6
Summary of Regional Infrastructure: Ports and Harbors

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In June 1987, the Fourth National Comprehensive Planning Conference of Japan (FNCPCJ) was held. In the conference, the concept of capital construction investment (domestic capital investment) was enlarged in the following three main aspects:

1. The formation of the public fixed capital: investment made by the government (including the state or local public organizations and so on); housing investment (exclusive of houses for sale) made by public bodies such as the real estate corporation; equipment investment made by public enterprises (like the postal service and the power industry)

2. Nongovernmental investment in public utilities including water supply and sewer facilities, roads, education, welfare services, further development of the city proper, basic agriculture, and so on

3. Investment in public utilities (utilities whose activities are restricted by the government) is the investment made in power and gas services, privately run railways, civil aviation, buses, taxis, water and land transportation, communication facilities, and so on

FNCPCJ has anticipated, on the premise of putting domestic needs first and maintaining moderate development, that the total sum of domestic capital investment in the scheduled time (1986–2000) is about 1,000 billion Japanese yen (Table 6.1). The amount of capital construction investment can be calculated according to Figure 6.1; thus the total investment in 1987 is 59 billion yen. In capital investment, the most important public investment is almost equal to the compensation made by the formation of public capital for land occupation. Figure 6.2 shows the percentage of public investment in various trades. As the result of the construction, the agreement on public investment has been worked out. It determines that the amount of public investment during the scheduled time (1991–2000) is about 430 billion yen. The figure is obtained by supposing that the average increase rate of public funds is 6.3 percent, which is in keeping with the whole target set in FNCPCJ. Meanwhile, in the 15-year program of public utilities, eight long-term projects (harbor, airport, coastline, housing, city parks, sewer, garbage disposal, special measures for traffic

Table 6.1 Domestic capital investment funds (Japanese yen)

	1985	Scope in the scheduled time (1986–2000)
Gross national product	293 billion	6,100 billion (4%)[a]
Domestic capital investment	45.5 billion (15.5%)	1,000 billion (16.4%)
Formation of public fixed investment	20.8 billion (7.1%)	
Nongovernmental investment	14.1 billion (4.8%)	
Investment in public utilities, etc.	10.5 billion (3.6%)	

a. Estimated increase.

Figure 6.1 Calculation of the amount of domestic capital investment, 1971–87 (billion yen in 1980 prices)

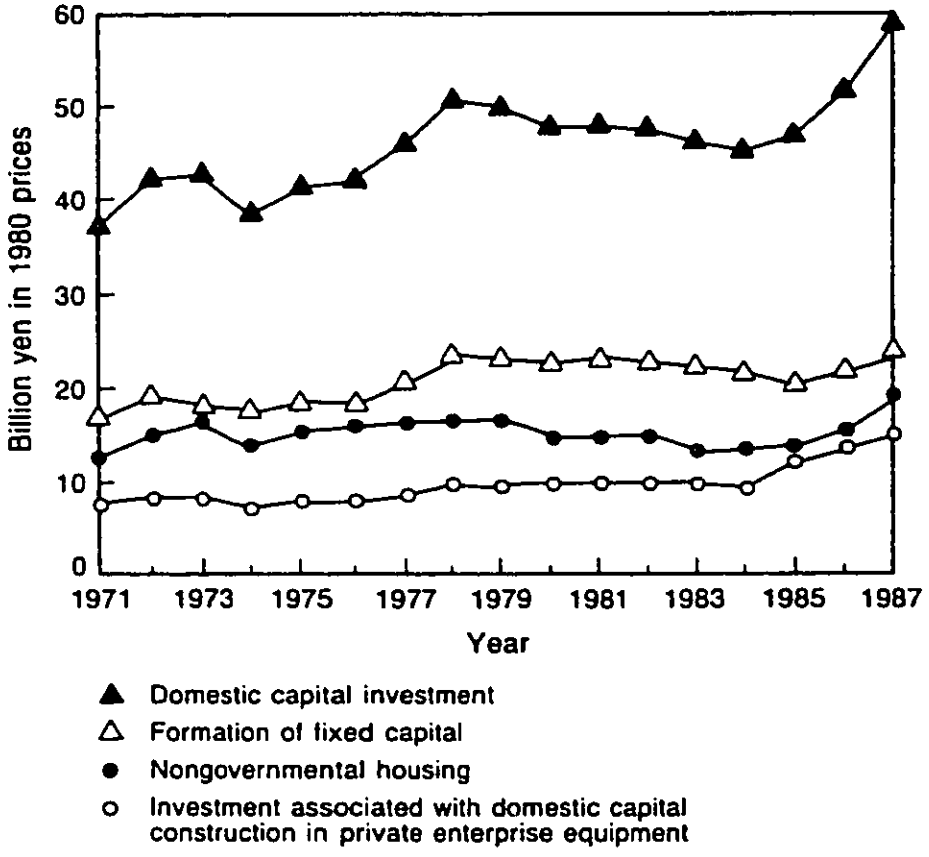
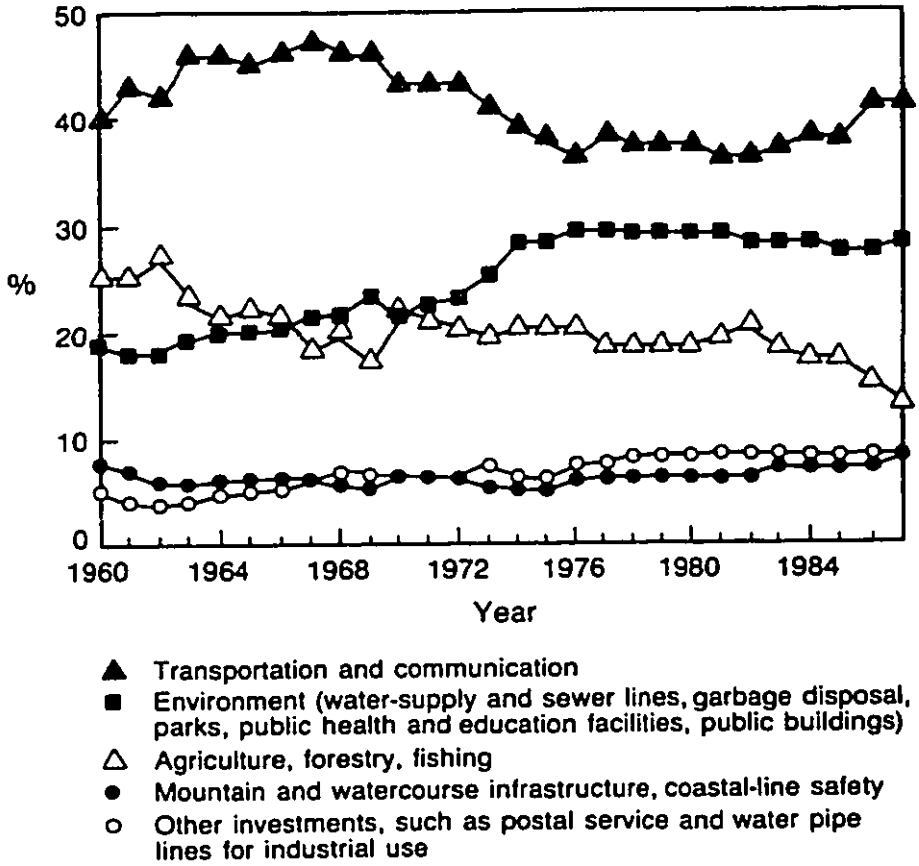


Figure 6.2 Percentage of public investment in various sectors, 1960–87



safety) are to be discussed and passed in the cabinet meeting in autumn 1991 as specific projects to be carried out in five years (1991–1995).

The amount of capital construction investment in 1987 was 50 billion yen. The efficiency per unit area of big cities is 4.6 times more than that of small towns, but the efficiency per unit resident of big cities is 1.3 times less than that of small towns (Table 6.2).

PORTS AND HARBORS IN JAPAN

Of the 1,091 ports and harbors in Japan, there are 143 ports and harbors (13 percent) along the coast of the Sea of Japan. But they can only handle up to 100 million tons of cargo a year, accounting for 3 percent of the 3,200 million tons of cargo, the total amount of the whole country. Their coastline, in all, is 7 percent of the total. There are 104 containerized deep-water ports equipped with elevated cranes in Japan, but only four of them are located along the coast

Table 6.2 Efficiency of capital construction investment

Amount of investment per unit area (per km²)	Whole country: 10,600 million yen
	Big cities: 460 million yen (Tokyo, Osaka, Nagoya)
	Small towns: 100 million yen (other counties)
	Around Sea of Japan: 100 million yen (Akita-ken-Shimane-ken)
Amount of investment per person	Whole country: 0.50 million yen
	Big cities: 0.42 million yen (Tokyo, Osaka, Nagoya)
	Small towns: 0.55 million yen
	Around Sea of Japan: 0.60 million yen

Table 6.3 Ports and harbors along the Sea of Japan vs. those of the whole country

	Whole country	Along Sea of Japan
No. of ports and harbors	1,099	143 (13.0%)
Volume of goods transported	3,166 million tons	96 million tons (3.0%)
Home trade	2,215 million tons	67 million tons (3.0%)
Foreign trade	950 million tons	29 million tons (3.0%)
Length of coastline	801 km	
No. of berths	7,175	484 (6.7%)
No. of deep-water ports (over 12 m deep)	439	13
No. of containerized ports	100	4 (3.0%)
Length of antistorm dikes	913 km	108 km (11.8%)

of the Sea of Japan. The Sea of Japan is calm in summer but stormy because of the northwest wind in winter, so it is necessary to build antistorm dikes. Although the length of the dikes amounts to only 11.8 percent of the whole, the investment in them is inefficient (Table 6.3).

The total volume of trade between Japan and the countries along the Sea of Japan was about 7.7 billion Japanese yen, making up 11.5 percent. The total volume of goods transported throughout the country in 1989 was 89 million tons. The volume transported through the Sea of Japan has just begun. However, new containerized shipping lines have started from the ports of Niigata, Toyama, Karazawa, Tsuruga, and others to South Korea and the coun-

tries of Southeast Asia. And the number of runs of freighters from and to Niigata increased rapidly in 1980, which was 94 percent more than that of the previous year.

We turn now to the role that the ports and harbors along the Sea of Japan play. If the economic policy of Japan changes—for example, from the export of manufactured goods to the United States as its leading economy to domestic needs—the countries along the Sea of Japan will export resources and manufactured goods to Japan, thus strengthening its new economic structure. FNCPCJ put the emphasis on such big cities as Tokyo, Osaka, and Nagoya, which are 200 to 300 kilometers from the Sea of Japan; therefore, express traffic systems like expressways, new main lines of communication, and airways are gradually being rebuilt or improved. As a result, the role that the circle of the Sea of Japan plays has been consolidated as a great economic assembling place and a transfer center of foreign trade.

In January 1991, the construction of 19 big-sized ports over 12 meters deep was planned and is now in progress (Table 6.4). In 1990, some 89 passenger ships entered ports of six counties along the Sea of Japan (Akita–Shimane). As tourists keep coming by ship, 11 ports or harbors have planned to construct berths for passenger ships (Noshiro, Funakawai, Akita, Sakata, Niigata, Naoetsu, Fushikitoyama, Nanao, Karazawa, Tsuruga, and Sakai). Because Changbai Mountain, Lake Baikal, and other beautiful sightseeing spots are just by the side of the Sea of Japan, tourism should be developed.

THE ASIA–EURASIA AXIS

In FNCPCJ, the construction of seven radiating and four encircling new main lines of communication and expressways was decided in order to prevent Tokyo from becoming too large and too densely-populated. In this way, the capital's functions of production, research and development, higher education, circulation of commodities, supply of services, and so on can be fully developed. Around this area, there are such backbone cities as Sendai, Niigata, Kanazawa, and Nagoya, cities that have their own unique history and culture, as well as various concentrated urban functions; they can intensify their functions as centers and actively accept the urban functions radiated from Tokyo. To realize this, New Tokyo airport's function as international airline center should be extended in order to give great impetus to systematizing the network of international aviation, and at the same time the facilities of international airports should be augmented.

The Toetsu new main railway and Kantsu expressway have been laid down in Niigata, making it most suitable to be the base for business. Moreover, Niigata is situated in the Axis of Tokyo (Kantsu Expressway, Toetsu new main railway)—Niigata (business center, airport, ports and harbors)—the opposite shore of Sea of Japan (the Golden Delta)—Eurasia (Figure 6.3). Corresponding to the first domestic axis (Tokyo–Fukuoka) and the second domestic axis (Tokyo–Sapporo), Niigata should be regarded as the third.

Table 6.4 Facilities of Japan's principal ports and harbors

Port	Quay wall		Oceangoing ships		Cargo tonnage		Largest vessels		Smallest oceangoing vessels (GT)
	No. of berths	Total berth length (m)	No. of vessels	Total tonnage (1,000 GT)	Foreign trade (1,000 T)	Total tonnage (1,000 T)	GT	Draft (m)	
Wakkanai	13	4,327	20	57	21	2,069	19,000	9.2	1,000-3,000
Rumoi	11	2,006	57	165	140	1,849	9,649	7.0	100-500
Otaru	41	7,112	295	1,245	777	10,231	28,228	11.2	100-500
Hakodate	48	6,147	255	1,544	646	23,560	139,737	21.0	100-500
Aomori	40	5,203	77	928	297	20,625	58,906	12.6	500-1,000
Noshiro	3	445	31	124	58	185	7,007	7.13	1,000-3,000
Funakawa	4	557	6	15	9	709	4,123		500-1,000
Akita	38	3,848	276	2,169	1,883	4,733	41,139	11.5	100-500
Sakata	33	4,122	187	1,385	1,374	2,826	37,811	11.8	1,000-3,000
Niigata	55	7,937	532	9,042	8,802	20,960	104,123	15.99	100-500
Naoetsu	17	2,558	175	1,597	1,066	2,785	37,455	9.83	100-500
Fusiki-Toyama	52	6,915	743	5,737	5,418	10,756	145,575	19.51	100-500
Nanao	9	1,111	95	586	374	865	48,920	8.9	100-500
Kanazawa	19	2,235	98	460	238	2,680	19,364	7.7	500-1,000
Fukui	13	1,827	11	764	896	4,711	136,117	19.83	3,000-6,000
Tsuruga	20	3,109	197	1,259	894	6,721	26,087	7.79	100-500
Maizuru	32	4,561	320	1,632	942	5,300	35,978	12.0	100-500
Sakai	43	3,659	257	919	575	2,664	34,060		100-500
Kitakyusyu	296	32,154	3,635	39,343	29,931	90,075	143,304	12.0	100-500
Hakata	73	8,081	1,215	13,366	4,687	20,670	43,806	10.0	100

Source: Ports of Japan, Ministry of Transport, Harbor Bureau.

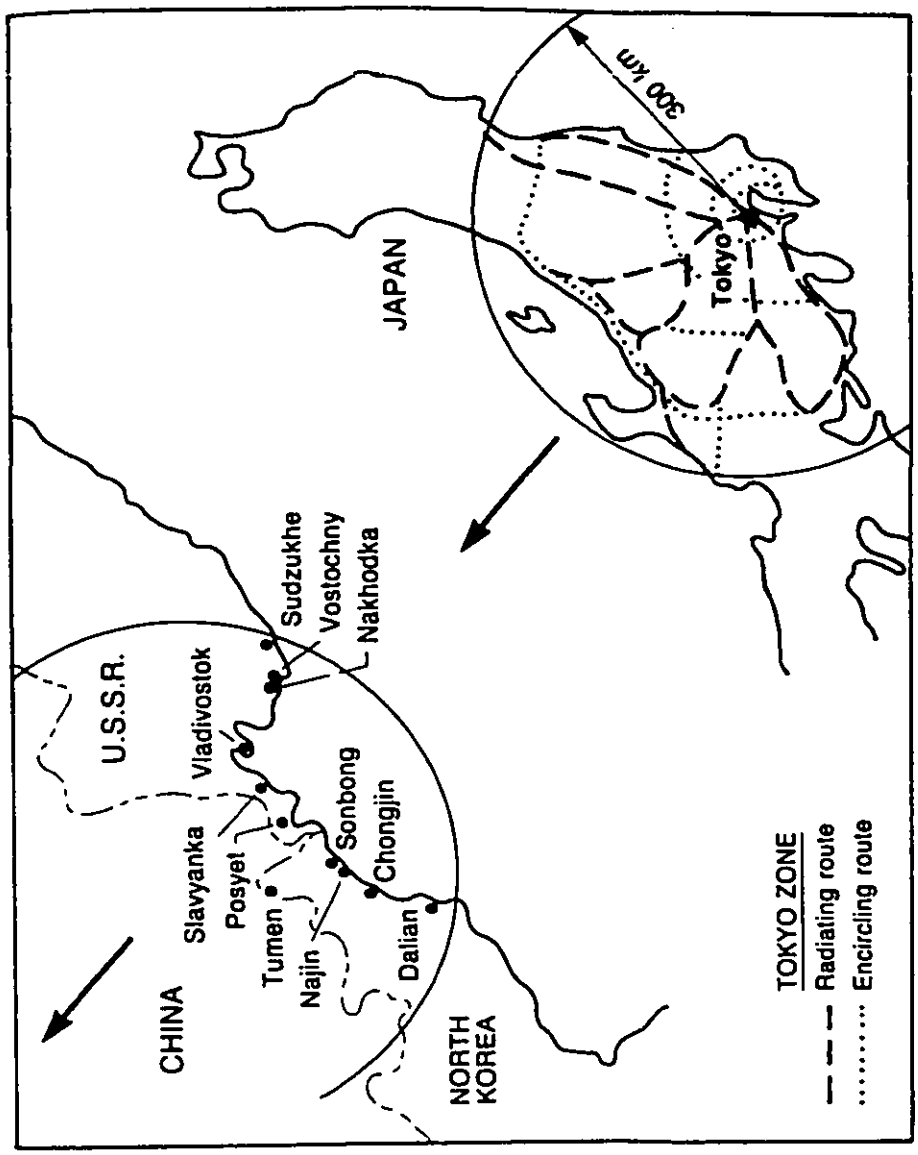


Figure 6.3 Asia–Eurasia axis concept

PORTS AND HARBORS OF THE GOLDEN DELTA

In the Golden Delta, situated in the axis as mentioned above, there are the ports of Chongjin, Najin, Nakhodka, Vostochny, and others, which are to be enlarged (Figure 6.4). All of these ports have a favorable situation, for they are connected with the railways behind them. If the networks of railways and expressways are systemized, the three countries around them will be closely linked. As it will take a long time to turn these ports into international ports, it is of great importance to analyze each of the ports and harbors in the Gold-

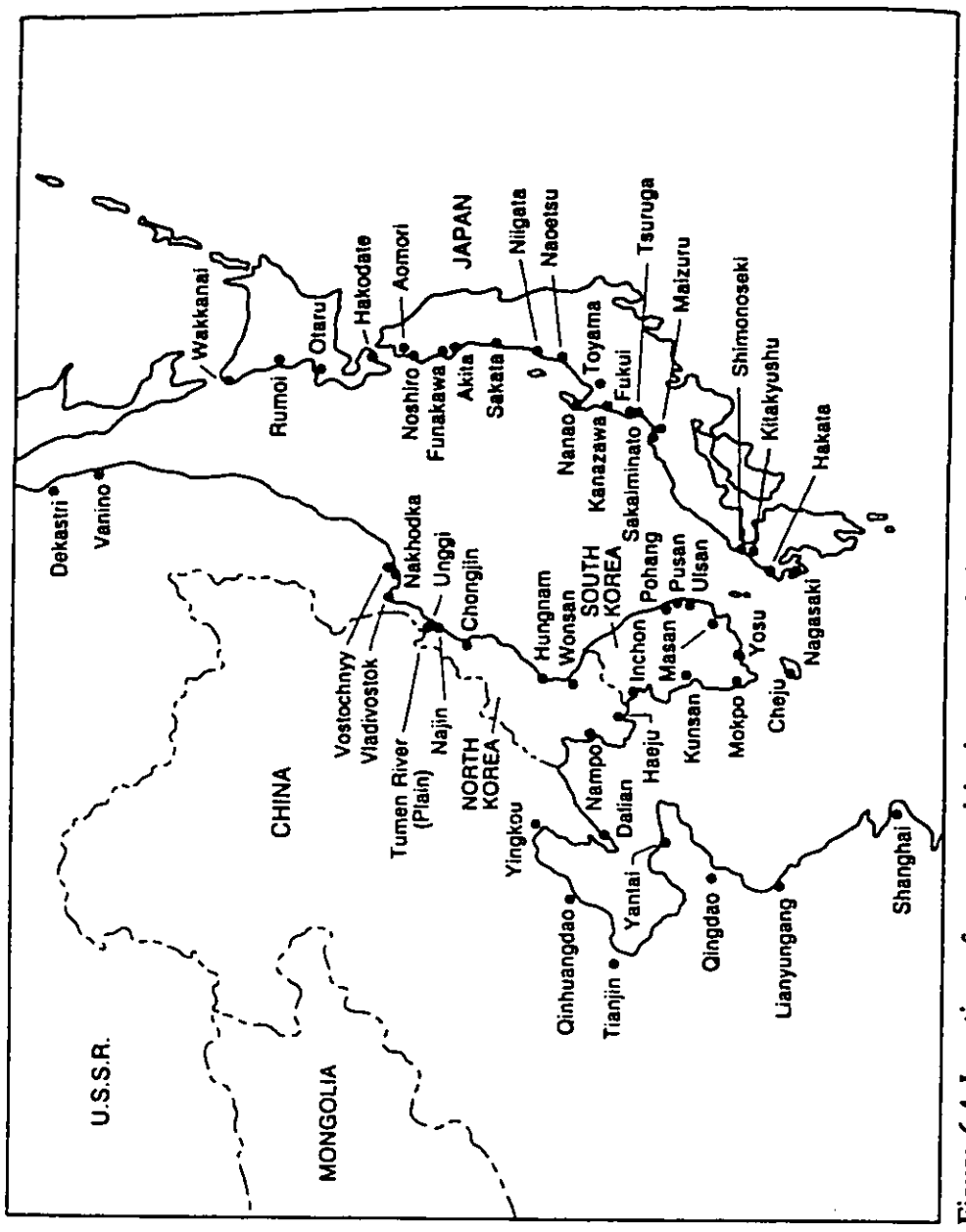


Figure 6.4 Location of ports and harbors around the Sea of Japan

en Delta. Table 6.5 and Table 6.6 outline the ports and harbors in the countries involved.

1. Chongjin Port: There are two harbors, the East and the West, handling up to 8–10 million tons of cargo a year and berthing 10,000-ton oceangoing ships. They are planned to be extended.

2. Najin Port: Najin has a handling capacity of 3 million tons of cargo a year and can berth 10,000-ton vessels.

3. Nakhodka Port: The volume of freight handled in this port is 800–900 tons a year, 20,000-ton freighters can lie at anchor there, and an extension is planned.

4. Vostochny Port: This port can handle up to 12 million tons of cargo a year. It can berth 150,000-ton vessels at its coal harbor and is to be extended.

5. Tumen River: If we compare the nautical chart of 1987 with that of 1930 (the Chang Gufeng Event was in 1938), we will find that there is nearly no change in the river's course and mouth. Such untapped rivers are rarely found to be so stable. Of foreign vessels sailing in Japan, the smallest are 100–500 gwt (mostly 300 gwt). Because there exists a problem of a Soviet railway in Tumen Port, the port should maintain its business by berthing vessels of 1,000–2,000 tons, develop Jingxin Village (40 km away from the river mouth), and develop gradually into a large port.

COOPERATION AROUND THE SEA OF JAPAN

To the Japanese islands, cooperation will bring new economic prosperity to the circle of the Sea of Japan if the centralized organizational structures can be perfected and the areas along the sea can be developed. To countries on the other side of the sea, as well, it is a great opportunity for economic development, for they can export natural resources and manufactured goods to Japan (whose main economy has been turning to domestic needs) and can get funds and technology from Japan. Because development of the circle of the Sea of Japan can meet the needs of both sides, it is essential to cooperate with one another.

As the circle of the Sea of Japan has just started its primary development, the fundamental facilities should be constructed and perfected. These facilities not only include the construction of roads, ports, airports, and so forth but also international information-exchange structures.

It is very important to improve the ports and harbors as the basis of exchange in order to develop the economy of the countries along the Sea of Japan. And to bring the ports and harbors into full play, the cargo-handling facilities should be high in efficiency; moreover, it is essential for each country to construct the ports and harbors at the same level. In planning the development, all the countries should exchange information in order to work out mutually beneficial plans. Only through mutual aid and cooperation can the decision to develop the circle of the Sea of Japan be made. The conditions of the ports and harbors in those countries on the opposite side of the Sea of Japan are listed in Table 6.5 and Table 6.6, but they are by no means complete owing to lack of information. I hope, therefore, that we will often exchange such information and coordinate with one another.

Table 6.5 Facilities of the principal ports and harbors

Port	Berth number	Total berth length (m)	Ore and bulk berth (max) Tonnage (dwt)	Ore and bulk berth (max) Depth (m)	Tanker berth (max) Tonnage (dwt)	Tanker berth (max) Depth (m)	Oceangoing ships No. of vessels	Oceangoing ships Total tonnage (10,000 dwt)	Cargo tonnage (10,000 tons) Foreign trade	Cargo tonnage (10,000 tons) Total tonnage	Remarks
ROK											
Inchon	42	6,846	50,00	13.0	50,000		2,626 (1987)		2,826 (1987)		Range of tide about 8.14 m; use locks
Kunsan		1,453	20,000	11.0							Range of tide 3.96–7.24 m
Mokpo		782	40,000	12.5 (draft)							Range of tide 4.6 m; anchorage 9 berths
Cheju	2 piers	827	7,852 (grt)	8.0							
Busan		8,858	50,000	12.5	10,000 (dolphin)	9.14	20,492 (1990)		10,921 (1990)	11,625 (1990)	New harbor area under construction
Pohang	24	4,134	150,000	14.5 (draft)			1,532 (1987)		2,661 (1987)		Pohang Steel Company (POSCO)
Ulsan		1,608	45,000	11.0	buoy mooring 100,000	21.33	3,072 (1987)		3,132 (1987)		Korea Oil Company dolphin berth
DPRK											
Nampo	9	2,000	(coal)	10.0							January–mid-February ice conditions
Haeju	2	800	10,000 (cement)	7.0							January–March freeze
Wonsan		274		7.9							Anchorage 12.8 m
Heungnam				7.9							Anchorage 9.1 m; breakwater contains berth
Chongjin	8	1,800	10,000	9.1						800–1,000	East and West Port extension plan
Najin	15	2,500	10,000							300	Extension plan
CHINA											
Dandong			1,000	10,000-ton berth *(under construction)*							Yalu River; navigation period *April–October*

connected to national railway system

Yingkou	5		3,000	27,000-ton berth (under construction)							For coal extension plan
Dalian	58	7,100	40,000 (grain)	9.0	125,000 (crude oil)	17.5	2,206 (1988)	3,750 (1988)	4,610 (1987)		Container facilities at Dayao Bay under construction
Qinhuangdao	25	1,360	50,000 (coal jetty)		50,000 (crude oil)		849 (1988)	1,858 (1988)	5,370 (1988)		
Tianjin	39	2,000	15,000				1,867 (1988)		2,109 (1988)		
Yantai	14		10,000	9.9							
Qingdao	55	3,000	30,000	12.0	50,000 (crude oil)		949 (1988)	1,719 (1988)			New project (50,000 t × 3; 20,000 t × 2); container facility 500 m
Lianyungang	9		35,000 (coal)								New harbor area under construction (25,000 t)
Shanghai	98		40,000 (coal)	10.0					13,000 (1987)		
USSR											
Nakhodka	21		25,000	11.6			connected to national railway system			800-900	Container facilities; largest vessel 64,912 dwt
Vostochnyy			150,000 (coal)	15.0	50,000					1,200	Container facilities; largest vessel 103,781 dwt
Vanino		3,000		11.5	(extension plan)					1,050	Container facilities; largest vessel 42,424 dwt
Dekastki			12,000	7.0							November-April ice condition
Lazarez			7,000	7.0							December-May ice condition
Alexandrovsk	4	anchorage 11-14 m (by lighter)		2.6			Sakhalin Island				
Shaketersk		anchorage 11-13 m (by lighter)		2.0							
Kholmsk			4,673	7.3							December-June ice condition
Polonaysk	14	anchorage 8-10 m (by lighter)		4.6							

Source: *Lloyd's Ports of the World* (1989).

Table 6.6 Container facilities of principal ports and harbors

Port	Container berth			Gantry crane	Terminal facilities		Container freight station		Container cargo tonnage	
	No.	Total length (m)	Depth (m)		Total area (ha)	Storage (TEU)	Total area (ha)	Covered area (m^2)	TEU	Tonnage (ton)
ROK										
Busan	4	1,262	12.5	30.5 t×6, 40.6 t×3	63.0	196,000		26,000	1,223,362	22,112,042
Inchon	3	635	14.0	35.0 t×1, 40.0 t×1	19.4	4,000	1.0	3,801		
		535	14.0	30.5 t×1, 40.6 t×1	17.6	2,600	0.5	1,980		
China										
Dalian		455	10.0	30.5 t×2	12.5	7,548	2.5	9,504	74,945	783,072
Qingdao	1			40.5 t×1	13.0	6,840	0.5	4,560	86,290	819,280
Shanghai	2	484	10.5	30.5 t×2	23.7	10,000	11.0	7,560	310,000	
	2	482	10.5	30.5 t×2	17.6	6,390	4.2	4,800		
Tianjin	4	1,300	12.0	40.5 t×8	57.5	22,100	60.0	28,000	214,000	2,373,600
USSR										
Nakhodka	1	195	9.75	30.5 t×2	2.9					
Vostochnyy	4		11.5	35.0 t×4	16.0		1.0	4,000		
Japan										
Hakata	1	240	12.0	40.0 t×2	5.0	813		2,000	61,594	1,873,432
Kitakyusyu	2	1,175	10.0	48.0 t×4	24.8	4,134		6,000	218,056	3,307,571
	1	300	10.0	37.5 t×1	6.1	1,000		3,390		
Niigata	1	185	10.0	40.0 t×1	2.0	1,900	0.3		4,224	48,418

Source: *Containerization International Yearbook* (1991), Japan Container Association.