

## airway

- 1> Discuss the basis on which the current network of airway is build in India, highlighting its role in the overall transportation milieu. (60 - 1992)
- 2> Assess the growing importance of air-transport in India and examine its role in the regional development of the country. (30 - 2011)

- Started with airmail service between Agra & Nainital in 1911.
- Airtransport Enquiry Committee recommended merger of all 8 airline into single Corporation (1950).
- Airport Authority of India was established in 1995 for providing safe, efficient Air Traffic service and aeronautical communication service.
  - Imp. for → difficult terrain (N&JK)
    - Islands.
    - National security & Army
    - emergency & disaster management.
  - low cost airlines rapidly expanding.

### Problems of aviation sector →

- Rising airline Turbine fuel prices
- Congestion → Delhi, Mumbai
- High airport charges
- Alternate/secondary airport with low charges not available
- Lack of technical manpower
- Issue of safety & security
- Land encroachment thus risky runway
- Decommission of old airports. (Bengaluru, Hyderabad) loss of infrastructure
- Merely USA, FDI in Aviation sector
- Emission → Carbon tax → UK & Australia.

Three types of Air routes →

- 1) Trans- continental Trunk Routes → international ports of Mumbai & Kolkatats are linked with foreign & overseas air routes at ~~center~~ <sup>like</sup> Delhi, Mumbai, Kolkata.
- 2) Regional trunk Routes
- 3) Local service Routes.

⇒ Naresh chandra committee on civil aviation

## Waterway - Inland

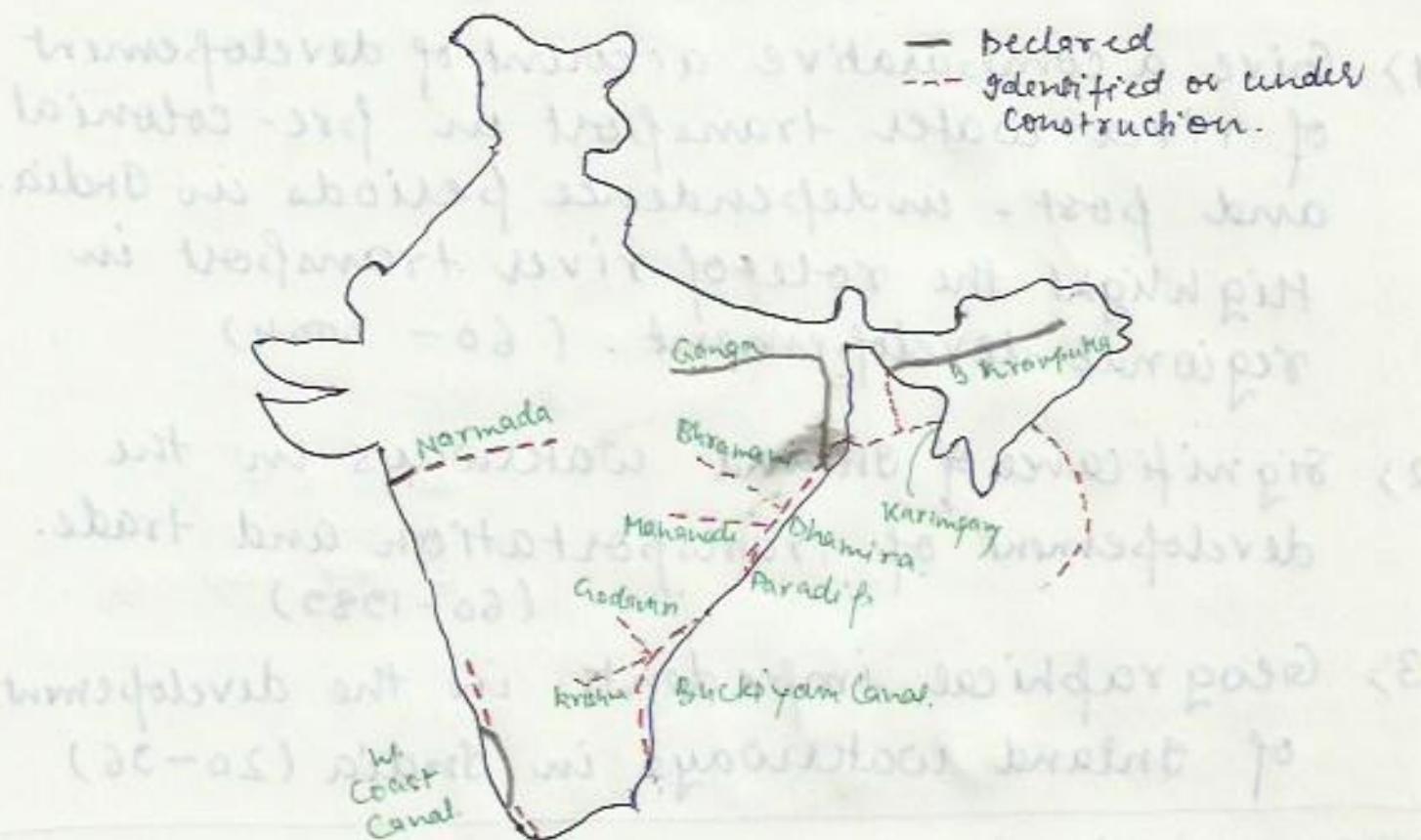
- 1) Give a comparative account of development of river water transport in pre-colonial and post-independence periods in India. Highlight the role of river transport in regional development. (60-2004)
- 2) Significance of Inland waterways in the development of transportation and trade. (60-1989)
- 3) Geographical impediments in the development of Inland waterways in India (20-36)

Steam navigation introduced in 1886 → promoted Indigo industry in Bihar, Jute industry in Bengal & tea industry in Assam, Sylhet & Cachar valley.

Significance → Cheap, suitable for bulky goods, fuel efficient, eco friendly, employment opportunities, reduces load on road & railways.

Problems →  
→ diversion of water for canals & irrigation  
→ Major pass & routes through Bangladesh.  
→ Can't compete with rail & road speed  
→ lack of infrastructure due to lack of govt. initiatives  
→ decrease in depth of water  
→ seasonal flow (South India) lack of sufficient water.  
→ Waterfall, Cataracts → Narmada Falls.  
→ silting

Inland vessel (Amendment Act) Bill - 2005 → extension of water limit  
→ facility of safety of vessel  
→ pollution control  
→ insurance against disasters.



IWAI → Inland Water Authority of India  
 CIWTC → Central Inland Water Transport Corporation

## Pipeline Network

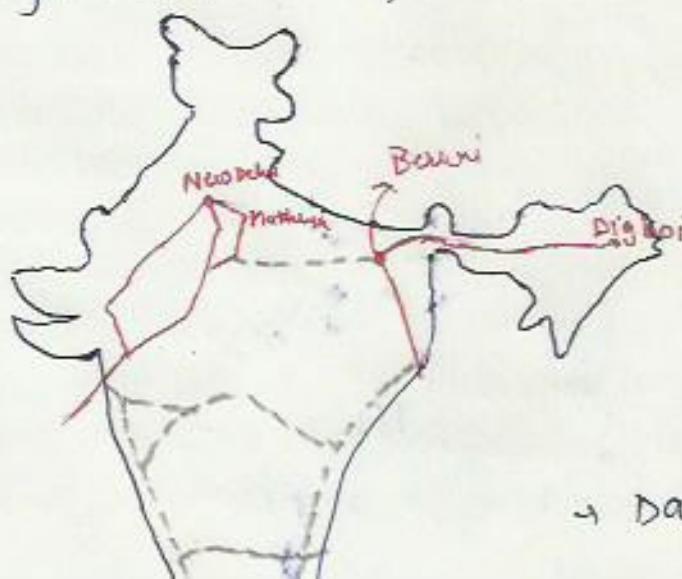
1) Discuss the oil and natural gas pipeline network in India. highlight their complementary role in regional development. (60-2002)

- It's the latest addition & is most convenient mode of transportation for petroleum products and gas in bulk for large distances.

### Advantages

- Can be laid through rough terrain & underwater
- Operation & maintenance low
- very low energy consumption thus environment friendly
- Integrate industrial regions
- No transhipment loss or delay.

- ### DisAdv
- Installation expensive (funds locking in developing world)
  - Increase in capacity at once not possible after installation
  - Security threats to pipeline.
  - underground leakage detection & repair difficult



### TAPI

→ Turkmenistan  
Afghanistan, Pak, India

→ Caspian sea  
Natural gas  
→ Along Silk route  
→ Fazili ka (gasfield)

→ Dhamtari gas field

Iran - Pakistan - India gas pipeline  
↳ Multan → Delhi → Bangladesh (Proposed)

India withdraw due to price.

(1998-99) want to import about 100 million  
(1000-02) thousand bbl/day in 2002

to those countries and so on the total will be  
any time around 1.5 million bbl/day required  
import of oil/gas and

therefore it is best option import oil and gas.

Gas importation is considered  
first because with most countries of gas and you

want to import from Iran/other countries.  
also to avoid import of heavy oil.

if you import oil/gas then it may be imported.  
so there is no problem.

old saying that want to import oil/gas.

so there is no problem to import oil/gas.

so there is no problem to import oil/gas.

15.4.1

multan  
Pakistan

100 km from

2nd largest

multan  
Pakistan  
oil/gas field  
producing oil/gas

multan has oil/gas

Ports → Importance in national & foreign trade

- 1) Discuss the growing importance of ports in foreign trade of India (60-2003)
- 2) Importance of coastal shipping of India (20-34)

- At independence only 5 major ports & 13 million tonnes cargo now → > 230 million tonnes.
- 90% of India's foreign trade by value.

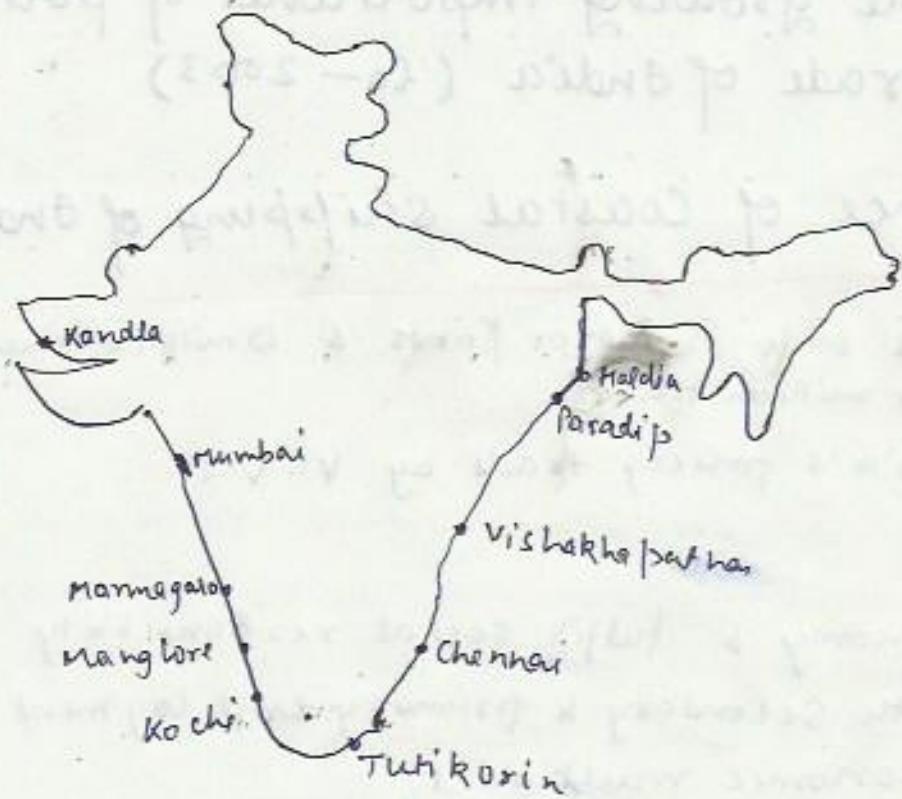
### Importance

- Improve economy & fulfill social responsibility
- provide both secondary & primary employment.
- Act as economic multipliers.
- promote industrial clusters.
- nature related industries like fishing, aquaculture, ship repair & dredging activity.
- Improve productivity & reduce costs in movement.
- pave way for technological innovation.
- PPP model → Rourkela port.
- Export processing zone.
- operation of ports on ~~copper~~ commercial lines.
- India's projected export-import → \$ 800 billion (2014)

### Problems

- global competitiveness
- technological upgradation
- fixed or rigid pricing at major ports under Tariff Authority of major ports (TAMP)
- low capacity & operational efficiency.

## Sea trade, ports & their significance



Kandla → After partition → Karachi went to Pakistan

Mumbai → Britishers, Natural harbour → Cotton textile, Automobile

Nova Sheva → Elephant Caves. (to reduce pressure of Mumbai port)

Marmagaon (goa) → estuary of Zurri river (iron ore, petroleum)

New maylure → Crude oil, fertilizer, oilseeds & edible oil

Kochi → Spices, Coconut, coffee, tea, crude oil, fertilizer.

Tuticorin → oldest artificial port

Ennore → to reduce pressure of chennai port.

## Railway

- 1> Critically examine the complementary and competitive character of the Indian rail routes and road network. (60 - 1999)
- 2> Explain the role railways as a unifying factor in Indian economy. (20 - 1998)
- 3> Development of Railway transport in India during different Plan periods. (20 - 1986)

• Principal means of transport, > 70% transport, particularly for long distance, 1853, metre gauge - 71%, narrow gauge - 24%, light gauge - 5%.

Significance → bulk material - coal, iron, oil, cement  
↳ agricultural industry  
↳ reduced regional disparity by unifying national market  
↳ quick movement in crisis, disaster, famine  
↳ MK Gandhi & GT brought people of diverse culture together to contribute to India's freedom struggle.

Problems → not completely metre gauge thus delay & losses  
↳ " = electrified  
↳ total length not increased substantially since independence  
↳ over burden due to lack of oil & gas pipe lines.

Railway during Plans → after partition NE Railway & Bengal-Assam railway was dismembered, thus railway left in Indian territory was to be integrated, 1952  
→ Railway of princely states such as Hyderabad, Jodhpur was to be integrated - 2nd plan

## Factors influencing railway penetration :-

- Political → ~~was~~ british aim at economic exploitation thus connects only ports & hinterland centres, & no uniform De  
 → Princely states, portuguese, french territory act as hindrance  
 → Old trading centre decays & new centres develop.

Geographical → advantage of flat plains & river valleys

Kanpur - Bhopal → between

Mumbai - Kolkata → Mahanadi & Tapti

### Pattern

1) Dense → N. Plains

Amritsar - Howrah

Delhi focal point

Radiate to all dir.

Guj, T.N → Moderate population



■ high density  
 □ med. to low  
 ▨ absence

Competition & complementary role ( road & railway )

- diversion from one mode to another at the cost of other  
 → sub(less)- optimum utilization of capacity of any of the modes.

long distance - bulk → railway

short & light → road. → act as feeder to railway

metro's → airway give competition.

### Regional

Himalaya → rail till foothill, then roadways

Brahmaputra valley → roadways complemented with waterways

Kerala → Canal, roads

Nilgiris → Ooty railway & road

Jhar-WB Mineral belt → railways dominant

W. Coast → Konkan railway → Roll on Roll off service.

## Transport as integrating role

- generate centripetal force to unite a diverse nation
  - integrate point of production with that of consumption
  - provide relief in disasters & calamities.
  - Integrate & expand economy & trade.
  - ports airport crucial for exports & imports
  - connect hinterland.
  - promote urbanisation & migration.
  - regional specialisation → Apple - JK, HP  
Tea → Assam  
Coffe → Karnataka  
Spices → Kerala  
Oil → Orissa, M.P. }  
• promote backward integration & thus minimise regional disparities in development.
- } \* Integrating them at national level.

## Roadways

- 1) What is the role of triple transport system in the regional development of India (20-09)
- 2) What is the golden quadrilateral? Discuss the progress made in its execution and impact on Indian economy (60-2005)
- 3) Discuss the significance of traffic flow pattern, emerging trends and problems of road transport in India (60-87)
- 4) Importance of road transport in India - development under the plans - (60-85)
- 5) Examine the role of road transport in regional development taking suitable examples from an area you have studied in detail. (20-2012)

A development of transport system ensures movement of passengers and goods along with ideas and skills from one region to another and thus helps in curbing regional disparities. Development of transport system reflects development of economy.

### Significance of road transport:-

- goods and passenger movement for short & medium distance
- Easy and cheap mean of transport, low maintenance costs.
- provide communication to difficult terrains such as Mts.
- Strategic comm to border areas (National Security - BRO)

### INDIAN ROADWAYS →

- Ancient times - Harrapan paved road, Mauryan & Mughal roads
- Road network increased 11 times since independence from 4 Lakh to 44 Lakh kilometre.
- It account for 5.4% of GDP (total transport sector - 6.4%)
- It carries 85% of passenger movement and 63% of freight movement of total land transport.
- Four types → National highway - 2%, 40% traffic  
State highway - 3.5%  
Rural roads - 60%  
Other district roads - 34.5%
- Indian road network is second largest in world.

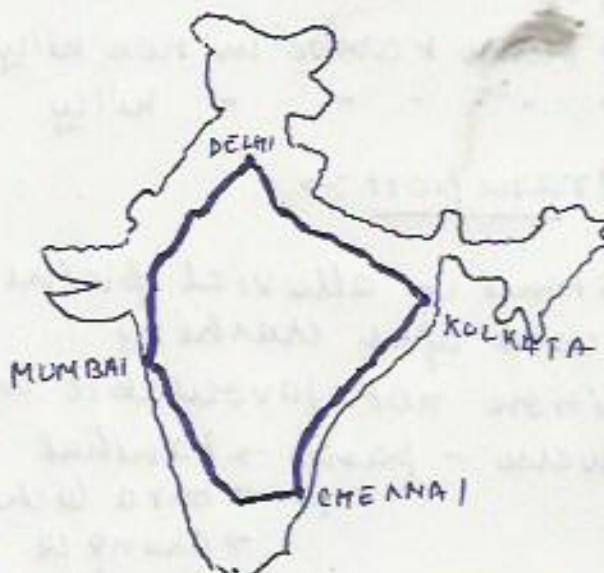
### Nogbar plan (1943) → To increase the road length from 6.56 lakhs to 10.60 lakhs over a period of 20 yrs.

- bring every village in developed agricultural area within 8.4 Km of metalled road, in semi developed within 12.8 Km, & in undeveloped 19.2 Km.

## National Highway Development Project :> (1992)

managed by NHAI to upgrade, rehabilitate and widen major highways of India. Its major projects are

- ① Golden Quadrilateral connects major industrial, cultural and agricultural sector. Its 5<sup>th</sup> longest project in world.  
State of art safety features.  
→ Connectivity between ports & major cities.



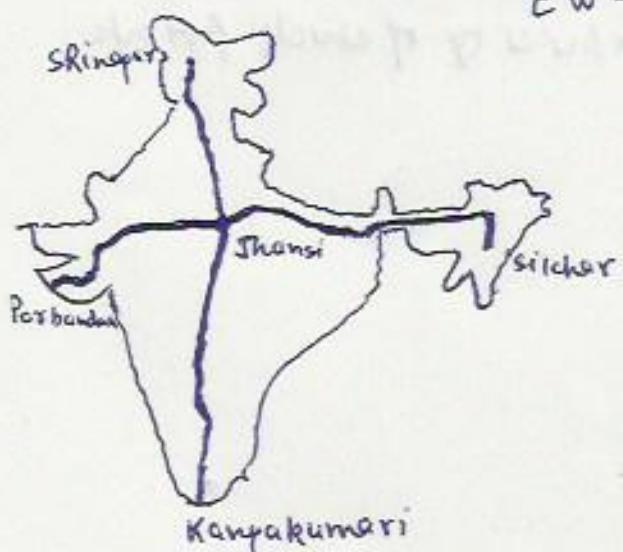
→ Also connect Dhanbad (Jh) Chittorgarh (Raj) Guntur(AP)

### Benefits

- Better movements of goods & people
- more choice of location of industry
- reduced wastage in agricultural sector
- Decrease in vehicle operation costs & time

- ② NS & EW Corridor :> its the second phase to minimize regional disparity in development

NS → connects Srinagar to Ranga Kumari  
EW → connects Porbandar to Silchar



→ PPP model  
→ corridor management for maximising speed & traffic volume while enhancing road safety and minimising operational cost

- ① Sagar Mala project → To connect major ports (12) to the golden quadrilateral and NS-EW corridor.
- ② Express highways - Pune-Mumbai, Great Decan highway, Taj

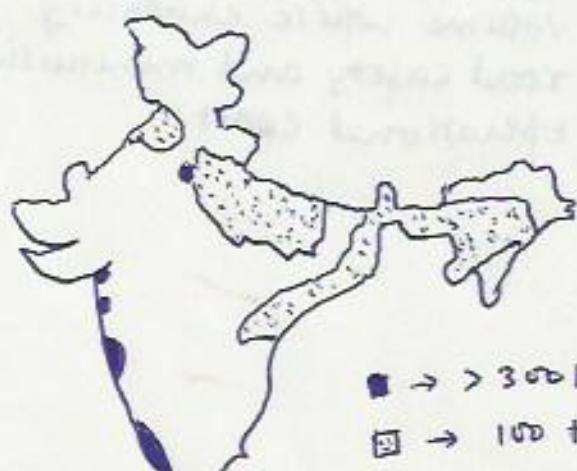
Rural Roads → Pradhan Mantri Gramin Sadak Yojna (2000)

- Under Ministry of Rural development.
- World Bank & Asian Development Bank funds
- to provide all weather road connectivity to villages.
  - 500 person & above in non hilly till 2007
  - 250 " " " " hilly " "

Problems for road transport →

- Non availability of stones in alluvial plains & thus river boulders are used after crashing
- Environmental condition not favourable in hilly regions & relief is adverse - passes → banjhal  
→ bara lechala  
→ Changla etc.
- forest degradation a problem in Central forested areas of MP, Chhattisgarh, Jharkhand, Karnataka.
- No roadside amenities & safety measures.
- unsurfaced roads & poor maintenance
- inter state permit & multiplicity of check points

Road density →



● →  $> 300 \text{ km}/100 \text{ km}^2$

◻ → 100 to 300