National Academy of Indian Railways

21st Training Course
Operational Practices for Carriage of Freight Traffic on Railways

TAR: Prospects and challenges

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Vadodara

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- Railways exploring new opportunities;

  new markets;

  new destinations.

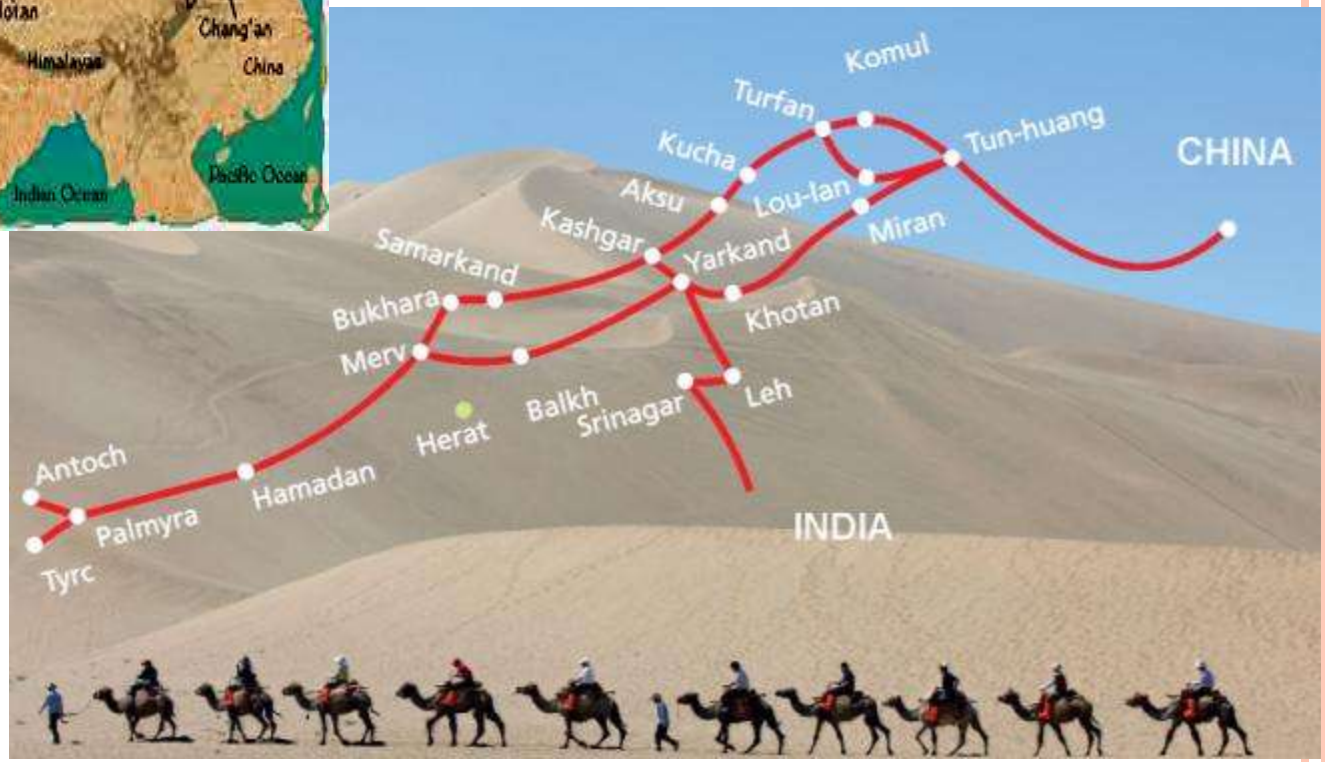
- The big, old dream of Trans Asian Rail network comes to life.

China's OBOR provides the impetus.

THE OBOR

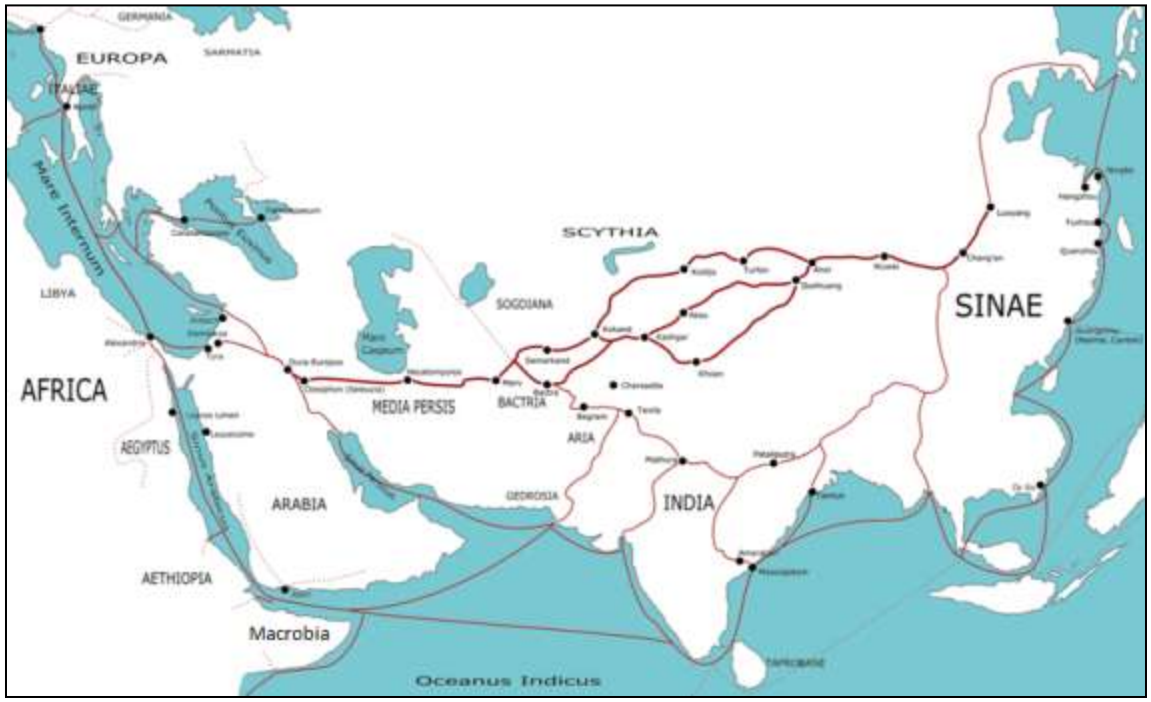
- In China's "One Belt, One Road" policy, the road refers to ancient maritime routes between China and Europe; the belt describes the Silk Road's better-known trails overland.

Ancient Silk Routes



- Chinese President Xi wants a revival of the Silk Road and the glory that went with it.
- It fits with his “Chinese dream” of recreating a great past. He seems to see the new Silk Road as a way of extending China’s commercial tentacles and soft power.
- In 1820, Chinese commentators maintain, China's GDP was one-third of the world's total.
  - now, in the mere thirty years, it has become world's second largest economy, after having descended as a poor, third world economy.
- OBOR treats Asia and Europe as a single space, and China, not the United States, is its focal point.
- The China-Pakistan Economic Corridor and the Bangladesh-China-India-Myanmar Economic Corridor closely related to the Belt and Road initiative
  - which covers, but is not limited to, the area of the ancient Silk Road.
- In 2015, China’s central bank transferred $82 billion to three state-owned “policy banks” for OBOR projects.
  - Its sovereign wealth fund backed a new Silk Road Fund worth $40 billion and the government set up the AIIB with $100 billion of initial capital.
  - China’s FDI is increasingly going along the Silk Road.
  - In 2015, 44% of China’s new engineering projects were signed with OBOR countries..
- China claims it will invest a cumulative $4 trillion in OBOR countries; and that there are 900 deals under way, worth $890 billion, such as a gas pipeline from the Bay of Bengal through Myanmar to south-west China and a rail link between Beijing and Duisburg, a transport hub in Germany.
  - China is planning a 3,000km high-speed rail line from Kunming, in its south-west, to Singapore.

Traditional Silk Road, its new extensions



- There are three alternative corridors along the Modern Silk Road to connect China to Europe:
  - The Northern Corridor, passing through Russia, using TSR line, reaching Belarus and ultimately Europe.
  - The Southern Corridor, starting from Kazakhstan, passing through Turkmenistan or Kyrgyzstan and Tajikistan to Iran. Through Iran, the corridor joins Turkey before connecting Europe.
  - The Middle Corridor, crossing Kazakhstan to reach the Caspian port of Aktau and using a sea connection, passing through the South Caucasus to reach Europe via Turkey.

"THE EAST WIND WILL PREVAIL OVER THE WEST WIND"

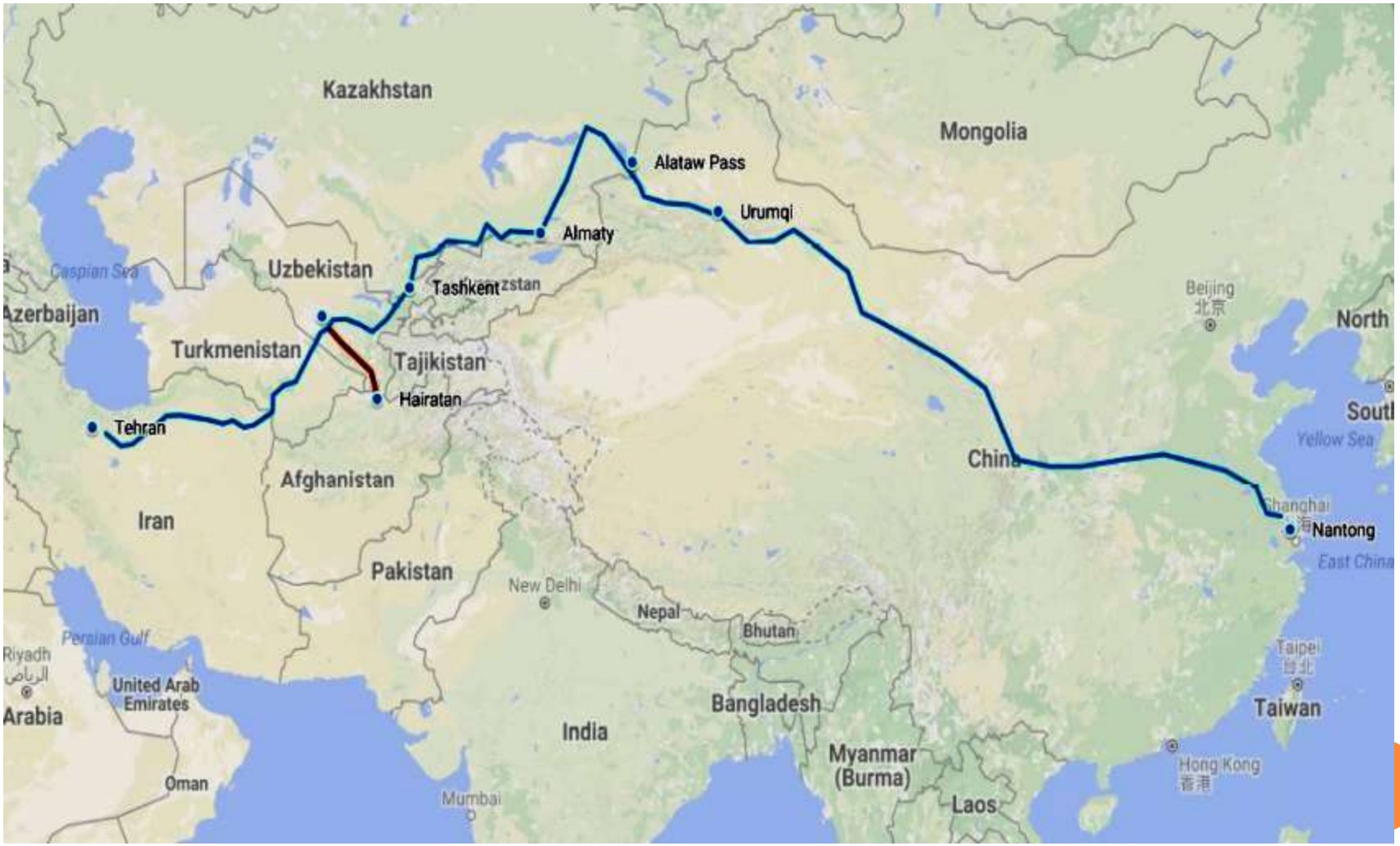
- MAO ZEDONG

- The One Belt, One Road initiative has given strong impetus to the Eurasian rail land-bridge between China and Europe.
- A new rail milestone came up on 18 January 2017 with **The East Wind** rolling in the Euro hub freight terminal at Barking in east London.

- The train carrying an assortment of consumer good, in containers on 44 wagons, set off on 3 January from Yiwu in eastern China, and made its way through Kazakhstan, Russia, Belarus, Poland, Germany, Belgium and France, then the Channel Tunnel, thus traversing world's longest train journey of some 12,000 km.
  - It dropped 10 of the wagons en route at the German cargo hub at Duisburg, pulling into Barking with 34 wagons loaded with 68 TEUs.
- The transit time of the train, already half of what the maritime freight journeys take, is expected to fall further with accelerated transhipment and customs processes at cross border points en route.


RUSSIA
BRITAIN
FRANCE
GERMANY
SPAIN
POLAND
Trans-Siberian Railway
Vladivostok
JAPAN
Moscow
Madrid
BELARUS
MONGOLIA
ITALY
ALGERIA
CHINA
Yiwu
KAZAKHSTAN
TURKEY
UZBEK.
TURKM.
TAJIK.
China-Europe Block Train
LIBYA
IRAQ
AFGH.
IRAN
EGYPT
PAK.
INDIA

IRAN RAIL-LINKED TO CHINA



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- Carrying “small commodities” in 32 containers originating from Yuwi in Zhejiang province, south of Shanghai in China, the first container train left China on 28 January 2016, arrived in Tehran on 15 February, hailed as a pioneering event to revive the ancient Silk Road.
- Its 10,400 km journey via Kazakhstan and Turkmenistan with two breaks-of-gauge en route was scheduled to take 14 days.
  - The test train took five days to cover the 4,491 km in China, before passing the Kazakh border at Dostyk;
  - it then took four days for the 3,417 km distance to cover to the Turkmenistan border at Serhetyaka;
  - The journey across Turkmenistan via Bereket and Ashgabat took further two days, before it continued to Sarakhs on the border with Iran.
- The transit time of around two weeks was half the time of the equivalent journey by sea.

TRAIN FROM CHINA STEAMS INTO AFGHANISTAN

- The first through freight train from China to Afghanistan reached Hairatan on the border with Uzbekistan on 7 September 2016.

The train had been dispatched form Nantong, China on 25 August, carrying 84 containers.

- Its 3,000km journey took 14 days.
- Two trains a month are scheduled to run via the Alatau Pass, Kazakhstan and Uzbekistan.

A second China–Afghanistan service was launched on 28 August, linking Yiwu with Mazar-i-Sharif.

- A weekly service is planned.

Chinese Railways extended to Lhasa in Tibet, now going beyond to Nepal, Bhutan and door-steps of India

Rail linking Gwadar in south-west of Pakistan to Kashgar in China's north-west

China has planned strategic linkages to Pakistan, Iran and all across Central Asia, incorporating the Gilgit-Baltistan tract in PoK into its Xinjiang's logistics grid, expanding the Karakoram highway, also planning a rail line from Gwadar port in Balochistan on Pakistan's south-west coast close to the Straits of Hormuz to Kashgar in China.

MILESTONES: CONTAINER TRAIN TRIAL RUNS

- UNESCAP and the Organization for Railways Cooperation (OSJD) signed a Memorandum of Understanding in 1999 to promote cooperation for the development of railway infrastructure and services.
- The two organisations together promoted demonstration runs of container block trains along TAR northern corridor:
  - in November 2001, between Chinese port of Tianjin and Ulaanbaatar in Mongolia,
  - in April 2004, between the Chinese port of Lianyungang and Almaty in Kazakhstan,
  - in June 2004, between Ulaanbaatar (Mongolia) and Brest (Belarus), and
  - in July 2004, between Vostochny in the Far East of Russia and Malaszewicze in Poland.
- An event of significance was the inaugural run of a freight train carrying containers on 14 August 2009 under the auspices of the Economic Cooperation Organisation from Islamabad to Istanbul, with a break-of-gauge at Zahedan (from 1,676 mm to 1,435 mm).
  - The train established that technically it is possible to introduce rail services on the route along Istanbul to Dhaka, via IR system with just one break-of-gauge at Zahedan.

ADVANCING EURASIAN RAIL-BRIDGE

- Ever since a demonstration service between Chongqing and Antwerpen began running in October 2011, carrying Acer computer parts, followed by DB Schenker Rail Automotive's daily container train at end-November 2011 that carried BMW automotive components from Leipzig to Shenyang, thereafter another service carrying HP computers between Chongqing and Duisburg, and DHL's weekly service in June 2013 from Chengdu in central China, moving across Kazakhstan, to Poland, China reports it has operated 1,702 freight trains (each with 90 TEU capacity) to Europe.
- Less than half the number made the return journey.
- Promoted under the brand of **China Railway Express**, landbridge container services now link 16 cities in China and 12 in Europe, as far as Hamburg and Madrid, using 39 different routes.
- London is said to be the 15th European city and UK the eighth country on the expanding map for China's rail cargo.
- China Rail plans to explore another 20 European destinations for its rail freight.

Rail – a commercial necessity

- Given the over-congestion of Chinese ports, rail freight emerged as a critical logistical alternate solution to support its growing trade with Europe,
  - Also as a tool to bring industrial development to the landlocked countries of Central Asia and the Caucasus.
- As China's economic geography changes with surging labour costs in its eastern cities, manufacturers move production west to the interior to reduce costs.
  - Trucking goods from inland factories to Shenzhen or Shanghai port on the coast and sending goods by ship takes five weeks.
  - It thus takes some as 35 days to ship a container from industrial parts of China to the industrial heartland of Europe.
- A freight train could transport the container in around 15-20 days.
- Whereas journey times of 7-10 days are the goal, at present 18-20 day transit is more typical.
- Speed is rail's main competitive advantage, albeit maritime freight rates are cheaper than rail transport:
  - A container by train costs in the range of €3,500-5,500, shipping it would cost €1,500-2,000.
  - By switching from ocean freight to rail freight, shippers achieve valuable savings in "frozen capital" – of inventory costs and lead times.

TAR: *RAISON D' ETRE*

The Trans-Asian Railway Network Inter-governmental Agreement formally came into force on 11 June 2009.

- The network seen as a way to facilitate huge prospective increases in international trade, with its primary aims
  - to provide a continuous, cost effective 14,000 km rail link between Asia and Europe
  - as well as to improve the economies and accessibility of landlocked countries like Nepal, Bhutan, Laos, Afghanistan, Mongolia, and the Central Asian Republics.
- The TAR link offered the potential to greatly shorten the distances and reduce transit times between countries and regions.

TAR: Four major components

- **The Northern corridor** (northeast Asia to Western Europe).
- **The Southern corridor** would run from Europe to Southeast Asia.
- **Sub-regional network**, covering the ASEAN and Indo-China sub-region; and
- **North-South corridor**, linking northern Europe to the Persian Gulf through the Russian Federation, Central Asia and the Caucasus region.
  - The main route starts in Helsinki, and continues through Russia to the Caspian Sea, where it splits into three routes:
  - A western route through Azerbaijan, Armenia, and western Iran;
  - A central route across the Caspian Sea to Iran via ferry; and
  - An eastern route through Kazakhstan, Uzbekistan and Turkmenistan to eastern Iran.
  - The routes converge in the Iranian capital of Tehran and continue to the Iranian port of Bandar Abbas.

TAR: NORTHERN CORRIDOR

- **The Northern corridor** links Europe and the Pacific, via Germany, Poland, Belarus, Russia, Kazakhstan, Mongolia, China, and the Koreas.
  - The 9,250 km Trans-Siberian Railway (TSR) covers much of this route and currently carries large amounts of freight from East Asia to Moscow and on to the rest of Europe.
  - The TSR network and the other between China and Kazakhstan are both connected to Western Europe.
- The Korean Peninsula West Corridor links Busan with Shenyang in China via Seoul, Pyongyang, and Sinuiju in North Korea and Dandong in China.
- Due to political problems with North Korea, freight from South Korea is currently shipped by sea to the port of Vladivostok to access the route.
  - The China land-bridge starting from China and passing Central Asia to Europe competes with the Siberian land-bridge for traffic between East Asia and Central Asia/Europe.

The land route is approximately 12,000 km between the Baltic and Northeast Asia vs about 20,000 km by sea, with Kazakhstan virtually at the centre.

TAR NORTHERN CORRIDOR ALREADY OFF THE BLOCK

- TAR northern corridor , although not in reckoning in the initial TAR concept, bristles with possibilities of a Eurasian railbridge to grow substantially.

There are already several operators vying for the growing pie of intermodal business through TSR route as well as proliferating rail links across Central Asia and West Asia.

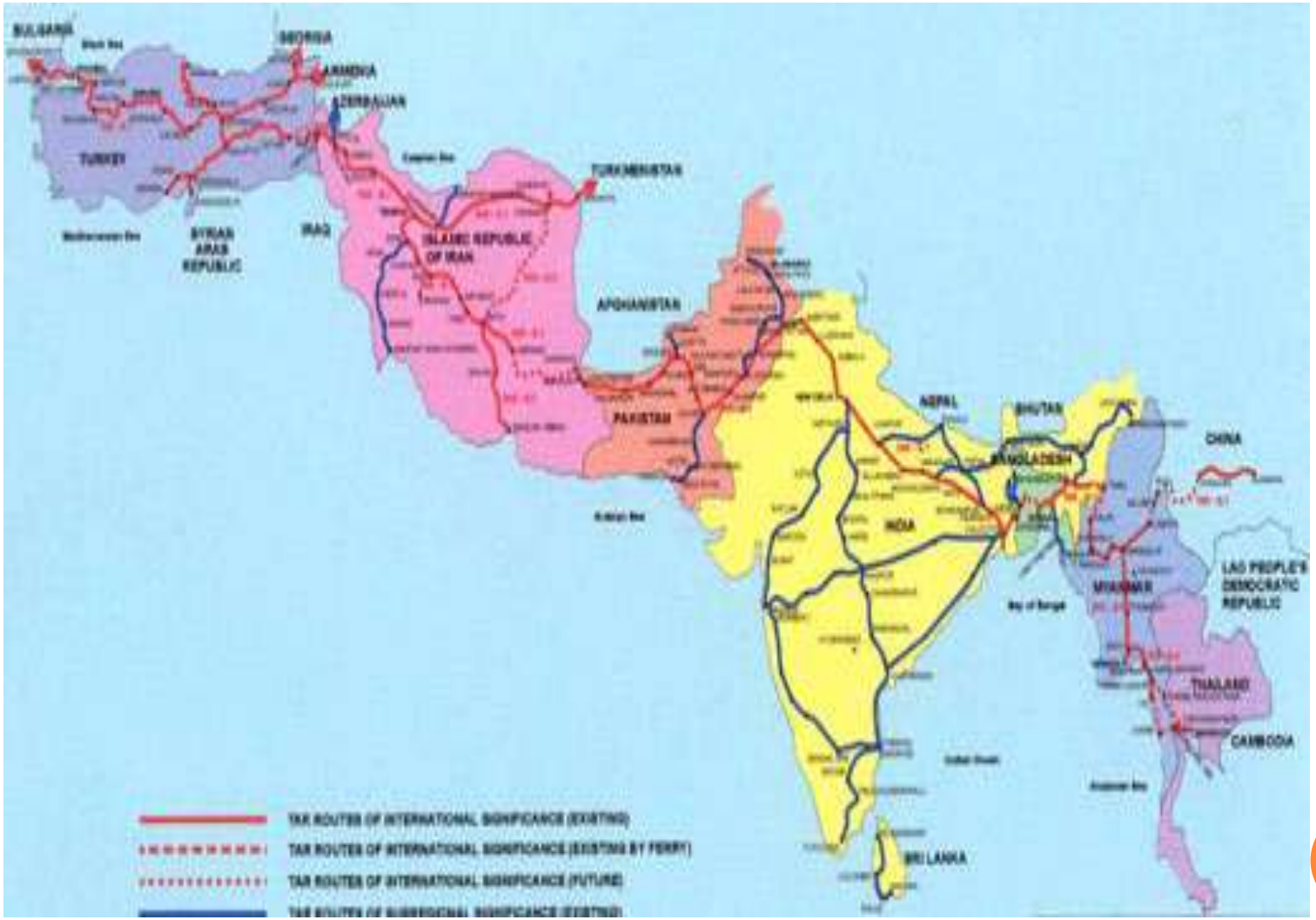
The Sinotrans Container service, Far East Land Bridge, Hupac, DB Schenker Rail Automotive, etc. operate container services, transporting high value, time-sensitive freight, e.g., computers, auto components, FMCG.

Achieving transit of 17-20 days for the 11,500 km journey, which in due course can be pared to 8-10 days.

- Today, rail carries over 1m TEU from East Asia to Europe (UIC), enabling shippers save transit time more than half.

RZD working for the Trans Siberian Seven Day rail transit programme, aiming at a reduction of $ 400 per container.

TAR: Southern corridor



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- **The Southern corridor** would run from Europe to Southeast Asia, connecting Turkey, Iran, Pakistan, India, Bangladesh, Myanmar, and Thailand, with links to China's Yunnan Province and, via Malaysia, to Singapore/Indonesia.
- In 1995, ESCAP undertook a preliminary study of route requirements.
  - Three routes of international significance were identified, designated TAR-S1, TAR-S2, and TAR-S3.
- Route TAR-S1 commencing in Kunming, running southwest from Chinese railhead Xiaguan (near Dali) to the border with Myanmar at Ruili, thence to the railhead of Lashio in Myanmar, along branch line, to Mandalay.
  - From Mandalay, it would follow an east-west axis, crossing Myanmar, India (twice), Bangladesh, Pakistan, Iran, as far as the border between Turkey and Bulgaria, at Kapikule.
  - From its western extremity it would allow access to Western Europe via Bulgaria, Romania, Hungary and Austria.
- From Kunming to Kapikule, it would have a total length of 11,700 km of which 9,790 km (or 84%) is in place, 95 km (1%) comprises ferry links, and 1,820 km (15%) would need to be constructed.
- From the border between Turkey and Bulgaria, Frankfurt (Germany) is another 1,785 km by rail, making a total distance between Kunming and Frankfurt of approximately 13,500 km.
- Between its eastern and western extremities, TAR-S1 would cross as many as seven national borders (with another five to be crossed west of Turkey) and would contain three different track gauges - metre (1,000 mm), standard (1,435 mm) and broad (1,676 mm).

TAR: SUB-REGION-WISE RAIL NETWORK

Southeast Asia	Cambodia, Indonesia, Malaysia, Myanmar, Singapore, Thailand, Viet Nam	12,600 km
Northeast Asia	China, Democratic People's Republic of Korea, Mongolia, Republic of Korea, Russian Federation	32,500 km
Central Asia and Caucasus	Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan	13,200 km
South Asia, Iran and Turkey	Bangladesh, India, Islamic Republic of Iran, Pakistan, Sri Lanka, Turkey	22,600 km
Total		80,900 km

Problems of standards and discontinuities

Two critical aspects merit special attention:

- break-of-gauge points, and
- missing links.

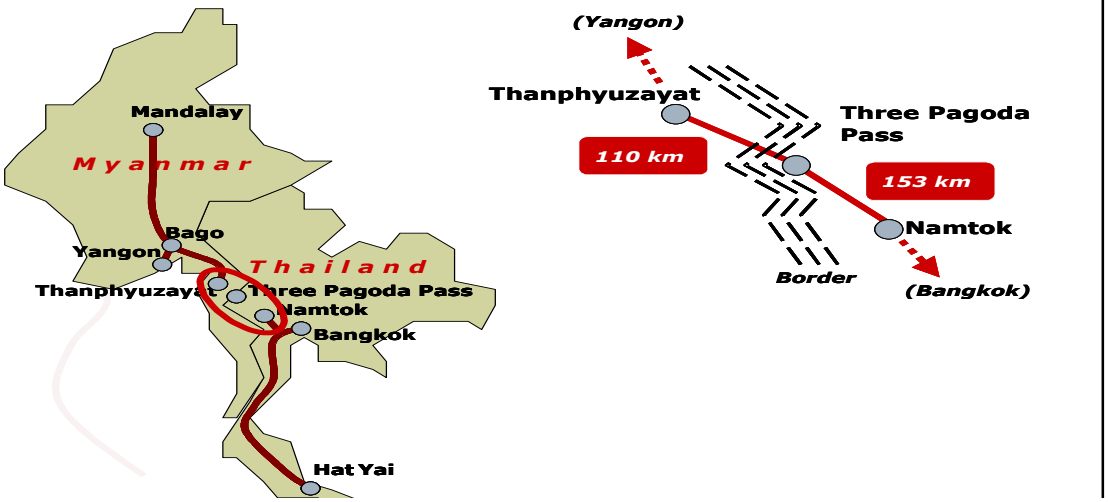
TAR: TRACK GAUGES

S. No	Rail Track gauge (mm)	Country	Route length (km)
1	1,676	Bangladesh23, Nepal, India, Pakistan and Sri Lanka	16,524
2	1,520	Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Mongolia, Russian Federation, Tajikistan, Turkmenistan, Uzbekistan	40,707
3	1,435	China, Democratic Republic of Korea, Republic of Korea, Islamic Republic of Iran, Turkey	33,784
4	1,067	Indonesia	4,035
5	1,000	Bangladesh, Cambodia, Lao People's Democratic Republic, Malaysia, Myanmar,Singapore, Thailand , Vietnam	9,882

TAR : MISSING LINKS

Country	Section	Gauge (mm)	Length (km)
Turkey	Eastern and Western shores of lake Van	1435	99
	Across Bosphorus Strait	1435	4
India	Jiribam -Tamu	1676	180
Bangladesh	Jamuna River Bridge -Joydebpur	1676	99
Myanmar	Tamu-Kalay	1000	135
	Thanbuzayat-Three Pagoda Pass	1000	110
	Lashio-Muse	1000	232
China	Muse-Dali	1435	632
Thailand	Three Pagoda Pass -Namtok	1000	153
Cambodia	Poipet – Sisophon	1000	48
	Phnom Penh – Loc Ninh	1000	286
Laos People's Democratic Republic	Nong Khai - Vientiane	1000	14
Vietnam	Loc Ninh – Ho Chi Minh city	1000	129

MYANMAR-THAILAND LINKS



- For the 110 km missing link between Thanbhyuzayat and Three Pagoda Pass on the Thailand-Myanmar corridor, a feasibility study sponsored by Korea International Cooperation Agency (KOICA) submitted in April 2007. The link was estimated to cost US$246 mn.
- A 350 km long missing link, if constructed, will connect Indian rail network with Myanmar's.
  - Of this, about 150 km falls within India, for which a new rail line being built between Jiribam and Moreh at a cost of Rs. 2,941 crore (US$ 700 million).
  - For a 135 km Kalay-Tamu missing rail link (within Myanmar) on Myanmar-India corridor, a feasibility report was submitted by RITES in March 2005.

Linking Cambodia and Thailand

- There is a missing link of 130 km between Ho Chi Minh City in Vietnam and Loc Ninh on the Cambodian border.
  - A feasibility study completed; cost of construction is estimated at $150 million.
- The Second Survey and Design Institute of China Railway carried out a preliminary technical study on the 286 km missing link from Phnom Penh in Cambodia to Loc Ninh in Vietnam, where it would meet the proposed 128km line to Ho Chi Minh City.
  - China is already linked by rial to Vietnam by the 195km dual gauge line between Hanoi and Dong Dang.
  - Its report submitted in June 2005, with estimated cost of construction at $480m.

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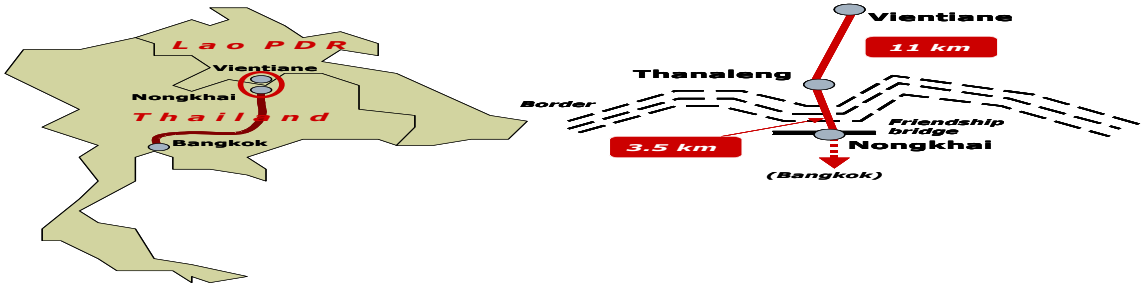
- The Cambodian Royal Railways has two main rail links:
  - 368 km northern line constructed during years 1929-1942 from Phnom Penh to the Thai border at Poipet.
  - The 48 km section Sisophon- Poipet destroyed during the war;
  - 264 km southern line constructed during 1960-1969 from Phnom Penh to Sihanoukville.
- Cambodia was scheduled to take up the construction of the 48 km Sisophon-Poipet missing link in 2007 at estimated cost of US$73 mn.
  - Malaysian government and KTMB donated used rails of 106 km length for the stretch and its subsequent link to Phnom Penh project.
- The State Railway of Thailand pursued the construction of the 6-km missing link from Aranyaprathet to the border at Poipet with Cambodia.
  - The missing links have been: (i) a 3.5 km stretch across the Friendship Bridge from Nong Khai in Thailand; and (ii) an 11 km link between Thanaleng and Vientiane.

LAO PDR-THAILAND



- The link connecting Lao PDR's capital city, Vientiane with Bangkok and eastern seaboard in Northeast Thailand had the Thai-Lao Friendship Bridge over the Mekong river constructed between Nong Khai and Vientiane and opened in April 1994.
- A feasibility study conducted by Korea Railroad Technical Cooperation in 2002 for a 13.6 km rail line from the centre of the Friendship Bridge to Vientiane city.
  - In phase I, a 3.5 km MG stretch from Nong Khai to Thanaleng over the Friendship Bridge completed in April 2008 at a cost of Baht 18.7 mn (US$600,000).
  - For phase II, the 9 km Thanaleng-Vientiene stretch feasibility study completed in August 2008 with French assistance.
- For Laos, a 148 km MG line is envisaged for the Khek-mugia project.
  - A feasibility study completed with financial assistance from Government of Vietnam and report submitted on 24 September 2008.
- Laos-China Railway Co. Ltd has awarded China Railway group subsidiaries contracts with a value of Yuan 8.13b for civil works on the Boten – Vientiene railway.
  - The construction of the 414km standard gauge line would start at Mohan on China-Laos border and run south to the capital and the Thai border town of Nong Khai.

TAR IN ASEAN

TAR in the ASEAN sub region is a special case.

- Its constituent railway systems conform to 1,000 mm or 1,067 mm track gauge standards;
  - Predominantly light track structures
  - Light axle loads
  - Slow speeds, and
  - Small vehicle profiles

- It contrasts with the TAR Northern corridor, which has a predominance of 1,520 mm gauge route (1,435 mm in China), heavier track structures, heavy axle loads, generally higher speeds, and larger vehicle profiles.

- The TAR network in Indo-China and ASEAN sub region is connected to Northern corridor via southern China linked to the Vietnamese railway system via a dual gauge (1,000 mm/1,435 mm) track extending into Vietnam as far as Hanoi.

- The rail lines in the south are connected to Malaysia at Padang Besar and Sungai Kolok.

  - The link is used for carrying containers between Port Klang in Malaysia and ICD Lad Krabang in Bangkok.

The Orient Express luxury train operates between Thailand and Singapore via Malaysia.

SKRL

Proposed at the 5th ASEAN Summit in Bangkok, December 1995, the Singapore-Kunming Rail Link. (SKRL) project is the core agenda for ASEAN Mekong Basin Development Cooperation (AMBDC) programme.

- As a SKRL component of TAR project, three sections are relevant in Vietnam:
  - 1,726 km Ho Chi Minh-Hanoi backbone network;
  - 130 km Sai Gon (Ho Chi Minh City)-Loc Ninh missing link (line built in 1933 heavily damaged in war, ceased operation in 1967), to provide connectivity between Vietnam and Cambodia; and
  - 119 km Vung Ang-Mu Da-Tan AP spur line to connect port of Vung Ang and extend to Laos.

China in its western backyard

The land of Babur (Uzbekistan), Bairam Khan (Turkmenistan), Mirza Haidar Dughlati (Kazakhstan), and Bedil (Tajikistan) is cloaked in mist of history.

- China's frenetic development of infrastructure in Central Asian Republics signifies its strategic and economic stakes in the region.
  - It has built a road link via Badakhstan in Tajikistan to the Karakoram Highway.
  - Energy pipelines are being rapidly built between China and Central Asia.
  - There is already an oil pipeline between Kazakhstan and China,
  - plans are underway to build a gas pipeline between Turkmenistan and China that will also draw in surplus gas available in Uzbekistan and Kazakhstan.

An extensive rail infrastructure to revolutionize Eurasian transit landscape, especially across Kazakhstan.

- The 293 km rail link from Zhetygen to Korgas complements Chinese Railways' 295 km branch from Jinghe on the Urumqi–Dostyk line.
- Lines to Korgas open a second rail connection, cutting 500 km off the route between China and southern Kazakhstan.

- There are plans to have a rail link between Osh and Ferghana, to create yet another east-west rail corridor between China and Europe, passing through Kyrgyzstan, Uzbekistan and Tajikistan.

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- A through rail link is available from China to Europe via Turkey.
  - Another transit route being considered is through Afghanistan and Pakistan along Ashkabad-Towraghondi-Herat-Kandahar-Chaman-Quetta.
  - The 75 km ADB-funded Hayratan-Mazar-i-Sharif rail line having been opened in 2012, the Khaf-Herat line is making progress:
    - Following the 77 km of this 1,435 mm gauge line within Iran and Iran-funded Afghan section from the border to Rahzanak/Ghurian, the final 62 km line to Herat is projected to be ready by end-2017.
- The TAT (Turkmenistan-Afghanistan-Tajikistan) railway, forming a part of the 2,100 km standard gauge Five Nation Railway corridor linking Kashi in China with Kyrgyzstan, Tajiskitan, Afghanistan and Iran, already has a 88 km rail link between Atamyrat and Aqina via a border crossing at Imamnazar in Turkmenistan.
  - This 88 km stretch rail-links the two border crossing facilities – Imamnazar of Turkmenistan and Aqina of Afghanistan.
- This will be the second rail connection between Turkmenistan and Afghanistan after a short cross-border spur at Towraghhondi built by the USSR.
  - Another 38 km extension of the Atamyrat – Imamnazar – Aqina has been planned from Aqina to Andkhvoy in Afghanistan.

TAT is the first railway project to be managed by the Afghan Railway Authority set up by Ministry of Public Works.

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- A long-planned link between China and Central Asia is the 268 km route from Kashi in western China over the Torugart pass and through southern Kyrgyzstan to Andizhan in Uzbekistan.
- The north-south railways, under construction on both sides of the Caspian, would eventually provide links from Kazakhstan to Iran via Turkmenistan and from Russia to Iran via Azerbaijan.
  - The 686 km corridor project (70km of line in Iran, 470 km in Turkmenistan and 146 km in Kazakhstan), launched in 2007, linking Gorgan in Iran with Uzen in Kazakhstan via Gyzylgaya, Bereket and Etrek was inaugurated in December 2014.
- Chinese engineering companies signed an agreement to support the construction of eight new lines in Iran, including the 370 km Qazvin-Rasht-Astara line which will form part of the north-south corridor to Azerbaijan and Russia along the western side of the Caspian.
  - The link is slated to be completed by end-2017; the portion connecting Astara is ready.
- Iran Railways proposed to be connected to Azerbaijan and Iraq 'in the near future'.
  - A link from Khorramshahr to Iraq opened .

An old dream…

An old dream: Ever since the inception of railways, engineers and administrators have talked of linking Europe with India by rail.

India's **Viceroy Dalhousie** contemplated an extension of the rail line from Calcutta to Singapore and Bangkok.

- Engineers William Low and George Thomas proposed to the British Prime Minister William Gladstone in 1871 the construction of a 9,500 km railway, connecting London with Karachi and Mumbai via Trieste, Istanbul, Aleppo and Baghdad.

The engineering duo believed the route could be completed at a cost around £24 million.

North-South Transport Corridor

- The commencement of operations on the international North-South Transport Corridor project — connecting Bandar Abbas port in Iran to St Petersburg in European Russia — is of significance to India.
  - It affords an alternative shorter sail to Bandar Abbas, from where cargo can move nearly 1,800 km by road to the rail-head at Astara in Azerbaijan, for forward journey to the Caspian and Port Olya in the Volga delta.
- Conceived by Russia, Iran and India in 2002, the rail connectivity is already established up to Azerbaijan.
  - Work is progressing to bridge the logistics gaps on the Iranian part of the project that was delayed due to UN sanctions.
- Multi-modal operations may reduce travelling time between St. Petersburg and JNPT.
  - The inter-continental rail link should reduce the time to 14 days, and the cost of transportation from around $4,000 for an FEU to lower than the $3,000 sea freight.
- India has already built a 240-km road corridor connecting Afghanistan with Iran.
- Next on agenda is to build a rail corridor connecting Iranian ports with the India-promoted Hajigak iron and steel project in central Afghanistan.

This will bring cargo to Bandar Abbas or Chabahar.

Challenges

- The TAR network for the entire sub region, with the inclusion of missing and new links, would have an overall route length of 14,320 km,
  - Of which 1000mm gauge lines would account for 9,436 km (66%); lines of 1,067 mm, 1,435 mm and mixed 1,000/1,435 mm gauge 2,295, 2,277, and 312 km, respectively.
- It was estimated that building single-track lines on the 13 major missing links over a total of 6,237 km will entail an investment of about $14.6 billion.
  - A large number of TAR lines need to be upgraded to double-track lines, requiring large outlays.
  - Additional investment will be required to develop intermodal interfaces – ICDs and border-crossing facilities.
- The "software" part of the project involves the next challenge, to move towards joint operationalisation of the corridors at financial and commercial levels.
  - Institutional and technical bottlenecks to be identified for remedial measures.
    - Development of common IT platforms and systems to be in place, also efficient access to gateway ports and dry ports in hinterland.

In the longer term, it will be necessary to have corridor-based organizations to act on behalf of the constituent railway administrations for activities, e.g., service-definition, tariff-setting and marketing.

SOME PROSPECTS READY TO BE GRASPED

- The UIC-sponsored ICOMOD (Intercontinental Combined Traffic) study, 2011 identified five corridors for the Eurasian railbridge, with an annual potential of $ 2.5-4.5 billion.
  - The Eurasian container market is expected to reach 17.4m TEU in 2020 and 22.7m TEU in 2030.
  - A rail market share of just 5-6% would yield, by 2020, a throughput of about 500,000 TEU annually, or about 20 trains a day.
- A concerted strategy warrants a determined bid to operationalise the TAR southern corridor.
  - Pending the construction of Kunming-Myanmar, Thailand-Myanmar, Bangladesh-Myanmar, India-Myanmar missing links, Northern corridor can work from near Dhaka to Istanbul/Europe via Zehedan.
- Trial container trains from Dhaka to Delhi, to Lahore, to Koh-i-Taftan, to Zahedan are indeed overdue.
  - The corridor commands a unique advantage of only one transhipment for break-of-gauge at Zahedan between Dhaka and Istanbul, in fact, Europe.
  - ECO- supported container train runs from Pakistan to Turkey via Zahedan.

Thank You