Land Transportation System: Road, Railways and Pipelines

The earliest form of land transport was Man himself. They used narrow paths, beaten out and maintained only by use and rarely were specially constructed except at bridges.
In some parts of the world human porterage is still prevalent today, e.g., in thickly forested regions or rugged mountains where roads are difficult to build and in sparsely populated regions where the cost of construction is not warranted by the amount of traffic to be expected.
In many countries man himself is the only means of transport. In Central Africa, China and India, men are still employed to carry loads for short distances. The relief and climate of Africa from the Sudan to the Zambesi are such that it very difficult to construct roads and railways. Hired porters carry ivory, rubber, palm nuts and other products of Savannas.
The slopes of the mountains may be too steep for animals, as in some parts of the Himalayas and Tibet, or harmful insects may prevent the use of transport animals as in Central Africa, the middle Amazon basin, etc. In such regions, heavy loads are moved by human labour.

After animals had been domesticated a wide range of beasts of burden was employed, including dogs, horses and donkeys, cattle, yaks, camels and elephants among others. Man employs many animals in his service and also employs them as his beasts of burden.

The horse is the common transporting animal in the temperate lands. In the hot deserts of the Old World, camels carry heavy loads and can travel more than thirty miles a day. Elephants are employed in India and Bui ma and parts of Africa to carry loads and they rendered valuable service in the teak forests of tropical Asia.

Yak is the beast of burden in the mountainous regions of Northern India and Tibet, and the mule is serviceable in the mountain areas near the Mediterranean Sea and Mexico. In the north-west of Canada and in Siberia, sledges are drawn by hardy dogs over the frozen snow. The reindeer has been introduced in Alaska and parts of Canada.

The invention of the wheel was another major step forward in the development of transport. The use of carts and wagons, drawn by animals, allowed far larger loads to be carried, or enabled several people to ride in a carriage compared with one on horseback. But these carriages required some medium in the form of cart tracks or roads. Of all land routes, the road is most ancient as well as the most universal.

Road transport

Road transport is particularly suitable for short and medium distance travel on account of its convenience. For personal travel, the car is widely used for both work and leisure trips. In case of the former, public transport is usually available as an alternative but for non-work trips the advantage of the private car is even more pronounced, since, flexibility as well as convenience is an additional factor inherent in its use.

Over the past 60 years, road transport has become increasingly important for long distance travel due to the construction of motorways (known as ‘auto-route’ in France, ‘autobahn’ in Germany, autos-trade in Italy and National Highway in India), specially constructed arterial, dual carriageway roads, as well as the straightening, widening, and cambering of the already existing highways.

Consequently, roads are now being used for the movement of goods over longer distances: this can be attributed to improvements in vehicle technology and, as in personal travel, to the development of better roads and, more especially, motorways.

This trend is in great contrast to the early function of road goods_ transport which was seen to act as a feeder for rail services. A big advantage of road transport is that it overcomes the transfer problems of rail movement and this certainly appeals to some own account operators.

The post-war period has also seen the rationalization of the public carrier branch of the industry and this has done much to improve the industry's image in terms of responsibility and respect-ability. Perhaps the major disadvantage of road transport is the limited carrying capacity of the individual vehicles.
Just as coaches and buses have gradually increased their carrying capacity, so also road transport goods vehicles have developed greatly increased carrying capacities, e.g., articulated Lorries, special bulk carriers, trailers. .
Roads are the most common means of surface transport, but its importance is mostly restricted to national limits. The neighboring countries may allow or not allow international movement. It depends upon their political and strategic interest.

All the European countries are having well-developed system of road highways and the road mesh is very close in the more populous and industrialized areas. The countries of North-West Europe like UK, Germany, France, Netherlands, Belgium, etc., and also Spain and Italy have dense road network. Many of the main highways follow age-old routes; in England and France and in many parts of southern Europe, roads are often patterned upon the original Roman network.
The French road network is the longest in the Europe, followed by Germany, Belgium, Netherlands, Sweden, Italy and Spain. Eastern Europe is also having good road connectivity, both within the country and with other adjoining countries. The 10,700 km of autobahn in Germany is the largest network in Europe.
The former USSR, with its vast area, has developed road transport system, but in comparison with European countries and USA, its road connectivity is limited. This also is because of the fact that a vast sizeable area is under the cover of ice, and in many other areas of central and eastern part, the topographical conditions are not suitable.

Railways:

Railways are the most important means of inland transport. Railway was, in a real sense, a product of the industrial revolution and afterwards became a predominant mode of inland transport.

Railways solved two important needs:

(i) The economic carriage by land of
(a) Materials in bulk,
(b) Bulky commodities, and
(ii) The relatively rapid movement of large number of people as well as goods.

The rails always revolve around its fixed track. This provides guidance for the wheels and also enables very heavy loads to be carried.

The opening of public traffic on September 27, 1825 of the Stockton and Darlington Railways is among the great events of history. The date marks the inauguration of the railway era in which we now live.

Railways have the following obligations to meet:

(i) The cost of capital expenditure on tracks,
(ii) The cost of maintenance of tracks,
(iii) The cost of rolling stock, and
(iv) The cost of additional restrictions for the safety and convenience of the public.

Railways are providing both long distance as well as short distance mode of carrier. There are national and international railways, while some intercontinental railways are also in function. Rail's main contemporary function, especially in developed countries, lies as a provider of inter-urban travel. Railways are able to achieve higher speeds and also easier access into the heart of cities.

New technology has further helped railways to perform their function more effectively. Advance has also been made in improving the design of carriage units which, along with track changes, have promoted a better ride for passengers.

Consequently, train speeds of up to 200 kph are now being achieved by high-speed trains. Railways are providing goods service in all countries of the world. The main advantage of rail is for movement of heavy, bulky goods and of coal and mineral ore in particular.

Transcontinental Railways:

Transcontinental railways are those which are running across the continent. The railways running from the Atlantic to the Pacific Coast in North America are described as "Transcontinental Railways". Such also are the Canadian National Railway, and the Canadian Pacific Railway.

But, in common use, all those railways which reach the Pacific Coast from the Mississippi or from Chicago are described as 'transcontinental', whether there is a through coast-to-coast service or not. Other such railways are the Cape-to-Cairo Railway in Africa and the Trans-Siberian Railway in Asia. The Paris-Berlin-Moscow route, Paris-Milan-Brindisi route; and the Berlin-Vienna-Istanbul route may be called transcontinental railway systems in Europe.

The Trans-Siberian Railway connects Russia with the Far East. It runs from Moscow to Vladivostok on the Pacific, the distance being 9,500 km. Although this line was constructed for strategic purposes, it now carries a large volume of traffic. The settlement of central and eastern Siberia is largely due to this railway system.

It has additional value as an alternative route between Europe and Asia on the Pacific for passengers and mails. The line was constructed by the government for the purpose of facilitating the work of administration in Asiatic Russia. It is a single-track system. From Moscow the line goes to Omsk after crossing the Urals and traversing the agricultural lands of northern Steppe provinces where wheat-fields are prominent.

Water transport

Water transport is the process of transport a watercraft, such as a barge, boat, ship or sailboat, over a body of water, such as a sea, ocean, lake, canal or river. The need for buoyancy unites watercraft, and makes the hull a dominant aspect of its construction, maintenance and appearance.

Ship transport is primarily used for the carriage of people and non-perishable goods, generally referred to as cargo.

In the 1800s the first steam ships were developed, using a steam engine to drive a paddle wheel or propeller to move the ship. The steam was produced using wood or coal. Now most ships have an engine using a slightly refined type of petroleum called bunker fuel. Some ships, such as submarines, use nuclear power to produce the steam. Recreational educational craft still use wind power, while some smaller craft use internal combustion engines to drive one or more propellers, or in the case of jet boats, an inboard water jet.

In shallow draft areas, hovercraft are propelled by large pusher-prop fans. or

Although slow, modern sea transport is a highly effective method of transporting large quantities of non-perishable goods. Commercial vessels, nearly 35,000 in number, carried 7.4 billion tons of cargo in 2007. Transport by water is significantly less costly than air transport for trans-continental shipping. A cargo ship sailing from a European port to a US one will typically take 10-12 days based on water currents and other factors. **Sea transport remains the largest carrier of freight in the world.**

Although the historic importance of sea travel for passengers has decreased due to the rise of commercial aviation, it is still very effective for short trips and pleasure cruises. While slower than air transport, modern sea transport is a highly effective method of moving large quantities of non-perishable goods. Transport by water is significantly less costly than transport by air for trans-continental shipping.



- Ship transport is often international by nature. It is frequently undertaken for purposes of commerce, recreation or military objectives. When a cargo is carried by more than one mode, the transport is termed intermodal or co-modal.
- Ships have long been used for warfare, with applications from naval supremacy to piracy, invasions and bombardment. aircraft carriers can be used as bases of a wide variety of military operations.
- Ship transport is used for a variety of unpackaged raw materials ranging from chemicals, petroleum products and bulk cargo such as coal, iron ore, cereals, bauxite. So called "general cargo" covers goods that are packaged to some extent in boxes, cases, pallets, barrels, etc. Since the 1960s containerization has revolutionized ship transport.