



**Class X<sup>th</sup> NEW NCERT**  
**Chapter-7**



1068CH07

# LIFELINES OF NATIONAL ECONOMY



We use different materials and services in our daily life. Some of these are available in our immediate surroundings, while other requirements are met by bringing things from other places. Goods and services do not move from supply locales to demand locales on their own. The movement of these goods and services from their supply locations to demand locations necessitates the need for transport. Some people are engaged in facilitating these movements. These are known to be traders who make the products come to the consumers by transportation. Thus, the pace of development of a country depends upon the production of goods and services as well as their movement over space. Therefore, efficient means of transport are prerequisites for fast development.

Movement of these goods and services can be over three important domains of our earth i.e. land, water and air. Based on these, transport can also be classified into land, water and air transport.

the help of equally developed communication system. Therefore, transport, communication and trade are complementary to each other.

Today, India is well-linked with the rest of the world despite its vast size, diversity and linguistic and socio-cultural plurality. Railways, airways, waterways, newspapers, radio, television, cinema and internet, etc. have been contributing to its socio-economic progress in many ways. The trades from local to international levels have added to the vitality of its economy. It has enriched our life and added substantially to growing amenities and facilities for the comforts of life.

In this chapter, you will see how modern means of transport and communication serve as lifelines of our nation and its modern economy. It is thus, evident that a dense and efficient network of transport and communication is a prerequisite for local, national and global trade of today.

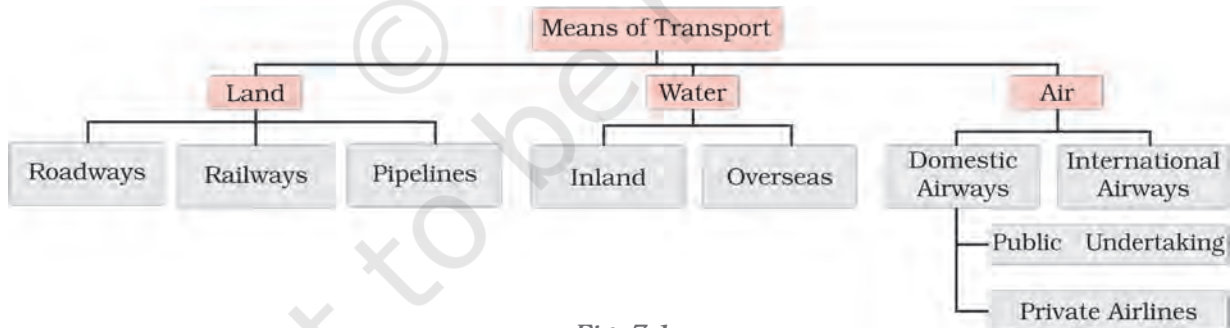


Fig. 7.1

For a long time, trade and transport were restricted to a limited space. With the development in science and technology, the area of influence of trade and transport expanded far and wide. Today, the world has been converted into a large village with the help of efficient and fast moving transport. Transport has been able to achieve this with

## TRANSPORT

### Roadways

India has second largest road networks in the world, aggregating to about 62.16 lakh km (2020–21). In India, roadways have preceded railways. They still have an edge over railways in view of the ease with which they can be built

and maintained. The growing importance of road transport vis-à-vis rail transport is rooted in the following reasons; (a) construction cost of roads is much lower than that of railway lines, (b) roads can traverse comparatively more dissected and undulating topography, (c) roads can negotiate higher gradients of slopes and as such can traverse mountains such as the Himalayas, (d) road transport is economical in transportation of few persons and relatively smaller amount of goods over short distances, (e) it also provides door-to-door service, thus the cost of loading and unloading is much lower, (f) road transport is also used as a feeder to other modes of transport such as they provide a link between railway stations, air and sea ports.

In India, roads are classified in the following six classes according to their capacity. Look at the map of the National Highways and find out about the significant role played by these roads.

- **Golden Quadrilateral Super Highways:** The government has launched a major road development project linking Delhi-Kolkata-Chennai-Mumbai and Delhi by six-lane Super Highways. The North-South corridors linking Srinagar (Jammu & Kashmir) and Kanniyakumari (Tamil Nadu), and East-West Corridor connecting Silchar (Assam) and Porbander (Gujarat) are part of this project. The major objective of these Super Highways is to reduce the time and distance between the mega cities of India. These highway projects are being implemented by the National Highway Authority of India (NHAI).
- **National Highways:** National Highways link extreme parts of the country. These are the primary road systems. A number of major National Highways run in North-South and East-West directions.
- **State Highways:** Roads linking a state capital with different district headquarters are known as State Highways.



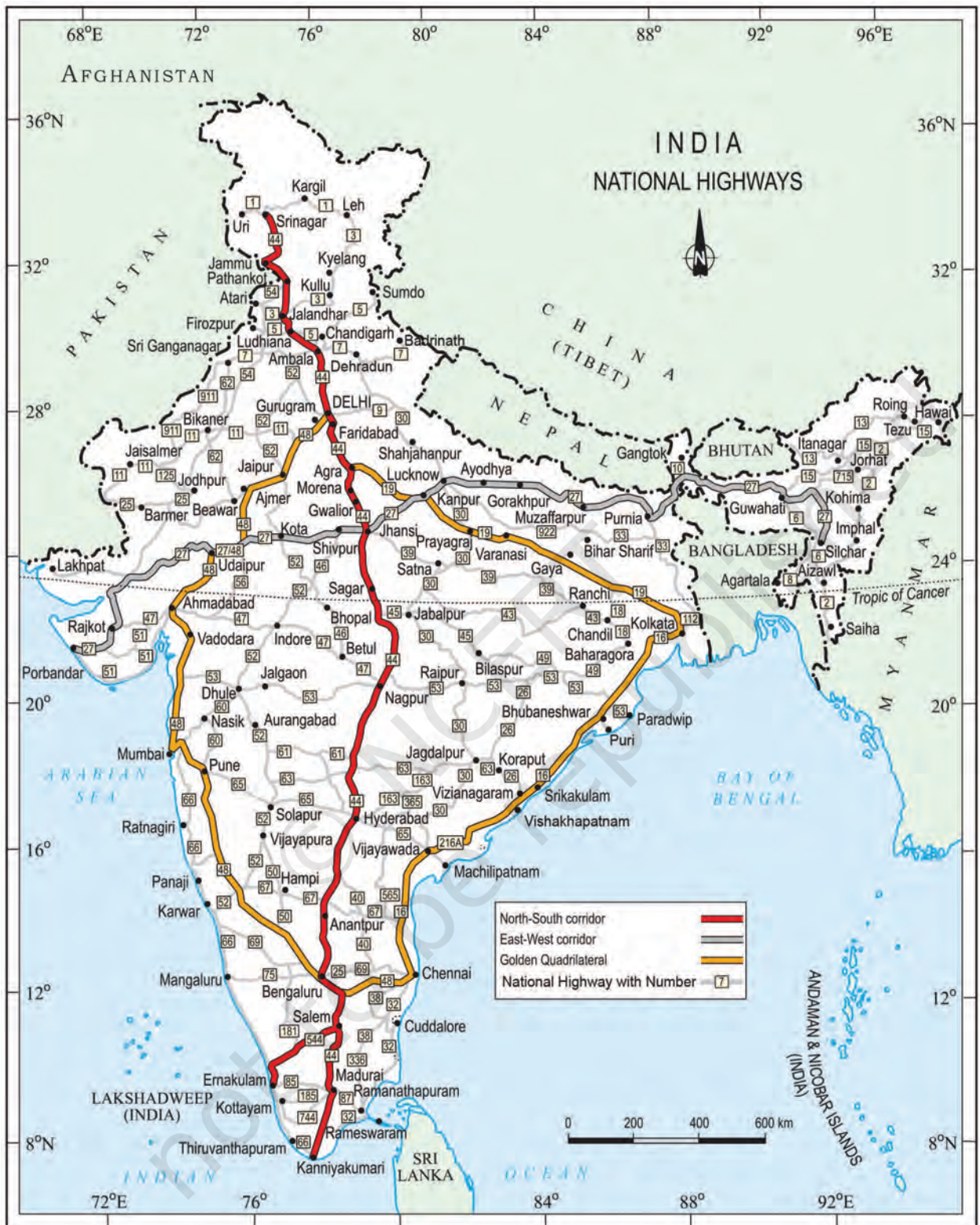
Fig. 7.2: Ahmedabad- Vadodara Expressway

#### Activity

Collect information of National Highway numbers (old and new) from the website [morth.nic.in/national-highway-details](http://morth.nic.in/national-highway-details). The historical Sher-Shah Suri Marg between Delhi and Amritsar is known by which National Highway ?

- **District Roads:** These roads connect the district headquarters with other places of the district.
- **Other Roads:** Rural roads, which link rural areas and villages with towns, are classified under this category. These roads received special impetus under the *Pradhan Mantri Grameen Sadak Yojana*. Under this scheme special provisions are made so that every village in the country is linked to a major town in the country by an all season motorable road.
- **Border Roads:** Apart from these, Border Roads Organisation a Government of India undertaking constructs and maintains roads in the bordering areas of the country. This organisation was established in 1960 for the development of the roads of strategic importance in the northern and north-eastern border areas. These roads have improved accessibility in areas of difficult terrain and have helped in the economic development of these area.





India: National Highways



### Do you Know?

The World's longest Highway tunnel-Atal Tunnel (9.02 Km) has been built by Border Road Organisation. This tunnel connects Manali to Lahul-Spiti valley throughout the year. Earlier the valley was cut off for about 6 months each year owing to heavy snowfall. The tunnel is built with ultra-modern specifications in the Pir Panjal range of Himalayas at an altitude of 3000 metres from the Mean Sea Level (MSL).

**Source:** <http://www.bro.gov.in/pagefimg.asp?imid=144,And PIBdelhi03October2020>



Fig. 7.3: Hilly Tracts



Fig. 7.4: Traffic on north-eastern border road (Arunachal Pradesh)

Roads can also be classified on the basis of the type of material used for their construction such as metalled and unmetalled roads. Metalled roads may be made of cement, concrete or even bitumen of coal, therefore, these are all weather roads. Unmetalled roads go out of use in the rainy season.

### Railways

Railways are the principal mode of transportation for freight and passengers in India. Railways also make it possible for people to conduct multifarious activities like business, sightseeing, pilgrimage along with transportation of goods over longer distances. Apart from an important means of transport the Indian Railways have been a great integrating force for more than 150 years. Railways in India bind the economic life of the country as well as accelerate the development of the industry and agriculture.

The Indian Railways is the largest public sector undertaking in the country. The first train steamed off from Mumbai to Thane in 1853, covering a distance of 34 km.

The Indian Railway is now reorganised into 17 zones.

#### Activity

Find out the current Railway zones and their headquarters. Also locate the headquarters of Railway zones on the map of India.

The distribution pattern of the Railway network in the country has been largely influenced by physiographic, economic and administrative factors. The northern plains with their vast level land, high population density and rich agricultural resources provided the most favourable condition for their growth. However, a large number of rivers requiring construction of bridges across their wide beds posed some obstacles. In the hilly terrains of the peninsular region, railway tracts are laid through low hills, gaps or tunnels. The Himalayan mountainous regions too are unfavourable for the construction of railway lines due to high relief, sparse population and lack of economic opportunities. Likewise, it was difficult to lay railway lines on the sandy plain of western Rajasthan, swamps of Gujarat, forested tracks of Madhya Pradesh, Chhattisgarh, Odisha and Jharkhand. The contiguous stretch of Sahyadri could be crossed



Table 7.1: India: Railway Track

The Indian Railway network runs on multiple gauge operations extending over 67,956 km.

Gauge in metres	Route (Km)
Broad Gauge (1.676)	63950
Metre Gauge (1.000)	2,402
Narrow Gauge (0.762 and 0.610)	1,604
<b>Total</b>	<b>67,956</b>

Source: Railway Yearbook 2019–20, Ministry of Railways, Government of India.

Website: [www.indianrailways.gov.in](http://www.indianrailways.gov.in)

only through gaps or passes (Ghats). In recent times, the development of the Konkan railway along the west coast has facilitated the movement of passengers and goods in this most important economic region of India. It has also faced a number of problem such as sinking of track in some stretches and landslides.

Today, the railways have become more important in our national economy than all other means of transport put together. However, rail transport suffers from certain problems as well. Many passengers travel without tickets. Thefts and damaging of railway property has not yet stopped completely. People stop the trains, pull the chain unnecessarily and this causes heavy damage to the railway. Think over it, how we can help our railway in running as per the scheduled time?

### Pipelines

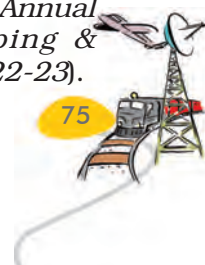
Pipeline transport network is a new arrival on the transportation map of India. In the past, these were used to transport water to cities and industries. Now, these are used for transporting crude oil, petroleum products and natural gas from oil and natural gas fields to refineries, fertilizer factories and big thermal power plants. Solids can also be transported through a pipeline when converted into slurry. The far inland locations of refineries like Barauni, Mathura, Panipat and gas based fertilizer plants could be thought of only because of pipelines. Initial cost of laying pipelines is high but subsequent running costs are minimal. It rules out trans-shipment losses or delays.

There are three important networks of pipeline transportation in the country.

- From oil field in upper Assam to Kanpur (Uttar Pradesh), via Guwahati, Barauni and Prayagraj. It has branches from Barauni to Haldia, via Rajbandh, Rajbandh to Maurigram and Guwahati to Siliguri.
- From Salaya in Gujarat to Jalandhar in Punjab, via Viramgam, Mathura, Delhi and Sonipat. It has branches to connect Koyali (near Vadodara, Gujarat) Chakshu and other places.
- The first 1,700 km long Hazira-Vijaipur-Jagdishpur (HVJ) cross country gas pipeline, linked Mumbai High and Bassein gas fields with various fertilizer, power and industrial complexes in western and northern India. Overall, India's gas pipeline infrastructure has expanded from 1,700 km to 18,500 km of cross-country pipelines.

### Waterways

Since the ancient period, India was one of the seafaring countries. Its seamen sailed far and near, thus, carrying and spreading Indian commerce and culture. Waterways are the cheapest means of transport. They are most suitable for carrying heavy and bulky goods. It is a fuel-efficient and environment friendly mode of transport. India has inland navigation waterways of 14,500 km in length. In order to create wide waterways network and to promote inland water transport in the country as an economical environment friendly supplementary mode of transport to rail and road, 111 inland waterways (including 5 National Waterways declared earlier) were declared as National Waterways (NWs) by the National Waterways Act, 2016. (Source: *Annual Report, Ministry of Ports, Shipping & Waterways, Government of India, 2022-23*).





**Activity**

Railway line has been extended from Banihal to Baramula in the Kashmir Valley. Locate these two towns on the map of India.





**Fig. 7.5:** Inland waterways widely used in north-eastern states

- The Ganga river between Prayagraj and Haldia (1620 km)-N.W. No.1
- The Brahmaputra river between Sadiya and Dhubri (891 km)-N.W. No.2
- The West-Coast Canal in Kerala (Kottapurma-Kollam, Udyogamandal and Champakkara canals-205 km) – N.W. No.3
- Specified stretches of Godavari and Krishna rivers along with Kakinada Puducherry stretch of canals (1078 km) – N.W. No.4
- Specified stretches of river Brahmani along with Matai river, delta channels of Mahanadi and Brahmani rivers and East Coast Canal (588 km) – N.W. No.5

There are some other inland water ways on which substantial transportation takes place. These are Mandavi, Zuari and Cumberjua, Sunderbans, Barak and backwaters of Kerala.

Apart from these, India's trade with foreign countries is carried from the ports located along the coast. 95 per cent of the country's trade volume (68 per cent in terms of value) is moved by sea.

### Major Sea Ports

With a long coastline of 11098.81 km, India is dotted with 12 major and 200 notified non-majors (minor/intermediate) ports. These major ports handle 95 per cent of India's foreign trade.

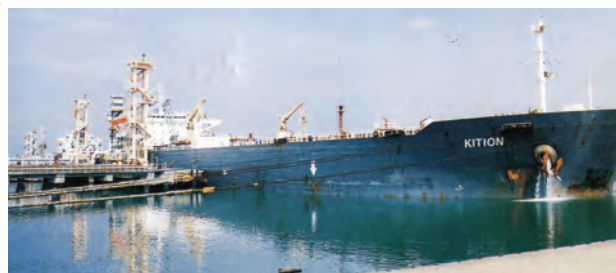
Deendayal Port (Kandla) in Kuchchh was the first port developed soon after Independence to ease the volume of trade on the Mumbai port, in the wake of loss of Karachi port to Pakistan after the Partition.

Deendayal Port, is a tidal port. It caters to the convenient handling of exports and imports of highly productive granary and industrial belt stretching across UT of Jammu and Kashmir, and the states of Himachal Pradesh, Punjab, Haryana, Rajasthan and Gujarat.



**Fig. 7.6:** Trucks being driven into the vessel at Mumbai port

Mumbai is the biggest port with a spacious natural and well-sheltered harbour. The Jawaharlal Nehru port was planned with a view to decongest the Mumbai port and serve as a hub port for this region. Mormugao port (Goa) is the premier iron ore exporting port of the country. This port accounts for about fifty per cent of India's iron ore export. New Mangalore port, located in Karnataka caters to the export of iron ore concentrates from Kudremukh mines. Cochin is the extreme south-western port, located at the entrance of a lagoon with a natural harbour.



**Fig. 7.7:** Tanker discharging crude oil at New Mangalore port

Moving along the east coast, you would see the extreme south-eastern port of V.O. Chidambaranar (Tuticorin), in Tamil Nadu. This port has a natural harbour and rich hinterland. Thus, it has a flourishing trade handling of a large variety of cargoes to even



our neighbouring countries like Sri Lanka, Maldives, etc. and the coastal regions of India. Chennai is one of the oldest artificial ports of the country. It is ranked next to Mumbai in terms of the volume of trade and cargo. Vishakhapatnam is the deepest landlocked and well-protected port. This port was, originally, conceived as an outlet for iron ore exports. Paradwip port located in Odisha, specialises in the export of iron ore. Shyama Prasad Mookerjee, Kolkata is an inland riverine port. This port serves a very large and rich hinterland of Ganga- Brahmaputra basin. Being a tidal port, it requires constant dredging of Hoogly. Haldia port was developed as a subsidiary port, in order to relieve growing pressure on the Kolkata port.



**Fig. 7.8:** Handling of oversized cargo at V.O. Chidambaranar (Tuticorin) port

### Airways

The air travel, today, is the fastest, most comfortable and prestigious mode of



**Why is air travel preferred in the north-eastern states?**

**Fig. 7.9**

transport. It can cover very difficult terrains like high mountains, dreary deserts, dense forests and also long oceanic stretches with

great ease. Think of the north-eastern part of the country, marked with the presence of big rivers, dissected relief, dense forests and frequent floods and international frontiers, etc. in the absence of air transport. Air travel has made access easier.

Pawanhans Helicopters Ltd. provides helicopter services to Oil and Natural Gas Corporation in its off-shore operations, to inaccessible areas and difficult terrains like the north-eastern states and the interior parts of Jammu and Kashmir, Himachal Pradesh and Uttarakhand.

### Do you Know?

UDAN (*Ude Desh ka Aam Nagrik*) is a first-of-its kind scheme globally, designed to jump-start the regional aviation market. Regional Connectivity Scheme (RCS) – UDAN was conceived by the Ministry of Civil Aviation (MoCA), Government of India, to promote regional connectivity by making fly affordable for the common citizen. The central idea of the scheme is to encourage airlines to operate flights on regional and remote routes through enabling policies and extending incentives.

### Communication

Ever since humans appeared on the earth, they have used different means of communication. But, the pace of change, has been rapid in modern times. Long distance communication is far easier without physical movement of the communicator or receiver. Personal communication and mass communication including television, radio, press, films, etc. are the major means of communication in the country. The Indian postal network is the largest in the world. It handles parcels as well as personal written communications. Cards and envelopes are considered first-class mail and are airlifted between stations covering both land and air. The second-class mail includes book packets, registered newspapers and periodicals. They are carried by surface mail, covering land and water transport. To facilitate quick delivery of mails in large towns and cities, six mail channels have been introduced recently. They are called Rajdhani Channel, Metro Channel, Green Channel, Business Channel, Bulk Mail Channel and Periodical Channel.





India: Major Ports and Some International Airports

(Source: Annual Report, 2023-24, Ministry of Ports, Shipping and Waterways, Govt. of India.)



### Do you know?

Digital India is an umbrella programme to prepare India for a knowledge based transformation. The focus of Digital India Programme is on being transformative to realise – IT (Indian Talent) + IT (Information Technology)=IT (India Tomorrow) and is on making technology central to enabling change.



Fig. 7.10 : Emergency call box on NH-48

India has one of the largest telecom networks in Asia. Excluding urban places more than two-thirds of the villages in India have already been covered with Subscriber Trunk Dialling (STD) telephone facility. In order to strengthen the flow of information from the grassroot to the higher level, the government has made special provision to extend twenty-four hours STD facility to every village in the country. There is a uniform rate of STD facilities all over India. It has been made possible by integrating the development in space technology with communication technology.

Mass communication provides entertainment and creates awareness among people about various national programmes and policies. It includes radio, television, newspapers, magazines, books and films. All India Radio (Akashwani) broadcasts a variety of programmes in national, regional and local languages for various categories of people, spread over different parts of the country. Doordarshan, the national television channel

of India, is one of the largest terrestrial networks in the world. It broadcasts a variety of programmes from entertainment, educational to sports, etc. for people of different age groups.

India publishes a large number of newspapers and periodicals annually. They are of different types depending upon their periodicity. Newspapers are published in about 100 languages and dialects. Did you know that the largest number of newspapers published in the country are in Hindi, followed by English and Urdu? India is the largest producer of feature films in the world. It produces short films; video feature films and video short films. The Central Board of Film Certification is the authority to certify both Indian and foreign films.

### International Trade

The exchange of goods among people, states and countries is referred to as trade. The market is the place where such exchanges take place. Trade between two countries is called international trade. It may take place through sea, air or land routes. While local trade is carried in cities, towns and villages, state level trade is carried between two or more states. Advancement of international trade of a country is an index to its economic prosperity. It is, therefore, considered the economic barometer for a country.

As the resources are space bound, no country can survive without international trade. Export and import are the components of trade. The balance of trade of a country is the difference between its export and import. When the value of export exceeds the value of imports, it is called a favourable balance of trade. On the contrary, if the value of imports exceeds the value of exports, it is termed as unfavourable balance of trade.

India has trade relations with all the major trading blocks and all geographical regions of the world. The commodities exported from India to other countries include gems and jewellery, chemicals and related products, agriculture and allied products, etc.



The commodities imported to India include petroleum crude and products, gems and jewellery, chemicals and related products, base metals, electronic items, machinery, agriculture and allied products. India has emerged as a software giant at the international level and it is earning large foreign exchange through the export of information technology.

### Tourism as a Trade

Tourism in India has grown remarkably over the past two decades, with government initiatives, infrastructure development, and global branding contributing to this success. To boost tourism in India, schemes like Swadesh Darshan 2.0, Vibrant Village Programme, PRASHAD (Pilgrimage Rejuvenation and Spiritual Heritage Augmentation Drive), Paryatan Mitra, etc. have been started. Tourism also promotes national integration, provides support to local handicrafts and cultural pursuits. It also helps in the development of international

understanding about our culture and heritage. Foreign tourists visit India for heritage tourism, eco tourism, adventure tourism, cultural tourism, medical tourism and business tourism.

There is a vast potential for development of tourism in all parts of the country. Efforts are being made to promote different types of tourism for this upcoming industry.

### Activity

On the map of India show important tourist places of your State/UT and its connectivity with other parts of the country by railways/roadways/airways.

Discuss in the class:

- What type of tourism may be developed in your state/UT and why?
- Which areas in your state/UT you find more attractive for development of tourism and why?
- How tourism may be helpful for the economic development of a region adopting sustainable development approach?



**कुफ़री**

**बुलंद होती जा रही मेडिकल टूरिज्म क्षेत्र की सेहत**

संजय झा

नई दिल्ली। पिछले कुछ वर्षों में चिकित्सा के लिए भारत आने वाले विदेशियों की संख्या में काफी तेज वृद्धि हुई है। विशेष रूप से केरल, महाराष्ट्र और ओड़िशा जैसे राज्य इसमें खास रुचि-विषय बने हैं। आंकड़े बताते हैं कि पिछले पांच वर्षों में चिकित्सा पर्यटन की वृद्धि दर में 15 प्रतिशत से भी अधिक की वृद्धि हुई है। ऐसा अनुमान लगाया जा रहा है कि चिकित्सा से आने वाले के पर्यटकों का संख्यात्मक वृद्धि 2012 तक 'भारत के सबसे पक्कवत मोने आने वाले अमेरिी उद्योग के मुदान के करीब 10 गुना'।

दो अरब डालर से अधिक का है मेडिकल टूरिज्म उद्योग

20 प्रतिशत कम है। यही नहीं, अस्पतालों में बेड पाने की प्रतीक्षा सूची भी अन्य विदेशीय देशों की तुलना में भारत में काफी कम है।

भारतीय चिकित्सा छात्राकर, राज्य चिकित्सा और भारत में उपरने का खर्च भी विदेशों में रहना उनके अस्पतालों और होटलों की तुलना में काफी कम रहता है। उनका भी यही लक्ष्य है। यहाँ अधिक बेहतरीन और आसुवन होटलों में जहाँ उन्हें काफी अच्छी सुविधाएं सुविधाएं मिलती हैं।

जानकारी बताती है कि विदेशियों के लिए भारत आने की वृद्धि है। यहाँ

का अनुमान लगाया होटलों के साथ करार होता है और केरल और दक्षिण कर्नाटक के चिकित्सा से भीमाबाद स्थानी पर अन्य छोटे स्थानों का विकास।

साथ ही कई पहले एक भारत में रहना करने वाले लोगों में विशेषता की संख्या केवल पांच प्रतिशत की संख्या है। यहाँ आने वाले लोगों में अधिकतर महिला महिला, इंजीनियर, डॉक्टर, पुराने और रिटायर के लोगों को छोड़ते हैं। यह भी एक विशेषता है कि यहाँ रहने वाले लोगों में महिलाओं का अंश काफी अधिक है। यहाँ के अलावा अन्य विदेशीय सुविधाओं और कम खर्च के कारण यहाँ काफी संख्या में आते हैं।

कुछ दिनों से यहाँ केवल भारत चिकित्सा के लिए आने के लिए आते हैं। उनकी

विदेशी चिकित्सा सुविधाओं में ही इन्होंने का यहाँ



**अरुणाचल प्रदेश**

**Biswanath Ghat best tourism village of India**

Kangkani Kalita / TNN / Sep 23, 2023, 11:26 IST

Assam's Biswanath Ghat has been named the Best Tourism Village of India 2023. The village, located on the northern bank of the Brahmaputra, is known for its cluster ... [Read More](#)



The entrance to Biswanath Ghat

Prepare a project on the heritage tourism in India.



1. Multiple choice questions.
  - (i) Which two of the following extreme locations are connected by the east-west corridor?
 

(a) Mumbai and Nagpur	(c) Mumbai and Kolkata
(b) Silchar and Porbandar	(d) Nagpur and Siligudi
  - (ii) Which mode of transportation reduces trans-shipment losses and delays?
 

(a) Railways	(c) Pipeline
(b) Roadways	(d) Waterways
  - (iii) Which one of the following states is not connected with the H.V.J. pipeline?
 

(a) Madhya Pradesh	(c) Gujarat
(b) Maharashtra	(d) Uttar Pradesh
  - (iv) Which one of the following ports is the deepest land-locked and well-protected port along the east coast?
 

(a) Chennai	(c) V.O. Chidambaranar (Tuticorin)
(b) Paradwip	(d) Vishakhapatnam
  - (v) Which one of the following is the most important modes of transportation in India?
 

(a) Pipeline	(c) Roadways
(b) Railways	(d) Airways
  - (vi) Which one of the following terms is used to describe trade between two or more countries?
 

(a) Internal trade	(c) External trade
(b) International trade	(d) Local trade
2. Answer the following questions in about 30 words.
  - (i) State any three merits of roadways.
  - (ii) Where and why is rail transport the most convenient means of transportation?
  - (iii) What is the significance of the border roads?
  - (iv) What is meant by trade? What is the difference between international and local trade?
3. Answer the following questions in about 120 words.
  - (i) Why are the means of transportation and communication called the lifelines of a nation and its economy?
  - (ii) Write a note on the changing nature of the international trade in the last fifteen years.

### QUIZ DRIVE

1. Northern terminal of the North-south corridor.
2. The headquarter of the southern railway zone.
3. The rail gauge with a track width of 1.676 m.
4. A Riverine Port.
5. Busiest railway junction in Northern India.



## ACTIVITY

Start your search vertically, horizontally or diagonally and reach various destinations across the country!

S	H	E	R	S	H	A	H	S	U	R	I	M	A	R	G
A	R	T	P	R	N	X	E	L	A	T	A	D	L	A	Y
J	M	M	X	I	P	O	R	A	Y	M	P	G	H	T	X
Y	C	H	E	N	N	N	A	I	I	K	M	C	A	I	M
O	D	C	D	A	L	M	C	S	O	T	P	O	R	C	P
A	P	T	R	G	S	K	J	M	J	L	E	A	N	E	R
R	A	E	T	A	J	P	O	R	M	W	M	A	S	X	O
I	L	S	B	R	O	A	D	G	A	U	G	E	L	O	T
A	S	N	L	C	M	E	C	U	K	Z	M	A	A	J	E
L	M	U	G	H	A	L	S	A	R	A	I	B	S	N	A
G	O	E	T	V	R	A	Y	F	T	O	R	E	A	J	M
K	Q	A	I	P	M	N	Y	R	Y	A	Y	H	L	I	N
Q	K	O	L	K	A	T	A	E	U	I	T	W	B	E	A
N	I	T	N	K	D	E	M	O	U	R	P	N	P	J	D





**Class XII<sup>th</sup> NEW NCERT**  
**Chapter-7**



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## TRANSPORT AND COMMUNICATION

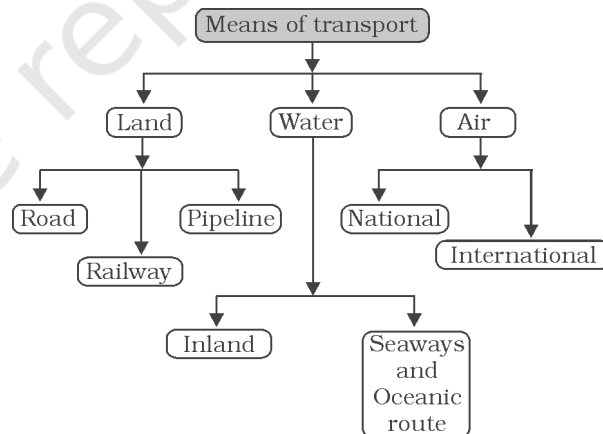


We use many items in our daily life. From toothpaste to our bed tea, milk, clothes, soaps, food items, etc., are required every day. All these can be purchased from the market. Have you ever thought as to how these items are brought from the site of production? All the production is meant for consumption. From the fields and factory, the produce is brought to the place from where consumers purchase it. It is the transportation of these items from the site of their production to the market which make them available to the consumer.

We not only use material things, like fruits, vegetables, books, clothes, etc., but also use ideas, views and messages in our daily life. Do you know we exchange our views, ideas and messages from one place to another or one individual to another while communicating with the help of various means?

The use of transport and communication depends upon our need to move things from place of their availability to the place of their use. Human beings use various methods to move goods, commodities, ideas from one place to another.

The following diagram shows the major means of transportation.



### Land Transport

The pathways and unmetalled roads have been used for transportation in India since ancient times. With the economic and technological development, metalled roads and railways were developed to move large volume of goods and

people from one place to another. Ropeways, cableways and pipelines were devised to cater to the demands of transporting specific goods under special circumstances.

### Road Transport

India has one of the second largest road networks in the world with a total length of about 62.16 lakh km (morth.nic.in, Annual Report 2020-21).

the princely states and British India. After Independence, twenty-year road plan (1961) was introduced to improve the conditions of roads in India. However, roads continue to concentrate in and around urban centres. Rural and remote areas had the least connectivity by road.

For the purpose of construction and maintenance, roads are classified as National Highways (NH), State Highways (SH), Major District Roads and Rural Roads.

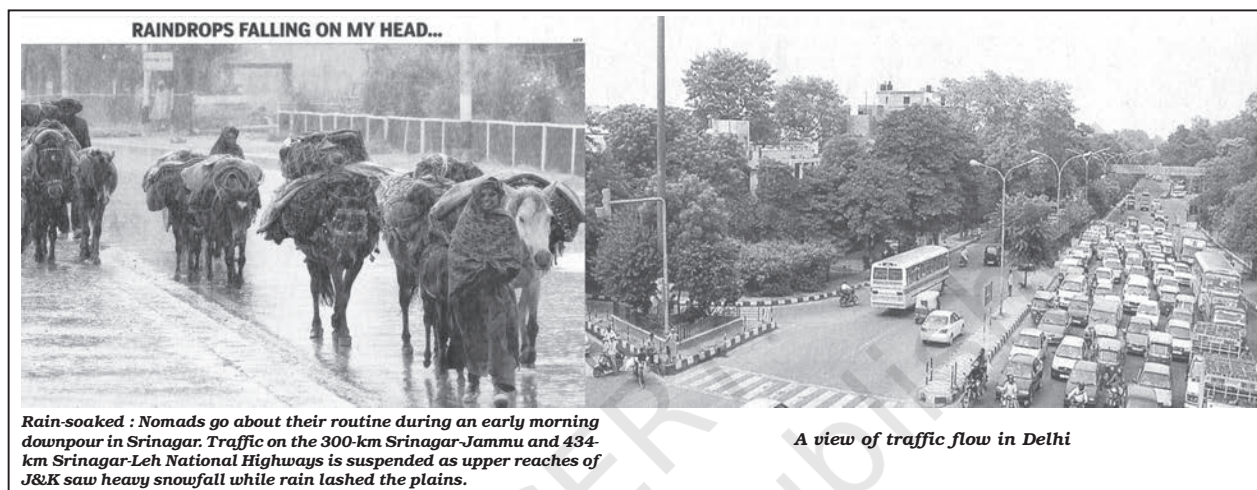


Fig. 7.1

About 85 per cent of passenger and 70 per cent of freight traffic are carried by roads every year. Road transport is relatively suitable for shorter distance travel.

### DO YOU KNOW ?

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 renamed the Grand Trunk (GT) road during the British period, connecting Calcutta and Peshawar. At present, it extends from Amritsar to Kolkata.

Collect information about National Highway number (old and new) from the website [morth.nic.in/national-highway-details](http://morth.nic.in/national-highway-details).

Road transport in modern sense was very limited in India before World War-II. The first serious attempt was made in 1943 when 'Nagpur Plan' was drawn. This plan could not be implemented due to lack of coordination among

### National Highways

The main roads which are constructed and maintained by the Central Government are known as the National Highways. These roads are meant for inter-state transport and movement of defence men and material in strategic areas. These also connect the state capitals, major cities, important ports, railway junctions, etc. The length of the National Highways has increased from 19,700 km in 1951 to 1,36,440 km in 2020. The National Highways constitute only about 2 per cent of the total road length but carry 40 per cent of the road traffic.

The National Highways Authority of India (NHAI) was operationalised in 1995. It is an autonomous body under the Ministry of Surface Transport. It is entrusted with the responsibility of development, maintenance and operation of National Highways. This is also the apex body to improve the quality of the roads designated as National Highways.



**Table 7.1 : India Road Network 2020**

Serial No.	Road Category	Length in Km
1.	National Highways	136440
2.	State Highways	176818
3.	Other Roads	5902539
	<b>Total</b>	<b>6215797</b>

**Source:** Ministry of Road Transport and Highways Annual Report 2020-21. For latest data see website morth.nic.in

### National Highways Development Projects

NHAI has taken up some major projects in the country under different phases :

**Golden Quadrilateral :** It comprises construction of 5,846-km long 4/6 lane, high density traffic corridor, to connect India's four big metro cities of Delhi-Mumbai-Chennai-Kolkata. With the construction of Golden Quadrilateral, the time, distance and cost of movement among the mega cities of India will be considerably minimised.

**North-South and East-West Corridors :** North-South corridor aims at connecting Srinagar in Jammu and Kashmir with Kanniyakumari in Tamil Nadu (including Cochin-Salem Spur) with 4,076-km long road. The East-West Corridor has been planned to connect Silchar in Assam with the port town of Porbandar in Gujarat with 3,640-km of road length.

### State Highways

These are constructed and maintained by state governments. They join the state capitals with district headquarters and other important towns. These roads are connected to the National Highways.

### District Roads

These roads are the connecting link between District Headquarters and the other important nodes in the district.

### Rural Roads

These roads are vital for providing links in the rural areas. About 80 per cent of the total road length in India are categorised as rural roads. There is regional variation in the density of rural road because these are influenced by the nature of the terrain.



**Fig. 7.2 : Road constructed under the Pradhan Mantri Gram Sadak Yojna**

**Why are the rural roads' density very low in hilly, plateau and forested areas? Why does the quality of rural roads deteriorate away from the urban centres?**

### Other Roads

Other roads include Border Roads and International Highways. The Border Road Organisation (BRO) was established in May 1960 for accelerating economic development and strengthening defence preparedness through rapid and coordinated improvement of strategically important roads along the



northern and north-eastern boundary of the country. It is a premier multifaceted construction agency. It has constructed roads in high altitude mountainous terrain joining Chandigarh with Manali (Himachal Pradesh) and Leh (Ladakh). This road runs at an average altitude of 4,270 metres above the mean sea level.

Apart from the construction and maintenance of roads in strategically sensitive areas, the BRO also undertakes snow clearance in high altitude areas. The international highways are meant to promote the harmonious relationship with the neighbouring countries by providing effective links with India. (Fig. 7.4 and 7.5)



Fig. 7.3 : Khardung La Pass in Ladakh

### DO YOU KNOW ?

The World's longest Highway tunnel — **Atal Tunnel** (9.02 Km) has been built by Border Road Organisation. This tunnel connects Manali to Lahaul-Spiti valley throughout the year. Earlier the valley was cut off for about 6 months each year owing to heavy snowfall. The Tunnel is built with ultra-modern specifications in the Pir Panjal range of Himalayas at an altitude of 3000 metres from the Mean Sea Level (MSL).

Source: <http://www.bro.gov.in/pagefimg.asp?imid=144>, And PIB Delhi 03 October 2020

### Delhi-Lahore Bus



Fig. 7.4 : A Bus from Lahore to Delhi at Wagah Border



Fig. 7.5 : Aman Setu between Baramula and Muzaffarabad



## Activity

Why have Bengaluru and Hyderabad in the South and Delhi, Kanpur and Patna in north India have emerged as important nodes?

### Bharatmala Pariyojana - 'Road' to country's infrastructure development

- The Bharatmala Pariyojana envisages development of about 26,000 km length of Economic Corridors, which along with Golden Quadrilateral (GQ) and North-South and East-West (NS-EW) Corridors are expected to carry majority of freight traffic on roads.
- The Programme focuses on development of ring roads, bypasses and elevated corridors to decongest the traffic passing through cities and enhance logistic efficiency.

[Source: Press Information Bureau (Research Unit), Ministry of Information and Broadcasting, Government of India, December 13, 2021]

## Rail Transport

Indian Railways, network is one of the longest in the world. It facilitates the movement of both freight and passengers and contributes to the growth of the economy. Mahatma Gandhi said, the Indian railways "...brought people of diverse cultures together to contribute to India's freedom struggle".

Indian Railway was introduced in 1853, when a line was constructed from Bombay to Thane covering a distance of 34 km.

Indian Railways is the largest government undertaking in the country. The length of Indian Railways network was 67,956 km (Railway yearbook 2019-20). Its very large size puts a lot of pressure on a centralised railway management system. Thus, in India, the railway system has been divided into 17 zones.

**Table 7.2 : Indian Railways: Railway Zones and Headquarters**

Railway Zone	Headquarters
Central	Mumbai CST
Eastern	Kolkata
East Central	Hajipur
East Coast	Bhubaneswar
Northern	New Delhi
North Central	Prayagraj
North Eastern	Gorakhpur
North East Frontier	Maligaon (Guwahati)
North Western	Jaipur
Southern	Chennai
South Central	Secunderabad
South Eastern	Kolkata
South East Central	Bilaspur
South Western	Hubli
Western	Mumbai (Church Gate)
West Central	Jabalpur
Metro Railway	Kolkata

## DO YOU KNOW ?

On the basis of the width of track of the Indian Railways, three categories have been made:

**Broad gauge:** The distance between rails in broad gauge is 1.676 metre. The total length of broad gauge lines was 63950 km (2019-20).

**Metre gauge:** The distance between rails is one metre. Its total length was 2402 km (2019-20).

**Narrow gauge:** The distance between the rails in this case is 0.762 metre or 0.610 metre. The total length of narrow gauge was 1604 km (2019-20). It is generally confined to hilly areas.

Indian Railways has launched extensive programme to convert the metre and narrow gauges to broad gauge. Moreover, steam



engines have been replaced by diesel and electric engines. This step has increased the speed, as well as, the haulage capacity.

The replacement of steam engines run by coal has also improved the environment of the stations.

Metro rail has revolutionised the urban transport system in India. Replacement of diesel buses by CNG-run vehicles along with the introduction of metro is a welcome step towards controlling the air pollution in urban centres.

Areas around towns, raw material producing areas and of plantations and other commercial crops, hill stations and cantonment

towns were well-connected by railways from the British colonial era. These were mostly developed for the exploitation of resources. After the Independence of the country, railway routes have been extended to other areas too. The most significant development has been the development of Konkan Railway along the western coast providing a direct link between Mumbai and Mangaluru.

Railway continues to remain the main means of transport for the masses. Railway network is relatively less dense in the hill states, north eastern states, central parts of India and Rajasthan.

### Water Transport

Waterways is an important mode of transport for both passenger and cargo traffic in India. It is the cheapest means of transport and is most suitable for carrying heavy and bulky material. It is a fuel-efficient and eco-friendly mode of transport. The water transport is of two types—(a) inland waterways, and (b) oceanic waterways.

#### *Inland Waterways*

It was the chief mode of transport before the advent of railways. It, however, faced tough competition from road and railway transport. Moreover, diversion of river water for irrigation purposes made them non-navigable in large parts of their courses. India has 14,500 km of navigable waterways, contributing about 1% to the country's transportation. It comprises rivers, canals, backwaters, creeks, etc.

Which cities of India have Metro Rail Facility? Collect information about it and discuss in the classroom.

### Konkan Railway

One of the important achievements of the Indian Railways has been the construction of Konkan Railway in 1998. It is 760-km long rail route connecting Roha in Maharashtra to Mangalore in Karnataka. It is considered an engineering marvel. It crosses 146 rivers, streams, nearly 2000 bridges and 91 tunnels. Asia's largest tunnel which is nearly 6.5 km long, also lies on this route. The states of Maharashtra, Goa and Karnataka are partners in this undertaking.



Fig. 7.6 : River navigation in the North-east



For the development, maintenance and regulation of national waterways in the country, the Inland Waterways Authority was set up in 1986. In order to create wide waterways network and to promote inland water transport in the country as an economical, environment friendly supplementary mode of transport to

rail and road, 111 inland waterways (including 5 national waterways declared earlier, Table 7.3) were declared as National Waterways (NWs) by the National Waterways Act, 2016. (Source: Annual Report, Ministry of Ports, Shipping & Waterways, Govt. of India, 2022-23)

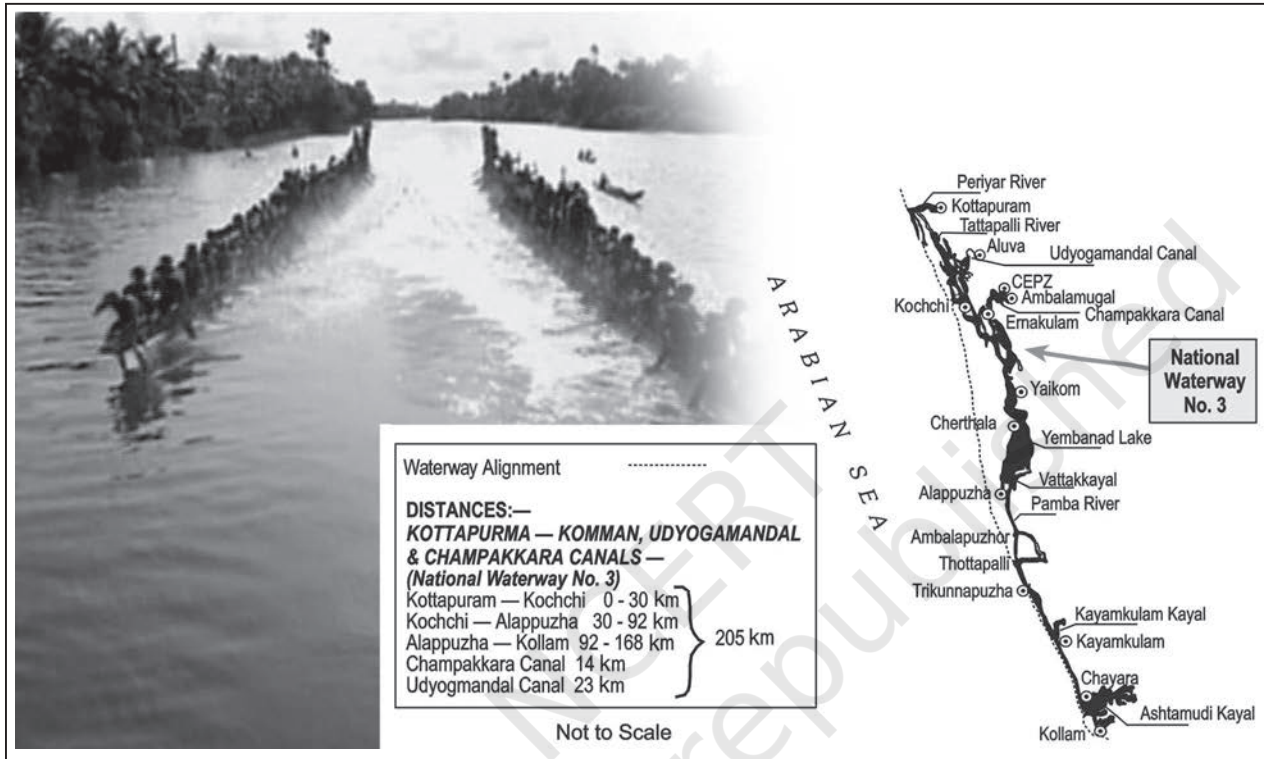


Fig. 7.7 : Natinal Waterway No.3

Table 7.3 National Waterways of India

Waterways	Stretch	Specification
NW 1	Prayagraj-Haldia stretch (1,620 km)	It is one of the most important waterways in India, which is navigable by mechanical boats up to Patna and by ordinary boats up to Haridwar. It is divided into three parts for developmental purposes – (i) Haldia-Farakka (560 km), (ii) Farakka-Patna (460 km), (iii) Patna-Prayagraj (600 km).
NW 2	Sadiya-Dhubri stretch (891 km)	Brahmaputra is navigable by steamers up to Dibrugarh (1,384 km) which is shared by India and Bangladesh
NW 3	Kottapuram-Kollam stretch (205 km)	It includes 168 km of west coast canal along with Champakara canal (14 km) and Udyogmandal canal (23 km).
NW 4	Specified stretches of Godavari and Krishna rivers along with Kakinada Puducherry stretch of canals (1078 km)	
NW 5	Specified stretches of river Brahmani along with Matai river, delta channels of Mahanadi and Brahmani rivers and East Coast canals (588km).	



The Inland Waterways Authority has also identified 10 other inland waterways, which could be upgraded. The backwaters (Kayal) of Kerala has special significance in Inland Waterway. Apart from providing cheap means of transport, they are also attracting a large number of tourists in Kerala. The famous Nehru Trophy Boat Race (VALLAMKALI) is also held in the backwaters.

### **Oceanic Routes**

India has a vast coastline of approximate 7,517 km, including islands. Twelve major and 200 minor ports provide infrastructural support to these routes. Oceanic routes play an important role in the transport sector of India's economy. Approximately 95 per cent of India's foreign trade by volume and 70 per cent by value moves through ocean routes. Apart from international trade, these are also used for the purpose of transportation between the islands and the rest of the country.

### **Air Transportation**

Air transport is the fastest means of movement from one place to the other. It has reduced distances by minimising the travel time. It is essential for a vast country like India, where distances are large and the terrain and climatic conditions are diverse.

Air transport in India made a beginning in 1911 when airmail operation commenced over a little distance of 10 km between Prayagraj and Naini. But its real development took place in post-Independent period. The Airport Authority of India is responsible for providing safe, efficient air traffic and aeronautical communication services in the Indian Air Space.

## **DO YOU KNOW ?**

UDAN (*Ude Desh ka Aam Nagrik*) is a first-of-its kind scheme globally, designed to jump-start the regional aviation market. Regional Connectivity Scheme (RCS) -UDAN was conceived by the Ministry of Civil Aviation (MoCA) Govt. of India, to promote regional connectivity by making fly affordable for the common citizen. The central idea of the scheme is to encourage airlines to operate flights on regional and remote routes through enabling policies and extending incentives.

Pawan Hans is the helicopter service operating in hilly areas and is widely used by tourists in north-eastern sector.

In addition, Pawan Hans Limited mainly provides helicopter services to petroleum sector and for tourism.

### **Oil and Gas Pipelines**

Pipelines are the most convenient and efficient mode of transporting liquids and gases over long distances. Even solids can also be transported by pipelines after converting them into slurry. Oil India Limited (OIL) under the administrative set up of the Ministry of Petroleum and Natural Gas is engaged in the exploration, production and transportation of crude oil and natural gas. It was incorporated in 1959 as a company. Asia's first cross country pipeline covering a distance of 1,157 km was constructed by OIL from Naharkatiya oilfield in Assam to Barauni refinery in Bihar. It was further extended up to Kanpur in 1966. GAIL (India) Ltd. was set up in 1984 as a public sector undertaking to transport, process and market natural gas for its economic use. The first 1,700 km long Hazira-Vijaipur-Jagdishpur (HVJ) cross country gas pipeline, constructed by GAIL (India), linked Mumbai

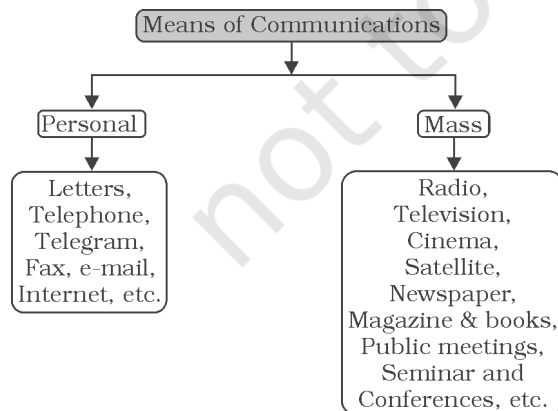


High and Bassein gas fields with various fertiliser, power and industrial complexes in western and northern India. This artery provided impetus to Indian gas market development. Overall, India's gas infrastructure has expanded over ten times from 1,700 km to 18,500 km of cross-country pipelines and is expected to soon reach over 34,000 km as Gas Grid by linking all the gas sources and consuming markets across the country including North Eastern States.

## Communication Networks

Human beings have evolved different methods of communication over time. In earlier times, the messages were delivered by beating the drum or hollow tree trunks, giving indications through smoke or fire or with the help of fast runners. Horses, camels, dogs, birds and other animals were also used to send messages. Initially, the means of communication were also the means of transportation. Invention of post-office, telegraph, printing press, telephone, satellite, etc has made the communication much faster and easier. Development in the field of science and technology has significantly contributed in bringing about revolution in the field of communication.

People use different modes of communication to convey the messages. On the basis of scale and quality, the mode of communication can be divided into following categories :



## Personal Communication System

Among all the personal communication system internet is the most effective and advanced one. It is widely used in urban areas. It enables the user to establish direct contact through e-mail to get access to the world of knowledge and information. It is increasingly used for e-commerce and carrying out money transactions. The internet is like a huge central warehouse of data, with detailed information on various items. The network through internet and e-mail provides an efficient access to information at a comparatively low cost. It enables us with the basic facilities of direct communication.

## Mass Communication System

### Radio

Radio broadcasting started in India in 1923 by the Radio Club of Bombay. Since then, it gained immense popularity and changed the socio-cultural life of people. Within no time, it made a place in every household of the country. Government took this opportunity and brought this popular mode of communication under its control in 1930 under the Indian Broadcasting System. It was changed to All India Radio in 1936 and to Akashwani in 1957.

All India Radio broadcasts a variety of programmes related to information, education and entertainment. Special news bulletins are also broadcast at specific occasions like session of parliament and state legislatures.

### Television (T.V.)

Television broadcasting has emerged as the most effective audio-visual medium for disseminating information and educating masses. Initially, the T.V. services were limited only to the National Capital where it began in 1959. After 1972, several other centres became operational. In 1976, TV was delinked from All India Radio (AIR) and got a separate identity



as Doordarshan (DD). After INSAT-IA (National Television-DDI) became operational, Common National Programmes (CNP) were started for the entire network and its services were extended to the backward and remote rural areas.

### *Satellite Communication*

Satellites are mode of communication in themselves as well as they regulate the use of other means of communication. However, use of satellite in getting a continuous and synoptic view of larger area has made satellite communication very vital for the country due to the economic and strategic reasons. Satellite images can be used for the weather forecast, monitoring of natural calamities, surveillance of border areas, etc.

On the basis of configuration and purposes, satellite system in India can be

grouped into two: Indian National Satellite System (INSAT) and Indian Remote Sensing Satellite System (IRS). The INSAT, which was established in 1983, is a multi-purpose satellite system for telecommunication, meteorological observation and for various other data and programmes.

The IRS satellite system became operational with the launching of IRS-IA in March 1988 from Vaikanour in Russia. India has also developed her own Launching Vehicle PSLV (Polar Satellite Launch Vehicle). These satellites collect data in several spectral bands and transmit them to the ground stations for various uses. The National Remote Sensing Centre (NRSC) at Hyderabad provides facilities for acquisition of data and its processing. These are very useful in the management of natural resources.



## **EXERCISES**

1. Choose the right answers of the following from the given options.
  - (i) In how many zones has the Indian Railways system been divided?
    - (a) 9
    - (b) 12
    - (c) 17
    - (d) 14
  - (ii) On which river and between which two places does the National Water Way No. 1 lie?
    - (a) The Brahmaputra, Sadiya-Dhubri
    - (b) The Ganga, Haldia-Prayagraj
    - (c) West Coast Canal, Kottapuram to Kollam
    - (d) Godavari-Kakinada Puducherry
  - (iii) In which of the following year, the first radio programme was broadcast?
    - (a) 1911
    - (b) 1936
    - (c) 1927
    - (d) 1923



- 2.** Answer the following questions in about 30 words.
- (i) Which activity does transportation convey? Name three major modes of transportation.
  - (ii) Discuss advantages and disadvantages of pipeline transportation.
  - (iii) What do you mean by 'communication'?
- 3.** Answer the following questions in about 150 words.
- (i) Which are the chief means of transportation in India? Discuss the factors affecting their development.
  - (ii) Give a detailed account of the development of railways in India and highlight their importance.
  - (iii) Describe the role of roads in the economic development of India.

**Project**

Find out the facilities that Indian Railways provide to the passengers.



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