

Transport in India

Transport or **transportation** is the movement of humans, animals and goods from one location to another .Modes of transport include air,land(rail & road),water,cable,pipeline and space.

Railways

- Railways was introduced to India in 1853, when a line was constructed from Bombay to Thane covering a distance of 34 km.
- The total length of Indian Railways network is 64460 km. (March 2011).
- Indian Railways system has been divided into **sixteen** zones (as shown in the map given below – the lines shown in different colors illustrate the regions of respective zones).
- India has three system of railways – **broad gauge** (the distance between rails is 1.676 meter); **meter gauge** (the distance between rails is one meter); and **narrow gauge** (the distance between the rails is 0.762 meter or 0.610 meter).
- Konkan Railway constructed along the western coast in 1998, is a landmark achievement of Indian Railway.
- Konkan Railway is 760 km long rail route connecting *Roha* in Maharashtra to *Mangalore* in Karnataka.
- Konkan Railway crosses 146 rivers, streams, nearly 2000 bridges, and 91 tunnels.
- Asia’s largest tunnel which is about 6.5 km long, is constructed on the Konkan railway route near Ratnagiri in Maharashtra.

The gauge-wise route and track lengths of the systems as on 31st March, 2007 are as under:-

Gauge	Route in Km	Running Track in Km	Total Tack in Km
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Broad Gauge (1.676 mm)	49,820	71,015	93,386
Meter Gauge (1.000 mm)	10,621	11,487	13,412
Narrow Gauge (762 and 610 mm)	2,886	2,888	3,198

The network is divided into 16 zones. Divisions are basic operating units. The 16 zones and their respective headquarters are given below.

Zonal Railways	Headquarters
Central	Mumbai CST
Eastern	Kolkata
Northern	New Delhi
Northern-Eastern	Gorakhpur
North-East Frontier	Maligaon (Guwahati)
Southern	Chennai

South Central	Secunderabad
South-Eastern	Kolkata
Western	Church Gate, Mumbai
East Central Railway	Hajipur
East Coast Railway	Bhubaneshwar
North Central Railway	Allahabad
North Western Railway	Jaipur
South-East Central Railway	Bilaspur
South-Western Railway	Hubli
West Central Railway	Jabalpur

Road

- With a total length of about 42.3 lakh km, India has one of the largest road networks in the world. About 85% of passenger and 70% of freight traffic are carried by roads. Sher Shah Suri built the *Shahi* (Royal) road to strengthen and consolidate his empire from the Indus Valley to the Sonar Valley in Bengal. This road was later renamed as the Grand Trunk (GT) Road during the British period, connecting Calcutta and Peshawar. At present, GT Road extends from Amritsar to Kolkata. It is bifurcated into 2 segments – (a) National Highway (NH)-1 from Delhi to Amritsar, and (b) NH- 2 from Delhi to Kolkata.
- Roads have been classified as National Highways (NH), State Highways (SH), Major District Roads, and Rural Roads.

- The National Highways Authority of India (NHAI), which is an autonomous body under the Ministry of Surface Transport was operationalized in 1995. The main roads connecting two or more states are constructed and maintained by the Central Government. These roads are known as the National Highways. The NHAI is responsible for the development, maintenance, and operation of National Highways. The National Highways constitute only 1.67 per cent of the total road length, but carry about 40 per cent of the road traffic.
- State Highways are constructed and maintained by the state governments.

National Highways/Expressways	65,590 km
State Highways	1,28,000 km
Major and other District Roads	4,70,000 km
Rural Roads	26,50,000 km

Waterways

Water transport can be divided into two major categories – **inland waterways** and **oceanic waterways**.

- India has 14,500 km of navigable waterways, contributing about 1% to the country's transportation.
- Currently, 5,685 km of major rivers is navigable by mechanized flat bottom vessels.
- **Inland Waterways Authority** was set up in 1986 for the development, maintenance, and regulation of national waterways in the country.
- Major National Waterways (NW) of India are **NW 1** (Allahabad-Haldia covers 1,620 km); **NW 2** (Sadiya-Dhubri covers 891 km); and **NW 3** (Kottapuram-Kollam covers 205 km). With 12 major and 185 minor ports, India has a vast coastline of approximate 7,517

km, including islands. Roughly 95% of India's foreign trade by volume and 70% by value moves through ocean routes.

- **Ocean transport** is the most important water transport, because it has certain advantages over land carriage. The sea offers a ready-made carriageway for ships which, unlike the roadway or railway, requires no maintenance.
- Water surfaces are two-dimensional and, although sea-going vessels frequently keep to shipping lanes, ships can travel, within a limited number of constraints, in any direction.

Air Ports

- Air transport in India marked its beginning in 1911 with the commencement of airmail over a little distance of 10 km between Allahabad and Naini.
- The **Airport Authority of India** is accountable for providing safe, efficient air traffic, and aeronautical communication services in the Indian Air Space.
- **Pawan Hans** is the helicopter service operating in hilly areas and is widely used by tourists in north-eastern regions.
- The coastline of India is dotted with 12 Major Ports and about 200 Non-major Ports. The Major Ports are under the purview of the central while the Non-major Ports come under the jurisdiction of the respective State Governments.
- The 12 Major Ports (including the Port of Ennore which is a corporate port set up under the Indian Companies Act, 1956) are evenly spread out on the Eastern and Western coast. The ports of Kolkata, Paradip, Visakhapatnam, Chennai, New Mangalore, Mormugao, Mumbai, Jawaharlal Nehru at Jhavasheva and Kandla are on the Western Coast. The capacity of major ports have increased from 20 Million Tonnes per annum (MTPA) 1951 to 504.75 as on 31st March, 2007.

Sea-Ports

- At present, India has 12 major ports and 185 minor or intermediate ports.

- The **12 major ports** handled about 71 per cent of the country's oceanic traffic in the year 2008-09.
- The capacity of Indian ports increased from 20 million tons of cargo handling in 1951 to more than 586 million tons in 2008-09.
- Kandla Port located in the Gulf of Kachchh, on the west coast of Gujarat has been developed as a major port.
- Kandla port is specially designed to receive large quantities of petroleum and petroleum products and fertilizer.
- Mumbai has a natural harbor and it is the biggest seaport of the country.

Pipelines

Oil and gas industry in India imports 82% of its oil needs and aims to bring that down to 67% by 2022 by replacing it with local exploration, renewable energy and indigenous ethanol fuel (Jan 2018).

- Length of pipelines for crude oil is 20,000 km (12,427 mi).
- Length of Petroleum products pipeline is 15,000 kilometres (9,300 mi).

Space Transportation System

- The **Space Transportation System (STS)**, also known internally to NASA as the Integrated Program Plan (IPP), was a proposed system of reusable manned space vehicles envisioned in 1969 to support extended operations beyond the Apollo program. (NASA appropriated the name for its Space Shuttle Program, the only component of the proposal to survive Congressional funding approval).
- The purpose of the system was twofold: to reduce the cost of spaceflight by replacing the current method of launching capsules on expendable rockets with reusable spacecraft; and to support ambitious follow-on programs including permanent orbiting space stations around the Earth and Moon, and a human landing mission to Mars.