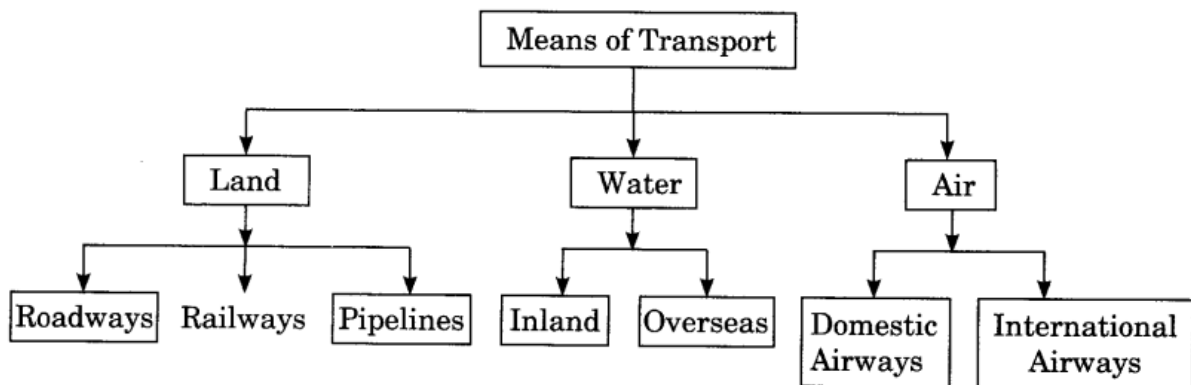


GEOGRAPHY – MODULE 3.4

TRANSPORTATION IN INDIA

- ✚ Includes – Rail transport, road transport, air transport, water transport, portal connectivity.
- ✚ India has one of the largest road networks in the world.
- ✚ India has largest railway system in Asia.
- ✚ Second largest railway system in the world.
- ✚ Use of transportation and communication depends upon our needs.

Major means of transportation



ROAD TRANSPORTATION

- ✚ Pathways and unmetalled roads used for transportation.
- ✚ With economic and technological development – metaled roads and railways emerged.
- ✚ To move large volume of goods and people from one place to another.
- ✚ Roads – popular mode of transportation.

✚ India has one of the largest road networks in the world – 5, 897, 671 km – march 2017.

For the proper construction and maintains, road is classified into four:

- ✚ National Highways
- ✚ State Highways
- ✚ Major District Roads
- ✚ Rural Roads

National Highways	<p>Roads that are constructed and maintained by the central government. Inert state transportation. Connect state capitals, major cities, important ports, railway junction. Constitute 2% of the total road length. Carry 40% of the road traffic.</p> <p>Golden Quadrilateral comprises – construction of 5,846 km long, high density traffic corridor – connect India four big metro cities of – Delhi, Mumbai, Chennai, Kolkata.</p> <p>North – South – East – West Corridor – north South corridor aims at connecting Srinagar in Jammu the megacities of India.</p> <p>North – South and East – West Corridor – connecting Srinagar in Jammu and Kashmir with Kanyakumari in Tamilnadu. East west corridor – planned to connect Silchar in Assam with the port town of Porbandar in Gujarat.</p>
State Highways	<p>Constructed and maintained by state government – PWDs. Join the capital states with district headquarters and other important towns. Roads are connected to national highways. Constitute 4% of total road length in the country.</p>
Major District Roads	<p>Roads connecting between districts headquarters and other important roads. Constitute 14% of the total road length.</p>
Rural Roads	<p>Connecting links in rural areas. Constitute 80% of the total roads in the country. Variation in the density of rural roads.</p>
Border Roads	<p>BROs Established in May 1960. To accelerate the economic development and strengthening defense preparedness through rapid and coordinated improvement of strategically important roads along northern and north eastern boundaries.</p>

	Premier multifaceted construction agency. Constructed roads in high altitudes mountainous terrain joining Chhattisgarh with Manali and Leh. They undertake snow clearance in high altitude.
International Highways	To promote harmonious relationship with the neighboring countries by providing effective links with India.



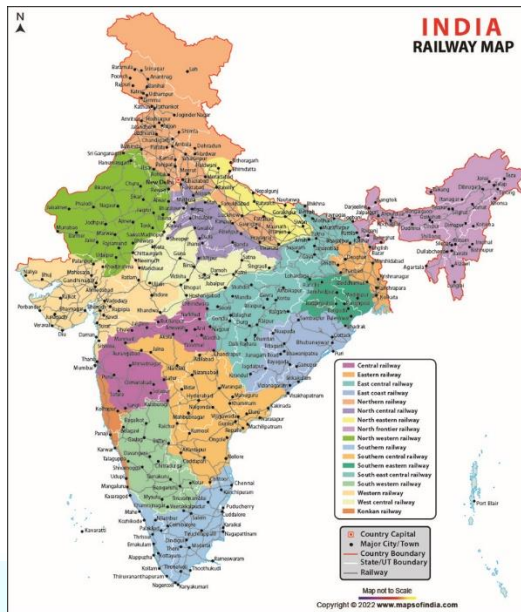
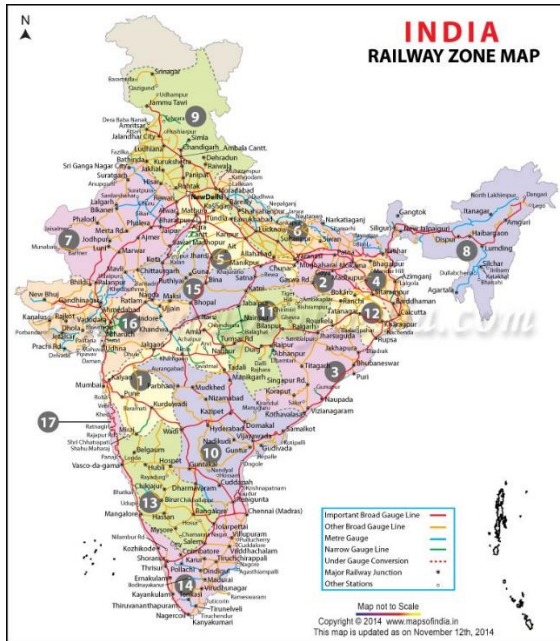
Sl. No	Name of National Highway	Length (Km)
1	NH-17 from Thalappady- Edappally	669.437
2	NH-47 from Walayar to Edappally	160
3	NH-49 from Bodimettu to Kundanoor	167.61
4	NH -47/C from Vallarpadam to Kalamassery	17
5	NH- 208 from Kollam to Kazhuthuritty	81.28
6	NH-212 from Kozhikode to Kerala -Karnataka border	117.6
7	NH-213 from Kozhikode to Thrissur	125.304
8	NH 220 from Kottarakara to Theni	190.3
9	NH 47A from Wellington Island to Kudanoor	5.92
	Total	1534.451

National Highway	Connecting Cities
NH1	Delhi-Ambala-Amritsar-IndoPak Border
NH2	Delhi – Agra – Kanpur – Varanasi - Kolkata
NH3	Agra – Gwalior – Indore – Nasik - Mumbai
NH4	Junction with NH3 near Thane – Belgaum – Bangalore – Ranipat – Chennai
NH7	Varanasi – Jabalpur – Nagpur – Hyderabad – Bangalore – Madurai – Kanyakumari
NH8	Delhi – Jaipur – Ahmedabad – Vadodara - Mumbai
NH9	Pune – Solapur – Hyderabad – Vijayawada
NH15	Pathankot – Amritsar – Bhatinda – Ganganagar – Bikaner – Jaisalmer - Kandla
NH22	Ambala – Kalka – Shimla – Rampur – Indo-Tibet border near Shipki La
NH24	Delhi – Bareilly - Lucknow
NH39	Numaligarh – Imphal – Palel – Indo-Myanmar Border
NH44	Shillong – Passi Badarpur – Agartala
NH47	Salem – Coimbatore – Trichur – Ernakulum- Thiruvananthapuram - Kanyakumari
NH48	Bangalore – Hasan - Mangalore
NH49	Kochi – Madurai - Dhanushkodi
NH55	Siliguri – Darjeeling
NH80	Makamah - Farakka
NH102	Chapra - Muzaffarpur
NH205	Ananthpur - Chennai



INDIAN RAILWAYS

- ✚ Length – 1,23,236 km with 13,452 passengers' trains.
- ✚ 9,141 freight trains – 2 million travelers – 3 million tons MT of freight trains daily from 7,349 stations.
- ✚ Fourth largest railway network in the world.
- ✚ Under single management.
- ✚ Main artery of the country.
- ✚ Lifeline of India.
- ✚ Contributes to the national growth and economic integration.
- ✚ First railway line in India – opened for public – 16 April 1853 – Mumbai to Thane – 34 km.
- ✚ First section of the east Indian Railway – Howrah to Hugli – 37km – inaugurated on 15 August 1854.
- ✚ Kanpur to Allahabad – opened in 1859.
- ✚ Southern part – Royapuram to Arcot – 105km – 1856.
- ✚ 1870 – all rail route between Kolkata and Mumbai – started functioning.
- ✚ Mainline from Mughal Sarai to Lahore was completed.
- ✚ 1871 – Mumbai to Chennai route – opened.
- ✚ Within short span of 18 years – 1853 to 1871 – most important cities of India were connected with rails.
- ✚ Presently, India has second largest network in Asia.
- ✚ India is at top with regard to passengers and kilometer earned.



WATERWAY TRANSPORTATION

Inland waterways

- ✚ Transport by rivers, canals, lakes.
- ✚ Utilization of rivers, canals, lakes, backwaters, creeks for transportation purposes.
- ✚ Cheapest mode of transportation.
- ✚ Away from railways and roadways.
- ✚ Inland water is easy for navigation.
- ✚ 1% water transportation of the total transportation.
- ✚ 2000 km is actually used.

Oceanic Transport

- ✚ Indispensable for foreign trade.
- ✚ Brought the world closer.
- ✚ Nations into world market.
- ✚ Operates on natural tracks.
- ✚ No investment in maintains.
- ✚ Includes coastal shipping and overseas shipping.

National Waterways

- ✚ National Waterways Act – 2016.
- ✚ Proposed 106 additional waterways and merges 5 existing waterways.

National Waterways 1	Allahabad to Haldia 1620 km. Runs through Ganga, Bhagirathi, Hooghly.
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	River side of Kolkata, Bhagalpur, Varanasi, Allahabad. Longest national waterways in India.
National Waterways 2	Brahmaputra river Sadiya to Dhubri in Assam. Northeast India. 891 km.
National Waterways 3	West Coast Canal Kerala Runs from Kollam to Kottapuram. 205 km India's first waterways with all-time navigation facility. West coast canal, Champakara canal, Udyogamandal canal. Kottapuram, Cherthala, Thrikkunnappuzha, kollam and Allepey.
National Waterways 4	Kakinada to Pondicherry. Canals, rivers, tanks, Godavari – Krishna River. Second longest waterways of India. 1095 km long. Andhra Pradesh and Tamilnadu.
National Waterways 5	Orissa to West Bengal Brahmi River, east coast canal, Matai River, Mahanadi River delta. 623 km. Handle cargo system – coal, fertilizers, cement, iron.
National Waterways 6	Assam state. Barak river Connecting Lakhipur to Bhanga 121km. Help I trade between town of Silchar to Mizoram state.

OCEAN ROUTES AND PORTS

- ✚ Coastline of India – 7517 km.
- ✚ 13 major ports
- ✚ 200 minor ports.
- ✚ 95% - India' s foreign trade.
- ✚ 70% - value of trade takes place through seaways.
- ✚ 7500km – 13% major and 60 operational non major ports.
- ✚ 70% - maritime transportation.
- ✚ Cargo handled at major port – bulk, liquid, containers.
- ✚ Seven eastern coast and 6 western coast – 200 non-major port.

MAJOR PORTS

Kolkata Port	Riverine major port in India.
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	Twin dock system.
Paradip Port	Artificial deep-water port. First major port in East Coast commissioned by independent India.
New Mangalore Port	Karnataka Confluence with Arabian Sea.
Cochin Port	Willington island. South west coast of India. East west oceanic trade. Natural gateway.
Jawaharlal Nehru Port	Nhava Sheva Largest container port in India. East coast of Mumbai.
Vadhavan Port	13 th major port in India. Special Purpose Vehicle – SPV Landlord model. All weather all cargo satellite port.
Mumbai Port	Oldest modern port of India. Used by navies of Shivaji.
Kandla Port	Built after partition of Karachi. Karachi port. Handling crude oil imports of India.
Vishakhapatnam Port	Vizag port Andhra Pradesh. Handle bulk of cargo handling on the east coast.
Chennai Port	Largest port in Bay of Bengal. Second largest port of India.
Tuticorin Port	Renamed as V. O. Chidambaranar Port. Artificial port. Only south Indian port – provide direct weekly container service to United States.
Ennore Port	Named as Kamarajar Port Limited. First corporate port of India. Registered as public company. 68% held by the government.
Mormugao Port	Goa Leading iron ore exporting port of India.

AVIATION SECTOR IN INDIA

- ✚ 1991 – air mail operation started between Allahabad and Naini.
- ✚ 1920 – 1930 – British, French, Dutch – carried aviation setup of India.
- ✚ 1933 – India National Airways formation.
- ✚ By the end of world war – major cities were connected with airways.
- ✚ After independence – there came lot of companies into this sector.
- ✚ 1953 – Indian Airline Corporation – started domestic aviation service.
- ✚ 1953 - Air India International was formed.
- ✚ 1981 – Vayudoot was set up.
- ✚ 1985 – Pawan Hans Limited was established.

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- ✚ Provided helicopter services to the petroleum sector – ONGC, Oil India Ltd, Enron Oil and Gas, Mumbai High, etc.
- ✚ 1 April 1995 - International Airport Authority of India and National Airport Authority of India merged – formed: Airport Authority of India AAI.
- ✚ Responsible for safe, efficient, air traffic services and aeronautical communication services.
- ✚ Today – lot of private players – Spice Jet, Indigo, Jet Airways – entered the aviation sector.
- ✚ Ministry of Civil Aviation – nodal ministry that oversees the aviation sector in India.

International Airports in India

- ✚ 34 operational international airports in India.
- ✚ Indira Gandhi International Airport – largest airport- 5495 acres.
- ✚ Busiest airport in India.
- ✚ Cochin international Airport – first international airport in India.
- ✚ Developed under PPP – Public Private Partnership Model.
- ✚ Calicut International Airport - recently added to the list of International Airports.
- ✚ Juhu Aerodrome, Mumbai – first and oldest airport in India – 1928.
- ✚ Airport of Trichy – smallest airport in India.
- ✚ Kushok Bakula Rimpochee, Ladakh – 23rd highest commercial airport in the world – 3256 meters.



POPULATION OF INDIA

- ✚ 20th century – world population – 1.6 billion.
- ✚ Death rates decreased.
- ✚ Developing countries – both the rates remained high.
- ✚ Low death rates and high birth rates resulted in rapid growth of population.

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- ✚ Migration to urban areas – birth rates and size of family declined.
- ✚ World population growth varies in developing countries where as stable in developed countries.
- ✚ World population increases in continent of Asia.
- ✚ China and India – most populated countries in the world.
- ✚ Continent of Africa – higher fertility rate of population.
- ✚ United States Census Bureau 2020 – world population is nearly – 7.65 billion.
- ✚ If this rate increases by 2023 - world population reaches 8 billion and by 2055 nearly 10 billion.
- ✚ Three most populated clusters in the world – eastern China, south Asia, Europe.
- ✚ Megalopolis – urbanized region – between Boston and Washington DC – includes: New York City, Philadelphia, Baltimore, neighbouring metropolitan areas.
- ✚ Large populated clusters centered in the tropics – coastal country of Nigeria in West Africa, islands of Java in Indonesia.

NATIONAL PARK

- ✚ Classified as IUCN category II.
- ✚ Any area notified by state government – constituted as National Park.
- ✚ 104 national parks in India.
- ✚ First national Park – Jim Colbert National Park or Hailey National Park.
- ✚ No human activity.
- ✚ Only permitted for those who sanctioned by Chief Wildlife warden of the state.
- ✚ 1.23% - geographical area of India.

WILD LIFE SANCTUARIES

- ✚ Classified as IUCN category II.
- ✚ Any area notified by state government – constituted as wildlife sanctuaries.
- ✚ Grazing rights are permitted.
- ✚ 543 wildlife sanctuaries in India.
- ✚ Covers – 3.62% - geographical area of India.

PROJECT RELATED TO WILDLIFE AND NATIONAL PARK
Project Tiger – 1973
Operational Crocodile – 1975
Project Rhinoceros – 1987
Project Elephant – 1988
Project Snow Leopard - 2009



Andaman and Nicobar Islands	Mahatma Gandhi Marine Middle button island NP Mount Harriet NP Northern button island NP South button island NP Galathea bay NP
West Bengal	Sundarbans wildlife sanctuary Buxa national park Neora valley NP Singilla national park
Uttar Pradesh	Dudhwa national park
Tripura	Clouded leopard NP Baisan NP
Tamilnadu	Mudimalai NP Mukurthi NP Annamalai NP Guindy NP Gulf of mannar marine NP
Kerala	Pampadum shola NP Eravikulam NP Mathikettan shola NP Silent valley NP Anamudi shola NP
Manipur	Keibul Lamjao NP Sirohi NP