National Academy of Indian Railways

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Trans Asian Railway Network and Connectivity

One Belt, One Road
Inter-continental rail links – backbone of Modern Silk Roads

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The Silk Road

- From ancient times to the 1400s, the Silk Road, acclaimed as the "greatest route in the history of mankind".
  - served as the main route for trade between China and Europe.
- The term "Silk Road" refers to numerous trade routes across a broad swathe of Eurasia,
  - stretching from the China Sea to the Mediterranean and Southeast Asia to North Africa.
- The roads from Chengdu to Dali and thence to India recorded in ***The New History of the Tang Dynasty***:
  - parts of the Southern silk route, entering through Yunnan, then passing through Ruili across the Irrawady to Bhamo on the Burmese side, and across the Chin Hills and Chindwin river to Manipur in India.

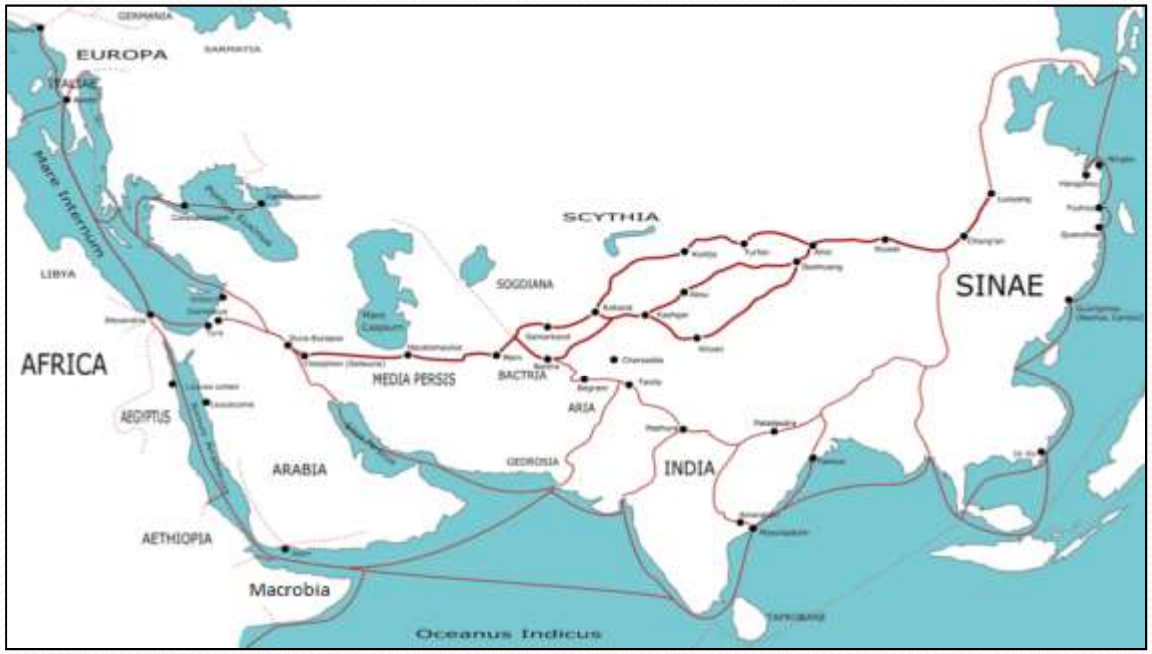
A new Silk Road-China's vision

- **The Silk Road Economic Belt**
  - focusing on bringing together China, Central Asia, Russia and Europe (the Baltic).
  - linking China with the Persian Gulf and the Mediterranean Sea through Central Asia and West Asia.
  - connecting China with Southeast Asia, South Asia and the Indian Ocean.
- A network of railways motorways, pipelines, ports, fibre optic cables.
  - Also entailing new ports, expanding some others, and industrial parks across Southeast Asia and beyond.
- **The 21st Century Maritime Silk Road**
  - proceeding from China's coast to Europe through the South China Sea and the Indian Ocean, on one route
  - from China's coast through the South China Sea to the South Pacific, on the other.

The underlying intent

- Soon after his ascension, **President Xi Jinping** announced
  - “...the greatest Chinese dream" was the "great revival of the Chinese nation".
- 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**.
- 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.

Traditional Silk Route with 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
    - using a sea connection, passing through the South Caucasus to reach Europe via Turkey.

The Juggernaut

- China has unveiled plans to invest **$1.1 trillion** across seven economic corridors, which include oil and gas pipelines, health, clean energy, transportation and mining.

  Chen Fengying of the China Institute of Contemporary International Relations, a state-run foreign policy think-tank.

- China has struck a deal with Russia to build world's longest high speed rail **connecting north-east China to Siberia**
  - then passing through a tunnel underneath the Pacific Ocean,
  - cutting through Alaska and Canada, to reach the continental US....

  An expert at the Chinese Academy of Engineering Wang Mengshu.

- **Spreading rail network**. China plans to
  - build a rail link with Columbia to rival the Panama Canal.
    - a 'dry canal', the 220 km network to link Columbia's Atlantic and Pacific coasts by rail.
  - build an international network for trains that would complete the journey from London to Beijing in just two days.
  - extend its Tibet railway network into the strategically sensitive Chumbi valley area, next to Sikkim and Siliguri corridor.
  - establish a direct rail-road link to Bangladesh's port city of Chittagong, further connect it to Yunnan province via Myanmar.

Railway expansion –incredible feat and ambition

- China's formidable presence in terms of rail and road projects typified by
  - **world's highest 1,142 km Golmud-Lhasa rail line**, opened in July 2006,
  - now extended westward by a 252 km link to **Xigaze**, Tibet's second largest city
  - Due to have a **further 400 km extension** not only to **Nyalam**, on the border with Nepal;
    - and a probable further 120 km link to **Kathmandu**.
  - **Also to Dromo**, close to Bhutan and Sikkim;
  - and yet further on to **Nyingchi** on the doorsteps of Arunachal Pradesh.

Tibetan Rail Extends

Rationale to support its burgeoning trade

- China's economic geography changes with **surging labour costs** in its eastern cities,
  - manufacturers move production west to the interior to reduce costs.
- Railway connections along the Modern Silk Road already being used by a number of MNCs.
  - **Hewlette Packard** uses cargo trains to ship its products from factories in China to Europe.
  - A demonstration service between Chongqing and Antwerpen via Dostyk and Klaipeda began running in October 2011, carrying **Acer** computer parts.
  - In June 2013, **DHL** began a weekly express freight train service from Chengdu in central China, moving across Kazakhstan, to Poland.
  - **DB Schenker Rail Automotive** launched a daily container train carrying BMW automotive components from Leipzig to Shenyang.
- Rail operators are targeting more time-critical, high-value goods such as computers, electronic components, FMCG and automotive parts.
- Trucking goods from inland factories to Shenzhen or Shanghai port on the coast and sending goods by ship takes **five weeks**.
- It takes as long as 35 days to ship a container from the 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.

Yet a lot more to be done

- As the rail land-bridge adds an option that is '**faster than a ship but cheaper than a plane**'
  - It would require a basic minimum frequency of at least one departure per week.
  - Also to ensure reliability of transit.
  - Further, a need for publication of prices and tariffs for trains as well as train paths.
  - Necessary to develop regular services running to **fixed timetables**, with **simplified border formalities**.
  - The problem of varying maximum permissible/feasible train lengths on European systems
  - There is the 1520 mm gauge region - including Mongolia, Kazakhstan, Ukraine, Belarus, the Baltic States and Finland,

Countries using 1435 mm gauge notably include China, Poland and Germany.

Rail connectivity - a central feature

- China's underdeveloped north-western Xinjiang province.
  - Sharing borders with India, Pakistan, Afghanistan, Tajikistan, Kyrgyzstan, Kazakhstan, and Russia, has been connected by
  - the 1,904-km double-tracked Xinjiang-Lanzhou Railway to north-west China and the main Chinese railway network.
- The railway corridor extending to Kazakhstan makes Xinjiang region a hub.
  - with high development potential between Central Asia and industrialized parts of China.

China woke up to opportunities in its western backyard - Central Asian Republics

- The land of **Babur** (Uzbekistan) and **Bairam Khan** (Turkmenistan)**Mirza Haidar Dughlati** (Kazakhstan) and **Bedil** (Tajikistan) is cloaked in mist of history.
- Kazakhstan itself, world's 9th largest country by land mass, with just 15m population.
- China's frenetic development of infrastructure signifies its strategic and economic stakes in the region.
  - China has built a road link via Badakhstan in Tajikistan to the Karakoram Highway.
  - Energy pipelines being built between China and Central Asia.
  - There is already an oil pipeline between Kazakhstan and China,
  - Plans underway to build a gas pipeline between Turkmenistan and China, to also draw in surplus gas available along the pipeline route 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 the Chinese Railways' 295 km branch from Jinghe on the Urumqi–Dostyk line.
  - The lines to Korgas open up a second rail connection between the two countries, cutting over 500 km off the route between China and southern Kazakhstan.
- There are plans to have a rail link between Osh and Ferghana
  - Which would create yet another east-west rail link between China and Europe, passing through Kyrgyzstan, Uzbekistan and Tajikistan.

A rail mesh across *Stan* landmass…

- **A through rail link would be available from China to Europe via Turkey**.
  - Another transit route being considered through Afghanistan and Pakistan along Ashkabad-Towraghondi-Herat-Kandahar-Chaman-Quetta.
  - The 75 km ADB-funded Hayratan-Mazar-i-Sharif rail line was opened in 2012. The Khaf-Heart line is making progress:
    - the 77 km of this 1,435 mm gauge line within Iran is nearing completion;
    - construction of the Iran-funded Afghan section from the border to Rahzanak/Ghurian is reported to be 2/3rds complete;
  - 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 .
  - preliminary agreements signed in December 2014.
  - already has a 85 km rail link between Atamyrat and Imamnazar in Turkmenistan nearing completion, further being extended 3 km up to Aqina.
  - This 88 km stretch will rail-link 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 35 km rail link has been planned from Aqina to Andkhvoy.

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

Also across Iran…

- 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 likely to be ready by end-2016.
- President Hassan Rouhani recently announced Iran Railways would be connected to Azerbaijan and Iraq.
  - A long-planned link from Khorramshahr to Iraq planned to be opened in November 2016.
- Meanwhile, the first container train between China and Iran
  - Carrying 32 containers left Yiwu on 28 January 2016 on the 10,399 km journey, and arrived in Tehran on 15 February.
  - 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.

Strategic Linkages…

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

- For many years, it was the Karakoram Highway, of which Kashgar is the railhead, which constituted China's lone attempt to extend its reach to South Asia.
- This is now sought to be vastly upgraded and expanded
  - To cover not just road, but rail and pipeline connectivity.
  - Also intends to link Nepal to the Karakoram Highway across the Tibetan plateau and Aksai Chin.

A web of steel extending to Southeast Asia

- China's development assistance to **Bangladesh** includes revamp of its port infrastructure
  - plans to construct the second Padma bridge,
  - a 130 km rail line from Chittagong to Gundum on Myanmar-Bangladesh border.
- The 232 km Lashio-Muse/Ruili rail line that China builds would provide a strategic link through an extensive rail network across **Myanmar**.
- China has built a 1,100 km long pipeline to tap the rich Shwe gas fields from the Kyaukpyu deep sea port on Myanmar's Arakan coast to Kunming.
- Having got Myanmar to agree to a multiple road, rail and pipeline link between Kyaukphu on Myanmar's Rakhine coast to its Yunnan province.
- China trying to establish a road link to Bangladesh via Myanmar, presumably by extending the proposed Yunnan–Kyaukphu link to Chittagong.
- Actively promoting rail links.
  - from **Kunming to Yangon** through a 1,920 km long rail line
  - also to Cambodia
  - besides an exploratory survey for another route to link Vientiane.
- China Railway Group designing a 257 km US$ 600m rail line.
  - From Bat Doeng near Phnom Penh to the border near Loc Ninh, to connect the proposed 128 km line to Ho Chi Minh City.
- China is already linked by rail to Vietnam by the 195 km dual gauge (1,435 mm/1,000 mm) line between Hanoi and Dong Dang.

Extensive renovation of the Kunming-Hekou line and construction of 141 km Yuxi-Mengzi line support an early connection of the pan-Asian rail network.

Chinese Railways extends up to Lhasa in Tibet and beyond to Nepal, Bhutan and door- steps of India

String of pearls

- Links with regional maritime nations,
  - Financing nearly all of Sri Lanka's biggest infrastructure projects .
    - a new sea port at Hambantota,
    - an oil storage facility,
    - a new airport,
    - a thermal power plant,
    - an expressway,
    - besides a special economic zone at Mirigama near Colombo,
    - rebuilding the main roads in the war-ravaged north and east.

Latin American Forays…

- China actively engaged in gaining control of several important ports in Latin America.
  - Chinese enterprises control the Buenos Aires Container Terminal in Argentina
  - The Panama Ports Company
  - Cristobal and Balboa ports on either sides of the Panama Canal
  - Ensenada International Terminal at the international port of Manzanillo
  - Operations in Veracruz, Mexico, and two ports in the Bahamas

All this makes China's access to Brazilian iron-ore, Argentinean soybeans and Venezuelan oil.