

■ 論 文 ■

Future Northeast Asia Transport and Communications System

Peter J. Rimmer

(Emeritus Professor and Visiting Fellow,
Research School of Pacific and Asian Studies
The Australian National University)

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Key Words: Barrier, City-Regions, Common Transport Policy, Communications, Gateway, Global Hub and Spoke System, Korean Peninsula, Multi-Layered Hubs, Northeast Asia, Platforms, Urban Agglomerations

ABSTRACT

Korea has been at the forefront of efforts to enhance international cooperation in transport and communications within Northeast Asia. This effort is driven not only by the benefits that could accrue to the Korean Peninsula but also to all nations in the region. Mutual cooperation within Northeast Asia would reduce transport and communications costs and provide the basis for a regional transport and logistics network. Before progress can be made towards an integrated transport and communications system in Northeast Asia, however, there is a need to evaluate its prospects, outline a visionary plan, and detail a preferred strategy.

The strategy to develop the Korean Peninsula as the gateway for Northeast Asia should harmonize with the region's common transport (and communications) policy. The strategy adopted by South Korea is focused primarily on the development of an improved logistics infrastructure that would be extended to North Korea upon reunification. The seaport and airport developments in Korea will have to be supported by improved access to planned high-speed railways, expressways and freight distribution centers that, in turn, are to be integrated with new telecommunications and computer technologies. The benefits from these improvements will be lost unless existing government monopolies controlling seaport, airport, rail, road and expressway developments are commercialized to ensure that the price of transport reflects its actual cost. Technical harmonization between different modes should be promoted to facilitate efficient intermodal transport between the Korean Peninsula and the rest of Northeast Asia.

I. Introduction

In 1940 Japan sought to establish a modern, regional transport system in Northeast Asia. It proposed an integrated system comprised railways, ports and telecommunications networks covering China, Korea (Chosen), Manchuria (Manchukuo) and the Russian Far East as part of its Greater East Asian Co-Prosperty Sphere. Specifically, an orbital railway system was designed to run through Karafuto (Sakhalin), Russia, Manchukuo and Chosen using five tunnels to negotiate the intervening straits. Links to the orbital railway were planned from Harbin to Ulan-Ude on the Trans-Siberian Railway and from Shenyang to Tientsin (Tianjin) where the line bifurcated to Shanghai and to Hong Kong via Beijing. An integrated transport and communications system would have eventuated in Northeast Asia had the full expression of this plan been realized. This was never tested because of Japan's defeat in the Pacific War.

In 2001 the need for an integrated transport system in Northeast Asia is still apparent but is beyond the capacity of a single country to develop. Over the intervening sixty years since the Japanese plan little progress has been made because Northeast Asia was split ideologically into two rival camps until the mid-1980s—China, North Korea, Mongolia and the Soviet Union were on one side and Japan, Hong Kong, South Korea and Taiwan on the other. During the Cold War there was little prospect of developing an integrated transport and communications system because of different social systems and modes of development. Although the resumption of economic relations and numerous schemes for sub-regional transport cooperation during the 1990s have boosted trade within Northeast Asia these differences have continued to impede the development of an integrated transport and communications system. Korea remains divided.

This lack of progress raises a key issue: how could an integrated transport system for Northeast Asia be developed in the future? There is little point in harking back to the 1940 Japanese plan as that was based primarily on rail transport. Consideration now has to be given to maritime, air and road transport and telecommunications. Also the context has changed as maritime, air transport and telecommunications networks are part of global systems.

In mapping out a future transport system for Northeast Asia the first step is to establish the region's role within the global hub and spoke system in maritime, air and telecommunications networks (Section 2). The second step is to provide the regional transport framework by distilling the hubs into urban platforms and linking them together by transport and communications corridors (Section 3). Having established the infrastructure for an integrated transport system within

Northeast Asia the third step is to examine the prospects for regional interoperability (Section 4). The fourth step is to outline the basis of Northeast Asia cooperation and the need for a regional transport and communications authority and project financing (Section 5). Finally, the pivotal importance of the Korean Peninsula is considered in the conclusion (Section 6).

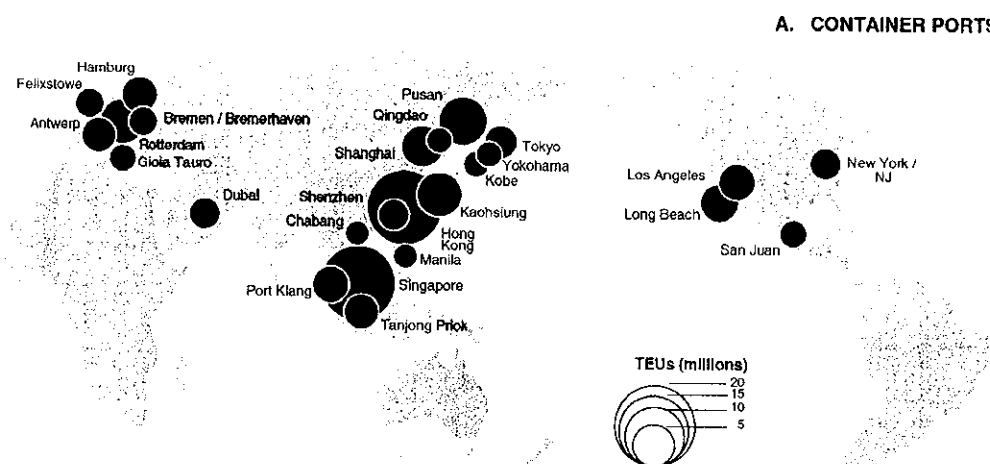
II. Global Hubs and Platforms

Since the mid-1980s Northeast Asia has become an integral part of the global hub and spoke transport and communications system. When the world is stripped to its bare transport and communications essentials it is clear that centers within the northern hemisphere have been linked together into a world-spanning 'Main Street' with a distinct east-west alignment integrating Asia, Europe and North America. From hubs at intersections on this 'Main Street' north-south offshoots run to terminals in southern hemisphere cul-de-sacs in Africa, Australasia and Central and South America. Accessibility and proximity to 'Main Street' matter within this emerging global hub and spoke system. Northeast Asia is in a fortunate position of being located on 'Main Street'. This global hub and spoke logistics system designed to meet the demands of global corporations for seamless services is reflected in container shipping, air passenger transport and telecommunications networks (Rimmer, 2001a). Attention here is focused on the hubs within these networks because they will be the pivots in any future Northeast Asia transport and communications system.

In 2000 nine of the world top-25 container hubs or load centers were located in Northeast Asia: Hong Kong, Pusan, Kaohsiung, Shanghai, Tokyo, Yokohama, Kobe, Shenzhen and Qingdao (Fig. 1). Mainline mother vessels on east-west routes operated by major container shipping alliances service these hubs with feeder vessels relaying cargo to and from minor ports. As the mother vessels have increased in size there has been a concentration of mainline activities in Europe and North America on fewer, bigger hubs offering 15-m depth-some in offshore locations-which has left the by-passed ports reliant on feeder services. This has not occurred in Northeast Asia as the number of container hubs has continued to grow, particularly in China's three port complexes focused on the Bohai Rim, Yangtse River Valley and Pearl River Valley (Rimmer, 2001b). During the Asian Crisis of 1997-98 the larger mainline operators extended their activities into Australasia's north-south trades at the expense of regional traders to compensate for the shortage of containers on the east-west route. This strategy has

avored hubs ports in Northeast Asia which are serviced by ever-expanding feeder networks (Robinson, 1997).

Looking ahead, Northeast Asia's dominance of container shipping is likely to continue over the next 30 years, particularly as it is expected to be at the center of the production of key manufacturing items (vehicles, semi-conductors, textiles and machinery). Long-term forecasts of container shipping by individual ports, however, are notoriously inaccurate. The proposed deepwater container hub port in Shanghai alone is expected to increase its throughput from 5.6 million TEUs in 2000 to 15 million TEUs in 2010 (Li, 2001). By then China will have a throughput of 60 million TEUs which will account for 12-15 per cent of expected world throughput of 391-496 million TEUs (Notteboom, 2001). Over the same period container throughput in South Korea will increase from 6.7 million TEUs to 20.2 million TEUs. As depths up to 18-m may be required to accommodate jumbo mother vessels capable of handling over 10,000 TEUs, the expansion of port activity in Northeast Asia may soon be over leading to an increasing concentration on fewer key hub ports.



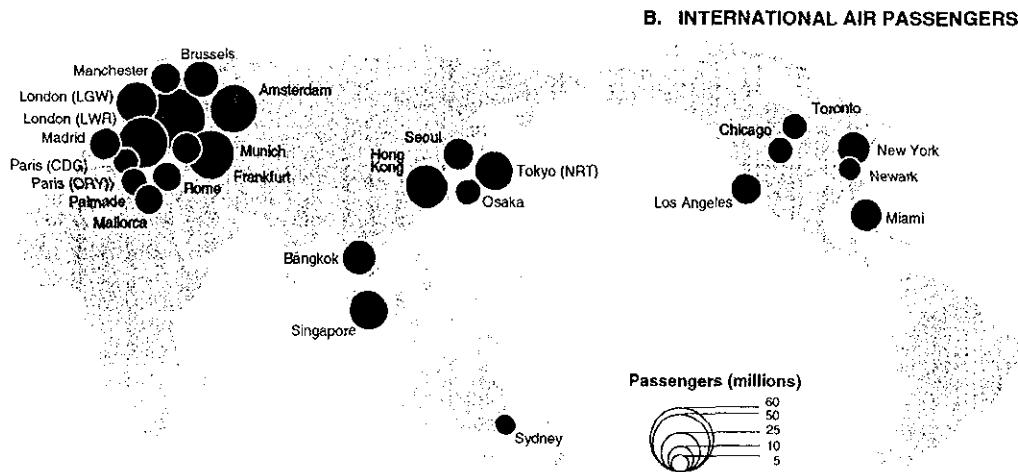
Source: Beddow, 2001.

Figure 1. Location of the World's Top-25 Container Ports, 2000

In airline networks-exhibiting similar logistical characteristics and dynamics of market forces to container shipping networks-there has been a concentration of activities on hub airports in Northeast Asia with the parallel development of global airline alliances (though unlike container shipping real mergers are precluded by bilateral regulations). However, the number of Northeast Asia airports in the 1999 Top-25 rankings based on international

passengers handled is less pronounced compared with container shipping (Fig. 2). Despite two decades of sustained growth in air traffic only four airports-Tokyo (Narita and Haneda combined), Seoul, Hong Kong and Osaka-are featured among the Top-25 Airports. This is largely a reflection of the nature of the data, which overplays the importance of airports in a fragmented Europe and underplays those located in the American Mid-West. All four airports in Northeast Asia have sought to develop as hubs handling passengers in transit not only for east-west routes between Europe and North America but for the north-south routes involving Australasia. Together with Taipei, they are also among the Top-25 cargo airports. However, the ranking is different as Hong Kong is the most important followed by Tokyo, Seoul, Taipei and Osaka.

Looking ahead, double-digit rates predicted before the Asian Crisis of 1997-98 will not be attained (ICAO, 1999; 2001). Even the amended forecasts for the period to 2014 are now unlikely following the expected downturn in passenger movements following the high-jacking of planes to demolish the World Trade Center in New York and damage the Pentagon in Washington on 11 September 2001. Nevertheless international passenger traffic involving Northeast Asia is still expected to grow at a faster rate than other parts of the world (IATA, 2000). Many airports in Northeast Asia have already built new or expanded facilities to maintain their superhub status: Tokyo (Narita and Haneda), Seoul (Incheon), Hong Kong (Chep Lap Kok) and Osaka (Kansai). There may be some shuffling in the rankings. Hong Kong may move ahead of Seoul despite the latter's lower landing charges and anticipated strong growth. Hong Kong's hub traffic is likely to be boosted by the growing frequency of its connections to other key global cities, especially as its home-based carrier is in one of the world's two major global alliances. Within the next ten years Beijing is expected to have joined the Top-25 rankings as China-Northeast Asia's potentially largest market-is likely to undergo a massive expansion in air travel (though prospects have been lowered slightly). It is also likely to figure more prominently in cargo rankings, particularly as Northeast Asia is expected to be the world's fastest growing region in freight traffic to 2010. Shanghai (Pudong) may follow Beijing into both the Top-25 passenger and cargo league tables. These developments on China are also likely to benefit Seoul because of the large number of cities within four hours of its new airport, particularly as urban centers in China have limited local airport structure. Also Taipei's possible elevation to the Top-25 airports will depend on opening direct flights with China-a move that will drastically cut traffic between Macau and Taiwan. However, Pusan and Kaohsiung are likely to remain as important secondary airports. Of course, the importance of hubs could be undermined by the fragmentation of the Northeast Asia-North America and Northeast Asia-Europe routes with plans for a larger number of airports in China.

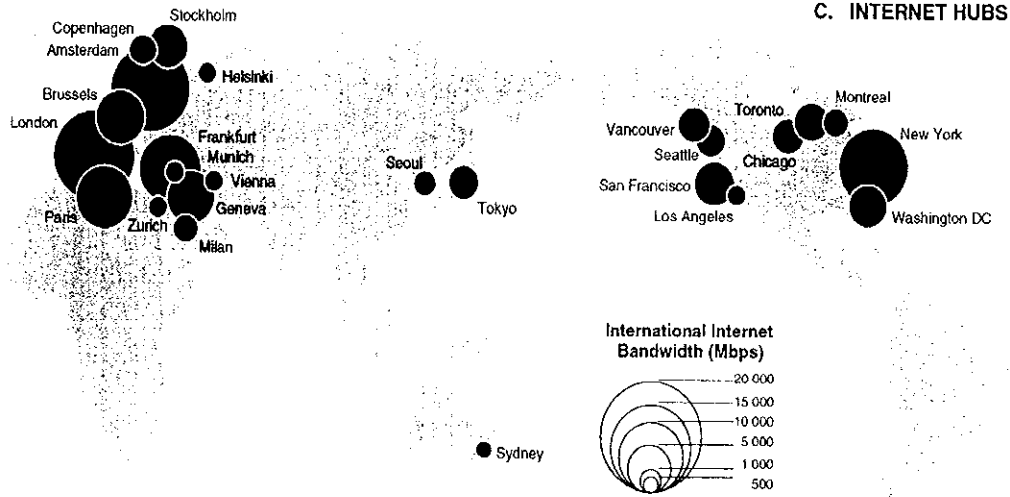


Source: IATA, 2000b.

Figure 2. Top-25 International Airports in Passenger Kilometers, 1999

An analysis of the importance of telecommunications hubs in Northeast Asia has always been fraught with difficulties because data has been restricted to movements between the largest country-pairs measured in Minutes of Telecommunications Traffic on public switched telephone networks. Only Hong Kong can be reliably assessed on this score. However, it is now possible to assess the relative importance of Internet hubs based on the estimated Internet bandwidth between Consolidated Metropolitan Statistical Areas or their equivalents in 1998 (Staple, 1999). The results shows the weak involvement of Northeast Asia as only two hubs-Tokyo (ranked 15th) and Seoul (19th)-are ranked among the Top-25 Internet hubs (Fig. 3). Conversely, there were thirteen Internet hubs in Europe and nine in North America. Much vaunted Asian-Pacific centers not ranked in the Top-25 include Hong Kong (29th position), Taipei (33rd), and Osaka (37th). This showing reflects that International Service Providers (ISPs) are less integrated within Northeast Asia. Despite improvements in regional connectivity, hubs still rely heavily on exchanging traffic with the West Coast of the United States, notably San Francisco and, to a lesser extent, Portland.

Looking ahead in telecommunications is fraught with difficulties because, unlike container shipping and air transport, there are no long-term statistical series to establish trends. Reasonably, one could expect Tokyo and Seoul to maintain their Internet hub rankings and for Hong Kong and Taipei to improve their relative positions, possibly with Beijing and Shanghai seeking entry to the Top-25 in the longer-term.



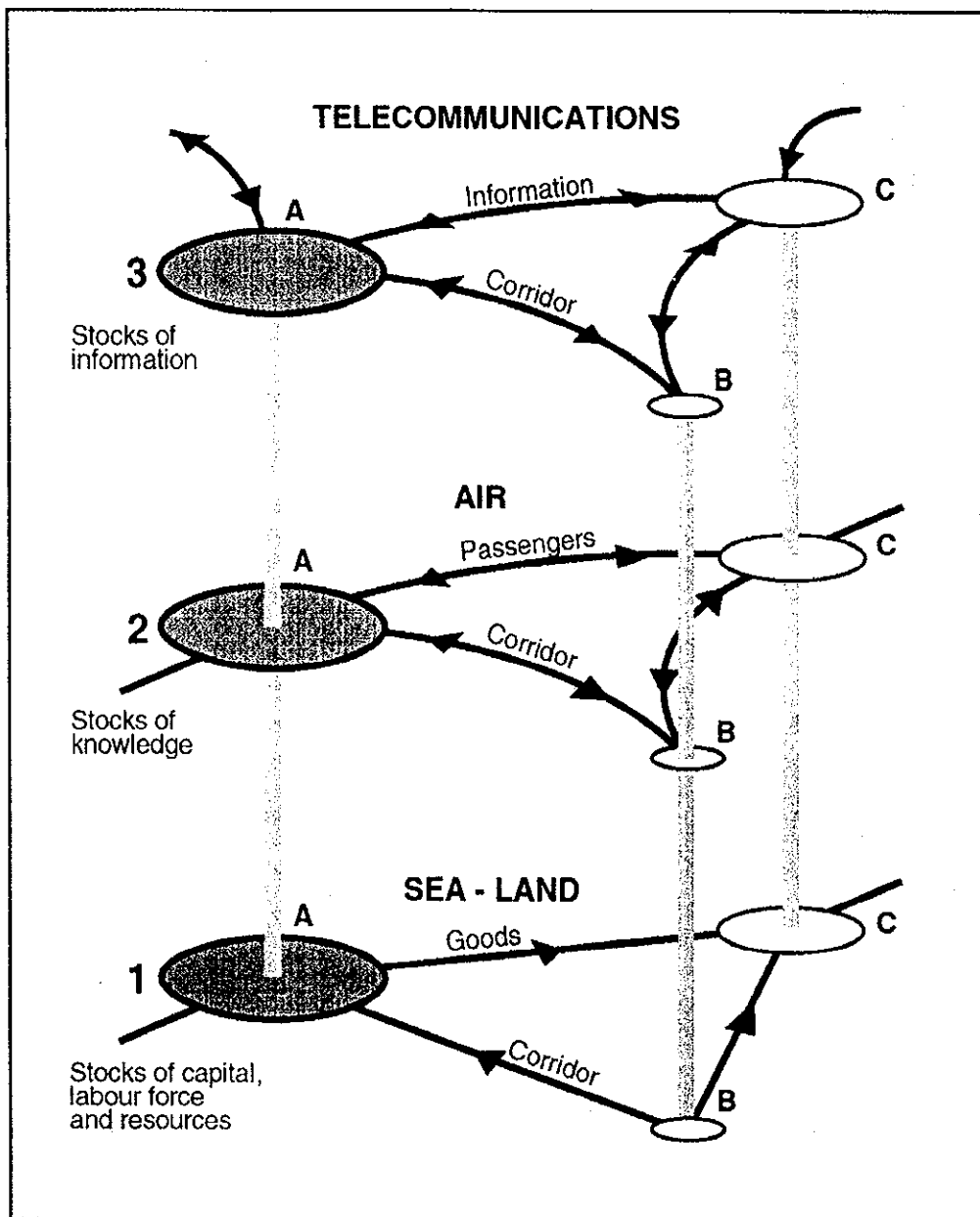
Source: Staple, 1999.

Figure 3. Top-25 Internet Hubs, 1998

These differences in hub representation are not entirely unexpected because the driving forces vary between container shipping, airline passengers and telecommunications. Container shipping responds to the scarcity of resources; airline activity to business, migrants and seasonal leisure; and telecommunications to marked cultural differences. Further, the value of information increases as the telecommunications network expands. However, having identified hubs in each of the three modes and their likely future trajectories there is a need to integrate this information to determine the nature of global logistical platforms in Northeast Asia - the focal areas in the region's future transport and communications system.

Platforms

This challenge of defining the logistical platforms led to the development of the concept of a multi-layered hub, which integrates sea-land, air passenger and telecommunications networks (Fig. 4).



Source: Rimmer, 1999c: p. 44.

Figure 4. The Multilayered Hub

In this representation A, B and C are three multi-layered hubs generating goods, passengers and information flows (i.e. equivalent to solids, liquids and gases). The links between hubs are the corridors accommodating movements of goods, people and information.¹

These platforms are defined basMed on the ranking of hubs in the Top-25 international goods, passenger and telecommunications throughput augmented by information on the location of headquarter firms in these three industries (Table 1). On this score only Tokyo has representation across all three modes. Of those with rankings in two modes Hong Kong and Osaka/Kobe are absent from telecommunications list and Seoul is not represented in container shipping (though it is the base for three of the Top-25 container shipping firms). Five centers - Pusan, Shanghai, Qingdao, Kaohsiung and Shenzhen-only appear in the container shipping rankings. The last grouping can be regarded as the true 'seaport cities' rather than fully fledged logistical platforms like Tokyo, Hong Kong, Osaka and Seoul. Taipei could augment this list of platforms, as like Seoul, it had representatives among the Top-25 container shipping and air transport companies. As China is not a member of IATA Beijing's importance in air transport is underplayed and on the basis of its emerging strength in telecommunications should be added as a sixth platform. Looking ahead, Shanghai is the most likely center to become a platform as its spreads its interests beyond the maritime sector.

¹ Each hub has stocks for each layer: capital, labor and resources in sea-land transport; face-to-face transport associated with air passenger transport (i.e. business travel); and routinized information linked to telecommunications. These distinctions are not clear-cut as besides routinized information telecommunications may also allow the transfer of knowledge products (e.g. downloading of software, music and E-games) and transactions (tele-transaction of investment). Telecommunications are critical for cargo and passenger booking systems and offer a substitute for passenger travel. Conversely, telecommunications are also a stimulator leading to higher levels of exchange activities and leading to more travel. Thus, hub synergies are possible between sea-land, air passenger and telecommunications levels. These synergies are critical because increasingly profits will not be derived from goods or passenger transport but from the use of telecommunications. Information has value. The value of airlines may not be from passengers but for the information it holds on flyers (e.g. hotels and car rental). Indeed, the new commercial currency is not 'traffic rights' but the 'information rights' possessed by the multi-layered hubs.

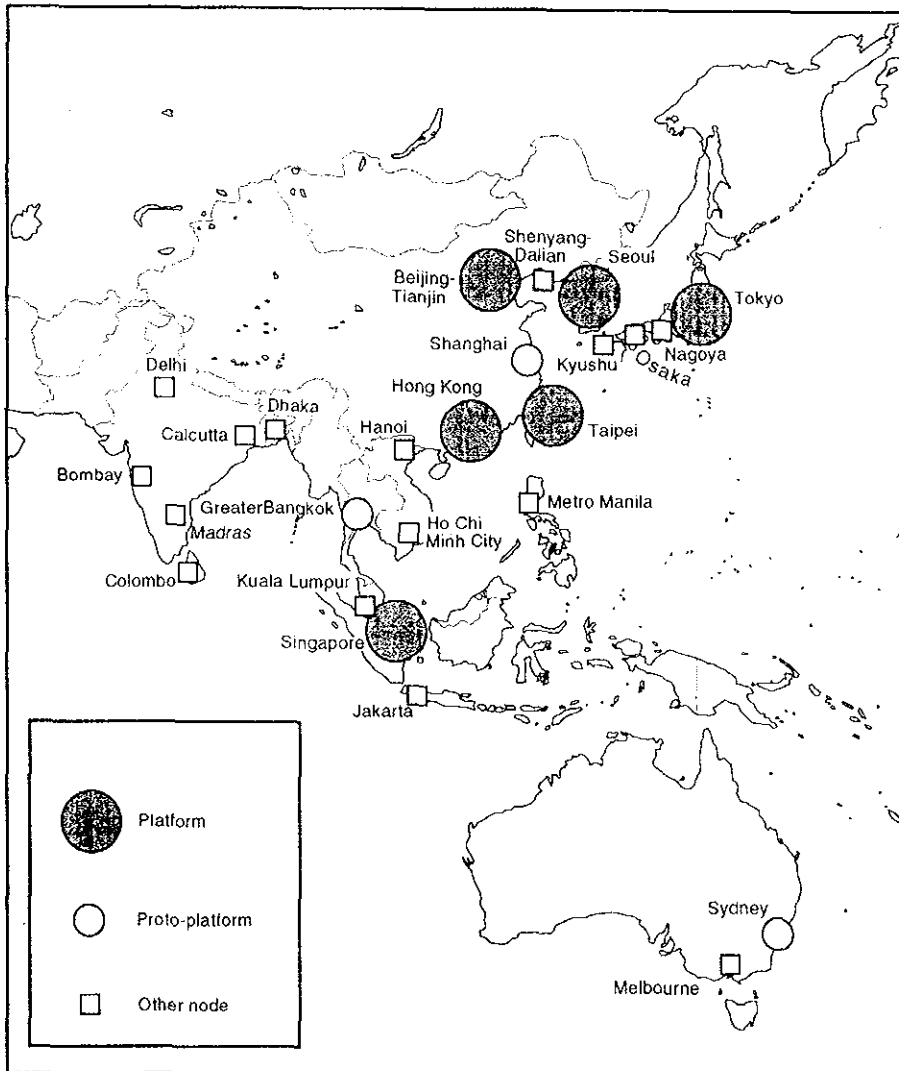
Table 1. Ranking of Hubs Based on Top-25 Global Rankings on Throughput and Company Head Office Representation

Hub	Top-25 Throughput			Top-25 Companies		
	Container Shipping 2000	Air passenger 1999	Telecom-munications 1998	Container Shipping 2000	Air passenger 1999	Telecom-munications 1998
Japan						
Tokyo	20	8	15	8,12,17	5	19
Yokohama	16	NR	NR	NR	NR	NR
Osaka/Kobe	25	21	NR	NR	NR	NR
Korea						
Seoul	NR	13	19	6,14	14	NR
Pusan	3	NR	NR	NR	NR	NR
China						
Beijing	NR	NR	NR	7	NR	10
Shanghai	6	NR	NR	15	NR	NR
Shenzhen	11	NR	NR	NR	NR	NR
Qingdao	24	NR	NR	NR	NR	NR
Hong Kong	1	7	NR	13	11	11
Taiwan						
Tapei	NR	NR	NR	2, 16	NR	NR
Kaohsiung	4	NR	NR	NR	NR	NR

Note: Number refers to rank in Top-25. NR = No ranking.

Source: Beddow, 2001; Fossey, 2000; IATA, 2000; and Staple, 1999.

The platforms offer prime regional bases in Northeast Asia for international firms to manage their global economic functions (Fig. 5). However, this process of selecting platforms is rather arbitrary and the next step is to gauge the economic size of these platforms.

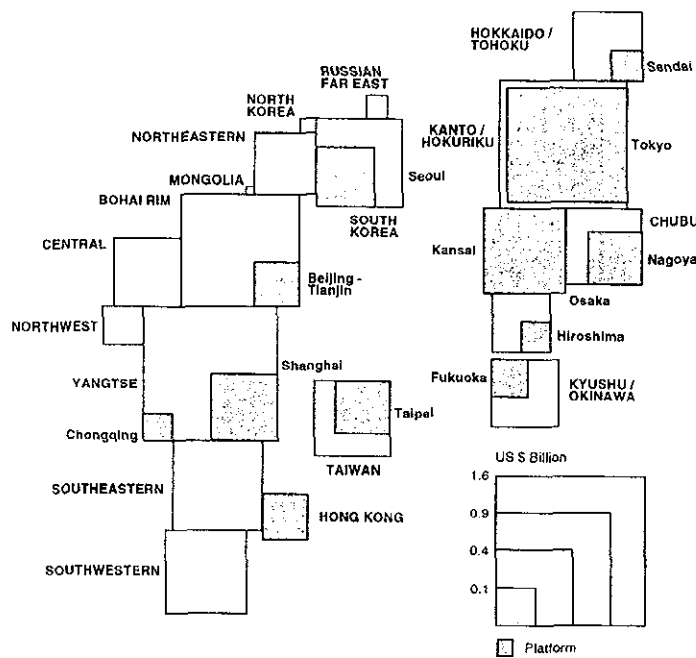


Source: Updated from Rimmer, 1997b.

Figure 5. Location of Platforms in the Asian Pacific Rim

The first step is to subdivide the largest countries (Fig. 6)-China and Japan -into macro-regions, which cover several city-regions (Rimmer, 1997a; 1998). The relative strength of these macro-regions is based on estimating their Gross Regional Domestic Product (GRDP) adjusted for Purchasing Power Parity (PPP). The next step is to calculate-where possible-the size of the economies of major urban platforms within these macro-regions. All six urban platforms derived from

the previous analysis are present. However, both Shanghai and Nagoya are much stronger economically than is suggested by their relative positions in the container shipping, air transport and telecommunications networks. Relative to South Korea's National Capital Region (NCR) (US\$278 billion), Tokyo's economy (US\$1,057 billions) is 3.8 times larger, Osaka (US\$487 billion) is 1.7 times larger and Shanghai (US\$347 billion) is 1.4 times larger. Conversely, the NCR's economy is almost 1.5 times larger than that of Nagoya (US\$191 billion), 1.5 times Taipei (US\$183 billion), 1.7 times Beijing (US\$161 billion) and almost double that of Hong Kong. As the NCR's economy is almost 2.6 times greater than Fukuoka, 4 times Chongqing, 4.3 times Hiroshima and 5.8 times Sendai they can be regarded as secondary platforms. When these findings are mapped the key elements of Northeast Asia's economic structure are revealed. The next task is to relate these global logistical platforms by transport and communications connections to other parts of Northeast Asia.



Source: World Bank, 2000; Japan, 2000, PRC 2000 and other statistical sources.

Figure 6. Macro-Regions and Platforms in Northeast Asia Based on Their Estimated Gross Domestic Product Adjusted for Purchasing Power Parity (PPP)

III. Regional Connections

Even if Shanghai and Nagoya are added to the list of platforms they comprise only eight of the 26 urban agglomerations with populations over two million. When these agglomerations in Northeast Asia are mapped the concentration of population along the Beijing-Seoul-Tokyo (Besoto) axis is evident (Fig. 7). Other features are the extension of the Besoto axis into Northeast China; the string of centers along the Yangtse Valley; and the apparent isolation of Hong Kong and Guangzhou.



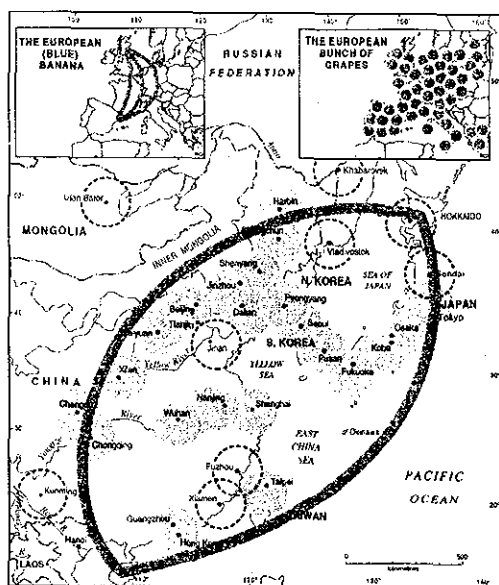
Source: Data from UN, 1994.

Figure 7. Estimated Population of Urban Agglomerations in Northeast Asia, 2000

Spatial Vision

In planning a transport and communications system to link these urban agglomerations it is useful to have an overall vision of their distribution. For example, spatial planners in Europe have developed two alternative models entitled the 'blue banana' and 'bunch of grapes' respectively (Fig. 8). The 'blue banana' model reflects a central corridor swinging from southeast England, to northern Italy in which goods, people and information flows have been concentrated since the inception of a Single European Market. As Paris, Berlin and Madrid were outside the alternative 'bunch of grapes' model was developed to capitalize on Europe city-regions which are key nodes in its rail and air infrastructure which serve 200-km hinterlands (Kunzmann and Wegener, 1991)

A combination of the 'blue banana' and 'bunch of grapes' models appears applicable in Northeast Asia (Rimmer, 1999a,b). A pod-like structure stretching from Sapporo to Hong Kong would encompass all twenty-two urban agglomerations with populations over two million. Rather than refer to this core economy as a 'peas-in-a-pod' structure it is given a regional appellation and referred to as a 'jack fruit' structure.



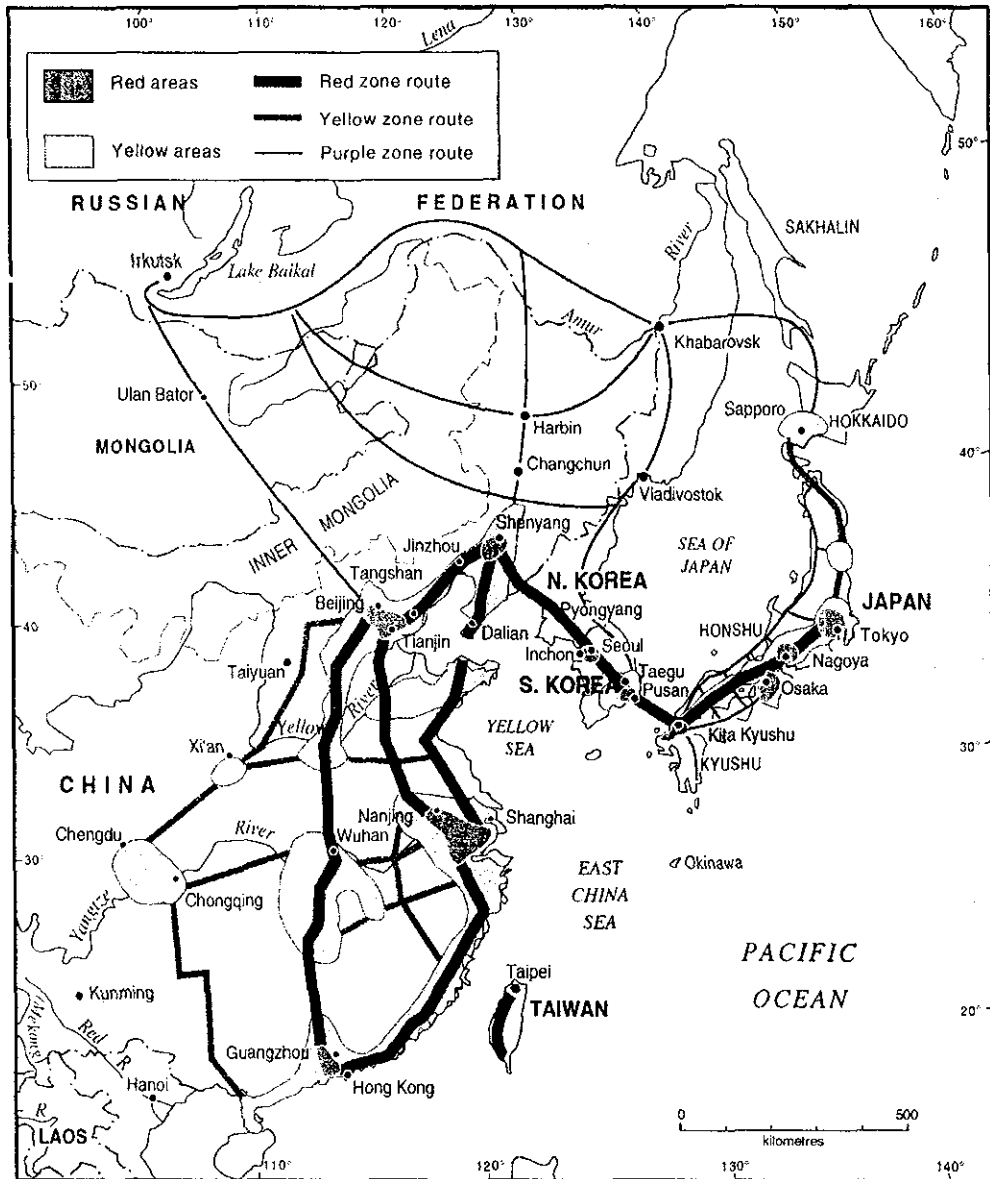
Source: Rimmer, 1999b; insets from Kunzmann, 1998.

Figure 8. Northeast Asia's 'Jack Fruit' Core Region with Insets Showing the Showing the European (blue) Banana and the 'Bunch of Grapes Metaphors'

Corridors

Having established a spatial vision for Northeast Asia the future transport and communications system can be outlined. The prime purpose in constructing pan-Northeast Asian infrastructure networks is that they enhance economic and social cohesion between the core (jackfruit area) and peripheral regions. As infrastructure development has been a virtual state preserve little attention has been given to networks between countries despite the fact that they increased overall transport costs to industry. Reviews of transport outside the urban core areas have highlighted overtaxed, dilapidated and ill-equipped railway systems; poorly maintained highways; inadequate port capacity; high cost of installing communications systems; and lack of intermodal coordination (Kim and Kim, 1996; Kim, 1998, 1999).

Infrastructural issues involved in overall network development are at the core of the transport question facing Northeast Asia. As there is no regional program in place all we can attempt is the broad-brush identification of potential transport networks as the basis of further discussion (Fig. 9). Extrapolating from the work of Chinese, Japanese and Korea spatial planners, the key city-regions (red areas) within the core 'jack fruit' area are linked by major transport corridors (red zone routes). Secondary transport corridors (yellow zone routes) also link second level city-regions (yellow areas) within the core. Within the peripheral area only few key corridors (purple zone routes) are sketched out to complete the transport network.

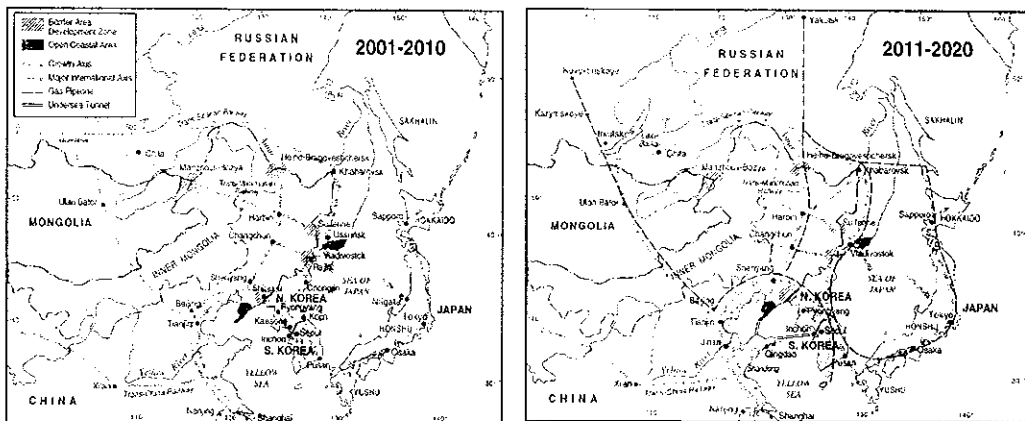


Source: extrapolated from Rimmer, 1997a: p. 455.

Figure 9. Northeast Asia's Urban Areas and Main Land Transport Corridors

A report by Kim Won Bae and Kim Young Bong (1996) has provided a more detailed analysis of routes in the peripheral area. While more emphasis should have been given to Eurasian connections, particularly to energy sources in Central Asia, it provides a very useful guide (see Rhee, 1995). As the map of the proposed transport infrastructure and industrial development in the original report for the period between 1996 and 2020 was difficult to digest the staged development has been broken down into two phases: 2001-2010 and 2011-2020 (Fig. 10). No attempt is made to cost these recommendations or the specific pan-Northeast Asia transport projects-high-speed railways, motorways and better port and airport facilities-to match the corridor framework.

The prime concern in the development of pan-Northeast Asian infrastructure networks is that they will allow inter-operative, cross-border transport services. They shift the concern from liberalization to harmonization as a clear objective in developing an integrated transport system.



Source: Kim and Kim, 1996; Rimmer, 1999b.

Figure 10. Location of Proposed Infrastructural Developments in Northeast Asia, (a) 2001-2010 (b) 2011-2020

IV. Integrated Transport System

The objective of a regional integrated transport system is to develop a framework for the optimal unification of the transport modes and transport markets. This would enable the efficient and cost-effective use of the transport system while simultaneously ensuring competition between transport service providers. Key issues relevant to policy-making in each of four modes-air, rail, road and sea-need to be analyzed to highlight prospects for industry deregulation and depth of cooperation required at a Northeast Asian level. These disparate transport issues are the rationale for the Northeast Asian network projects that are required to facilitate future cross-border developments. Although transport links are capable of eliminating barriers and prompting cross-border interaction, the sector has been marked by rigid state protectionism.

Rail development has been primarily a national matter. As the system is capable of handling International Standard Organization (ISO) containers it will become an identifiable Northeast Asian issue. Inevitably, any move towards a common regional transport policy for railways involving harmonization or liberalization will induce a clash between those favoring state protection (and substantial subsidies for capital investment and operating costs) and those promoting cross-national cooperation (and possibly privatization). Rail has already experienced a marked loss of market share to other modes, especially road, in Japan, South Korea and Taiwan-a trend likely to be intensified in Mainland China. If the railways are afforded a key integrative role in transcending national boundaries they could help in solidifying the regional market and facilitating cross-border cooperation. Rail's competitive advantage over road or sea on longer-distance routes could be used to generate greater competition in international freight movements. Visionaries see the emergence of the Seoul-Pusan and Beijing-Shanghai high-speed trains as elements of a Tokyo-Shanghai super-express based on inter-operability across borders. These cross-border arrangements also raise the possibility of a central rail authority for Northeast Asia and the coupling of regional harmonization with privatization but such propositions are unlikely to be realized in the short term due to the expected stiff opposition reflecting the strong national roots of railway development. Modernization and profitability may have to precede any attempt to introduce market conditions.

The road sector will begin to eclipse the railways in Northeast Asian transport. The massive shift towards road use for both passenger and freight in Japan, South Korea and Taiwan is likely to be duplicated in China with adverse consequences for the environment and generating safety concerns. The expansion

of China's expressway system reflects the cost and convenience to individuals and enterprises and the expanding influence of the local motor manufacturing industry. Over time road transport will be favored by a switch from weight or volume as the prime determinant of transport use towards flexibility and network reach. Many road issues are local and sub-regional in scope and beyond the span of a common regional transport policy unless there is a convergence of interest at all geographical scales from local to the international-as occurs with movements of ISO containers.

External competitive pressures from non-regional airlines have affected the airline industry within Northeast Asia but supportive governments have long resisted any major restructuring. Without full liberalization both state and privately owned airlines in the region have been slow to pare costs and form cross-border alliances or mergers because their prospects of surviving as independents have been virtually guaranteed. Even with the globalization of the world aviation industry it is still possible to isolate an Asia-Pacific-if not a Northeast Asian-dimension. Where privatization of national state airlines and admission of a second carrier have occurred dual national champions have been produced. These champions are still favored by host governments through informal arrangements (e.g. in central airport expansion). Consequently, it will be difficult to lay down the elements of an air liberalization package-relaxation of bilateral agreements, phasing-out of capacity agreements and free competition on domestic routes are steps towards minimizing market distortions. Another step will be to extend harmonization and liberalization to air space, landing rights, and traffic control and ground services. The critical task will be to create a competitive climate by replacing the existing bilateral regime established by the Chicago Convention with a multilateral one, which offers more carriers, reduced fares, new routes and alliances across national boundaries. The progressive removal of state aid to airlines will be a contentious political issue.

International deep-sea shipping companies with headquarters in Northeast Asia have already been affected by the broad trend towards liberalization. The lack of control by states over private shipping operators makes it difficult to impose any regional dimension on their activities through a common shipping policy because of increasing competitive pressures and foreign direct investment. The operators are jealous of their cosmopolitan traditions and will resist any attempts to control their activities, particularly as Northeast Asia is not a natural shipping market. Coastal cabotage, however, is an issue that could be addressed in a common regional transport policy, with particular reference to short-sea transport. Another topic is ship safety and a major contribution could be made through the region's participation in international organizations such as the

International Maritime Organization (IMO) which is engaged in setting global standards, including port-state control.

These structural elements have to be set within a wider context provided by the possibilities of intermodal cooperation within Northeast Asia that will alter or transcend distinctions between individual modes by promoting interconnections and inter-operability. Unlike the United States Northeast Asia is an archipelago not a single market. Even this overstates the case as there are, for example, many visible and invisible barriers to both people and goods movements in China (Tang and Chung, 2000). So far the transport industry has played an uneven role in unifying Northeast Asia. It has yet to emerge as a policy area in regional integrative process as cooperative approach among constituent states has yet to develop.

V. Regional Cooperation

A common transport policy for Northeast Asia has to be developed for the free circulation of services to foster (rather than constrain) regional economic and social progress. This need for long-distance corridors for the movements of goods, people and information is accentuated by the rise of the network firm and its demand for high-speed and high quality transport corridors.

In an ideal world, Northeast Asia would shrug off rigid state protectionism and deregulate international transport markets to permit a more rapid adjustment to changing demands. This would involve: opening air transport to competition from all airlines and abolishing national subsidies; opening road transport to competition between all regional transport companies and removing subsidies; and removing protection and subsidies from railways. There may be many stages in the process of getting between the present situation and the desired end-state of exposing transport modes to external competition.

Another policy goal would be to identify and fill missing links in the land transport system connecting roads, ports and railways. Physical discontinuities have to be avoided if Northeast Asia's industrial and spatial system is to be effectively supported. There is a need to address the missing networks at four other levels besides the physical infrastructure: logistics and information, institutional and organization setting, financial and funding arrangements and environmental and safety effects.

There is also a need to be conscious of technological and organizational innovations (not only in transport but also in telecommunications). Attention would have to be given to advanced transport infrastructures at a Northeast Asian

scale, including motorway and high-speed networks. The uncertainties impinging upon transport policy issues suggest scenario approaches may be useful in exploring alternative futures.

It is important not to treat transport policy-making in isolation as it encroaches on many other policy areas relating to industrial development, competition, regional development, energy, the environment, telecommunications, new technologies, foreign affairs and defense. Much emphasis here is placed on linking transport with a spatial planning policy based on the identification of city-regions but, as noted, peripheral areas beyond these core areas also need attention, particularly in Mongolia and the Russian Far East (see Fig. 9).

An absolute priority preliminary to any formulation of policy is the establishment of a statistical system to provide a true assessment of the transport situation. Good statistics are a prerequisite for good policy! Elementary data in Northeast Asia are often lacking on the weight of transport within the economy, the weights of different modes of transport, the financial position of the modes of transport and how the different modes function (i.e. quality of service). There is need for information on the turnover of transport companies and data on vehicle kilometers rather than ton-kilometers. Company turnover is also required for passenger companies though passenger kilometers can be retained. Statistics will not be the only issue as there will be strong pressure from groups seeking to weight transport in favor of one mode or another as has occurred in Europe through the rail lobby. There will need to be a strong Regional Transport Committee to withstand these pressures.

The mission of a representative Regional Transport Committee drawn from the Northeast Asia region (and adjacent areas) is to provide leadership in identifying and resolving transport issues. In pursuing this mission the Committee would need to develop and recommend a common regional transport policy and allied programs. The Committee's task is to achieve key transport objectives through considering the needs of regional users, carriers, industry and labor. Key agenda items would be: integrating the region's international transport system; fostering a sound financial basis for transport development; making the transport industry sound and competitive; ensuring that the regional transport system supports public safety; protecting the environment and quality of life; and advancing Northeast Asian transport technology. The Committee would also represent the region on international transport bodies (e.g. International Maritime Organization) and possibly contribute to regional security.

Project finance will be as crucial in implementing infrastructure developments as the task of overcoming the administrative, regulatory and technical barriers to harmonization (including the lack of a common legal framework). Progress will hinge on obtaining a private-public funding mix. It is

unlikely sources can fund expensive and administratively complex cross-border ventures. Even with assistance of multilateral organization only one-third of the required US\$7 billion is available for transport and communications, energy and environmental programs (Cho, 1998). Much will depend on the private sector's willingness to contribute the required additional US\$5 billion per year. A long-standing proposition is that a Northeast Asia Development Bank (NEADB) should be established to supplement existing sources of funds from other multilateral financing institutions, private and official sources. Once private investors recognize that their investments will be supported by basic infrastructure Northeast Asia will be better able to compete for funds with other capital-strapped areas and capitalize more on its position in the global hub and spoke system.

VI. Conclusion: The Korean Peninsula's Role

Having reviewed the impact of globalization and regionalization conclusions can be drawn about Korea's prospects and strategies to become a major transport and logistics platform in Northeast Asia. Before proceeding with this task it is important to define the study area. Should we consider Greater Seoul and Greater Pusan as separate transport and logistics platforms; or should we incorporate both city-regions and the intervening 420-km transport corridor into one entity and examine the Kyongbu logistical platform; or should we consider the entire Korean Peninsula as the appropriate area of study. Although the first two options have some merit, attention is focused on a unified Korean Peninsula because the intention is to look ahead towards 2030.

Prospects

The potential of a unified Korean Peninsula to play a pivotal role in the economic development of Northeast Asia has long been recognized. In the late Chosun Dynasty (1392-1910) the Peninsula provided a bridge from Japan to north China (Kim and Yoo, 1988: 394). During the colonial period (1910-1945) Japan sought to capitalize further on this connection by proposing an underground rail tunnel. These plans have been inactive since the defeat of Japan in the Pacific War, particularly as the Peninsula was divided into two antagonistic blocs after the Korean War (1950-1953). Little progress was achieved until the end of the Cold War in the late 1980s with South Korea's rapprochement with China and the Soviet Union (Rimmer, 1990). However, the full range of regional integration possibilities was never realized during the 1990s because of relatively closed

national markets and the continuing division of Korea (Moon and Chung, 1991). At the beginning of a new millennium the Peninsula's strategic geographical location is again being highlighted, particularly with the entry of China into the World Trade Organization in 2002.

The Korean Peninsula is still positioned to become a gateway to the dynamic Northeast Asian region. Indeed, it is now in the 'nutcracker' position between the world's second and third largest economies in terms of purchasing power parity (PPP)-China and Japan. Consequently, the Peninsula is well placed to benefit from the region's anticipated greater share of world trade, passenger travel demand and telecommunications traffic. Also it will gain from the expected continuing growth in inter-regional trade, passengers movements and information flows. As this accelerated growth in Northeast Asia has outstripped the capacity of metropolitan seaports and airports their capability to handle future traffic growth has been questioned. Prior to the Asian Crisis of 1997-98-when double-digit cargo, passenger and telecommunications growth were the norm-these concerns led to an expansion of container ports and development of new airports to meet the pent-up demand in Northeast Asia occasioned by the greater freedom of movement.

The investments in the Korean Peninsula were designed specifically to realize its potential to become a logistics platform for the movement of cargo, people and information in Northeast Asia in the 'era of globalization' (Jun, Hong and Park, 1997). The Peninsula's undoubted strengths are its strong domestic demand for transport and logistics services. This advantage is compounded by the opportunity for shippers and airline operators to save total travel time and costs in transshipping cargo and transiting passengers, especially to and from China and Japan. Conversely, the Peninsula's weaknesses are manifest in the way the accelerated growth in demand has congested rail, road, seaports and airport facilities. This problem is contributing to higher door-to-door costs (though these are considerably lower than in Japan and Taiwan).

As much has been done to fix some of the obvious weaknesses in the Korean Peninsula's transport and logistics systems there are opportunities to capitalize on its excellent access and proximity to 'Main Street' in the contemporary global hub and spoke system. In container shipping competitive services are being offered by the world's third largest port of Pusan to attract transshipments, particularly to and from Japan's local ports and northeast China. Protectionism, strong unions and high costs have affected the overall growth, and competitiveness of Japan's container terminal operations. Rapid growth of containers in China has outstripped the capabilities of its ports. Thus, Pusan stands to benefit from offering lower costs to Japanese shippers and receivers and higher efficiencies to their Chinese counterparts. A similar strategy has been employed in

air transport. On 29 March 2000 the US\$5 billion Incheon International Airport was opened to replace Kimpo, ranked thirteenth among the world's airport in passenger throughput in 2000. Incheon is designed to attract transit passengers, particularly from Japan and China. It was seen to have enormous passenger and cargo potential, as within 210 minutes flying time there are 40 cities with more than 1 million people each. Twenty-six of these cities are in China where airport infrastructure has not met demands. However, reunification of the Peninsula has to be accomplished before Korea can gain fully from these prospects and become the gateway to Northeast Asia.

Threats to the realization of the Korea Peninsula's potential to become a regional hub in both maritime and air services stem from the challenges of rival centers in Northeast Asia. In the container transshipment market Taiwan's Kaohsiung is Pusan's main competitor. New ports are being planned in Japan (Hibiki in Kita Kyushu) and Taiwan (Taipei) as distribution hubs. These new, privately operated ports, like the new, Korean port of Kwangyang operated by Hutchison Ports, Hyundai Merchant Marine and Hanjin Shipping, are designed to attract containers from China, which is increasingly seen as the key driver of the container trade. Inevitably, the future balance of direct port calls in China and the transshipment of its cargo will affect these developments. Pusan and, to a lesser extent, Kwangyang have been successful in the transshipment market. Their future progress will depend on the ability to entice and retain shipping lines seeking the most efficient and lowest cost hub by offering flexible operations, reliable services, low charges and a strong local cargo base. China's reliance on Korean ports is likely to be reduced with the increasing number of direct calls at its Northeast Asia ports, notably Shanghai, Ningbo, Qingdao, Tianjin and Dalian. However, transshipment using Korean ports will remain an element in the regional strategies of shipping lines because carriers can reduce the number of direct calls and minimize handling charges by combining direct and transshipment port facilities.

In air transport the new Incheon International Airport has to vie with leading airports such as Singapore Changi, Hong Kong International Airport and Tokyo Narita, which have high frequencies of connections to key global and local cities. Despite its spaciousness, aggressive marketing and undercutting of the fees of other Northeast Asian airports, the currently underutilized Incheon International Airport is struggling to wrest business from the leading regional airports and new airports at Osaka Kansai and Shanghai Pudong. Also the expected local origin and destination traffic at Incheon may have been overstated because increased air traffic during the 1990s was a response to pent-up demand rather than a reliable indicator of long-term trends. South Korea did not issue visas for international leisure travel until the late 1980s. These initial difficulties at Incheon have been

compounded by insufficiently developed ground transport arrangements because there is currently no rapid transit system. Other problems are the health of the national economy and airlines, and the continuation of a separate domestic airport. Resident airlines-Korean Air and Asiana-are also not in global alliances. As the resultant uncertainties generated by competitors in sea and air transport may result in a misallocation of resources Korean strategists need to be constantly informed of the effort of other regional centers to link their maritime, air and telecommunications hubs into regional logistic platforms.

Before the Korean Peninsula can be transformed into an efficient and effective regional platform for transport and logistics there has to be a resolution of several other land transport issues. Otherwise it cannot hope to become another Randstad (Rotterdam-Amsterdam-The Hague) or a Singapore (Jun, Hong and Park, 1997). However, with improved expressway and high-speed connections financed by public and private resources the Korean Peninsula could become a half-day travel zone. These developments would not only increase the competitiveness of Korean industries but would attract transnational corporations engaged in production and distribution to make the platform their regional base in Northeast Asia. Again the full realization of this strategy hinges on the high-speed railways running between North and South Korea. Only then can the plans for linking the Trans-Korean railway with Trans-Asian railways be implemented and the potential for a connection between Pusan and Rotterdam realized. When these projects are completed the notional plans for the undersea railway tunnels proposed originally by the Japanese and new ones suggested by the Chinese can then be assessed.

Strategies

As we have seen, the Korean Peninsula's efforts to become a regional platform have focused primarily on the development of logistics infrastructure. Already investments have been made in expanding the existing container ports of Pusan and Kwangyang to cater for the growth in short-sea trades within Northeast Asia. A new departure is the container terminal planned at Kaduckdo, 25-km west of Pusan, which like the new ports of Hibiki and Taipei will be partly constructed and operated by private interests. Provision is also being made for non-transshipment traffic within the region to be handled by roll-on roll-off vessels using local ports. New container berths have also been incorporated in the development of Incheon International Airport, which is specifically designed to be a main passenger and cargo superhub in Northeast Asia and focus of an integrated airport city. These seaport and airport developments are being supported by improved access to planned high-speed railways, expressways and freight

distribution centers that, in turn, are to be integrated with new telecommunications and computer technologies. Technical harmonization between different modes is being promoted to facilitate efficient intermodal transport within Northeast Asia.

These improvements in transport and logistic infrastructure in the Korean Peninsula will come to naught without reforms to existing government monopolies controlling seaport, airport, rail, road and expressway development. Commercialization of these monopolies would ensure that the price of transport reflected its actual cost. Reform of the legal and regulatory framework would also allow consideration of increased private participation in road, rail, seaport and airport projects.

Korea has been at the forefront of efforts to enhance international cooperation within Northeast Asia because of the benefits that could accrue not only to itself but also to all nations in the region. Mutual cooperation within Northeast Asia will not only reduce transport costs but also provide the basis for a regional transport and logistics network. It could be an important contribution to world peace and development.

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