Infrastructure Class 11 Notes Chapter 8 Indian Economic Development

Concept of Infrastructure
Infrastructure refers to such core elements of economic and social change which serves as a support system to production activity in the economy.

Economic Infrastructure
It refers to all such elements of economic change which serve as a support system to the process of economic growth.

Social Infrastructure
It refers to the core elements of social change which serve as a support system for the process of social development of a country.

Infrastructure and Development
Following observations show how exactly infrastructure contributes to the process of growth and development.

- Infrastructure impacts productivity
- Infrastructure induces investment
- Infrastructure generates linkages in production
- Infrastructure enhances size of the market
- Enhance ability to work
- Induces Foreign Direct Invesment (FDI)

The State of Infrastructure in India
(i) Energy Energy is the most important component of economic infrastructure. Industrial production is not possible if energy is not available.
Energy is broadly classified as commercial and non-commercial energy.

- Components of Commercial Energy Coal, petroleum products natural gas, electricity.
- Components of Non-Commercial Energy Fire wood, animal waste, agricultural waste.

(ii) Conventional Sources

- Coal
- Natural gas

(iii) Non-Conventional Sources

- Solar energy
- Wind energy

- Biomass energy including energy in the form of gobar gas
- Geo thermal energy
- Energy through tides and waves as well as temperatue gradient over sea

(iv) Power/Electricity The most visible form of energy, which is often identified with progress in moderation civilization is power, commonly called electricity.
(v) Some Challenges in the Power Sector

- Inadequate generation of electricity
- Less capacity utilisation
- Losses of electricity boards

(vi) Health Health is a state of complete physical, mental and social well-being. It does not simply mean absence of disease; rather it means a sound physical and mental state of the individual.

Development of Health Services After Independence
There has been a large scale improvement in health facilities. Following are the highlights

- Decline in death rate
- Reduction in infant mortality
- Rise in expectancy of life
- Control over deadly diseases
- Reduction in child mortality rate

Women's Health
Women in India suffer from a serious neglect not only in the area of education, but in the area of health care as well. More than 50% of women in India in the age group of 15-49 years suffer from nutritional deficiency.

Health as an Emerging Challenge
Points given below highlight the deficiencies of our social infrastructure in terms of health facilities.

- Unequal distribution of healthcare services
- Communicable diseases
- Poor management
- Privatisation
- Poor upkeep and maintenance
- Poor sanitation level

Infrastructure facilitates support system in an economy. It contributes to economic development of a country both by rising the productivity of factors of production and by improving the quality of life of its people.
This chapter focuses on analysing the economic and social components of infrastructure. The significance of infrastructure in the context of growth and development of an economy is also discussed in it.

Concept, Types and Importance of Infrastructure

Infrastructure is basic physical and organisational structure needed for the operation of a society or enterprise. It provides supporting services in the main areas of industrial and agricultural production, domestic and foreign trade and commerce. Infrastructural installations do not direcdy produce goods but help in promoting production activities in an economy. e.g. transport, communication, banking, power, etc.

These services include roads, railways, ports, airports, dams, power stations, oil and gas pipelines, telecommunication facilities, etc. They also include country's educational system including schools and colleges, health system including hospitals, sanitary system including clean drinking water facilities and the monetary system including banks, insurance and other financial institutions.

Types of Infrastructure

Infrastructure is broadly categorised as social and economic infrastructure. They are discussed below

Social Infrastructure It refers to the core elements of social change which serve as a foundation for the process of social development of a country. It contributes to economic processes indirectly and from outside the system of production and distribution, e.g. educational institutions, hospitals, sanitary conditions and housing facilities, etc.

Economic infrastructure It refers to all such elements of economic change which serve as a foundation for the process of economic growth. These helps in the process of production directly. e.g. transportation, communication, energy/power, etc.

Difference between Social and Economic Infrastructure

Social Infrastructure	Economic Infrastructure
It helps the economic system from outside. (i.e. indirectly)	It helps the economic system from inside. (i.e. directly)
It improves the quality of human resources.	It improves the quality of economic resources.
Expenditure on it, will raise the stock of human capital overtime.	Expenditure on it, will raise the stock of physical capital overtime.
For example, health, education and housing.	*For example*, energy, transport and communication.

Relevance of Infrastructure

Infrastructure is the support system which provides support to the efficient working of a modem industrial economy. Modem agriculture also largely depends on it

for speedy and large scale transportation of seeds, pesticides, fertilisers, etc.

We use modern roadways, railways and shipping i facilities. In recent times, agriculture also depends on insurance and banking system.
Inadequate infrastructure can have multiple adverse effects on health. Improvements in water supply and – sanitation have a large impact by reducing morbidity (state of being unhealthy or diseased) from major

> waterborne diseases and reducing the severity of disease, when it occurs. Air pollution and safety hazards connected to transportation also effect morbidity particularly in densely populated areas.

Importance of Infrastructure in Development
Folloiving points highlights how exactly infrastructure contributes to the process of growth and development

- Impact on Productivity Infrastructure plays an major role in the raising productivity, with improved roadways, warehouses etc farmers can easily sell their products in different markets. Also irrigation facilities has reduced dependence on monsoon for water needs, which not only increases productivity but also production level.
- Induces Investment Infrastructure induces investment. Low investment points to low level of production and backwardness of an economy. A well developed infrastructure attracts foreign investors. Which gives investment avenues and profitable ventures.
- Generates Linkages in Production Better means of transport and communication, robust system of banking and finance generates better inter-industrial linkages. It is a situation when expansion of one industry facilitates the expansion of the other.
- Enhances Size of the Market Infrastructure enhances the size of the market as large scale of production can capture more market.
- Enhances Ability to Work Social infrastructure increases the quality of life of workers, thereby increasing their efficiency. Health care centres, educational institutions and other such facilities inherit skills which increases ability and efficiency to work.
- Facilities Outsourcing India is emerging to be a global destination for all kinds of outsourcing. For example, call centres, study centres, medical
- transcription and such other services, owing largely – to its sound system of social and economic infrastructure.

The State of Infrastructure in India

Traditionally, the government has been solely responsible for developing the country's infrastructure. But it was found that the government's investment in infrastructure was inadequate. Today, the private sector by itself and also in joint partnership with the public sector has started playing a very important role in infrastructure development. India invests only 5% of its GDP on infrastructure, which is for below than that of China and Indonesia.

Some Infrastructure in India and Other Countries, 2008-10

Country	Investment in Infrastructure as a % GDP 2003	Access to Safe Drinking Water (%)	Access to Improved Sanitation (%)	Mobile Users/ 1000 People 2010	Power Generation (billion kwh)
China	20	98	55	642	3700
Hong Kong	4	100	100	1900	40
India	**5**	**97**	**31**	**642**	**900**
South Korea	7	99	100	703	452
Pakistan	2	96	45	592	95
Singapore	5	100	100	1440	42
Indonesia	14	92	52	920	155

Infrastructure State in Rural Area

Majority of India's population still lives in rural area.
Infrastructure state in rural India can be understood from the following points

- Despite of so much technological progress, women of rural India are still using bio fuels to meet their daily energy requirement.
- Women go long distances to fetch water and other basic needs.
- The Census 2001 shows that in rural India, only 56% households have an electricity connection and 43% still use kerosene.
- About 90% of the rural households use bio fuels for cooking.
- Tap water availability is limited to only 24% rural households.
- About 76% of the population drinks water from open resources such as wells, ponds, etc.
- Access to improved sanitation in rural areas was only 20%.

Future Prospects in India

Some economists have projected that India will become the third biggest economy in the world, a few decades from now. For that to happen, India will have to boost its infrastructure investment.

In an economy as the income rises, requirement of infrastructure will change. For low income countries, basic infrastructure services like irrigation, transport and power are more important. On the contrary the developed economies require more service related to infrastructure. That is why, share of power and telecommunication infrastructure is greater in high income countries.

Thus, development of infrastructure and economic development go hand in hand. Obviously, if proper attention is not paid to infrastructure development, economic development will be severely affected.

In this chapter, we will focus only two kinds of infrastructure, those associated with energy and health. Other types of infrastructure are not included in our syllabus.

Energy

Energy is a critical aspect of development process of a nation. It is essential for industries, agriculture and related areas like production and transportation of fertilisers, pesticides

and farm equipment. It is also required in house for cooking, household lighting and heating etc.

Sources of Energy

1. Conventional Sources of Energy

There are two types of conventional sources of energy

- Commercial Sources Coal, petroleum and electricity are commercial sources of energy as they bought and sold in the market. They account for over 40% of total energy sources consumed in India. Commercial sources of energy are generally exhaustible in nature.
- Non-commercial Sources Fire wood, agricultural waste and dried dung non-commercial sources of energy. They are found in nature free of cost. Non-commercial sources are generally renewable in nature.

More then 60% of Indian households depend on the traditional sources of energy. In meeting their regular cooking and heating needs.

2. Non-conventional Sources of Energy

Solar energy, wind energy and tidal power are non-conventional sources. India has almost unlimited potential for producing all three types of energy if some appropriate cost effective technologies (that are already available) are used.

Note India is fifth largest producer of wind energy.

Difference between Conventional and Non-conventional Sources of Energy

Conventional Sources of Energy

These are the traditional sources of energy which are generally bought and sold in the market.

In India, conventional sources are being used in total disregard to the environment, i.e. These sources creates pollution.

Conventional Sources of Energy	Non-conventional Sources of Energy
These are the traditional sources of energy which are generally bought and sold in the market.	These are modern sources of energy.
In India, conventional sources are being used in total disregard to the environment. i.e. These sources creates pollution.	These are being developed as sources of commercial energy with a view to checking environmental pollution.

Primary and Final Sources of Energy

Primary Sources They are those sources which are the gift of nature to the Earth. They do not require any transformation before their use. They are directly used as the inputs of production. e.g., coal, lignite, petroleum, gas, etc.

Final Sources They sources are used as a final product.
This involves transformation process, transforming inputs into final outputs like transformation of coal energy into electricity.

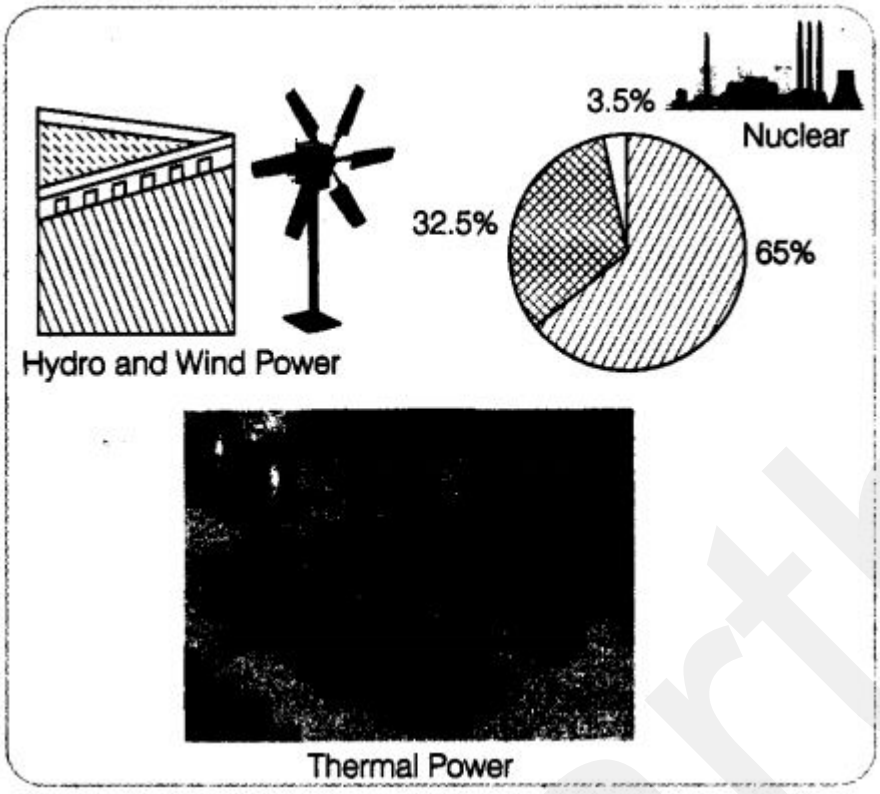
Consumption Pattern of Commercial Energy in India
At present, commercial energy consumption makes up about 74% of the total energy consumed in India. This includes coal with the largest share of 54%, followed by oil at 33%, natural gas at 9% and hydro energy at 3%. Non-commercial energy sources account for over 26% ofthe total energy consumption.

The critical feature of India's energy sector and its linkages to the economy, is the import dependence on crude and petroleum products, which is likely to grow rapidly to more than 100% of the need in the near future.

Sectoral Pattern of Energy Consumption in India
Earlier till 1953-54, transport sector was the largest consumer of commercial energy but it declined thereafter and industrial sector has been increasing. The share of oil and gas is highest among all commercial energy consumption.

Power/Electricity
The most visible form of energy, which is often identified with progress in modern civilisation, is power, commonly called electricity. It is a critical component of infrastructure that determines the economic development of a country. The growth rate of demand for power is generally higher than the GDP growth rate. Studies point that in order to have 8% per annum, power supply needs to grow around 1. annually.

In 2010-11, thermal sources accounted for almost 65% generation capacity in India. Hydel and wind power accounted for 32.5% while nuclear power accounted only 2.5%. India's energy policy encourages two energy sources; hydel and wind, as they do not rely on fossil fuel and hence, avoid carbon emissions and are renewable in nature. It has resulted in faster growth of electricity produced from there two sources.



Atomic energy is an important source of electric power. At present, nuclear energy accounts for only 2.5% of total energy consumption, against a global average of 13% which is too low. Hence, some scholars suggest to generate more electricity through atomic sources.

Use of Solar Energy in Thane

There is a use of solar energy on large scale in Thane city. The use of solar energy, which was considered a somewhat far fetched concept, has bought in real benefits and results in cost and energy saving, In this city, solar energy is being applied to heat water, power traffic signals and advertising hoardings, The experiment is lead by Thane Municipal Corporation. It has made compulsory for all new buildings in the city to install solar water heating system.

Some Challenges in the Power Sector

Energy, in a developing country like India, is a basic put required to sustain economic growth and to provide basic amenities of life to the entire population of a country.

Energy generated at various power stations is not totally used by the consumers, some of it is consumed by the power station itself and some of it is wasted in transmission.
Some of the challenges that India's power sector faces today are

- India's installed capacity to generate electricity is , not sufficient to feed an annual economic growth of 9%. At present, India is able to and only 20,000 MW a year. Even the installed capacity is under utilised.
- State Electricity Boards (SEBs) which distribute electricity, incur losses which exceed ? 500 billion due to transmission and loss in distribution, wrong pricing of electricity and other inefficiences.

- Private sector power generators are yet to play their role in a major way, same is the case with foreign investors.
- There is general public unrest due to high power tariffs and prolonged power cuts in different parts of the country.
- Thermal power plants which are the mainstay of India's power sector, are facing shortage of raw material and coal supplies.

Continued economic development and raising population is driving the demand for more energy than what India is currendy producing. Instead of investing in already installed power sector, government has shifted interest into the private sector particularly for the distribution of electricity at much higher prices.

Power Distribution : The Case of Delhi
Since, independence power management in the capital has changed hands four times. The Delhi State Electricity Board (DSEB) was set up in 1951. This was succeeded by the Delhi Electric Supply Undertaking (DESU) in 1958. The Delhi Vidyut Board (DVB) came into existence as SEB in February 1997.

Now the distirbutioq of electricity vests with two leading private sector companies—Reliance Energy Limited (BSES Rajdhani Power Limited and BSES Yamuna Power Limited) and Tata—Power Limited (TPDDL). They supply electricity to approximately 28 lakh customers in Delhi.

The tariff structure and other regulatory issues are monitored by the Delhi Electricity Regulatory Commission (DERC). Though it was expected that there will be greater improvement in power distribution and the consumers will benefit in a major way, experience shows unsatisfactory results.

Health
A person's ability to work depends largely on his health. Good health enhances the quality of life. Health is not only absence of disease but also the ability to realise one's potential. It is a yardstick of one's well being.
Health is an important component of social infrastructure. It is the holistic process related to the overall growth and development of the nation. Scholars assess people's health by taking into account indicators like infant mortality and maternal mortality rate, life expectancy and nutrition levels, alongwith incidence of communicable and non-communicable diseases.

Development of health infrastructure ensures a country about healthy manpower for production of goods and services.

Health infrastructure includes hospitals, doctors, nurses and other para-medical professionals, beds, equipment required in hospitals and a well developed pharmaceutical industry. Only the presence of infrastructure is not enough to have healthy people but it should be accessable to all the people easily.

State of Health Infrastructure in India
The government has the constitutional obligation to guide and regulate all health related issues such as medical education, adulteration of food, drugs and poisons, medical profession, vital statistics, mental, deficiency and lunacy. Central Council of Health and Family Welfare collects information and renders financial and technical assistance to State Governments, union territories and other bodies for implementation of important health programmes in the country.

State of health infrastructure in India can be understood from the following points

- At the village level, a variety of hospitals known as Primary Health Centres (PHCs) have been set.
- There are large number of hospitals run by voluntary agencies and the private sector, equipped with professionals and para medicaf professionals trained in medical, pharmacy and nursing colleges.
- Since independence, there has been a significant expansion in the physical provision of health services. Public Health Infrastructure in India, 1951-2000

Item	1951	1[illegible]	2000	2008-10
Hospitals	2694	[illegible]5	15888	12760*
Beds	117000	[illegible]38	719861	576793*
Dispensaries	6600	16745	23065	24465
PHCs	725	9115	22842	23458
Sub-centres	–	84736	137311	145897
CHCs	–	761	3043	4510

Private Sector Health Infrastructure
In recent time, private health infrastructure has grown largely. Private sector health, infrastructure is explained below

About 70% of the hospitals running in India belong to private sector. Nearly 60% of dispensaries are run by the same private sector.

Private sector has also been contributing significantly in medical education and training, medical technologies and diagnostics, manufacture and sale of pharmaceuticals, hospital construction and medical services.

Health System in India
India's health infrastructure and healthcare is made up of a three tier system
1. Primary Healthcare
Primary healthcare system in India includes

- Education concerning prevailing health problems and methods of identifying, preventing and controlling them.
- Promotion of food supply and proper nutrition and adequate supply of water and basic sanitation.
- Maternal and child health care.
- Immunisation against major infectious diseases and injuries.
- Promotion of health and provision of essential drugs.

Auxiliary Nursing Midwife (ANM) is the first person who provides primary healthcare. Primary Health Centres (PHCs), Community Health Centres (CHCs) and sub centres.

2. Secondary Healthcare
When condition of a patient is not managed by PHCs, they are referred to secondary or tertiary hospitals. Health care institutes having better facilities for surgery, X-ray, ECG (Electro Cardio Graph) are called secondary healthcare institutes. They function both as primary health care provider and also provide better health care facilities. They are mostly located in district and headquarters in big towns.

3. Tertiary Healthcare
In tertiary sector, there are the hospitals which have advanced level equipment and medicines and undertake all the complicated health problems, which could not be managed by primary and secondary hospitals.
This sector also includes many premier institutes which not only impart quality medical education and conduct research but also provide specialised health care.

For example, All India Institute of Medical Sciences (AIIMSs), Post Graduate Institute (PGI), Chandigarh, Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Pondicherry, National Institute of Mental Health and Neuro Sciences (NIMHNSs), Banglore and All India Institute of Hygiene and Public Health, Kolkata.

Indian Systems of Medicine ASM
It includes six systems, Ayurveda, Yoga, Unani, Siddha, Naturopathy and Homeopathy (AYUSNH). At present there are 3529 ISM hospitals 24943 dispensaries and as 6.5 lakhs registered practitioners in India.

Medical Tourism – A Great Opportunity
Now-a-days foreigners visit India for surgeries,liver transplants, dental and even cosmetic care etc, the reason is, our health gervices combine latest medical technologies with qualified professionals and is cheaper for foreigners as compared to costs of similar health careaervices in their own countries. In 2004-05, as many as 150000 foreigners visited India for medical treatment, this figure is likely to increase by 15% each year. Health infrastructure can be upgraded to attract more foreigners to India.
ISM has huge potential and can solve a large part of our health care problems because they are effective, safe, and inexpensive.

Indicators of Health an Health Infrastructure :critical Appraisal

(i) Health status of the country can be assessed through indicators such as infant mortality and maternal mortality rates, life expectancy and nutrition levels, alongwith the incidence of communicable diseases.

iholars argue that there is greater scope for the role of government in the health sector.

Indicators	India	China	USA	Sri Lanka
Infact mortality rate/1,000 live birth	50	16	6.5	14
Under-5 mortality/1,000 live births	63	18	8	17
Birth by skilled attendants (% of total)	53	99	99	99
Fully immunised	72	99	99	99
Health expenditure as % of GDP	4.2	4.3	15.2	4.1
Government health spending to total government spending (%)	4.4	10.3	18.7	7.9
Out of pocket expenditure as a % of private expenditure on health	74.4	82.6	24.4	86.7

Source World Health Statistics 2011. www.worldbank.org

From the given table, following facts can be concluded

- India's expenditure on health sector is only 4.2% of total GDP. This is very low as compared to other countries, both developing and developed.
- India has about 17% of the world's population but it bears a frightening 20% of the global burden of diseases.
- Global Burden of Diseases (GBD) is an indicator used by experts to gauge the number of people dying prematurely due to a particular disease as well as the number of years spent by them in state of'disability' Owing to the disease.
- Every year around five lakh children die due to water borne diseases. The danger of AIDS is also looming large.
- Malnutrition and inadequate supply of vaccines lead to the death of 2.2 million children every year.
- At present, less than 20% c the population utilises public health facilities.
- Only 38% of PHC's, have quired number of doctors and only 30% of PHC's have sutTK stock of medicines.

Urban-rural and Poor-rich Divide

Differences in medical healthcare between urban – rural and poor-rich can be understood from the points given below

- Only one-fifth of total hospitals are located in rural areas. Rural India has about half the number of dispensaries. People in rural areas do not have sufficient medical infrasctructure. This lead to difference in the health status of people. Out of 7 lakhs beds, roughly 11% are available in rural areas.
- There are only 0.36% hospital for every one lakh people in rural areas while urban areas have 3.6% hospitals for the same number of people.
- The PHCs located in rural areas do not offer even X-ray or blood testing facilities which, for a city dweller, constitutes basic healthcare. Even though 315 recognised medical colleges produce 30,000 medical graduates every year. Still there is shortage of doctors in rural areas. One-fifth of these doctors migrate from one coutry to -another for better job opportunities.
- The poorest 20% of Indians living in both urban and rural areas spend 12% of their income on healthcare while the rich spend only 2%.
- Percentage of people who have no access to proper care has risen from 15 in 1986 to 24 in 2003.

Women's Health

Women constitute about half the total population in India. They suffer many disadvantages as compared to men in the areas of education, participation in economic activities and health care. The child sex ratio has been detonated from 927 in 2001 to 914 in 2011.

There is growing incidence of female foeticide in the country. Close to 300000 girls under the age of 15 are not only married but have already borne children, at least once.

More than 50% of married women between the age group of 15 and 49 years suffer from anaemia caused by iron deficiency. It has contributed to 19% of maternal deaths. Abortions are major cause of maternal morbidity and mortality in India.

Health : A Vital Public Good and a Basic Human Right All citizens can get better health facilities if public health services are decentralised. Success against diseases depends on education and efficient health infrastructure. So it is necessary to create awareness on health and provide efficient system. The role of telecom and IT in this regard is very important. The ultimate goal should be to help people move towards a better quality of life.