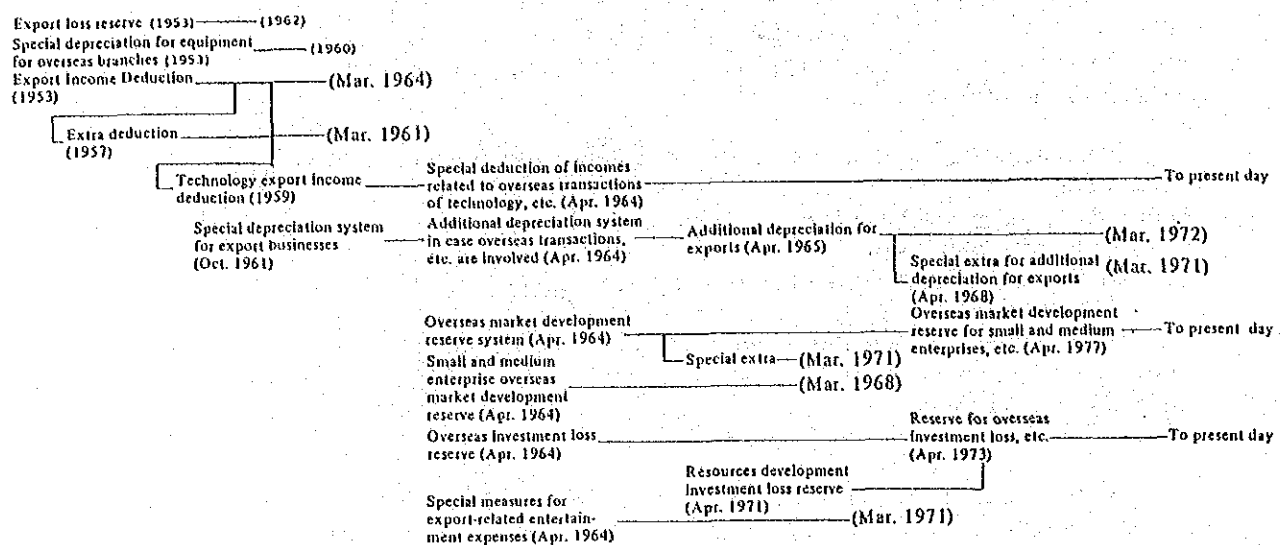
The taxation reform in 1964 introduced the following export promotional tax relief measures:

- (a) New establishment of an overseas market development reserve (0.5% of the export value for trading houses and 1.5% for manufacturers)
- (b) Overseas Investment Loss Reserve (50% of investment in developing countries)
- (c) Overseas Market development Reserve, etc. for small and medium enterprises (2.5% of the export value)
- (d) Continuation of additional depreciation system 1961 for increased exports, with amendment to expand the limit upto 0.8% of the increased exports
- (e) Continuation of technology export income deduction
- (f) Special treatment of inclusion in losses of entire overseas social entertainment expenses.

In addition, the fiscal 1964 taxation reform effected various other measures including the reduction of corporate tax rate and the shortening of service life of machinery and equipment.

1) The country which accepted Declaration A of the GATT follows the rule of abolishing all export subsidies for commodities other than primary products.

Figure V-2-2 The Development of Export Promotion Taxation Systems



Source: MITI, White Paper on International Trade and Industry, 1950-1970.

The development of Export Promotion Taxation Systems are shown in Figure V-2-2.

At present, there are three types of such tax incentive systems including; (a) special tax deduction system for incomes related to service trade such as transactions of technology, (b) overseas market development reserve system for small and medium enterprises, and (c) overseas investment loss reserve system.

The overseas market development reserve system for small and medium enterprises engaged in direct or indirect export business allows them to put into reserves a part of their export amount of the preceding year, at the ratio listed below.

Capital	Trading House	Manufacturer
¥100 mil. or less	1.36%	1.84%
¥100 to 500 mil.	0.656%	0.896%

Special tax deduction system for incomes related to service exports allows a deduction of a certain amount of such export transactions from the taxable income. The income deduction rate vary according to the different categories of service as seen below.

Transaction	Percentage	Ceiling amount
Transfers of industrial property rights, etc.	28	40% of incomes of the business year involved
Transfers of copy-rights	8	
Consulting, surveying and technical guidance in agriculture and fisheries	16	

2-5 Export Inspection System

2-5-1 Development of the Export Inspection System

In Japan, the export inspection system has a very long history, starting from the raw silk export inspection system of 1895. Initially the inspection system was based on laws and regulations in the Meiji and Taisho eras. During and after the decade beginning 1935, however, it continued development with private inspection agencies as the nucleus. Since inspection by these private agencies is compulsory based on law, it was argued that such inspection by private organizations runs counter to the spirit of the Anti-Monopoly Law and Enterprisers Organization Law. From a point of view that such inspection should be undertaken exclusively by the government, the Export Commodity Controls Law (1948) was enacted under the new concept of private independent inspection. The Law was promulgated on July 12, 1948 and put in force on October 10 of that year, contributing much to the improvement of reputation and quality of Japanese products over nine years before the present Export Inspection Law was instituted. The Export Commodity Control Law featured the principle of self-responsibility, maintaining that products should naturally be guaranteed for their quality on the responsibility of those who manufactured them. However, the Law entertained too lofty and ideal to fit the actual conditions of Japan in those days. Concluding that it is difficult for the inspection system based on such law to prevent inferior products from being exported, the government recognized the necessity of strengthening qualitative competitiveness of export products through the establishment of a more rational third-party inspection system, and presented on February 18, 1957 before the 26th National Diet an export inspection bill, a fully amended version of the Export Commodity Control Law.

The bill successfully passed through the Diet on April 5 and was promulgated on May 2 for enforcement starting February 1, 1958.

2-5-2 Outline of the Export Inspection System

Under the Export Inspection Law, exporters in general are compulsorily subjected to inspection by designated persons for designated export goods. The purpose is to "maintain and improve the reputation of export goods, thereby contributing to the sound development of export trade," as provided for in Article 1 of the Law.

First, goods which specifically require export inspections in maintaining and improving the reputation of export goods are designated by a government ordinance (the Ordinance Concerning Export Inspection Items). The designated goods are not allowed for export unless they successfully stand export inspections and carry a label to that effect. The inspections are carried out by a government agency or an inspection agency designated by the competent minister as an agency to carry out an export inspection. As inspection entities who undertake export inspections, there are three government agencies, including the Textile Inspection Laboratory, and 36 designated inspection agencies who satisfy designation standards provided for in the MITI Ordinance (Rules for Designation Standards for Designated Inspection Agencies) and so designated by the competent minister.

The export inspections are conducted upon application filed by a person who wishes to take the inspections. The inspections are divided into four types: (a) a quality inspection checking up on the quality, or the most basic point of a product; (b) a packaging inspection making an examination of packaging conditions with a view to keeping up the quality of the product during transportation; (c) a material inspection; and (d) an inspection during manufacture, the last two inspections being conducted in order to complement the quality inspection of finished products. Each of these four types of inspection is conducted in accordance with inspection standards set by a MITI ordinance (The Ordinance for Setting Standards, etc. for Export Inspections). A label showing the successful passing of the inspections is attached to the goods which have been judged to meet the standards. The successful goods are also qualified to demand an export inspection certificate to be attached to an export declaration, which must be submitted to customs, when they go through customs formalities (Figure V-2-3).

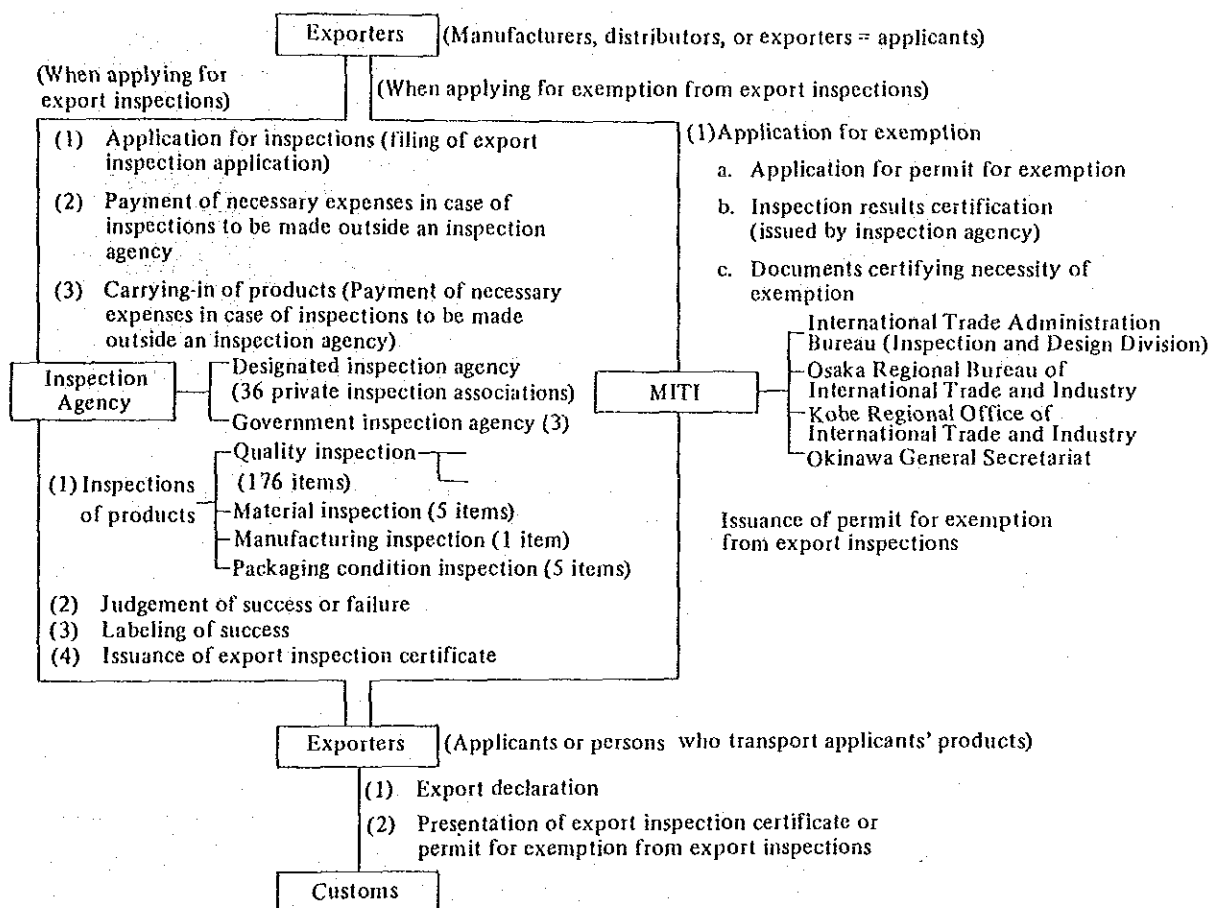
In addition to the general export inspections described above, certain designated products, which are exported to specific areas, sometimes must meet inspection standards more sophisticated than those for general destinations (Export Inspection Law Article 2-2), while those which have been successfully stood the export inspections are sometimes graded by setting much value on particular business practices (Article 8). Further, some other certain designated goods are allowed to carry a label of successful inspections by manufacturers themselves, not by compulsory inspections by government or designated inspection agencies (Article 10. The number of such goods totals 14: 2 machinery and metal products, 5 textile products, 6 agricultural and fishery products, and 1 medical instrument).

Meanwhile, the designated goods in general are allowed for export without export inspections in special cases, such as when those goods

are carried personally by persons going out of the country temporarily (Article 13).

Export inspections must naturally be conducted in a strict and proper manner. Since inspections of a great number of designated products are entrusted to private designated inspection agencies, however, the designated inspection agencies are required to satisfy specific qualifications to ensure independent and fair export inspections. In addition, business operations of the inspection agencies are under strict regulations, while directors, inspection personnels, etc., are saddled with the responsibility for their respective operations.

Figure V-2-3 Outline of the Export Inspection System



Source: JETRO, A History of Japan's Postwar Export Policy, 1983.

2-5-3 Designated Items

Goods subjected to the Export Inspection Law are designated by the Ordinance for Export Inspection Items based on Article 2 of the Law. The number of such designated items totals 176: 60 machinery and metal products, 51 sundries, 40 textiles, 23 agricultural and forestry products, and 2 medical instruments (Table V-2-2). The export ratio of these items to the nation's total exports accounted for some 50% at the time when the Export Inspection Law was put in force, but went down to the 30% and 20% level, respectively, during the 1960s and the 1970s. Presently the ratio is believed to stand at slightly over 8%.

Amendment or abolition of the Ordinance for Export Inspection Items are subjected to deliberation at the Export Inspection and Design Councils in accordance with Article 28 of the Law.

Table V-2-2 Inspection Agencies

Classification	No. of items	Government agency (Figures in parentheses denotes the no. of items)	Designated inspection agency (no. of items)
Machinery	60	Shipping Bureau, Transport Ministry (4)	6 (60)
Sundries	51		12 (51)
Textiles	40	MITI Textile Products Inspection Institute (6)	14 (33)*
Agricultural, forestry and fishery products	23	Agricultural and Forestry Products Inspection Institute (14)	3 (3)
Medical instrument	2		1 (2)

* Six of the 33 items of designated inspection agencies for textile products are identical with the six items subjected to inspections at the MITI Textile Products Inspection Institute.

Source: JETRO, A History of Japan's Postwar Export Policy - Japanese Experience, 1983.