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The Development of Asian Rail Corridors-

David Murray

Background

In recent years, considerable publicity has been given to the development of a regional growth hexagon embracing those parts of neighbouring countries which lie within the Mekong River basin in Thailand, Laos, Burma and Yunnan Province of China. In the late 1980's the then Prime Minister of Thailand, Chatichai Choonhavan, saw the opportunities when he vowed to turn the Indochina region "from a battle field to a market place". With the cessation of hostilities in Cambodia, the entry of Burma, Laos, Vietnam and Cambodia into the Association of South East Asian Nations. (Asean), and the development of more open market economies in countries previously tied to central planning, the opportunities for economic cooperation have blossomed. Under the sponsorship of the Asian Development Bank (ADB), in 1993 countries of the region formed the Greater Mekong subregion cooperation forum (which also includes Vietnam), with the aim of coordination economic growth in the subregion.

Although such prospects are exciting, the development of transport infrastructure, particularly rail, can be seen as just part of a much more ambitious scheme to link Southeast Asia and Indochina to other parts of Asia, and to Europe. Such rail nets should not be seen merely as ones only linking Pacific coast Asian nations with Europe, but networks that will also provide valuable intra-Asian links between South,

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1 David Murray, 'From Golden Triangle to Economic Hexagon-Recent Development Proposals for Regional Linkages in Mainland Southeast Aisa', *Occasinal Paper* No. 34, Indian Ocean Centre for Peace Studies, The University of Western Australia, Perth, 1993.

South West and Central Asia on the one hand, and the countries of East and Southeast Asia on the other.

Linking the countries of Asia with Europe by road and rail has been a cherished ambition of the United Nation's Economic and Social Commission for Asia and the Pacific (ESCAP) since the 1960s. At that time, a line was envisaged from Singapore to Istanbul via South Asia. But the Cold War and political conflict in the region put these plans on hold. Yet, over the past 15 years, rates of growth in gross domestic product and trade for most Asian countries have been at least double the global levels, and there has been a surge in demand for the transportation of goods and people. With lessened political tensions and countries increasingly adopting market economy principles, Asian government are reconsidering the ambitious rail network project. With encouragement from countries of the European Union.

In 1992, ESCAP launched an integrated project: "Asian land transport infrastructure development", one component of which is the Trans-Asian Railway project. Since then, series of feasibility studies have been conducted, and the Commission has acted as a coordinator in bringing together representatives of the countries involved, to reach agreement on standardised trans-national facilitation procedures. Three major rail corridors have been identified (Figure 1), with a set of criteria developed to define routes within each network:

3 Much of the detail on the three proposed corridors, plus the information presented in Figure 1 and Table 2 comes from the following ESCAP studies: Land transport linkages from Central Asia to sea ports in the south and east, United Nations, New York, 1995; Trans-Asian railway route requirements: Feasibility study on connecting rail networks of China, Kazakhstan, Mongolia, the Russian Federation and the Korean peninsula, United Nations, New York, 1996; Trans-Asian route requirements: Preliminary study on development of trans-Asian railway in the southern corridor of Asia-Europe routes, United Nations, New York, 1996; and Trans-Asian route requirements: Development of the trans-Asians railway in the Indo-China and Asean subregion, (three vols.), United Nations, New York, 1996.
1. Capital to capital links.
2. Links to important origins and destinations (industrial and agricultural centres).
3. Connections to major sea and river ports (integration of land and water transport).
4. Connections to major inland container terminals and depots (integration of road and rail).

Implementation involves the maximum use of existing infrastructure to minimise costs, building the necessary missing links, developing common technical and operational standards; improving border crossing for international traffic; and planning the construction of new links and facilities to cater for increased use.

Investigations have now reached the point that ESCAP's dream of thirty years is about to become a reality.

The proposed corridors

The proposed northern corridor has a major spine using the Russian Federation’s Trans-Siberian route, with branches eastwards and southwards leading to the major Pacific ports and industrial areas of eastern Russia, northern China, North and South Korea, and the Tumen River economic growth triangle in the border area of North Korea, China and the Russian Federation. The more northerly of these ports are already linked by feeder ships to Japan, but transport delays and slow speeds along the Trans-Siberian line in the past have resulted in no real time savings to Western Europe compared with conventional sea travel. For southern and central China, a direct route is proposed from the Shenzhen economic free zone near Hong Kong and from the port of Lianyungang, across central China and eastern Kazakstan. In the process of developing these routeways, land-locked Kazakstan and Mongolia would gain access to East Asia's ports. The rail distances range from 8,900 km to 11,600 km to the western border of Belarus with Poland, with a further 1,500 km to the main cities of Europe. If 1,000 km is added for sea transport from Japan's east coast ports, the total distance travelled by a container from Kobe (Japan), to Frankfurt (Germany) would be 11,400 km, as opposed to a 22,000 km voyage by sea via the Suez Canal.
For the southern corridor, again there is a single main routeway-from Iran's border with Turkey to the Bangladeshi port city of Chittagong. In addition, there are off-shoots to connect major Indian port cities and land-locked Nepal with the network, along with the island nation of Sri Lanka by way of a sea link to southern India. In May 1996, work commenced to fill the gaps in the line linking the Central Asian Republics and the northern corridor (the "Silk Route"), with the Iranian port of Bandar Abbas. The distance from Chittagong to the border of Turkey and Bulgaria is 9,600 km, and about one half that distance from the border between Iran and Pakistan. Eventually, it is planned to develop an additional north <-> south corridor running northwards from Bandar Abbas and just to the east of the Caspian Sea.

In the Southeast Asia/Indochina subregion, the main route under study is one originating at the eastern extremity of the island of Java in Indonesia, and termination at Kunming in the southern Chinese province of Yunnan. The cheapest choice is a 5,290 km track from Singapore, which makes a circuitous eastwards loop through Cambodia, and hugs the Vietnamese coast before striking inland. More direct alternatives via northern Thailand and eastern Burma, or northeastern Thailand and Laos (3,115 km to the Chinese border), are also under investigation. Connections to the northern corridor from Kunming and Hanoi to Shenzen are already in place, and links to the southern corridor westwards from Kunming and north-westwards from Bangkok are being assessed. In the more distant future, it is planned to develop an additional north <-> south corridor running northwards from Kunming, although with Chinese railway building processing rapidly, this line could well be developed before others.

Technical considerations

The Only missing links in the proposed northern corridor network is a 20 kilometre gap across the border between the two Koreas. All the railways concerned can accommodate the largest "super high cube" containers in terms of size and shape (loading and structure gauge), and weight. Moreover, no line is less than 76 per cent double-tracked, with a

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high percentage of most sections electrified (Table 1). There are only two different track gauges—a 1,435 mm "standard" gauge in the Korean peninsula and China (as in Europe), and the wider 1,520 mm gauge in the other countries. However, a change in track gauge is no longer the major impediment to traffic movement that it once was, with modern lifting machinery able to transfer containers quickly, and even the possibility of developing rail cars with gauge adjustable wheel sets. Table 1 gives details of two of the routes to Europe—a southerly one from the major Chinese port city of Lianyuugang and a more northerly pathway from the Tumen River growth area. In each case, it is the land locked countries—Kazakstan and Mongolia—that have the weakest infrastructure in the network, but both involve only one break in track gauge at the Chinese border, and another at the Belarus/Poland frontier.

The infrastructure of the main southern routeway is not as well developed and the network is incomplete, with a 545 km gap in Iran and 30 km of track yet to be built in Bangladesh. The missing link in the latter country will be plugged by 1998, and Iran intends to fill its gap by 2000. There are also at least two points at which there are changes in track gauge, but India is in the process of converting 7,000 km of track to broad gauge by 2000. Axle load and loading gauge limitations would restrict the network to lighter, smaller-sized containers.

The Southeast Asia/Indochina network needs to be considered separately, because most of its track is of narrow, 1,000 mm gauge (1,067 mm in Indonesia), with an emphasis on light track structures and axle loads, slow speeds and small vehicle structures. Only a small number of short sections are double-tracked, and there is little electrification. The main coastal route also has gaps of 48 km in Cambodia at the Thai border, and of 240 km between Phnom Penh and Ho Chi Minh City, which will cost an estimated US$275 million to construct. In addition, either a number of tunnels will need to be enlarged and bridges modified or special low-well wagons used, to enable the network to carry "super high cube" containers, and the run-down Cambodian line must be renovated. It is unlikely that missing links in Burma, either to China

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(US$750 million) or Thailand (US$675 million), will be filled in the near future, because of the enormous cost of building lines traversing rugged terrain, despite passing through areas rich in untapped natural resources. Similarly, although a 20 kilometre rail extension from the Thai border to Vientiane is currently under construction, giving land-locked Laos access to the sea, further northward extensions to link the Thai and Chinese rail nets (US$3,160 million), are unlikely to be made for some time. Nor is the 800 km gap in Sumatra likely to be filled soon. Detailed studies of possible routeways between either Bangladesh or northeast India and Burma have yet to be made.

Commercial considerations

Until now, container traffic between Europe and Asia has been in the hands of shipping companies, and apart from the Trans-Siberian line, little thought has been given to land bridge links, or the installation of special lifting equipment at break-of-gauge points. Yet, container flows on the East Asia-Europe route are forecasted to double between 1995 and 2005, indicating a vast potential for railways to increase their volumes of freight. To compete with long established and well organised shipping services, rail must deliver goods at least seven days more quickly, and at little or no extra cost. This in turn depends on the speed at which trains can travel, and the length of time taken up with inspections and paperwork at borders and in handling cargoes at point where track gauge changes occur or at sea/land interfaces. For the northern corridor, ESCAP studies indicate that rail transit times to European destinations from both the Tumen River growth area and the port of Lianyungang achieve a competitive target (Table 1). Also, it has been estimated that rail offers a small rate advantage, rising to as much as 30 per cent for inland destinations such as Warsaw. So, it would seem that for routes in the northern corridor, shipping goods by rail would not only be quicker, but marginally cheaper. For the southern corridor, the travel time from Chittagong to Frankfurt is 8-10 days shorter by rail than by boat, rising to 16-18 days for New Dehli, 23-30 days for Lahore and 30-34 days for Tehran.

It is not thought that the Southeast Asia/Indochina rail line can compete with shipping services to Europe. The main purpose of its spinal mainland network is seen as providing a south <-> north corridor from
Singapore to Vietnam for the movement of goods, with feeder routes to and from major ports. These will continue to be the land termini for trade with Europe, with southern Laotian goods feeding through Bangkok's out-port of Laem Chabang. The movement by rail of goods between Thailand and the out-ports of Medan in Sumatra and Kuala Lumpur, and the port of Penang, is seen to have cost and time advantages over sea travel, as would the use of the line from Bangkok to Phnom Penh. There is also the possibility of feeder transportation of maritime containers between Kunming and Haiphong, or even to Laem Chabang, if a line through Laos were to be built.

**Economic and political rivalry in the Southeast Asia-Indochina subregion**

Ironically, although the original intention was to link Southeast Asia with Europe by way of a line from Singapore through Malaysia, Southern/Central Thailand, Burma, South and South West Asia and Turkey, this route is likely to be the last to be developed, because of the major gaps in rail track between Thailand and Burma, and Burma and Bangladesh or northeast India.

Here railway developments form the basis for economic and political rivalry between countries. China has both economic and geopolitical interests in the region. It looks west to Burma to provide it with an outlet to the Indian Ocean, and has provided assistance in building a naval base as well as commercial container berths and bulk-cargo wharves in Rangoon. It has long been a supplier of military hardware to both Burma and Laos, and recently signed an agreement to boost military cooperation with the former, and installed a signals-intelligence facility in the latter. But China is also looking further west than Burma. In 1995 it approached India with a proposal to build a rail link from western Yunnan to Burma's rail terminus at Myitkyina, and on to the northeast Indian state of Assam. Although this would reduce the distance between the two Asian giants by 6,000 kilometres, India was cool to the idea, expressing concern over the strategic rail and road links

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that China was already forging with Burma. It is also mindful of exacerbating the insurgency problems it already has in its northeast, with easier access to Burma possibly strengthening trans-border dissident groups of common ethnic stock.

Chinese officials also make reference to the "Great Golden Peninsula", meaning Thailand, Laos and Burma, and through trade, plan to transfrom the economically backward south-western province of Yunnan into an economic power house. China has special interests in Thailand to its south, with favours in agricultural trade and cheap weaponry exchanged for political support from Thailand within the Asean Regional Forum. Thailand too, has interests in stronger links with China and also with South Asia. It sees itself as becoming the economic hub of Southeast Asia, with strong direct links to South Asia to the west, and Indochina and East Asia to the north and north-east. In early June 1997, it launched Bistec (Bangladesh, India, Sri Lanka and Thailand Economic Cooperation) as a triangle of economic cooperation surrounding the Bay of Bengal. Burma has been invited to join, and attended the group's first meeting as an observer.

Thus, the development of transport links serves special purpose for both China and Thailand. China currently has a programme of both modernising its existing railway lines and building new ones at the rate of 3,000 kilometres a year, with particular emphasis on opening up western China and linking it to the east. Already, 200 kilometres of track are being laid to connect Dali with the rail net west of Kunming, and routes are being surveyed further west to connect Burmese rail head at Myitkyina, and the border towns of Ruili and Wandingzhen which are further south and on a more direct route to Mandalay and Rangoon. Rail track is also striking south of the current terminus south of Kunming at Yuxi.

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7 Dinesh C Sharma, 'Plans to build China rail link fail to excite Indian officials', *Bangkok Post*, 23 June 1995, p.5.
Malaysia is aggressively trying to position itself economically in the Indochina region and to do so, it must leap-frog Thailand. An international rail link would solve some of its problems, by allowing goods to travel unimpeded through a "neutral" Thailand. Laos in particular, welcomes Malaysian investment as a counter-balance to that of its much larger neighbour, Thailand, which it fears will swamp it economically. Malaysia has also developed business interests in Cambodia, where 19 firms have invested a total of US$132 million. In December 1995, at the Fifth Asean Summit, regional leaders approved of a proposal sponsored by Malaysia and Singapore, for the group to consider forging a Singapore-Kunming rail link. Malaysia went even further in offering to pay up to 2 million ringgit (US$800,000) for a feasibility study on alternative routes. But money is becoming a sore point, with the Malaysian Transport Minister admitting to having difficulty in raising the funds at a gathering of regional rail officials in Kuala Lumpur in early December 1996, although he claimed that Japan, Britain, USA and Germany had shown "considerable interest" in the plan. Malaysia's determination to push ahead with the project also reflects its desire to demonstrate to Europeans what Asians can achieve as a group, seeing the rail link as a "symbol" of Asian togetherness.

Thailand is ambivalent about the Malaysian push. As part of his government's policy statement in December 1996, PM Chavalit Yongchaiyudh included a undertaking to "develop a rail link with neighbouring countries in order to make Thailand the transport hub in the Indochina and Asean sub-region". He confirmed his commitment in a meeting with Malaysian PM Mahathir Mohamad two months later. On the other hand, the kingdom fears that it will become a mere transit route for Malaysians to reach markets and raw materials in Indochina and southern China. Without a government-backed master plan on trade and investment in neighbouring countries, Thai businessmen have had to forge links independently and unassisted, and Thailand has lost its No 1

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11 Ibid.
12 Somchai Meesane, 'Chavalit evasive on bride plan', *Bangkok post*, 28 February 1997, p.3.
ranking for trade and investment in the Indochina region\textsuperscript{13}. To wrest back some of the initiative gained by Malaysia, in April 1997 the Thai Transport Minister put forward a counter-proposal to develop an Asean Highway Network to facilitate the flow of goods through the region. Although this received support from other Asean countries, significantly, Malaysia opposed Thailand's leadership of a joint working group to develop the plan further\textsuperscript{14}.

Despite its rhetoric, Thailand has been slow to respond to rail initiatives. Although it signed a memorandum of understanding with Yunnan Province in September 1994 to complete a rail link via Laos in seven years, it has been sluggish to proceed further, and it was not until early April 1997 that it signed a rail transport agreement with Laos to allow the carriage of passengers and goods along the 27 km rail way line to be built from the Thai border at Nong Khai to the Laotian capital, Vientiane. This line should be completed within the next two year, at a cost of US$40 million. The kingdom has also been tardy in reacting to proposals for a rail link to southern China via Chiang Rai. The building of the 304 km Den Chai-Chiang Rai-Chiang Sen line has been delayed for almost a decade, due to projected low investment returns. The plan was recently revived, and an engineering design study is due to be completed by the end of 1997 but, with the economic down turn, it is unlikely that the government will be able to find the US$400 million for construction\textsuperscript{15}.

Thus there are many imponderables in the sub-region, not the least of which is cost. In early December 1996, the Malaysian Minister for Transport announced that three routes had been short-listed: the circuitous route via the Vietnamese coast; the north-westerly route via Rangoon and northern Burma; and the most direct route via Northeast


\textsuperscript{15} 'New SRT boss plans rail link with China, Laos', \textit{Bangkok Post}, 7 September, 1994, p. 6; and Nussara Sawatsawang, 'Rail link needs funding to keep on proper track', \textit{Bangkok Post}, 4 April 1997, p. 11.
Thailand and Laos\textsuperscript{16}. Yet who will pay the vast cost, irrespective of the route chosen? A Mekong region investment adviser suggested that the region should concentrate on upgrading existing infrastructure rather than building new lines and a rail net is not a "top" priority for the Greater Mekong Subregion forum sponsored by the ADB, which is focussing on roads and related software. For war-torn countries such as Cambodia and Vietnam, the cost of building new track and renovation existing lines is substantial, and there could well place a higher priority on other development projects. Although land-locked Laos is very keen that a route pass through its country, its present lack of any railway lines plus the mountainous terrain, would mean high costs, and how would a country as poor as Laos is, pay? One intriguing but unlikely alternative is the granting of a concession for a land grant railroad. Likewise, Burma has requested a line through the eastern part of its nation, but who would foot the bill?

There is also a problem of security in eastern Burma, and in the Thai/Cambodian border area where land mines are present, and the recent internal political wranglings in Cambodia do not make that country attractive for rail or any other form of investment at the moment. The current economic crisis in Thailand and economic downturn in Malaysia have also dampened any enthusiasm for expensive projects.

So, it is likely that the political and economic ambitions of Malaysia and Thailand at least, will be postponed for some time, and rail links to southern China by any route will be delayed. For China it is a different matter, and it is ironic that the link to the southern network that could be the first to be completed might be the most difficult one, through mountainous terrain from western Yunnan to northern Burma.

**Likely trade flows**

Overall, it is acknowledged that rail can shift bulk goods over long distances more cheaply than road transport, and has less severe environmental and social impacts. But, what goods? Reports write of new

rail links in Southeast Asia in particular, as opening up vast areas of untapped natural resources\textsuperscript{17}. Undoubtedly, in previously inaccessible areas of Laos, Yunnan or eastern Burma, for example, rail would offer the opportunity to exploit timber and mineral resources as never before, and such developments would need to be controlled to properly manage the physical and social environments involved. However, in the longer term, it will probably be manufactured and bulky goods, and non-perishable agricultural products that will be attracted to rail. Already Yunnan has expressed interest in exporting heavy machinery manufactures via rail to Laem Chabang, thereby cutting land travel to 2,000 km, about one-half the distance to China Sea ports. Also, most of the goods now using the newly-opened link between Kunming and Hanoi are headed for third country destinations\textsuperscript{18}. Under the old Soviet Union administration, transport of goods by the Trans-Siberian Railway suffered from slow travel speeds, delays, outdated loading and unloading equipment, and primitive containerisation. It is for these reasons the Japanese shippers found it to be uncompetitive to send products to Europe by rail. With improvements in equipment and efficiency, those restrictions will no longer apply, as a trial shipment planned for early 1999 hopes to prove, with trains to average 48 kmp and take 28 days, as compared to 35 days by sea.\textsuperscript{19}

Improved rail nets will aid the flow of goods within Asia too. For example, trade between China and Vietnam nearly doubled between 1994 and 1995, with Chinese consumer goods pouring into Vietnam in exchange for coal and agricultural products. By 1996, Yunnan's trade with Burma (excluding smuggling), had reached US$362 million compared with only $85 for Laos, Thailand and Vietnam combined.\textsuperscript{20}

\begin{itemize}
\item \textsuperscript{17} See, for example, 'Asia's Own Railway', \textit{Asiaweek}, 23 February 1997, p. 24.
\item \textsuperscript{18} 'New SRT boss plans rail link with China, Laos', \textit{Bangkok Post}, 7 September 1997, p. 6.
\end{itemize}
And right now, cartons of Chinese apples sit at riverside wharves in Thailand's Chiang Rai Province, awaiting road transport to Bangkok, having come by ship down the Mekong River. With access to rail transport, such fruits could be marketed even further afield. India already recognises the importance of intra-Asian links. In mid-1995, it signed a trilateral memorandum of understanding with Iran and Turkmenistan, by which Indian goods now go by sea to Bandar Abbas for forwarding by road to the Turkmenistan border and thence by rail to other Central Asian Republics. With the completion of the missing links in the southern network, rail could well offer an economic alternative\(^\text{21}\).

With the Central Asian Republics, China, Russia and the countries of Indochina increasingly embracing market economy principles, the volume of trade between countries is set to grow rapidly. As it is, Asian trade is growing at an average of 13 per cent per year, compared with nine per cent for the world. And Asia will not only have goods to sell. With rising affluence, it will also provide an enormous consumer market.

Indirect economic considerations might come into play as well. For every tonne of goods moved one kilometre, freight rail emits one-third the nitrogen oxide and carbon monoxide, and one-tenth the organic compounds released by trucks. In crowded countries too, rail is attractive, with a two-track line capable of carrying as many people as a 16-lane highway. Rail can also save energy. In America it has been calculated that if five per cent of the nation's highway driving were transferred to journeys by electrified rail, one-sixth of the oil imported from the Middle East would be saved\(^\text{22}\). Whilst such considerations may be of little importance in the vast expanses of the Mongolian steppes, in eastern China they are already relevant, and are partly responsible for that country's present programme to up-grade its railways and India's recent decision to encourage the use of rail rather than road for the freight of goods\(^\text{23}\).

\(^{21}\) Dinesh C Sharma, 'Plans to build China rail link fail to excite Indian officials', *Bangkok Post*, 23 June 1995, p. 5.


But, it could be human rather than physical or infrastructural shortcomings that delay the development of rail networks. As yet, there is no legal framework for uninterrupted movement along any one of the three corridors, and a 1994 study of the route from Singapore to Vietnam identified impediments in the restrictions on the movement of cargo between ports and inland origins/destinations and on movement to a third country; limitations on the use of intermodal transport; and failure to make use of available technology and information to plan port and cargo-handling operations. However, piecemeal international rail agreements already exist, which could be harmonised and extended to cover present non-members. All northern corridor countries except the Republic of Korea are members of the Organisation for Railways Cooperation (OSShD), whilst most European countries and Iran are parties to a different convention on international movements of goods and people by rail. The nations of Central Asia, along with Turkey, Iran and Pakistan belong to a regional grouping that is currently forming bilateral and multilateral accords and developing a common system of customs procedures to facilitate transport across borders. In South Asia, India already has formal arrangements with both Pakistan and Bangladesh concerning rail traffic, and with Iran and Turkmenistan for the movement of goods by road and rail. In the Southeast Asia/Indochina sector, Vietnam and China have an agreement that allows for the movement of goods and passengers by rail between the two countries, and Malaysia and Thailand have a convention for the movement of passenger trains. Recently, these two nations also reached an agreement on border procedures for checking goods in transit to a third country.

Currently the European Union is preparing a convention on international customs transit procedures for the carriage of goods by rail, in consultation with (OSShD) and other organisations. Asian nations could well be willing to become parties to the convention once it is

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25 Ibid., p. 12.
finalised, as the agreements already entered into between Asian neighbours demonstrate a readiness to cooperate.

Conclusion.

After a wait of 35 years, the development of Trans-Asian rail nets linked to Europe is now set to become a reality. There is a need for closed cooperation between the railways and port authorities to ensure a reduction in dwell time of containers; countries required to make costly infrastructure investments must be cautioned against trying to recoup costs by high freight rates; poorer countries will need international financial assistance to build and renovate track; border crossing procedures must be streamlined and standardised, appropriate lifting equipment at break-in-gauge points installed, and container terminals built.

Also, it has yet to be established exactly what types of container-borne freight are most likely to be attracted by the overland route and, with larger container ships coming into used and with well established feeder services already in place, shipping companies could well lower freight rates to meet the challenge of rail. However, it is a reduction in transit time which is considered to be of major importance to customers, rather than a substantial drop in costs. Anyway, continued growth in volumes of international trade should mean that the two modes of transport could coexist.

For the northern routes, much of the infrastructure is already in place, common organisational procedures are in the process of being established, and the trial scheduled for early 1999 should turn ESCAP's dream into reality. For the southern route, rail could be vulnerable to shipping developments. At present, almost all container traffic involves feeding throught the port of Colombo. A rise in container volumes at some Indian ports could justify direct calls by mainline vessels, reducing sea transit times by at least 12 days, thereby eliminating any significant transit advantage for the rail service. However, even were this to occur, rail links between South, and South, and South-West and Central Asia could still justify development of the corridor, and for Pakistan and Iran, rail's time advantage to Europe would remain.
It is the development of the Southeast Asian/Indochinese corridor which is most problematic. Until the major gaps in the north <-> south spine are filled, international movement of goods will be limited, and the major new developments will be confined to transfer of goods to coastal ports from land-locked Yunnan and Laos. Only China has any strong commitment to railroad building and the funds to finance such an activity. Thus, it could be that the eventual link between Indochina and the southern corridor might bypass most of Southeast Asia altogether, with the construction of a line westwards from Yunnan to northern Burma, and from thence on to northeastern India.
### Table 1

**Asia to Europe. The Proposed Northern and Southern Rail Corridors**

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Distance of track (km)</th>
<th>Track gauge (mm)</th>
<th>Dual tracked (%)</th>
<th>Electric track (%)</th>
<th>Axle load (%)</th>
<th>Transit time (days)</th>
<th>Sea</th>
<th>Rail</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Northern Corridor</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Lianyungang</td>
<td>9,200</td>
<td>1,435</td>
<td>84</td>
<td>57</td>
<td>100</td>
<td>33</td>
<td>19-</td>
<td>22</td>
</tr>
<tr>
<td>China</td>
<td>4,150</td>
<td>1,435</td>
<td>89</td>
<td>29</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>2,035</td>
<td>1,520</td>
<td>52</td>
<td>52</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Russian Federation</td>
<td>2,405</td>
<td>1,520</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belarus</td>
<td>610</td>
<td>1,520</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>B. Tumen River</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>33</td>
<td></td>
<td>23-</td>
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<tr>
<td>China</td>
<td>1,180</td>
<td>1,435</td>
<td>72</td>
<td>72</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mongolia</td>
<td>1,110</td>
<td>1,520</td>
<td>0.5</td>
<td>0</td>
<td>100</td>
<td></td>
<td></td>
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<tr>
<td>Russian Federation</td>
<td>6,000</td>
<td>1,520</td>
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<td>100</td>
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<tr>
<td>Belarus</td>
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*Minimum desirable axle load standard set at 20 tonnes for the northern corridor, and 15 tonnes for the southern corridor.*