National Academy of Indian Railways

Transport for Economic Growth

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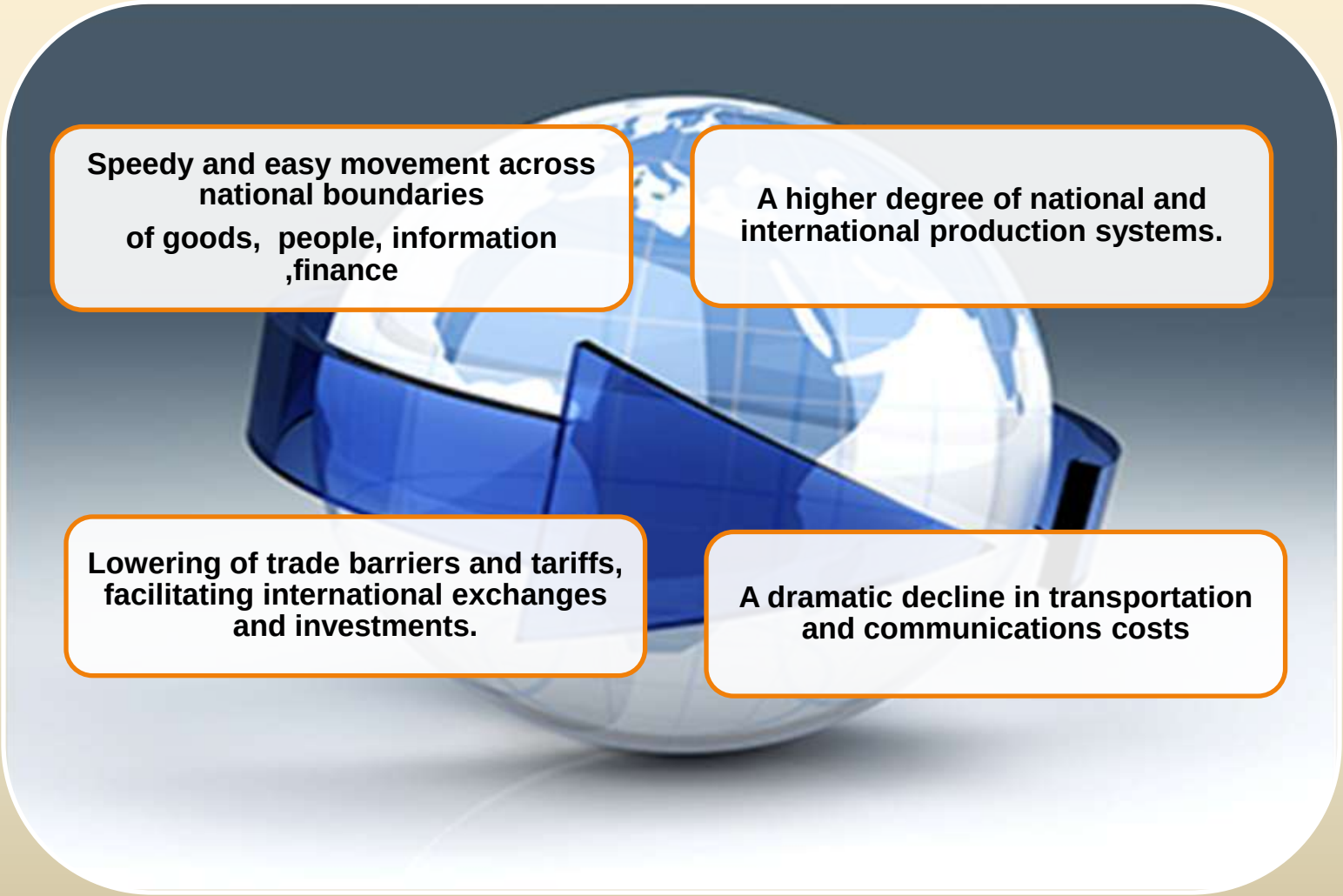
Globalisation impacts logistics sector as no other industry

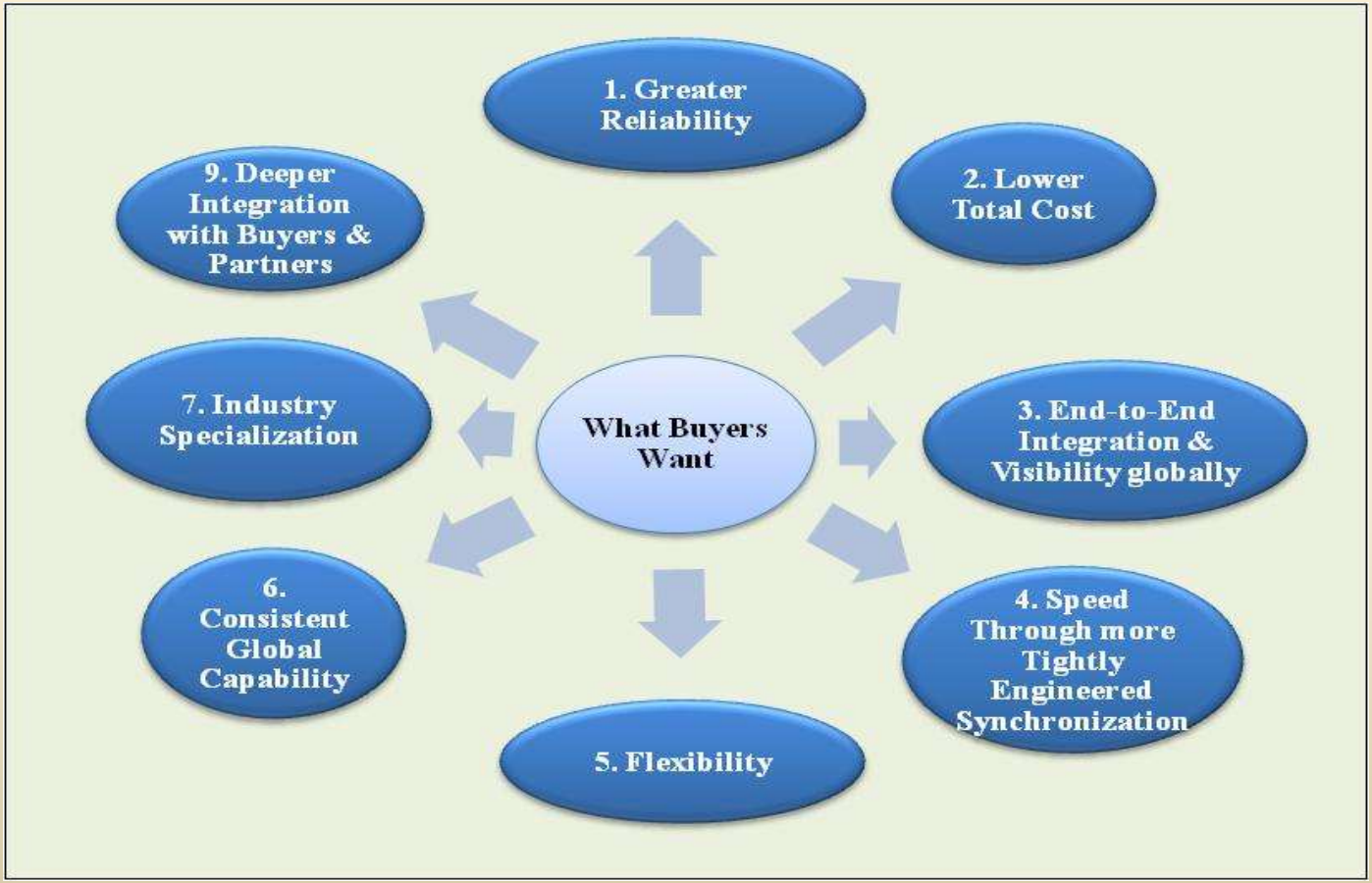


Mobility facilitates global integration

- **The globalization juggernaut on an inexorable march. There is easy movement of goods, people, information, and finance across national frontiers.**
- **Freight costs have about halved in real terms since the mid-1970s, driven by**
  - **investments in transport infrastructure,**
  - **better capacity use, and**
  - **technological progress.**
- **Falling costs of transportation and communications have made the world smaller.**
  - **But they have also made economic activity more geographically concentrated.**
- **Emphasis is on integration of national and international production systems with a greater demand of a common web of integrated supply chain for**
  - **speed,**
  - **efficiency and**
  - **reliability.**

Supply-chain management: an evolution of logistics

Customers have more demanding and diverging rrequirements



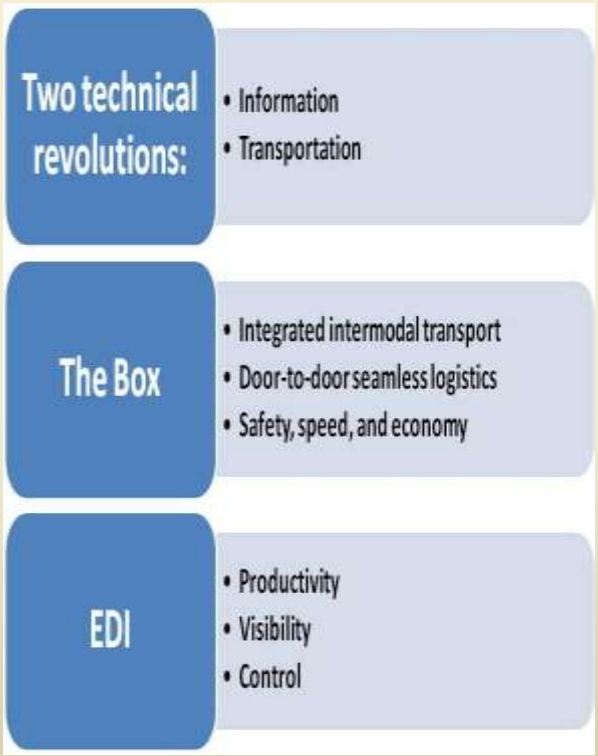
Supply chain management

- **Supply chain focuses on operational effectiveness and efficiency based on the successful experience in Japanese industry during1970s and 1980s:**

  - A Cox: An International Journal (1999)

- **The "dominant paradigm" in supply chain as the "lean approach has eight defining characteristics:**
  - **Perfection in delivering value to customers.**
  - **Producing only what is pulled from the customer just-in-time and concentrating only on those actions that create value flow.**
  - **Elimination of waste in all operational processes, internally and externally.**
  - **Recognizing that all participants in the supply chain are stakeholders and that value must be added for everyone in the business.**
  - **Developing close, collaborative, reciprocal and trusting rather than arms-length and adversarial relationship with suppliers.**
  - **Working with suppliers to create a lean and demand-driven logistics process.**
  - **Reducing the number of suppliers and working more intensively with those, given a preferred long-term relationship.**
  - **Creating a network of suppliers to build common understanding.**

Death of distance: end of geography



Logistics : new global architecture

Global economic change

- Rapid growth in business: services and high-tech manufacturing
- Steady growth in international trade
- Competition: on the basis of cost, quality & speed

Changing business practices

- Outsourcing; coordination of three flows like, Goods, Information and Funds
- Geographic spread of production
- Just-in-time inventory

New pressures

- Increasing sensitivity to transit/delivery times
- Cost competitiveness
- Customers now part of large supply chains

Time: the cutting edge

- **Product lines proliferate.**
- **Product life cycles contract**
- **Markets become increasingly service-sensitive.**
- **Consumers need products and services in their time-frame.**
- **The world of global business is resetting its clock in real time.**

Today, instead of cheaper and better, the new emphasis is on *quicker.*

- **To the four Ps of *Product, Price, Place* and *Promotion* must now be added *pace* or *speed,* in both manufacturing and delivery.**

Consumer incomes rising

- Higher income countries import higher quality goods. Speed in delivery today is itself an important characteristic of product quality.
- Exporters consider two costs:
  - the first is the direct cost of transport.
  - the second is the time cost.
- Among developed countries, trade logistics costs are typically 10% of GDP. For less developed economies, these costs often exceed 30% .
- Total logistics costs (packaging, storage, transport, inventories, administration and management) are estimated to reach up to 20% of total production costs in OECD countries.
- Developing countries account for 31% of total world imports, and 41% of freight payments. Freight costs for developing countries are much higher than for industrialized countries, i.e., 7.7% *vs* 4.8%
- There is immense potential for India, for example, to cut its logistics cost from the current 13% of GDP to 8-9% as in the US and Europe. Savings of around $20 bn will imply 4.5% cut in prices of Indian goods globally.

Transport in supply chain structure

- **Transport plays a key role in supply chain structure in contributing to**
  - **time-compression,**
  - **reliability,**
  - **standardization,**
  - **just-in-time delivery,**
  - **information systems support,**
  - **flexibility and customization.**

Each part of the supply chain influences the performance of others and the overall supply chain performance.

Transport: a high tech industry

- **More than half of world trade today is intra-industry trade.**
  - **This trade consists of final and intermediate goods; both increased considerably over the last 50 years.**
- **Intra-industry trade in machines and transport equipment is the highest.**
- **Falling communications costs have resulted in greater fragmentation of services into "components," supplied to final consumers from different parts of the world.**
- **Trade in intermediate goods is especially sensitive to transport costs. A 10% increase in trade costs is estimated to reduce trade volumes by 20%.**
- **A 5% increase in transport costs can produce trade friction equivalent to an ad valorem tax of almost 50%, when the share of intermediate inputs in value added is 70% (World Bank).**

Transport is not merely a cost centre as it has hitherto been considered.

- **Transport is fast becoming a high-technology industry, making research and innovation crucial to its further development.**

Transport: a strategic sector

- **Transport like a country's bloodstream has become an integral part of production process. A transaction cost factor and a critical variable in the corporate decision process.**
- **Transport and logistics costs most often pose a barrier at least as large, and frequently larger, than tariffs.**
- **A WTO report (July 2008): *Trade in a Globalising World* explains that spending on shipping for world imports in 2004 was three times higher than spending on tariffs.**
- **There is paradigm change in transport itself-it is today an integrated logistics service, involving the convergence of traditional transport infrastructure with the world of bits and bytes.**
- **DHL: *Logistics 2050: Delivering Tomorrow* scans the horizon for some decades beyond.**
  - **An emerging global transportation supergrid would ensure rapid exchange of goods between centres of consumption.**
  - **The new production technologies like 3D printers would accelerate the customization trend.**
  - **Given the exploding range of products and short product lifecycles, "on demand" manufacturing of products using fabbing technology will promote spare parts market (automotive, household appliances, consumer electronics, etc).**

Railways changed the world, it needs to change itself

- **IR has been losing market share-mainly to road transport; it is overwhelmingly patronized by captive customers for whom railways is the only option.**
- **Rail share in India can increase up to 46% (McKinsey) by 2020 and 50% by 2030.**
- **Extracting more from existing assets.**
  - **India's infrastructure development programmes have typically focused more on building new infrastructure as opposed to maintaining and extracting better services from existing assets.**
  - **Over 10% of the existing rail and road network capacity can be unlocked by upgrading existing assets.**
- **More investment to be allocated to rail and reallocating within roads and rail.**
  - **The allocation to railways needs to increase with large sums spent on building high-density traffic corridors, connectors ,and last mile links.**

Railways to reorient and re-dimension

- **Recent history's most important change-agent, railways over time failed to adapt and grow. Although still recognised nation's life-line, IR has steadily ceded its primacy in India's transport market.**
- **Imperative is it for railways to be a leader in the rapidly evolving world of logistics – with a customer-centric marketing strategy**
- **Besides handling its traditional core business of high volume dense cargo streams over long distances, it must devise innovative operational strategies to woo and win LTL freight.**
- **A rail renaissance is visible over the world, with extensive expansion of networks and capacity and speed enhancements. In India itself, there are schemes for dedicated rail corridors, development of inter-country linkages, agreement on Trans-Asian Railway network.**
- **Globally, railways are staging a come-back; they are competing with air services. Railways need to plan for capacity enhancement and extensive modernization of tracks, signalling and rolling stocks to optimize capacity,**
- **Need a new mindset to expand fast, improve response to customers for freight and passenger services.**

Railways: the agenda of action

- **Railways need to look for a role as wholesale carriers of bulk commodities in block trains and liner trains composed of sundry block loads of piecemeal wagons and containers on flat cars.**

Railways need to devise innovative means to convert/consolidate wagon loads into train loads

- **Do only line haul**
- **Let forwarders/CTOs consolidate LWL/LTL traffic into block trains.**
- **Create an expanded future , that of exclusive liner trains like inter-city passenger services**
  - **Supply wagons in train load formation.**
  - **Block-load operation end-to-end on specific corridors**
  - **Guarantee transit, with penalty for default**
  - **Pre-fixed departure schedules**
- **Leave commercial operations at terminals to others on contract, ownership , franchise.**
  - **Also overall tariff and marketing**
  - **Charges be mutually settled on the nature and scope of services.**

Container traffic to be the mainstay

Container traffic growth needs to be anticipated at twice the rate of country's GDP growth.

- **It calls for adequate and expeditious modernization and expansion of port infrastructure as well as intermodal connectivity.**
- **Containerization in India has scope to expand to an optimal 60-70% level of non-bulk general cargo in international trade.**
- **The huge potential of containerization of domestic cargo offers opportunities for an exponential growth. It implies a challenge for IR to put in place**
  - **the requisite line haul capacity,**
  - **terminal facilities,**
  - **extensive double stack container train infrastructure,**
  - **appropriate tariff structure and**
  - **facilitating environment for integrated intermodal development.**
- **Massive investments are indicated for select strategic choke points.**

Intermodal transport industry is continuing to evolve


Santa Fe
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Warehousing: a new concept

- An integrated logistics system has major objectives, e.g.,
  - obtaining the lowest possible inventory levels.
  - the shortest and most reliable lead times.
  - maintaining an appropriate level of customer service.
- Logistics centres may perform a number of functions including, but not only, the traditional warehousing function of storage.
- Modern logistics approaches emphasise flow rather than storage of inventory.
- Effective materials management seeks to minimize materials handling, at the same time making effective use of time and space.
- Warehousing is traditionally associated with the storage of goods.
- The role of the modern warehouse has as much to do with switching or transfer as it has to do with storage.

Towards regional cooperation

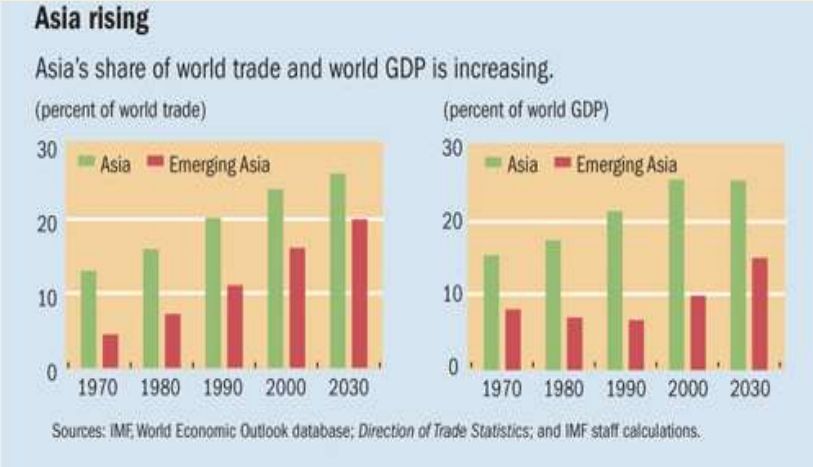
- **Structural change in industrial manufacturing is an ongoing process.**
- **Today's markets are dominated by networked and scattered structures.**
- **Transport and communications form an important component of regional cooperation.**
- **For the land routes to become viable arteries of international trade and commerce, countries need to recognise the benefits of a seamless movement of traffic irrespective of geographical boundaries.**

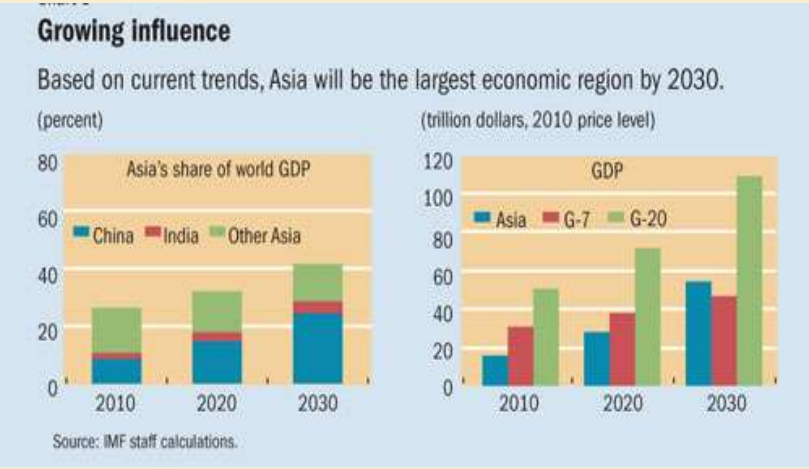
Some country profiles, 2012

		Population (million)	GDP growth	GDP per capita ($)	Total trade (billion$)	Rail* (km)	Road * (km)
Afghanistan*	652, 230	29.8	12.50	1100.0	6.8	200	42,150
Bangladesh	143,998	154.7	6.3	1622.9	51	2,622	21,296
Bhutan	38,394	0.7	9.4	5774.0	0.7	-	8,050
Cambodia*	181,035	14.9	7.3	2149.8	14.1	690	39,618
India	3,287,263	1236.7	3.2	3340.6	762	63,974	4,689,842
Indonesia	1,904,569	246.9	6.2	4271.4	287	5,042	496,607
Lao PDR	236,800	6.6	8.2	2521.5	4.6	-	39,568
Malaysia	329,847	29.2	5.6	14774.6	360	1,849	144,403
Myanmar	676,578	52.8	6.4	1600.0	15.7	5,031	34,377
Nepal	147,181	27.5	4.6	1279.3	5	59	10,844
Pakistan	796,095	179.2	4.2	2491.3	43	7,791	262,256
Singapore	697	5.3	1.3	53266.1	767	-	3,425
Sri Lanka	65,610	20.3	6.4	5384.3	219.3	1,449	114,093
Thailand	513,120	66.8	6.5	8463.4	360	4,071	180,053
Vietnam	331,210	88.8	5.0	3133.1	129	2,632	206,633

Source: World Bank
* = Data taken from CIA Fact book

Asia rising

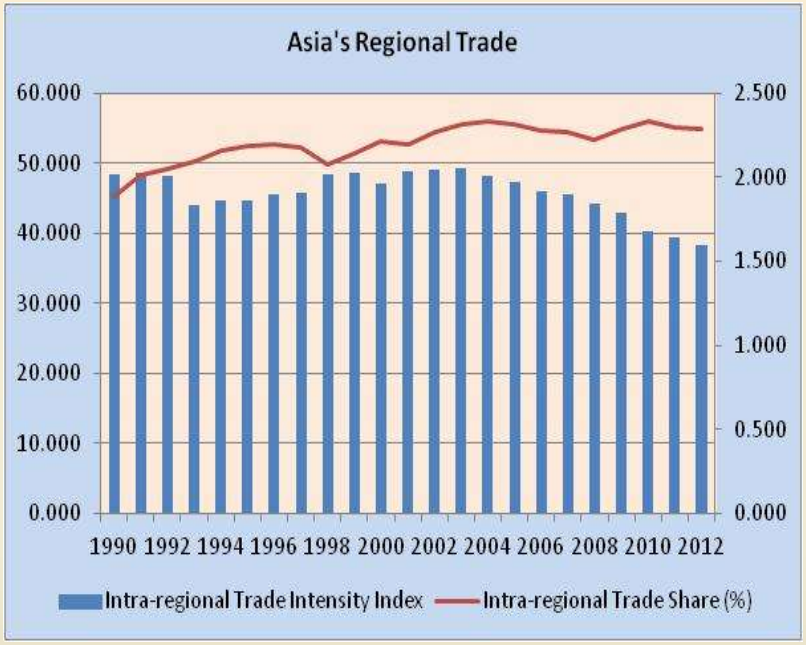


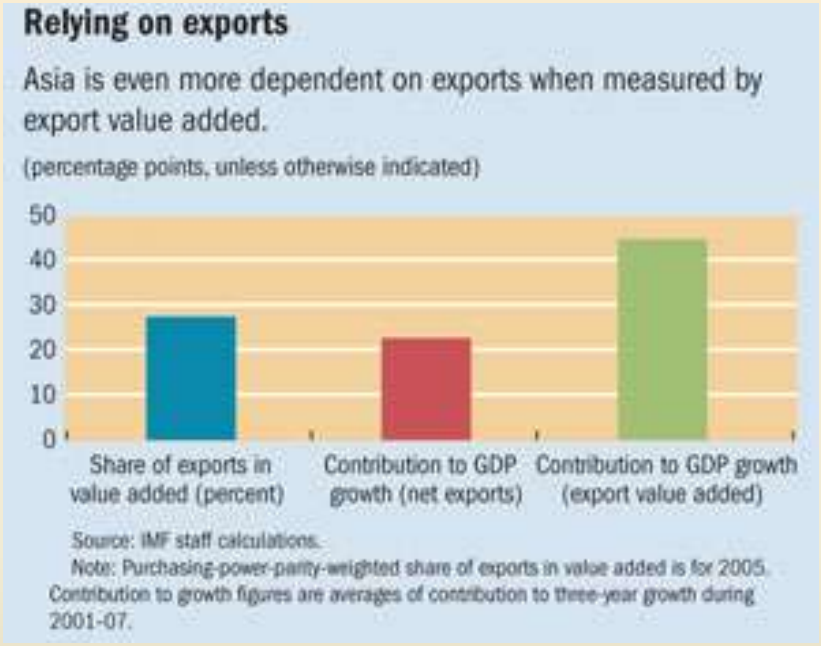


Source: IMF

- **The highest economic growth is expected in the Asia-Pacific region.**
- **By 2030, Asia's GDP will exceed that of the Group of Seven major industrial economies (G-7)**

New growth frontiers



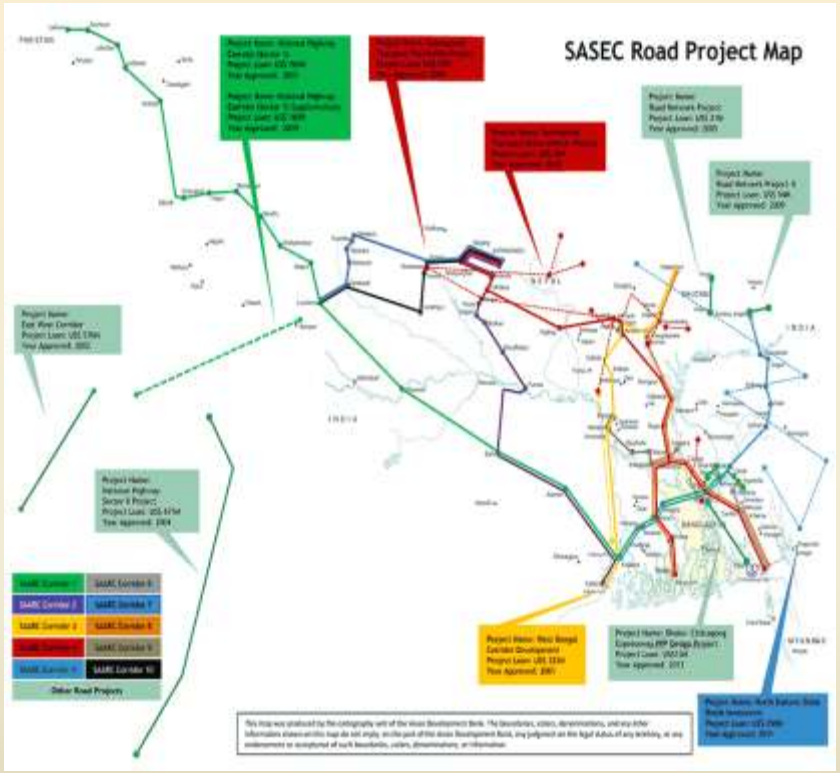


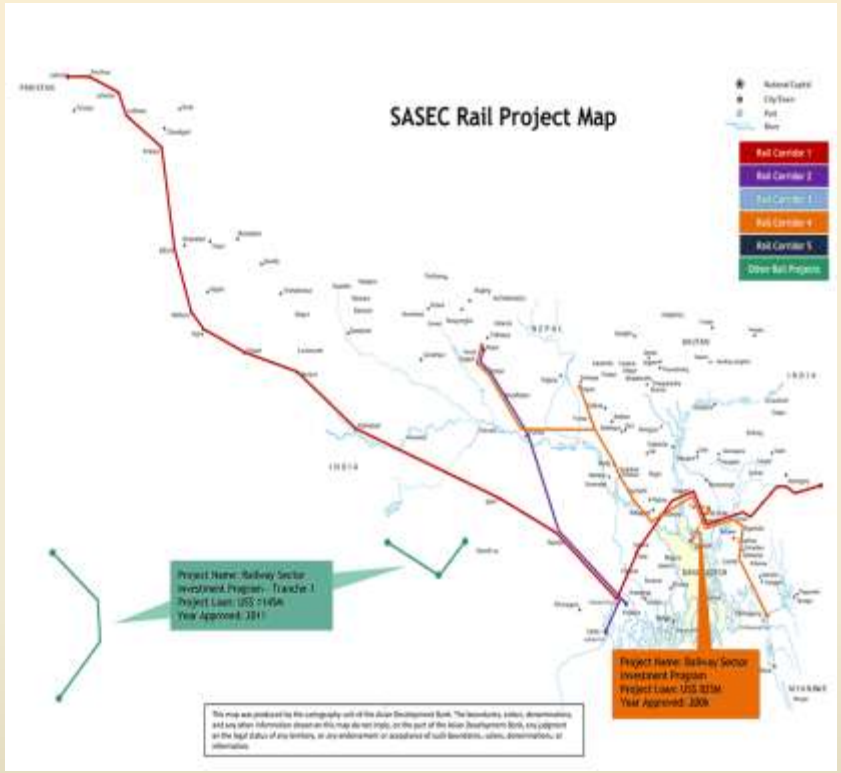
Source: IMF

Regional building blocks

- In the context of promoting the role of the Asian Highway (AH) and Trans-Asian Railway (TAR), United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) examined the potential for alleviating the trade and transit cost disadvantages of land locked countries and remote hinterlands of coastal countries.
- Its concomitant aspect is the promotion of intermodal transport and the development of freight modal interchanges and inland ports.
- An inland freight modal interchange facility stimulates growth of other economic activities in its vicinity.
- Inland port connectivity leads to a more efficient integration of the hinterland markets into the economy.

Regional transport in Asia: South Asia



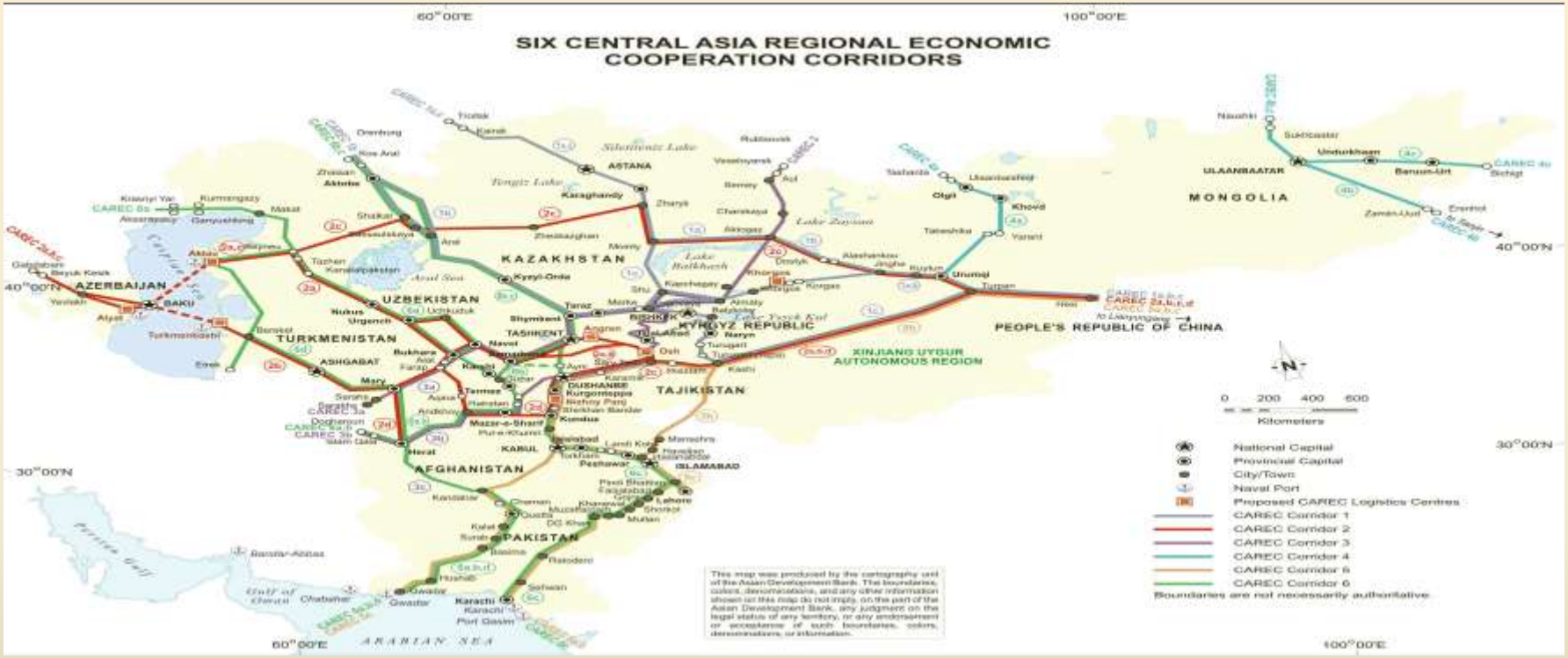


- **ADB has identified corridors in South Asia for both rail and road connectivity. There are 10 regional corridors in the SAARC region.**

Mekong transport corridors

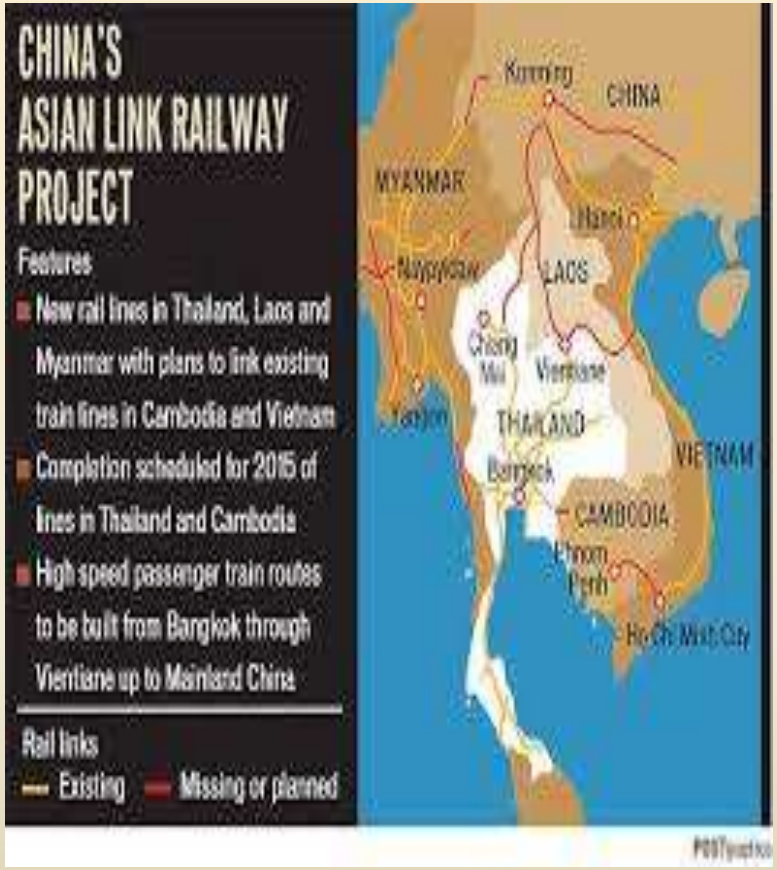
- **Economic corridors have been identified for Greater Mekong sub-regional connectivity mainly as road projects.**

Central Asia transport corridors



- **Work is in progress on rail and road corridors in Central Asian region. Along the identified corridors, rail connectivity between Uzbekistan and Afghanistan has already been extended up to Mazar-i-Sharif.**

ASEAN transport network

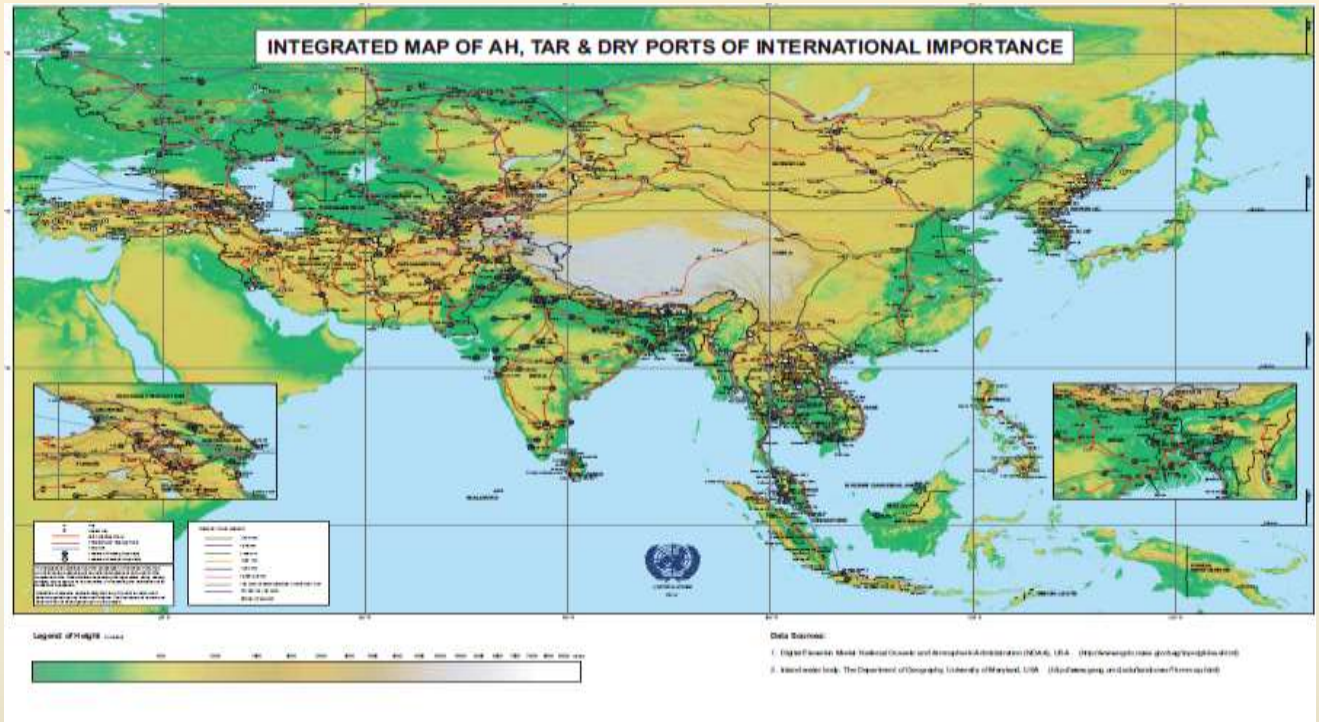


- **Rail and road corridors in ASEAN region has been identified under the aegis of ASEAN. Singapore-Kunming Rail Link is the most ambitious project.**

Trans Asian Railway

- **The TAR northern corridor has already been utilised for container carrying trains operating between East Asia and Europe..**

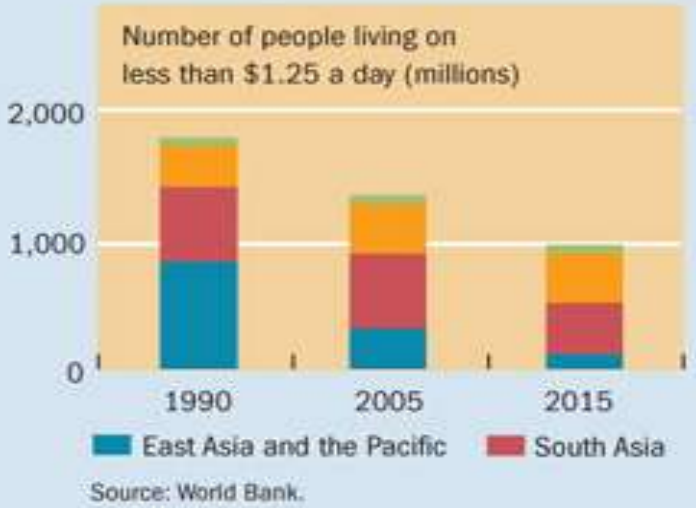
Integrated dry ports across Asia



- **With an inter-governmental agreement initiated by UNESCAP for the development of dry ports across Asia-Pacific, there is a heightened interest in the region for the establishment and operation of intermodal nodes.**

Poverty a major challenge

Despite improvement in poverty reduction, Asia still has the highest number of poor people in the world.



Source: World Bank.

Percent of the population living on less than $1.25 a day

	1990	2005	2015
East Asia and the Pacific	55	17	7
China	60	16	6
South Asia	52	40	24
India	51	42	25

- **The expansion of trade and investment in Asia-Pacific has helped lift millions out of poverty.**

Hostage to geo-political environment?

- **The division of the sub-continent in 1947 disrupted traditional economic and transport linkages.**

Overnight ,7,419 km of land borders were created leading to closure of several land routes.

- **Some parts of the sub-continent became virtually land-locked.**
- **The transport links became hostage to the geo-political environment.**
- **With the passage of time, operational technology disconnects have become more pronounced.**
- **Rail transport has suffered the most. Having lost the advantage of minimum critical mass in terms of traffic and network, the railway systems in Bangladesh, Pakistan and Myanmar are languishing.**

- **The sub-region loses the advantage of a socially benign mode of transport.**

Loss of benefits of common geography forfeited

- South Asia is home to 1.8 billion people and accounts for 26% of the world population but only 5% of its GDP. Contrast it with 25% share of the Indian sub-continent alone in the 18th century.
- Restrictive policy regimes have neutralised the beneficial effects of common cultural affinity, common geography, and the 'gravitational pull' of proximity on movement of goods and people.
  - Nearly a third of the population lives below the poverty line.
  - 10-15% of the youth unemployed.
  - Human development indicators are abysmally low, further compounded by gender bias.
- Despite fall in tariff rates, costs of non-tariff and behind-the-border measures remain very high.
  - The prevailing trading regime is often saddled with several opaque measures.
  - Land routes are restricted for movement of several commodities.
  - The benefit of proximity is thus lost.

Direction markers

- **Restoration of traditional transport links in the South Asian region for example, by road, rail and waterways would involve minimal investments and result in maximum benefits in the shortest timeframe.**
- **This would help revive languishing railway systems .**
  - **Transit traffic would add to their volumes and the additional earnings to their bottom lines.**
  - **Trans-border pipelines carrying energy and optic fibers providing digital connectivity can be laid alongside the railway lines and highways.**
  - **These corridors can thus become economic corridors of countries for multiple developmental purposes.**
  - **Transit traffic would account for trade in services and thus benefit the trade matrix of the transit countries.**
  - **Harmonization of operational platforms would promote interoperability of transport services.**
  - **Introduction of container services would reduce transport costs, improve efficiency , and minimize losses.**
  - **Use of ICT would reduce transaction costs, making the goods cheaper.**