

INDIAN ROAD NETWORKS

- »» Second largest in the world
- »» 62.16 lakh kilometres (2020-21)
- »» Considered more important than railways

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1. Easy construction and maintenance
2. Lower construction costs
3. Can handle rough and hilly topography
4. Can handle slopes and mountains
5. Cost-effective for short distances
6. Connects other modes of transport



ROADWAYS

CLASSIFICATION

- 1. Golden Quadrilateral Super Highway (GQ)
 - NHAI project linking Delhi - Kolkata - Chennai - Mumbai
- 2. National Highways
 - Link extreme parts of country primarily
- 3. State Highways
 - Link state capital with district headquarters
- 4. District Roads
 - Link district headquarters with other places
- 5. Other Roads
 - Link rural villages with towns
- 6. Border Roads
 - BRO develops roads in bordering areas



Golden Quadrilateral (GQ)

The image shows all the major places of India covered by these super highways.

Atal Tunnel

- »» World's longest highway tunnel (9.02 km) built by BRO.
- »» Connects Manali to Lahul-Spiti
- »» Built with ultra-modern specifications in Pir Panjal at an altitude of 3000 m from MSL.



Roads



On the basis of type of material used to construct

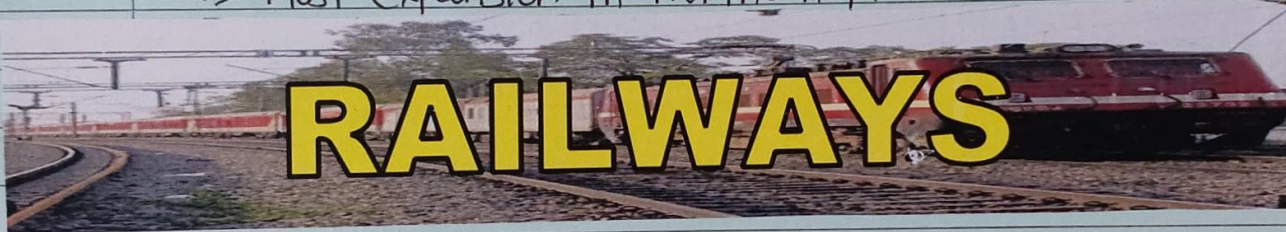
Pradhan Mantri Grameen Sadak Yojana (PMGSY)

A scheme which provides special provisions so that every village is linked to a major town in country by metalled roads



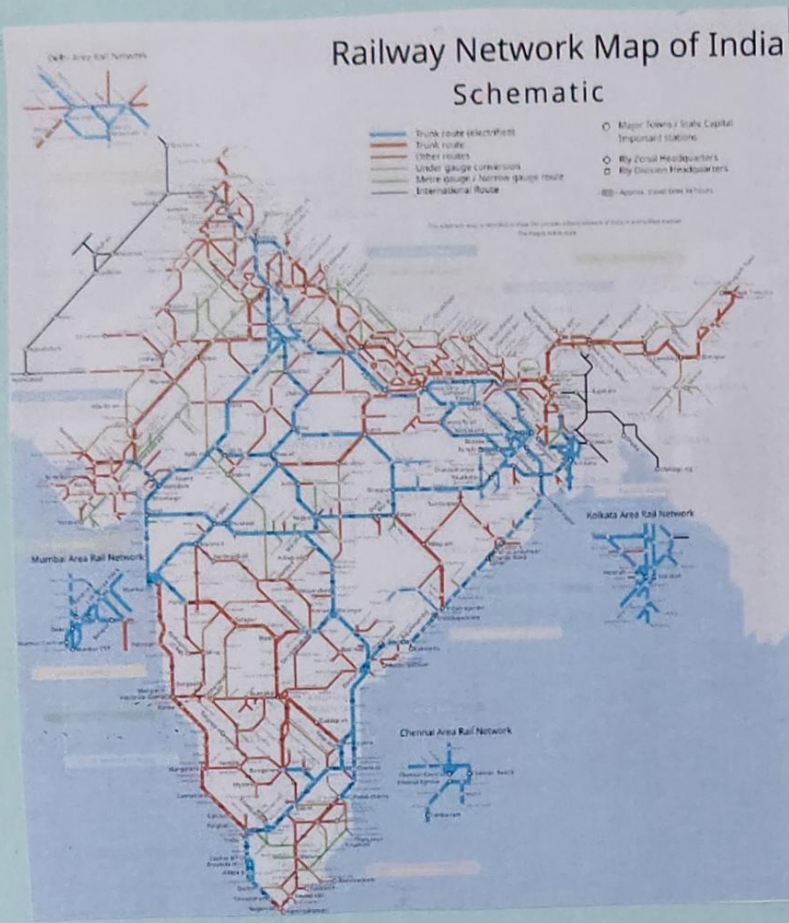
THE INDIAN RAILWAYS

- »» Principal transportation for freight and passengers
- »» Allows multifarious activities :
 - Business
 - Sightseeing
 - Pilgrimage
 - Transportation of goods (longer distances)
- »» Since more than 150 years
- »» Binds economy and development
- »» Most expansion in Northern plains



PROBLEMS

1. Rivers require construction of bridges
2. In hilly terrains - railway tracks laid through low hills, gaps or tunnels
3. Himalayas - unfavourable for railways due to high relief, sparse population and lack of economic opportunities
4. Difficulties in laying railways on:
 - Sandy plains of west Rajasthan
 - Swamps of Gujarat
 - Forested tracks of MP, CG, JH, OD
5. Passengers travel without tickets
6. Thefts and damage to railway property
7. People stop trains, pull chains and cause heavy damage



Schematic Railway Network Map of India

It shows the following routes:

- Trunk route (electric)
- Trunk route
- Other routes
- Under gauge
- Metre gauge / Narrow gauge
- International route

Delhi, Kolkata, Chennai, Mumbai rail networks shown separately.

Some Features of Indian Railways

- »» Largest public sector undertaking in India
 - »» First train:
 - Mumbai to Thane
 - In the year 1853
 - Distance : 34 Km
 - »» Reorganized into 17 zones
- More important in national economy than all other transport modes combined

Indian Railway runs on multiple gauge operations

Gauge in metres	Route (Km)
Broad gauge (1.676)	63950
Metre gauge (1.000)	2402
Narrow gauge (0.762 & 0.610)	1604
Total	67,956

PIPELINE TRANSPORT NETWORK

- »» New Arrival on transportation map of India
- »» Initially transported : Water only
- »» Now used to transport :
 - Crude oil
 - Petroleum products
 - Natural gas
 - Even solids (converted to slurry)
- »» Costs of laying pipelines is high but running cost is minimal
- »» Rules out trans-shipment losses or delays



PIPELINES

THREE IMPORTANT NETWORKS

- 1. From oil field in upper Assam to Kanpur (UP) via Guwahati, Barauni and Allahbad. It has branches from Barauni to Haldia via Rajbandh, Rajbandh to Mavrigam and Guwahati to Siliguri
- 2. From Salya (Guj) to Jalandhar (Pun.) via Viramgam, Mathura, Delhi and Sonipat. It has branches to connect Koyali, Chakshu, other places
- 3. The first 1700 km long Hazira - Vijayipur - Jagdishpur (HVJ) cross country gas pipelines links Mumbai High and Bassein gas fields with various fertilizer, power and industrial complexes in western and northern India.



Pipeline Networks of India

The map covers various pipelines in various categories whether it is existing or proposed, whether it is in construction or awarded - everything is included.

India's gas pipeline infrastructure has expanded to 18,500 km of cross-country pipelines

The far inland locations of refineries like Barauni, Mathura, Panipat and gas based fertilizer plants was only possible because of pipelines

INDIAN WATERWAYS

- »» Through these, in ancient times, Indian commerce and culture was spread.
- »» Waterways are cheapest means of transport.
- »» They are fuel-efficient and environment-friendly.
- »» Most suitable to carry heavy and bulky goods.
- »» India's inland navigation waterways - 14,500 km
 - Navigable by merchandise vessels - 5685 km
- »» Government has declared five waterways as NATIONAL WATERWAYS. (picture behind)
- »» 95% trade volume (68% in value) moved by sea.



WATERWAYS

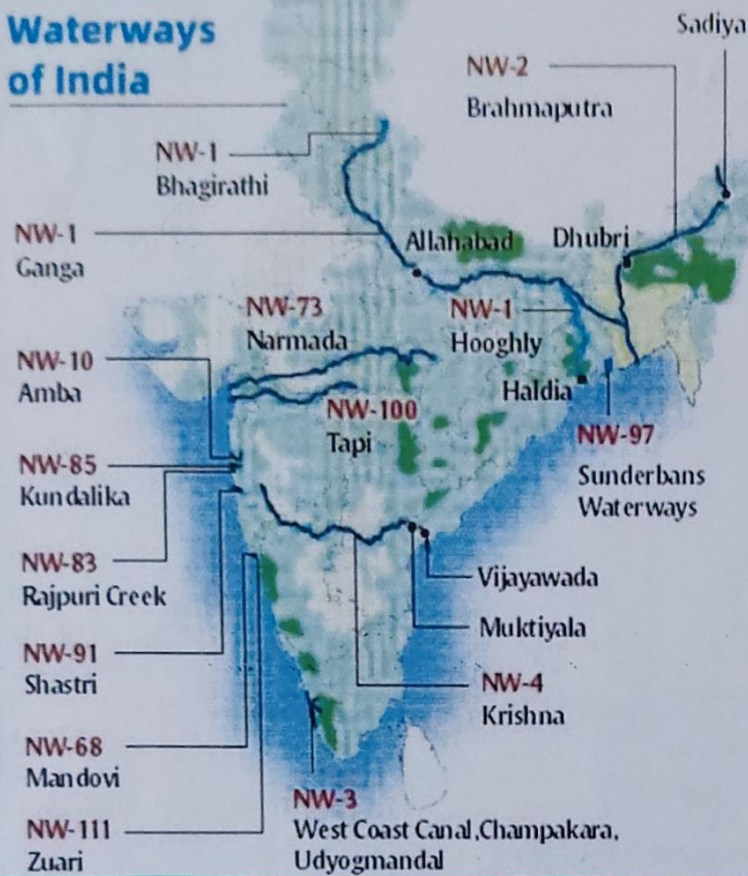
SEA PORTS

- »» India has a coastline of 7516.6 km
- »» India's ports :
 - 12 major (picture behind)
 - 200 notified non-majors (minor / intermediate)
- »» Major ports handle 95% of India's foreign trade.

OTHER WATERWAYS

- »» Other than the five National Waterways, there are also some inland waterways where substantial transportation takes place - Mandavi, Zuari & Cumberjua, Sundarbans, Barak and Kerala (backwaters)

National Waterways of India



National Waterways

NW-1 : Ganga (1620 km)
between Allahabad and Haldia

NW-2 : Brahmaputra (891 km)
between Sadiya and Dhubri

NW-3 : West-Coast Canal
in Kerala (205 km)

NW-4 : Godavari and
Krishna (1078 km)
along with Kakinada Puducherry

NW-5 : Brahmani
and Matai (588 km)
Mahanadi, East-Coast Canal

Major Sea Ports

1. Kanda port, Kuchchh
2. Mumbai port
3. Jawaharlal Nehru port
4. Mormugao port
5. New Mangalore port
6. Kochi/Kochchi port
7. Tuticorin port
8. Chennai port
9. Ennore port
10. Vishakhapatnam port
11. Paradip port
12. Kolkata & Haldia port

Major Ports of India



AIR TRAVEL

- »» Fastest, most comfortable and prestigious mode of transport.
- »» It can cover difficult terrains like high mountains, dreary deserts, dense forests and oceanic stretches easily.
- »» Access to north-eastern part made easy.
- »» Pawan Hans Helicopters Ltd. provides helicopter services to Oil and Natural Gas Corporation in its off-shore operations to inaccessible areas.



UDE DESH KA AAM NAGRIK (UDAN)

- »» First of-its kind scheme globally
- »» Designed to jump-start the regional aviation market

Regional Connectivity Scheme (RCS - UDAN)

- »» Conceived by Ministry of Aviation (MoCA)
- »» Promote regional connectivity by making flights affordable for common citizen.

CENTRAL IDEA

- »» To encourage airlines to operate flights on regional and remote routes through enabling policies and extending incentives.



Some air ports are marked in this map of India

These include cities of:

- A Srinagar
- B Guwahati
- C Imphal
- D KolKata
- E Vishakhapatnam
- F Kochi
- G Mumbai
- H Ahmedabad
- I Jaipur
- J Delhi
- K Lucknow
- L Bengaluru
- M Tirupati
- N Bhopal
- O Hyderabad

Some major airports crucial for India's aviation infrastructure

1. Indira Gandhi International Airport (DEL), Delhi
2. Chhatrapati Shivaji Maharaj International Airport (BOM), Mumbai
3. Kempegowda International Airport (BLR), Bangalore
4. Chennai Intl. Airport (MAA), Chennai
5. Rajiv Gandhi Intl. Airport (HYD), Hyderabad
6. Netaji Subhash Chandra Bose Intl. Airport (CCU), KolKata

These places have some of the most vital domestic / international airports

MAIL CHANNELS

» To facilitate quick delivery of mails in large towns and cities, six mail channels have been introduced.

1. Rajdhani Channel
2. Metro Channel
3. Business channel
4. Green Channel
5. Bulk Mail Channel
6. Periodical Channel



COMMUNICATE

SUBSCRIBER TRUNK DIALING (STD)

» India - one of the largest telecom networks in Asia



STD booth

» More than two-thirds of villages in India have been covered with STD

» Government provisions - 24-hours STD service in every village

» Uniform rate of STD facilities all over India

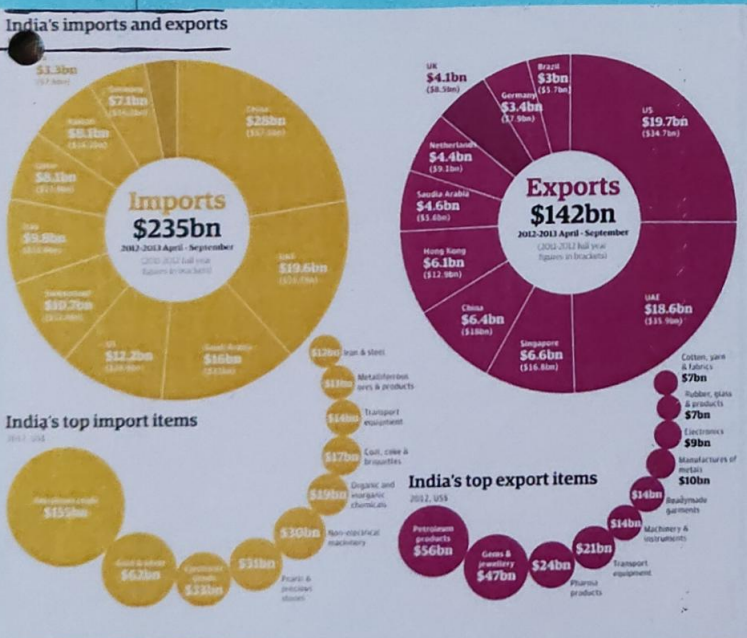
» It was possible by integrating the development in ~~state~~ space technology with communication technology.

INTERNATIONAL TRADE

- » Trade between two countries
- » An index to a country's economic prosperity
- » Export and import are components of trade
- » Balance of trade - difference between imports and exports of a country
 - Favourable balance - Value of exports exceed the value of imports
 - Unfavourable balance - Value of imports exceed the value of exports

TRADE

INDIA TRADE RELATIONS



- » India exports :
 - Gems and jewellery
 - Chemical products
 - Agriculture products etc.

- » India imports :
 - Petroleum products
 - Gems and jewellery
 - Chemicals
 - Base metals
 - Electronic items
 - Machinery etc.

India has also started exporting its IT.

TOURISM IN INDIA

- »» More than 15 million people engaged in tourism industry
- »» Advantages of tourism:
 - provides support to local handicrafts, cultural pursuit
 - promotes national integration
 - development of international understanding about our culture and heritage.
- »» Tourism has grown substantially over the last three decades.



TOURISM

FOREIGN TOURISM

- »» Foreign tourists visit India for:
 1. Heritage tourism
 2. Eco tourism
 3. Adventure tourism
 4. Cultural tourism
 5. Medical tourism
 6. Business tourism
- »» There is vast potential for development of tourism in all parts of India.
- »» Efforts are being made to promote different types of tourism for this upcoming industry.