1. Details of Module and its structure

Module Detail	
Subject Name	Geography
Course Name	Geography 03 (Class XII, Semester - 1)
Module Name/Title	Transport and Communication- Air Transport, Pipelines and Communication – Part 4
Module Id	legy_10804
Pre-requisites	Basic Knowledge about water Transport and Communication
Objectives	After going through this lesson, the learners will be able to understand the following: • Explain the Modes of Transport • Describe different type of transport • Discuss Air transport, Inter- Continental Air Routes • Pipelines, Communication, Satellite Communication, Cyber • Space- Internet
Keywords	Inter – Continental Air Routes, Aryabhatt, Bhaskar-I, Rohini

2. Development Team

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Table of Content:

Natural resources, manufacturing enterprises and markets for products are rarely located at the same place. Transport, communication and trade link areas of production of goods and services with areas of consumption. Distance in modern times is being progressively reduced with each improvement in transport and communication facilities. The world economy today will rather grind to a halt but for an efficient transport and communication system. In earlier days the means of transport and communication were the same. But with the advancement in science and technology, both have acquired specialised and distinct forms.

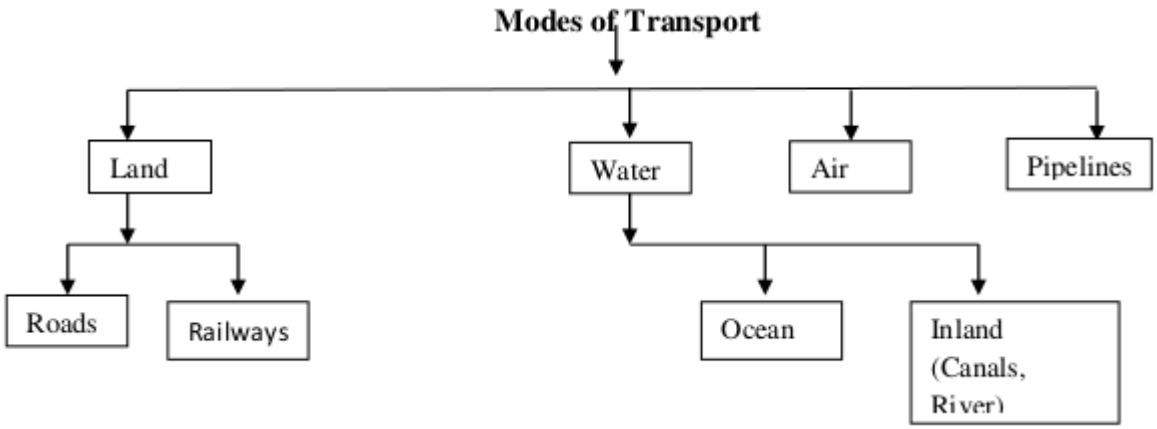
Transport refers to the carriage of goods and passengers from one place to the other using humans, animals and different kinds of vehicles. Such movements take place through land, water and air. Roads and railways form part of the land transport. Waterways and airways are the other two modes. Pipelines are used to carry liquids like water and petroleum, and natural gas. Transport thus includes transport arteries, vehicles to carry people and goods, and the organisation to maintain arteries and to handle loading, unloading safe delivery.

Communication means conveyance of information from the place of origin to the place of destination through a channel. Postal services, telephone, telegraph and fax services, internet and satellites are some of the major means of communication.

Trade means exchange of goods and services through market channels among places in response to differences in prices or demand and supply. It thus, refers to the flow of goods and services being exchanges between places.

It is now apparent that transport, communication and trade facilitate the movement and exchange of people, goods and services. Transport and communication provide the network or routes, channels and carriers, through which trade takes place. In and communication. Trade will be taken up separately in the next chapter.

Modes of Transport



Transportation

Transportation of people, goods and services takes place using different modes-land, water, air and pipes. Each mode of transport has its own importance. Which mode should be used depends on the type of goods and services to be transported, transportation cost and the means of transport available. For example, it is economical to move bulk materials using waterways. International movement of goods in general is handled by ocean freighters. Waterways however, restrict transhipment of goods from port s to inland destination and they are slow. Road Transport is cheaper for small distances and is faster too. It renders door to door service. But is one has to move large volume of bulky materials over long distances especially within a country, railways are most suited. Perishable light and precious goods, on the other hand can be best move by air. In a well-managed transport-system, the various modes supplement and complement each other. c9/Iss016e019375.jpg/1200px-Iss016e019375.jpg

Air Transport

Air transport is the fastest means of transportation, but it is very costly. Being fast, it is preferred by passengers for long-distance travel. The manufacturing of aircrafts and their

operation require elaborate arrangements-hangar, landing, fuelling and maintaining facilities. As such air transport is used only for high value goods and passengers. Air traffic is adversely affected in bad weather. Valuable cargo can be moved rapidly on a world-wide scale. It is often the only means to reach inaccessible areas. Air transport has brought about a connectivity revolution in the world. The frictions created by mountainous snow fields or inhospitable desert terrains have been overcome. The accessibility has increased. The airplane brings varied articles to the Eskimos in Northern Canada unhindered by the frozen ground. In the Himalayan region, the routes are often obstructed due to landslides, avalanches or heavy snow fall. At such times, air travel is the only alternative to reach a place. Airways also have great strategic importance. The air strikes by U.S. and British forces in Iraq bears testimony to this fact. The airways network is expanding very fast

The manufacturing of aircrafts and their operations require elaborate infrastructure like hangars, landing, fuelling, and maintenance facilities for the aircrafts. The construction of airports is also very expensive and has developed more in highly industrialised countries where there is a large volume of traffic.

Fig No 01 Air transport Iivery at Auto and Technik Museum

Sources:https://upload.wikimedia.org/wikipedia/commons/f/f2/Ilyushin_Il-14_in_Bulgarian_Air_Transport_livery_at_Auto_und_Technik_Museum_Sinsheim_%289079718508%29.jpg

At present no place in the world is more than 35 hours away. This startling fact has been made possible due to people who build and fly airplanes. Travel by air can now be measured by hours and minutes instead of years and months. Frequent air services are available to many parts of the world. Although, U.K. pioneered the use of commercial jet transport,

U.S.A. developed largely post-War international civil aviation. Today, more than 250 commercial airlines offer regular services to different parts of the world. Recent developments can change the future course of air transport. Supersonic aircraft, cover the distance between London and New York within three and a half hours.

A very dense network of air routes exists in Western Europe, Eastern United States of America and Southeast Asia. There are some nodal points where the air routes merge or radiate in all directions e.g. – London, Paris, Rome, Moscow, Karachi, New Delhi, Mumbai, Bangkok, Singapore, Tokyo, San Francisco, Los Angeles, Chicago, New York and Rio de Janeiro etc. Soviet Asia and Africa lack

Inter-Continental Air Routes

In the Northern Hemisphere, there is a distinct east-west belt of inter-continental air routes. Dense network exists in Eastern U.S.A., Western Europe and Southeast Asia. U.S.A. alone accounts for 60 per cent of the airways of the world. New York, London, Paris, Amsterdam, Frankfurt Rome, Moscow, Karachi, New Delhi, Mumbai, Bangkok, Singapore, Tokyo, San Francisco, Los Angeles and Chicago are the nodal points where air routes converge or radiate to all continents. Africa, Asiatic part of Russia and South America lack air services. There are limited air services between 10-35 latitudes in the Southern hemisphere due to sparser population, limited landmass and economic development.

Pipelines

Pipelines are used extensively to transport liquids and gases such as water, petroleum and natural gas for an uninterrupted flow. Water supplied through pipelines is familiar to all. Cooking gas or LPG is supplied through pipelines in many parts of the world. Pipelines can also be used to transport liquidified coal. In New Zealand, milk is being supplied through pipelines from farms to factories.

In U.S.A. there is a dense network of oil pipelines from the producing areas to the consuming areas. Big Inch is one such famous pipeline, which carries petroleum from the oil wells of the Gulf of Mexico to the North-eastern States. About 17 per cent of all freight per

tonne-km. is carried through pipelines in U.S.A. The Big Inch pipelines, are petroleum pipelines extending from Texas to New Jersey.

In Europe, Russia, West Asia and India pipelines are used to connect oil wells to refineries, and to ports or domestic markets.Russia and India, pipelines are being used to connect oil wells to refineries and to ports of internal markets. It is also popular for carrying natural gas. One of the longest pipeline, called COMECON, is 4,800 km long. It connects oil wells of the Ural and the Volga regions to the countries of East Europe Turkmenistan is central Asia has extended pipelines to Iran and also to parts of China. The proposed Iran-India via Pakistan international oil and natural gas pipeline will be the longest in the world.

Fig No .02 Steam pipelines leading from a steamfield leading from a steam field near Lake Taupo to the geothermal power plant at Wairakei Region of Waikarto

Sources:https://upload.wikimedia.org/wikipedia/commons/9/99/Steam_Pipelines_Near_Taup o.jpg

Communications

Humans used different means of communication ever since they appeared on the earth, but the pace of change has been rapid during modern times. Long distance communication has been made far easier than ever before without physical movement of either the communicator or the receiver. The first major breakthrough in communication system was the telecommunication

Human beings have used different methods long-distance communications of which the telegraph and the telephone were important. The telegraph was instrumental in the colonisation of the American West. During the early and mid-twentieth century, the American Telegraph and Telephone Company (AT&T) enjoyed a monopoly over U.S.A. telephone industry. In fact, the telephone became a critical factor in the urbanisation of

America. Firms centralised their functioning at city-headquarters and located their branch offices in smaller towns. Even today, the telephone is the most commonly used mode. In developing countries, the use of cell phones, made possible by satellites, is important for rural connectivity.

Radio, television, fax and internet make communication more accessible to more people cutting across all barriers of time and space. Modern communication system more than the transport system, has converted the world into a global village. The contemporary social and economic space is closely tied to modern communication system.

During the early and mid-twentieth century, the American Telegraph and Telephone Company (AT&T) enjoyed a monopoly over the US telephone industry. Faced with mounting competition, telephone companies have steadily upgraded their copper cable systems to include fibre-optic lines, which allow large quantities of data to be transmitted rapidly, securely, and virtually error free. With the digitisation of information in the late twentieth century, telecommunication steadily merged with computers to form integrated networks through the internet

There is a phenomenal pace of development. The first major breakthrough is the use of optic fiber cables (OFC). Faced with mounting competition, telephone companies all over the world soon upgraded their copper cable systems to include optic fiber cables. These allow large quantities of data to be transmitted rapidly, securely, and are virtually error-free. With the digitisation of information in the 1990s, telecommunication slowly merged with computers to form integrated networks termed as Internet..

Satellite Communication

Today Internet is the largest electronic network on the planet connecting about 1,000 million people in more than 100 countries.

Satellites touch human lives in many ways. Every time you use a cell phone to call a friend, send an SMS or watch a popular programme on cable television. You are using **satellite communication**.

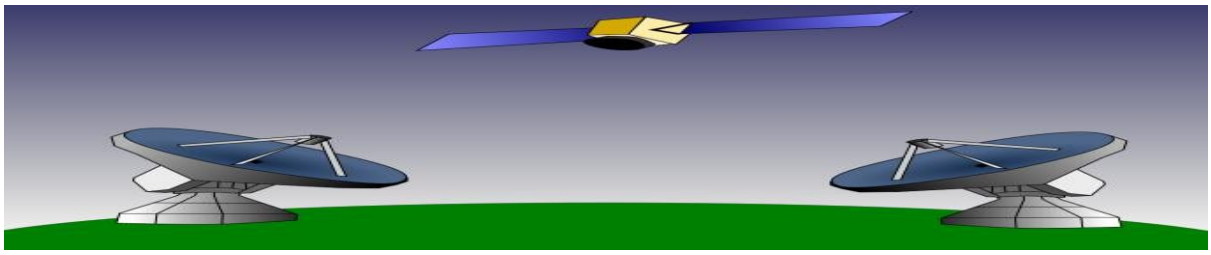


Fig.No, 03 Satellite_Communication

Sources:https://upload.wikimedia.org/wikipedia/commons/thumb/1/18/Satellite_Communication_Scet ch.svg/684px-Satellite_Communication_Scetch.svg.png

Communication through satellites emerged as a new area in communication technology since the 1970s after U.S.A. and former U.S.S.R. pioneered space research. Artificial satellites, now, are successfully deployed in the earth orbit to connect even the remote corners of the globe with limited on-site verification. These have rendered the unit cost and time of communication invariant in terms of distance. This means it costs the same to communicate over 500 km as it does over 5,000 km via satellite

India has also made great strides in satellite development. Aryabhatt was launched on 19 April 1979, Bhaskar-I in 1979 and Rohini in 1980. On 18 June 1981, APPLE (Arian Passenger Payload Experiment) was launched through Arian rocket. Bhaskar, Challenger and INSAT I-B have made long-distance communication, television and radio very effective. Today weather forecasting through television is a boon.

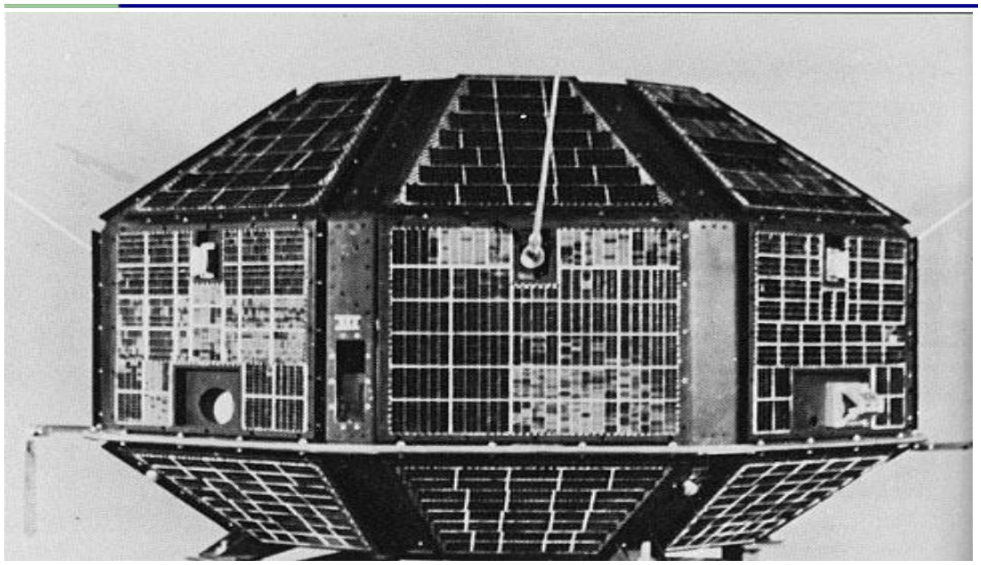


Fig No .04 Aryabhata Satellite

Sources:https://upload.wikimedia.org/wikipedia/commons/5/50/Aryabhata_Satellite.jpg
The best known satellite images have come from NASA series of Landsat satellites. The first, originally called the Earth resources Technology Satellite (ERTS) was launched in 1972. The launch of Landsat, which will be operated jointly by NASA and the US Geological Survey, took place in April 1999. The satellites have provided a wealth of information about the earth to scientists as well as to map makers.

As the US and Russian Governments drop security restrictions on data gathered from reconnaissance satellites, private companies are increasingly using this information for non-military applications such as seeking potential energy sources, monitoring pollution, and analysing building sites, besides predicting weather, locating areas of deforestation and mineral deposits, identifying hundreds of other physical patterns and processes. As the technology develops, government, academia and business are continuing to find new applications for these images.

Cyber Space Internet

As millions of new users log on to the internet each year, cyberspace has expanded rapidly in size and in use and importance, including e-mail and electronic commerce. Thus, cyberspace exists „everywhere". In short, telecommunication revolution has expanded the human, social and economic space considerably.Cyberspace is the world of electronic computerised space. It is encompassed by the Internet such as the World Wide Web (www). In simple words, it is the electronic digital world for communicating or accessing information over computer networks without physical movement of the sender and the receiver. It is also referred to as the Internet. Cyberspace exists everywhere. It may be in an office, sailing boat, flying plane and virtually anywhere. Popular access systems of the internet allow any individual with a micro-computer and modem to plug into cyberspace, the world of electronic computerised spaces encompassed by the internet and related technologies.

The speed at which this electronic network has spread is unprecedented in human history. There were less than 50 million Internet users in 1995, about 400 million in 2000 A.D. and over one billion in 2005. The next billion users are to be added by 2010. In the last five years there has been a shift among global users from U.S.A. to the developing countries. The

percentage share of U.S.A. has dropped from 66 in 1995 to only 25 in 2005. Now the majority of the world users are in U.S.A., U.K., Germany, Japan, China and India.

As billions use the Internet each year, cyberspace will expand the contemporary economic and social space of humans through e-mail, e-commerce, e-learning and e-governance. Internet together with fax, television and radio will be accessible to more and more people cutting across place and time. It is these modern communication systems, more than transportation, that has made the concept of global village a reality.

Fig no 05: Image incorporating the latest internet technologies

Sources: https://media.defense.gov/2008/Dec/15/2000650616/670/394/0/081215-F-0000X-002.JPG