TRANS-ASIAN RAILWAY: MISSING LINKS

B S Sehrawat
Joint General Manager
Urban Engineering Division
RITES Ltd. (INDIA)

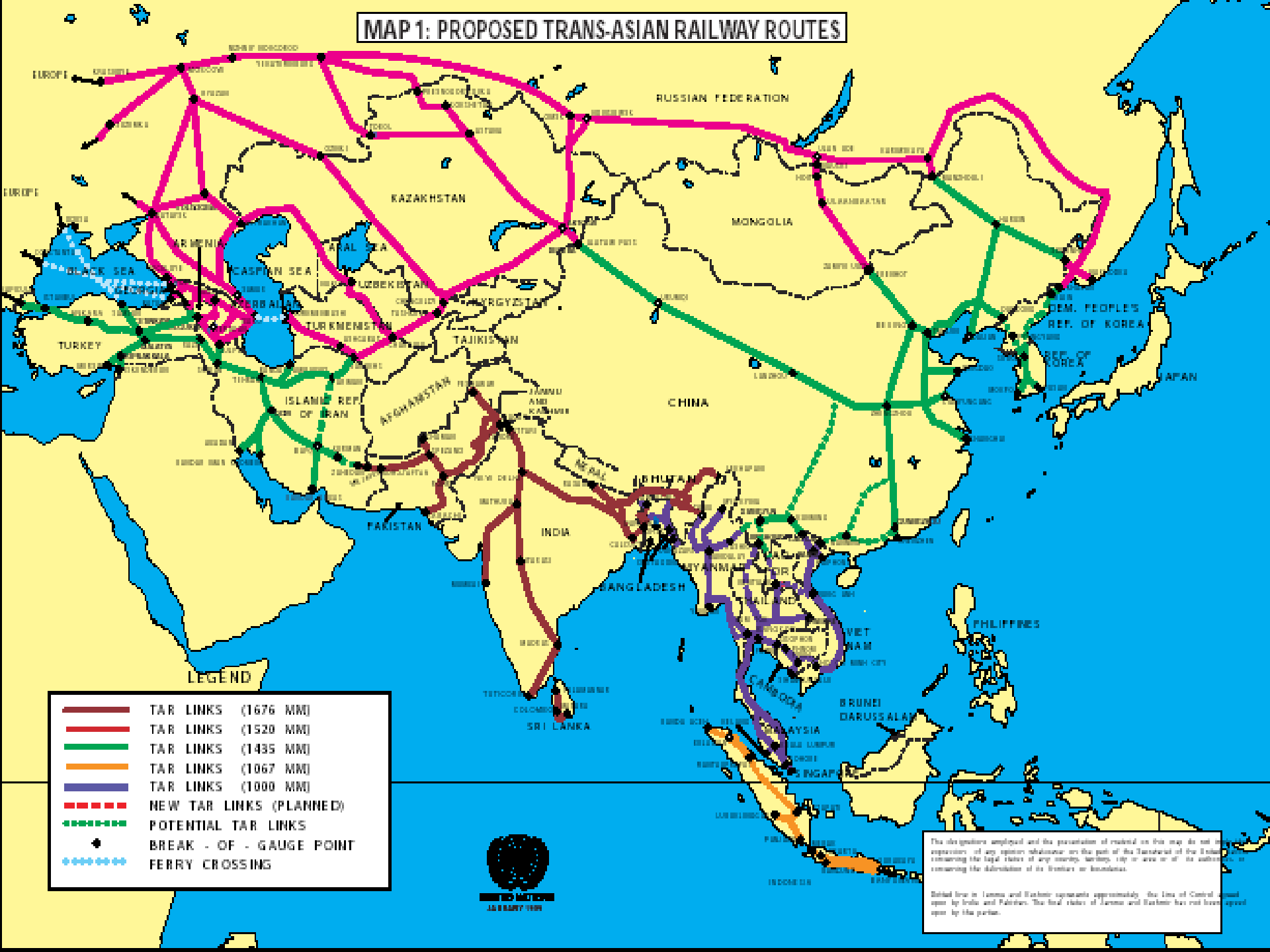
TRANS ASIAN RAILWAY-MISSING LINKS

BACKGROUND

- Three Asia-Europe rail land bridges were studied by Economic and Social Commission for Asia and the Pacific (ESCAP) as part of the Asian Land Transport Infrastructure Development (ALTID) project

- The southern corridor of the Trans-Asian Railway (TAR) is one of the three Asia-Europe rail land bridges.

MAP 1: PROPOSED TRANS-ASIAN RAILWAY ROUTES



The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Dotted line in Jammu and Kashmir represents approximately the Line of Control agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not been agreed upon by the parties.

TRANS ASIAN RAILWAY-MISSING LINKS

SOUTHERN CORRIDOR OF TRANS ASIAN RAILWAY

Objectives:

- To provide, ultimately, A continuous railway connection between Southeast Asia and Europe
- To provide rail connection between hinterland regions of the countries in the corridor and their nearest seaport
- To provide a conduit through which it is possible for trains to pass without interruption between Asia and Europe

TRANS ASIAN RAILWAY-MISSING LINKS

SOUTHERN CORRIDOR OF TRANS ASIAN RAILWAY

Participating Countries:

- Turkey
- Islamic Republic of Iran
- Pakistan
- India
- Nepal
- Sri Lanka
- Bangladesh
- Myanmar
- China
- Thailand

TRANS ASIAN RAILWAY-MISSING LINKS

SOUTHERN CORRIDOR OF THE TRANS ASIAN RAILWAY (TAR-S)

Criteria for Route Identification:

- Capital to capital link – for international traffic
- Connections to main industrial and agricultural centers as well as growth zones – links of important origin and destination points
- Connections to major sea and river port – integration of land and water transport
- Connection to major inland container terminals and depots

  – integration of rail and road network

TRANS ASIAN RAILWAY-MISSING LINKS

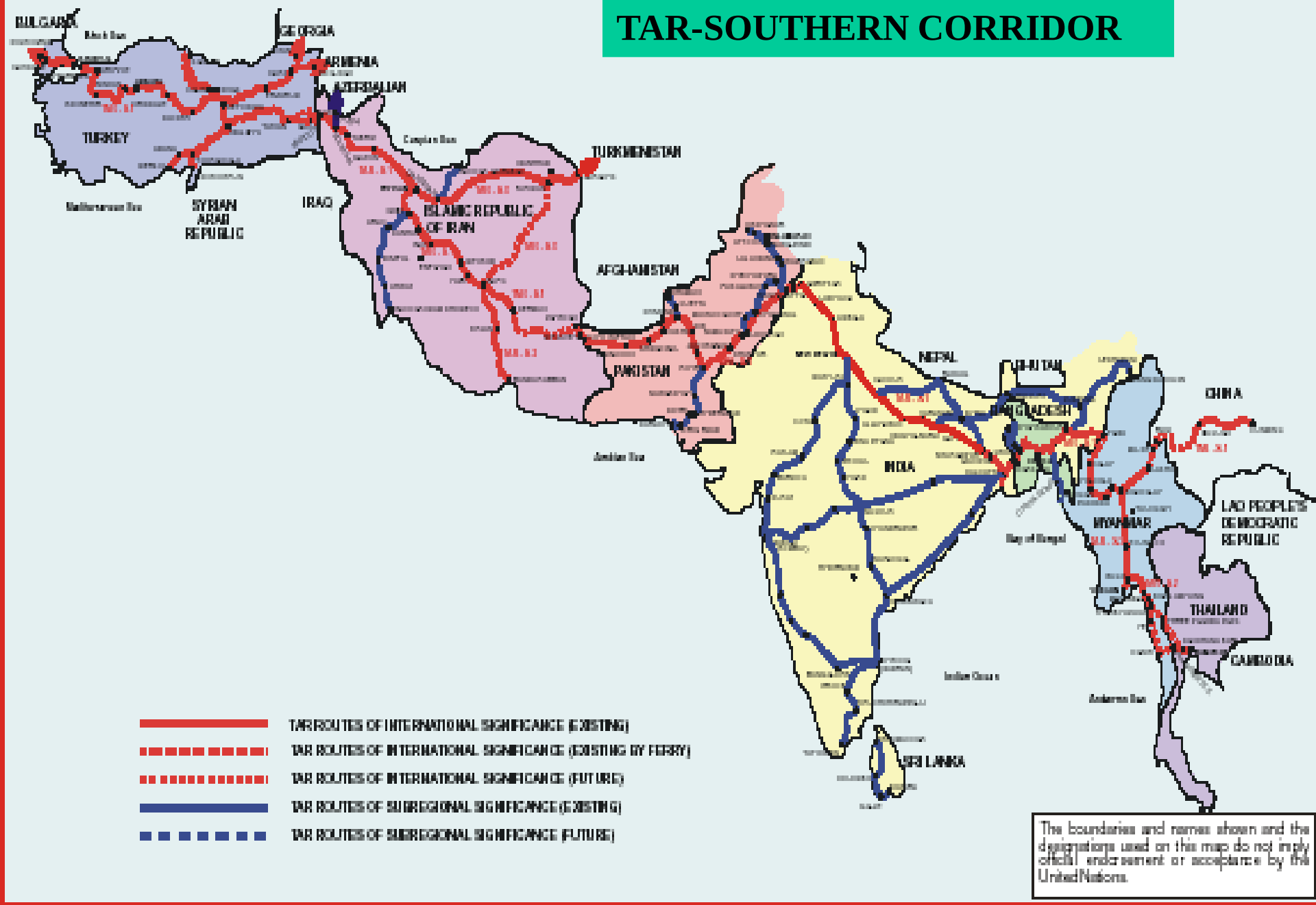
SOUTHERN CORRIDOR OF THE TRANS ASIAN RAILWAY (TAR-S)

Route Identification:

- Routes of international significance, which will facilitate uninterrupted transportation between between: Southeast Asia and Europe; Southwest China and Europe; Central Asia and Europe; and Central, South and Southeast Asia.

- Routes of sub regional significance, which will facilitate country to country , or hinterland to port transportation within the corridor

TAR-SOUTHERN CORRIDOR



TRANS ASIAN RAILWAY-MISSING LINKS

Route ProfileTAR-S1; Main international trunk route, Kunming (China) to Kapikule (Turkey)

Route component	Route length (Km)	% of total route length
Total route	*11,705*	*100.0*
Missing links	*1,820*	*15.6*
Existing rail links	*9,790*	*83.6*
Existing ferry links	*95*	*0.8*
Existing rail links	*9,790*	*100.0*
Metre gauge (1000 mm)	*1,130*	*11.5*
Standard gauge (1435 mm)	*4,560*	*46.6*
Broad gauge (1676 mm)	*4,100*	*41.9*
Non-electrified, single track	*6,170*	*63.0*
Electrified, single track	*1,040*	*10.6*
Non-electrified, multiple track	*640*	*6.6*
Electrified, multiple track	*1,940*	*19.8*
	Number of border crossings	Breaks of gauge (Number)
Total Route (existing)	7	0
Total Route (future)	7	5*
	Number of modal transfers	
Total Route (existing)	12	
*Total Route (future)**	0	

TRANS ASIAN RAILWAY-MISSING LINKS

Route ProfileTAR-S2; East-west trunk route between Nam Tok (Thailand) and Mandlay (Myanmar) as part of intercontinental route Bangkok to Kapikule

Route component	Route length (Km)	% of total route length
Total route - via Three Pagoda Pass	*1,078**	*100.0*
Missing links	*263*	*24.4*
Existing rail links	*811*	*75.2*
Ferry links	*4*	*0.4*
Total route - via Bongty, Dawei	*1,200**	*100.0*
Missing links	*150*	*12.5*
Existing rail links	*1,046*	*87.2*
Ferry links	*4*	*0.3*
	Number of border crossings	Breaks of gauge (Number)
Total Route (existing)	1	0
Total Route (future)	1	0
	Number of modal transfers	
Total Route (existing)	4	
Total Route (future)	0	

TRANS ASIAN RAILWAY-MISSING LINKS

Route ProfileTAR-S3; North-South trunk route between Sarakhs and Bandar Abbas (Islamic Republic of Iran) as part of international route between Central Asia and Europe and between Central Asia and South /Southeast Asia

Route component	Route length (Km)	% of total route length
Total route - via Fariman-Bafq direct	*1,589*	*100.0*
Missing links	*790*	*49.7*
Existing rail links	*799*	*50.3*
Total route - via Tehran and Qom (new line)	*2,402*	*100.0*
Missing links	-	-
Existing rail links	*2,402*	*100.0*

TRANS ASIAN RAILWAY-MISSING LINKS

Route ProfileTAR-S3; North-South trunk route between Sarakhs and Bandar Abbas (Islamic Republic of Iran) as part of international route between Central Asia and Europe and between Central Asia and South /Southeast Asia

Route component	Route length (Km)	% of total route length
Total route - via Fariman-Bafq direct	*1,589*	*100.0*
Missing links	*790*	*49.7*
Existing rail links	*799*	*50.3*
Total route - via Tehran and Qom (new line)	*2,402*	*100.0*
Missing links	-	-
Existing rail links	*2,402*	*100.0*

TRANS ASIAN RAILWAY-MISSING LINKS

Rail Route Choices: Bangkok-Europe, Bangkok-Central Asia and Islamic Republic of Iran

Origin/Destination	*Via*	*Rail Distance (Km)*
Bangkok/Frankfurt	Chiang Rai; Chengdu; Kazakhstan;Russian Federation	13,600
Bangkok/Frankfurt	Nong Khai; Chengdu; Kazakhstan; Russian Federation	13,500
Bangkok/Frankfurt	Routes TAR-S2 and TAR-S1	13,200
Bangkok/Almaty	Chiang Rai; Chengdu	7,700
Bangkok/Almaty	Nong Khai; Chengdu	7,600
Bangkok/Almaty	Routes TAR-S2 and TAR-S1 (via Tehran)	11,300
Bangkok/Almaty	Routes TAR-S2 and TAR-S1 (via direct link Bafq-Fariman)	10,500
Bangkok/Tashkent	Chiang Rai;Chengdu; Kazakhstan	8,600
Bangkok/Tashkent	Nong Khai;Chengdu;Kazakhstan	8,500
Bangkok/Tashkent	Routes TAR-S2 and TAR-S1 (via Tehran)	10,400
Bangkok/Tashkent	Routes TAR-S2 and TAR-S1 (via direct link Bafq-Fariman)	9,600
Bangkok/Ashgabat	Chiang Rai;Chengdu; Kazakhstan; Uzbekistan	9,500
Bangkok/Ashgabat	Nong Khai;Chengdu;Kazakhstan;Uzbekistan	9,400
Bangkok/Ashgabat	Routes TAR-S2 and TAR-S1 (via Tehran)	9,600
Bangkok//Ashgabat	Routes TAR-S2 and TAR-S1 (via direct link Bafq-Fariman)	8,800
Bangkok/Tehran	Chiang Rai; Chengdu;Kazakhstan; Uzbekistan; Turkmenistan	10,900
Bangkok/Tehran	Nong Khai;Chengdu;Kazakhstan;Uzbekistan; Turkmenistan	10,800
Bangkok/Tehran	Routes TAR-S2 and TAR-S1	8,100

TRANS ASIAN RAILWAY-MISSING LINKS

Rail Route Choices: Alternative routes from Kunming to (I) Europe, (ii) Central Asia, (iii) Islamic Republic of Iran

Origin/Destination	*Via*	*Rail Distance (Km)*
Kunming/Frankfurt	Chengdu; Kazakhstan;Russian Federation	11,400
Kunming/Frankfurt	Chongqing; Kazakhstan; Russian Federation	11,800
Kunming/Frankfurt	Route TAR-S1	13,500
Kunming/Almaty	Chengdu	5,500
Kunming/Almaty	Route TAR-S1 (via Tehran)	11,600
Kunming/Almaty	Route TAR-S1 (via direct link Bafq-Fariman)	10,800
Kunming/Tashkent	Chengdu; Kazakhstan	6,400
Kunming/Tashkent	Route TAR-S1 (via Tehran)	10,700
Kunming/Tashkent	Route TAR-S1 (via direct link Bafq-Fariman)	9,900
Kunming/Ashgabat	Chengdu; Kazakhstan; Uzbekistan	7,300
Kunming/Ashgabat	Route TAR-S1 (via Tehran)	9,800
Kunming/Ashgabat	Route TAR-S1 (via direct link Bafq-Fariman)	9,000
Kunming/Tehran	Chengdu; Kazakhstan; Uzbekistan; Turkmenistan	8,700
Kunming/Tehran	Route TAR-S1	8,400

TRANS ASIAN RAILWAY-MISSING LINKS

Rail Route Choices: General Observations

- In the case of Kunming and Bangkok-based shippers, the TAR southern corridor is unlikely to provide a competitive means of moving cargo consignments to Europe or to a majority of destinations in Central Asia, when there are other non-TAR route alternatives available which will provide shorter transit times and which do not suffer from a multiplicity of national frontiers and different track gauges.

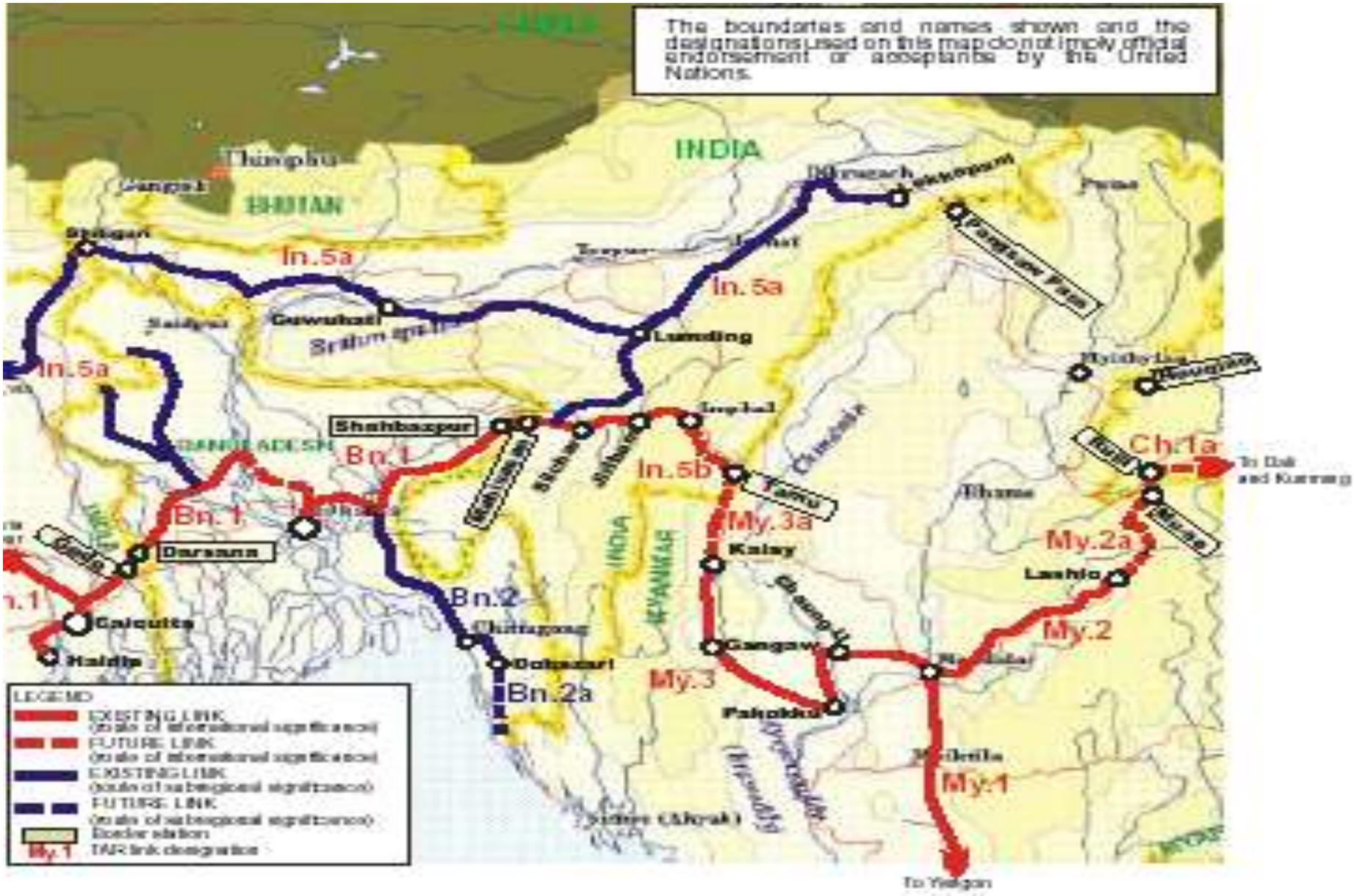
- Such a conclusion would tend to suggest that the TAR southern corridor might be advantaged to serve trade within that part of the corridor bounded on the west by the eastern part of Turkey and on the east by Bangladesh and northeastern India, with the possibility that trade between Kunming, Bangkok and Yangon to most locations in South Asia and the Islamic Republic of Iran could also be efficiently served by the TAR southern corridor. On the basis that much of the trade within this part of the corridor is sourced in the hinterland (i.e. at some considerable distance from seaports) and is destined for other hinterland operations, the TAR southern corridor is likely to have the strong advantage of providing direct connections between these trade focal points. Whether this provides a real competitive advantage over the alternative combined shipping/land transport services is an issue.

TRANS ASIAN RAILWAY-MISSING LINKS

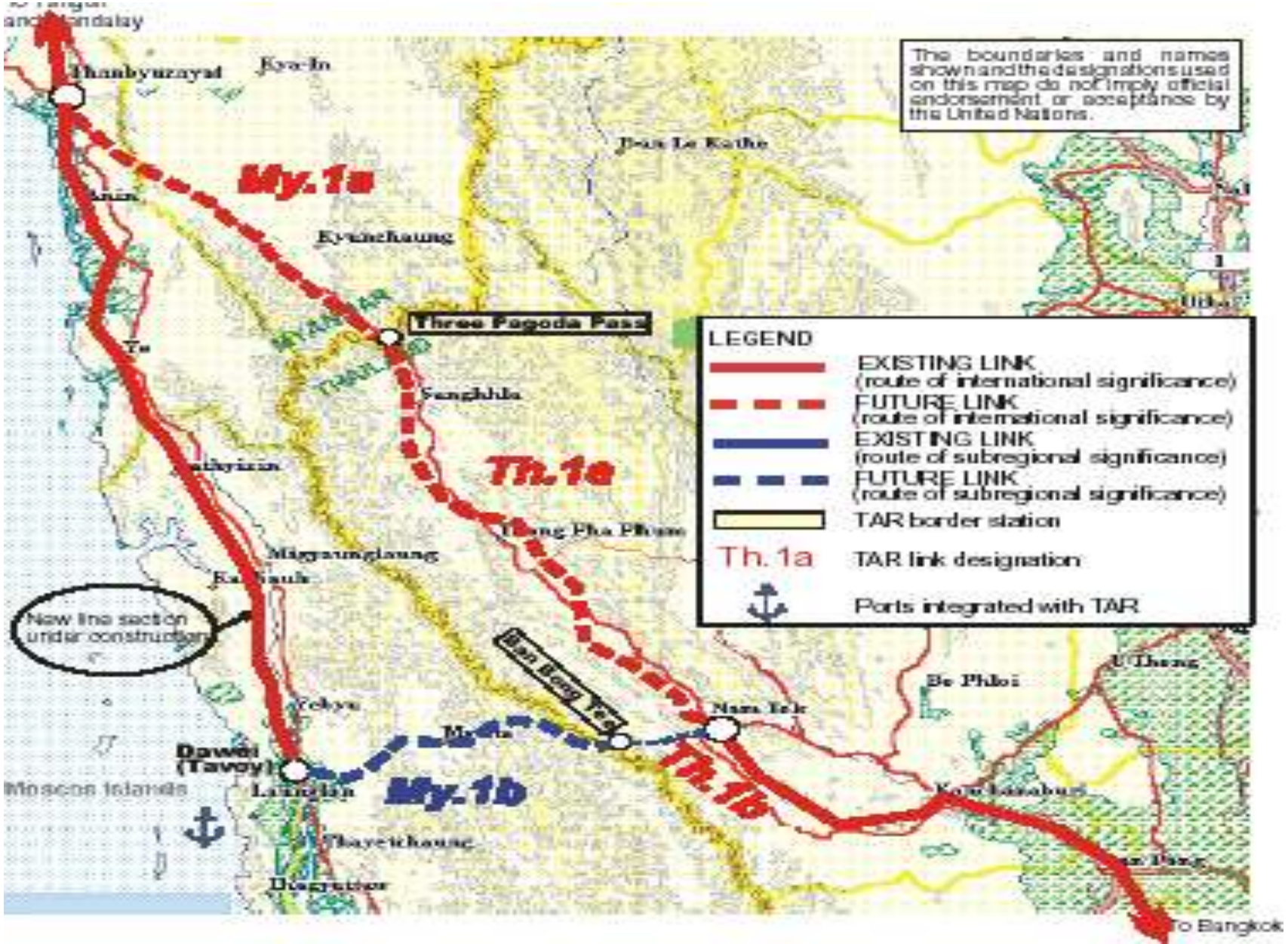
The Missing Links

- Between Thailand and Myanmar-260 km
- Between China (Yunnan province) and Myanmar-860 km
- Between Myanmar and India-300 km
- Between the new Jamuna River Bridge and Joydebpur in Bangladesh-99 km
- Between Kerman and Zahedan in the Islamic Republic of Iran-545 km
- Between the railheads on the eastern and western shores of Lake Van in Turkey-91 km
- Across Bosphorus Strait in Turkey-4.4 km
- The list does not include a gap of about 790 km between Bafq and Fariman in the Islamic Republic of Iran, for which a detour through Tehran is currently available

MISSING LINKS IN RELATION TO EXISTING TAR NETWORK IN NORTHERN MYANMAR, BANGLADESH AND NORTHEASTERN INDIA

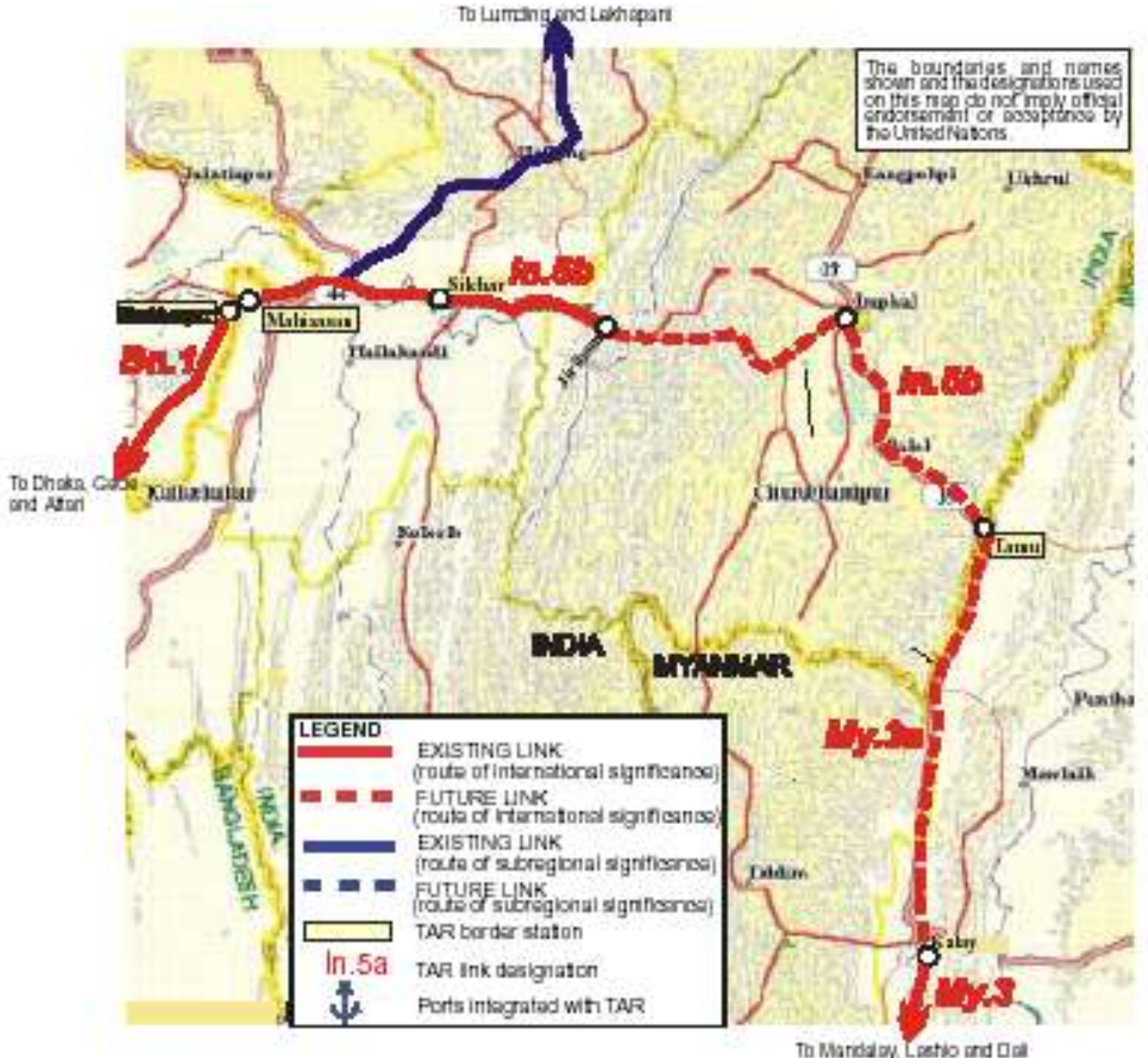


MISSING LINKS BETWEEN THAILAND AND MYANMAR IN THE TAR SOUTHERN CORRIDOR



MISSING LINKS BETWEEN CHINA AND MYANMARIN THE TAR SOUTHERN CORRIDOR

MISSING LINKS BETWEEN INDIA AND MYANMARIN- THE TAR SOUTHERN CORRIDOR



TRANS ASIAN RAILWAY-MISSING LINKS

Assumed Technical standards of new TAR Links

Outline Gauge	Sufficient to allow transportation of 9ft 6ins high containers on standard height flat wagons through all structures at normal speed	
Speed	*Target:*	Passenger trains, 120 km/hour Freight trains, 80 km/hour Allowance for possibility of future 200 km/hour passenger speeds
Radius of Curvature	*Target:* *Minimum* *Rolling:* *Mountainous:*	Straight 800 metres 150 metres (for metre gauge) 450-600 metres (for standard and broad gauge)
Maximum Gradients	*Rolling:* *Mountainous:*	1.00 % 1.20% - 1.25%
Track Structure	*Rail section:* *Sleepers:* *Ballast depth:*	UIC 54 (or heavier, if used by participating railways) Prestressed concrete 250 mm
Axle Load	20 tonnes	

TRANS ASIAN RAILWAY-MISSING LINKS

Assumed Costs of Missing Link Construction

Source of cost estimate (applies and track gauge)	Terrain Type	Construction Cost Estimate (US$ million Per Kilometre)	Based on (name of Project)	Applied to (name of missing link)
Chinese Railways, 1435 mm	Predominantly mountainous	3.37	Proposed new line Xiaguan-Ruili, (Yunnan Province of China)	Proposed new 630 km line Xiaguan-Ruili, (Yunnan Province of China)
Indian Railways, 1676 mm	Predominantly mountainous	2.25	Proposed new line in Mizoram state	(i) Proposed new 150 km line Tsaru (State of Myanmar) - Jiribam (Manipur State of India) (ii) Proposed new 230 km line Mu-so - Lashio (Shan State of Myanmar) *
State Railway of Thailand, 1000 mm	Predominantly hilly	1.75	New line, Klong Sip Khao - Kaeng Khoi Junction, construction completed 1986	(i) Proposed new 303 km line Nam Tok (Thailand) - Thanbyuzayat (Myanmar), via Three Pagoda Pass (ii) Proposed alternative 150 km line Nam Tok (Thailand) - Ye (Myanmar), via Kaw Bong Tee (iii) Proposed new 135 km line Kalay - Tamu (both in Sagaing State of Myanmar)
Islamic Islamic Republic Railways, 1435	Predominantly flat	1.20	New 345 km line under construction between Kerman and Zahedan	New 545 km line under construction between Kerman and Zahedan

* Per km construction costs supplied by Myanma Railways of US$ 320,808 per km for flat terrain, US$ 448,000 for medium terrain and US$ 640,808 for mountainous terrain were no allowance for construction of bridges or tunnels, and these are likely to substantial construction costs for missing links. For construction through mountainous terrain in Myanmar, indicative costs from India rather than from China were used to allow for lower labour costs in Myanmar.

TRANS ASIAN RAILWAY-MISSING LINKS

Capital Cost vs Threshold Freight Tonnage

Missing link	*Estimated construction cost (US$ million)*	*Estimated threshold freight tonnage requirement (million tonnes per annum)*
Dali-Ruili (China)	2,047	17.4
Ruili/Mu-se - Lashio (Myanmar)	759	14.0
Nam Tok - Three Pagoda Pass (Thailand)	268 [1]	7.3
Three Pagoda Pass - Thanbyuzayat (Myanmar)	192 [2]	7.1
Kalay-Tamu (Myanmar)	236	8.7
Tamu-Jiribam (India)	405	9.9
Kerman-Zahedan (Islamic Republic of Iran)	654	9.2
TOTAL	4,561	

TRANS ASIAN RAILWAY-MISSING LINKS

Rail hauled international container traffic forecast-all TAR links in India

CONTAINER TRAFFIC SEGMENT	Current (1996/97)		Forecast 2006/07		Ave. annual growth %	Forecast 2016/17		Average annual growth %
	Mill. TEU	Mill. Tonnes	Mill. TEU	Mill. Tonnes		Mill. TEU	Mill. Tonnes	
Bilateral (Neighbouring countries only)*	-		0.25	4.0		0.38	6.08	4.3
Other**			1.33	15.91		2.00	23.91	4.2
Total	0.576	7.26 (e)	1.58	19.91	13.4	2.38	29.99	4.2
Of which:								
Port oriented	0.576		1.22	15.01	9.8	1.85	22.78	4.3
Border crossing	-		0.36	4.90		0.53	7.21	3.9

Source: Country Paper for India

* *Neighbouring countries are identified as Bangladesh, Bhutan, Nepal and Pakistan. All except Bhutan are expected to experience cross border rail flows of containers in future.*

** *Comprises limited third country border crossing traffic and port oriented traffic. In the absence of a through east-west international TAR route, third country traffic projections have been limited to those between Nepal and Bhutan and Calcutta/Haldia ports.*

(e) Estimated on basis of ave. gross weight per TEU of 12.6 tonnes (as was used in Country Paper projections)

TRANS ASIAN RAILWAY-MISSING LINKS

Traffic forecasts in relation to threshold tonnage requirements

Missing link	*Estimated threshold tonnage requirement (million tonnes per annum)*	*Forecast border crossing freight tonnage, all modes (million tonnes p.a.) by:*	
		2006/07	*2016/17*
Dali-Ruili (China)	17.4	2.4	5.1
Ruili/Mu-se - Lashio (Myanmar)	14.0	2.4	5.1
Nam Tok - Three Pagoda Pass (Thailand)	7.3	0.9	2.0
Three Pagoda Pass - Thanbyuzayat (Myanmar)	7.1	0.9	2.0
Kalay-Tamu (Myanmar)	8.7	0.06	0.1
Tamu-Jiribam (India)	9.9	0.06	0.1
Kerman-Zahedan (Islamic Republic of Iran)	9.2	0.3	0.6

TRANS ASIAN RAILWAY-MISSING LINKS

Traffic forecasts in relation to threshold tonnage requirements

Observations

- The forecast data relate to the total tonnage carried across borders by all modes. These forecasts were derived by applying the growth factors.

- The high order of construction cost influenced by the severity of the terrain through which most of these links would have to pass resulted in annual threshold tonnages of a high order of magnitude.

- In no case would the threshold tonnage requirement be met by the forecast traffic on offer, even in the unlikely event that rail would secure 100 per cent of this traffic. However, it has to be noted that these forecasts do *not* allow for generated traffic demand, as described above. It is likely that the justification of all of the listed missing link construction projects would depend heavily on identification of an adequate level of generated traffic demand.

TRANS ASIAN RAILWAY-MISSING LINKS

TECHNICAL REQUIREMENTS

The practical implications of this requirement are that:

(i) The limiting dimensions of structures throughout this network should be sufficient to allow unrestricted passage of wagons conveying the highest and widest containers used in international trade - i.e. the ***structure gauge*** adopted for the network should provide adequate clearance for such containers carried at normal running speeds ;

(ii) The maximum allowable ***axle loads*** throughout this network should be sufficient to allow conveyance of such containers in trainloads of economic size and configuration. In practice, this would mean that axle loads would need to be sufficient for the conveyance on a single wagon of the equivalent of two (and in some cases three) twenty foot containers loaded up to or near their maximum payload or for the operation of locomotives of adequate power rating1;

(iii) The maximum allowable line speeds throughout the network must be consistent with the realization of ***commercial speeds*** which are competitive with those of alternative transport modes (bearing in mind that maximum line speed is only one of the factors influencing commercial speed, other important ones being operational and border crossing stopping times,signalling system performance, infrastructure condition, and motive power and rolling stock condition and performance).

TRANS ASIAN RAILWAY-MISSING LINKS

TECHNICAL REQUIREMENTS

Load and structure dimensions

- The high cube containers with dimensions 40ft(L)x 8ft (W)x 9ft 6in (H) is the largest container which is currently carried by railway of the region.
- Howevr, super high cube containers of dimensions 45-53ft(L)x 8ft 6in (W)

  x 9ft 6in (H) are being used in incresing numbers and should be satisfied bythe design of future container wagons and the dimensions of structures throughout the TAR network.
- The structures, such as tunnels and through truss bridges must provide adequate clearance for super high cube containers loaded on conventional container wagons- typically 1.1m high above the rails.
- A clearance of 40 cm between the loaded wagon and structure has to be kept for allowing the lateral and vertical movement of wagons due to track irregularities and vehical dinamics on curved track sections.

TRANS ASIAN RAILWAY-MISSING LINKS

TECHNICAL REQUIREMENTS

Load and structure dimensions: conformity with requirements

Will TAR links accept?....	*Bangladesh*	*China*	*India*	*Islamic Republic of Iran*	*Myanmar*	*Pakistan*	*Sri Lanka*	*Thailand*	*Turkey*
8 ft high ISO	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
8 ft 6 in high ISO	Yes	Yes	Yes[2]	Yes	No	Yes	No	Yes	Yes
9 ft 6 in high non-ISO	Yes[1]	Yes	Yes[2]	No	No	Yes	No	Yes	No[3]

[1] With modification of the structure of a single bridge on Link Bn.2a

[2] Likely to apply only to broad gauge links

[3] Could be accommodated with use of lower profile wagons

TRANS ASIAN RAILWAY-MISSING LINKS

TECHNICAL REQUIREMENTS

Axle Load: requirements

- The key determinant of axle load requirements for the TAR network is unlikely to be the maximum load bearing on track through the axles of a container wagon, but rather the maximum axle loading of locomotives used for freight haulage.
- Based on broad and standard gauge service requirements, the maximum gross weight (empty weight plus the weight of fuel) of 3,000-3,500 HP locomotives is typically around 112-115 tonnes and with a Co-Co wheel configuration (6 axles), the maximum load bearing through axles is approximately 19 tonnes.
- The maximum axle loading of metre gauge locomotives is usually much lighter, typically not more than 15 tonnes.
- The container flat wagons most commonly used on the broad gauge networks of both India and Pakistan have a length of 45 ft (13.7 metres), a tare weight of 20-21.5 tonnes and a payload capacity of about 48 tonnes, giving a maximum gross weight of 68-69.5 tonnes and an axle load of 17-17.37 tonnes.
- On the standard gauge network of the Islamic Republic of Iran, container flat wagons of 20 metre length, with fittings to carry up to three ISO 20 ft containers (albeit at restricted weights of 18 tonnes each5) are in use. These have a tare weight of 25 tonnes and a maximum payload of 55 tonnes, giving a gross weight of 80 tonnes and an axle load of 20 tonnes.

TRANS ASIAN RAILWAY-MISSING LINKS

TECHNICAL REQUIREMENTS

Axle Load: requirements

- There are compelling arguments in favour of adopting one axle load standard for those parts of the TAR network for which interchangeability of rolling stock, and possibly of locomotives, between railway systems is a practical option. This will generally apply to the standard and broad components of the network. It is evident that a 20 tonne axle load will satisfy the needs of international container traffic likely to use these components of the TAR network, in terms of accommodating the highest loads likely to bear on track through the axles of container wagons or of the high horse power locomotives needed to haul container trains of economic configuration.

- While it may be argued that axle loadings of this magnitude might never be imposed on metre gauge track and structures, it has been assumed that the other benefits accruing to metre gauge operators will be sufficient to justify their adoption of a 20 tonne axle load in the longer term. However, from the perspective of meeting the heaviest axle loads likely to be imposed by locomotives and rolling stock, it would be sufficient if the metre gauge components of the TAR network could be designed in future to accommodate axle loadings of up to 15 tonnes.

TRANS ASIAN RAILWAY-MISSING LINKS

TECHNICAL REQUIREMENTS

Axle Load: conformity with requirements

Bangladesh	*China*	*India*	*Islamic Republic of Iran*	*Myanmar*	*Pakistan*	*Sri Lanka*	*Thailand*	*Turkey*
22.5 [BG] 13.0 [MG]	21.5-23.0	20.32 [BG] 12.70 [MG]	20.0-22.5	12.5	22.86 [most links] 17.27 and 17.78 [some links]	16.5	15.0 [existing] 20.0 [future]	20
TEU carrying capacity of bogie container wagons								
2	2	2	3	1	2	2	2	3

TRANS ASIAN RAILWAY-MISSING LINKS

TECHNICAL REQUIREMENTS

Speed: standards and requirements

- It is established in this study that commercial speeds for international freight trains operating in this TAR corridor should be at least 20 km per hour in order to provide transit times which are competitive with the principal alternative transport modes - in this case mainly shipping.

- Typically, commercial speeds in the corridor represent about 50 per cent of the average running speeds, which in turn represent about 55-60 per cent of the maximum permissible speed.

- Therefore, to ensure attainment of a target commercial speed of 20 km/hour, a maximum permissible speed for freight trains of at least *70 km/hour* should apply throughout the TAR network.

TRANS ASIAN RAILWAY-MISSING LINKS

TECHNICAL REQUIREMENTS

Speed: conformity of participating railway systems

Existing speeds for freight traffic in the TAR network in:

- China : 80 kmph (mps)
- India : >70 kmph (mps), commercial speed <20 kmph
- Islamic Republic of Iran : commercial speed >25 kmph
- Myanmar: 32 kmph (mps), commercial speed 12-14 kmph
- Pakistan: 55 kmph (mps)
- Sri Lanka: 50 kmph (mps)
- Thailand: 70 kmph (mps)
- Turkey: 65 kmph (MPS)

TRANS ASIAN RAILWAY-MISSING LINKS

TECHNICAL REQUIREMENTS

Speed: Summary

- Maximum freight train speeds of less than 70 km per hour apply throughout a majority of existing links comprising the main transcontinental route TAR-S, implying that this route cannot yet offer a commercial speed, end to end, of at least 20 km per hour.
- A combination of inadequate track and rolling stock standards and condition explains this sub-optimal performance.
- Considerable investment in track and rolling stock rehabilitation/ improvement is likely to be required in order to bring speeds up to required levels.

TRANS ASIAN RAILWAY-MISSING LINKS

OPERATIONAL REQUIREMENTS

Since the attraction of container traffic to the TAR network depends in large measure on rail being able to deliver a cost effective and reliable service as compared with its competitors in the corridor, it is essential that any operational impediments to realization of these goals be removed.

In this context five factors are important:

- Compatibility in terms of the type and design of rolling stock employed by neighboring railway systems in international traffic :would ensure rolling stock inter-operability when no break-of-gauge is involved.

- Compatibility of train assembly and load scheduling practices between neighboring railway systems will be essential in order to avoid the necessity of having to readjust train loads at borders.

TRANS ASIAN RAILWAY-MISSING LINKS

OPERATIONAL REQUIREMENTS

Contd.

- The presence of adequate *route capacity* on existing links in the TAR corridor will be essential if the corridor is to meet its objective of providing a cost effective and competitive means for the international transportation of containers; and

- Breaks-of-gauge while not posing a problem currently, are likely to become a problem in the future when lines of differing track gauge are connected within the territory of one country, Bangladesh, and at two borders, China/Myanmar and Islamic Republic of Iran/Pakistan. Possible re-gauging of the existing metre gauge network in northeastern India would create two additional breaks-of-gauge at borders - between India and Myanmar and between Bangladesh and India(northeast). Provision of modern, high speed container transshipment equipment at all break-of-gauge points will be essential to minimize delays.

TRANS ASIAN RAILWAY-MISSING LINKS

COMMERCIAL REQUIREMENTS

There is no guarantee that the mere availability of a through railway route to Europe will automatically encourage freight shippers based in Kunming or elsewhere throughout the TAR southern corridor to use this route. In making decisions about route and mode choices, shippers will always be guided by their perceptions of the relative cost, standard and reliability of services offered by alternative modes and operators.

For container shippers, the following service attributes are considered to be important in arriving at decisions about mode and route choice:

(i) Overall costs paid by shippers inclusive of transportation, handling and repositioning costs of containers taking into account the shipping logistics;

(ii) Transit time, representing the time interval between dispatch of a consignment from a shipper=s premises and its arrival at the consignee=s premises;

TRANS ASIAN RAILWAY-MISSING LINKS

COMMERCIAL REQUIREMENTS

Contd.

(iii) Consignment security, or the extent to which consignments will be secure from damage or pilferage enroute, since this could affect an operators insurance cover and hence the overall transportation cost;

(iv) Reliability of service - specifically the extent to which an operator or mode can consistently meet promised delivery times for the shippers consignments;

(v) Comprehensiveness of service provided by operators, in terms of the extent to which a single operator will arrange and accept responsibility for all components of the transportation/handling chain between ultimate origin and destination; and

(vi) Availability of real time information on the location of a freight consignment or container at any point in its journey between origin and ultimate destination.

TRANS ASIAN RAILWAY-MISSING LINKS

CONCLUSION

The study provides a suitable foundation for a comprehensive development plan for the Trans-Asian railway network in the southern corridor. Such a development plan is a perquisite for the harmonized development of the sections of the TAR under the control of various national railway organizations. Before such a development plan can be finalized, however, it will be necessary to agree:

- A designated network of the TAR in the southern corridor between Asia and Europe;
- A fundamental role and operational priorities for the TAR in this corridor; and
- A follow up plan of action for the resolution of information gaps, the more detailed evaluation of a missing link construction programme and the formulation of suitable operational and commercial strategies and plans for the existing parts of the TAR network.

TRANS ASIAN RAILWAY-MISSING LINKS

THANK YOU