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- Railways – Part 2
Module Id	legy_10802
Pre-requisites	Basic Knowledge about Mode of Transport - Railway
Objectives	After going through this lesson, the learners will be able to understand the following: • Explain the importance of transport and communication • Understand the mode of transport • Explain the importance of railways in social and economic development • Describe the Railways system in different continents • Understand the Trans-Continental Railways • Describe the Union and Pacific Railway • Describe The Orient Express
Keywords	Railway gauges, Trans-Siberian Railway, Trans-Canadian Railways, The Union and Pacific railway, the Australian Trans- Continental Railway, the orient Express, railway

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Table of Content:

Introduction

Natural resources, economic activities and markets are rarely found in one place. Transport, communication and trade establish links between producing centres and consuming centres. The system of mass production and exchange is complex. Each region produces the items for which it is best suited. Trade or the exchange of such commodities relies on transportation and communication. Likewise, the high living standards and quality of life depend on efficient transportation, communications and trade. In earlier days, the means of transport and communication were the same. But today both have acquired distinct and specialised forms. Transport provides the network of links and carriers through which trade takes place.

Transport

Transport is a service or facility for the carriage of persons and goods from one place to the other using humans, animals and different kinds of vehicles. Such movements take place over land, water and air. Railways is the part of land transport. Moreover, transportation is an organised service industry created to satisfy the basic needs of society. It includes transport arteries, vehicles to carry people and goods, and the organisation to maintain arteries, and to handle loading, unloading and delivery. Every nation has developed various kinds of transportation for defence purposes. Assured and speedy transportation, along with efficient communication, promote cooperation and unity among scattered peoples.

Modes of Transportation

The principal modes of world transportation, are land, water, air and pipelines. These are used for inter-regional and intra-regional transport, and each one (except pipelines) carries both passengers and freight. The significance of a mode depends on the type of goods and services to be transported, costs of transport and the mode available. International movement of goods is handled by ocean freighters. Road transport is cheaper and faster over short distances and for door-todoorservices. Railways are most suited for large volumes of bulky materials over long distances within a country. High-value, light and perishable goods are best moved by airways. In a well-managed transport system, these various modes complement each other. The revolution in transport came about only after the invention of the steam engine in the eighteenth century. Perhaps the first public railway line was opened in 1825 between Stockton and Darlington in northern England and then onwards, railways became the most popular and fastest form of transport in the nineteenth century. It opened up continental interiors for commercial grain farming, mining and manufacturing in U.S.A.The invention of the internal combustion engine revolutionised road transport in terms of road quality and vehicles (motor cars and trucks) plying over them.

Railways

Railways are comparatively cheaper and more convenient mode of transport than roadways. Railways are a mode of land transport for bulky goods and passengers over long distances. The railway gauges vary in different countries and are roughly classified as broad (more than 1.5 m), standard (1.44 m), metre gauge (1 m) and smaller gauges. The standard gauge is used in the U.K. Commuter trains are very popular in U.K., U.S.A, Japan and India. These carry millions of passengers daily to and fro in the city. There are about 13 lakh km of railways open for traffic in the world. With the opening of the first public railway between Stockton and Darlington in northern England was officially opened on 27 September 1825.after that railway became most popular and fastest form of transport for both passengers and goods during the nineteenth century. The growth of the railways was brought about by two interrelated factors. Firstly, the steam engine was developed and applied not only to industry but also to transport. Secondary, the rapid rise of industry made it necessary to improve existing transport systems. Railways were the cheapest and fastest carriers of bulky goods a large number of passengers, over a long distances. Commuter trains have become very popular in Britain, the USA, Japan and India. They carry thousands of people every day from one part of the city to the other within no time.

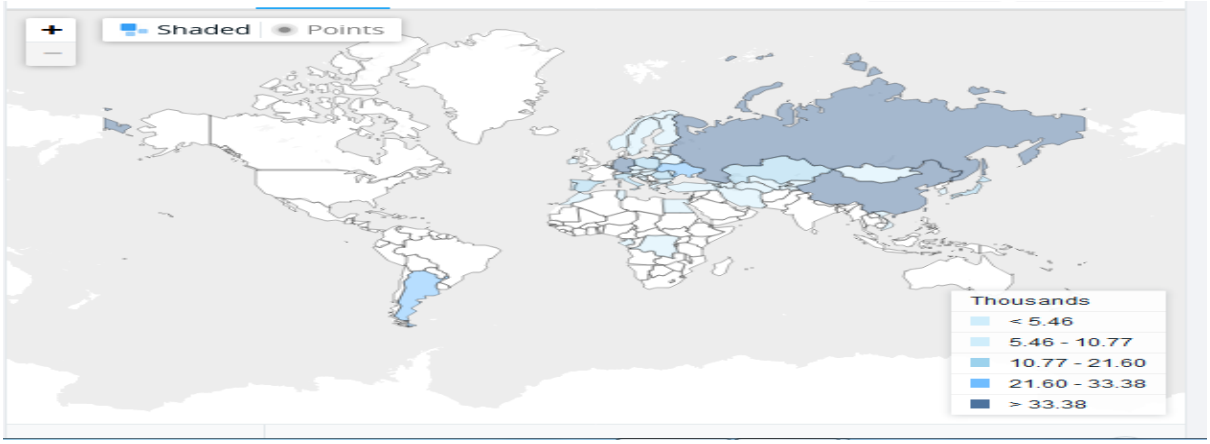

Fig No; 1 Rail Lines (total route –km) in Year 2016

Source:https://data.worldbank.org/indicator/IS.RRS.TOTL.KM?end=2016&start=1980&view=map

World Railway Patterns

The competitiveness of railways as a form of transport varies greatly from one country to another, because of the high cost of maintenance. Usually they are managed by the government as they come under essential services. Steam engines have been replaced by diesel and electric engines. Speed of trains has increased tremendously. Special services for passengers such as air-conditioning, night births, reclining seats and restaurant services are provided for comfortable journey. Freight services have also been improved by introducing wagons with cooling facilities for perishable goods and tankers and containers. Containers can be unloaded directly from ships on to special rail wagons cutting out several loading and packing operations. However, railways all over the world are experiencing server financial difficulties.

SI.NO	Countries	For every 100/km^2 area
1.	U.S.A	278.3
2.	Russia	160.8
3.	India	144.7
4.	Canada	93.5
5.	Germany	90.8
6	China	70.1
7.	Australia	40.0
8.	U.K	37.9
9.	France	34.5
10.	Brazil	30.1

Total Length of Railways in Selected Countries (in 100 sq km)

Source : Encyclopaedia Britanica Year Book, 2005.

Europe has one of the most dense rail networks in the world. There are about 4, 40,000 km of railways, most of which is double or multiple-tracked. Belgium has the highest density of 1 km of railway for every 6.5 sq. kms area. The industrial regions exhibit some of the highest densities in the world. The important rail heads are London, Paris, Brussels, Milan, Berlin and Warsaw. Passenger transport is more important than freight in many of these countries. Underground railways are important in London and Paris. Channel Tunnel, operated by Euro Tunnel Group through England, connects London with Paris. Trans-continental railway lines have now lost their importance to quicker and more flexible transport systems of airways and roadways. Trans-continental railway lines of Europe have now lost their importance with ever-growing quicker air transport and more flexible roadways.

Fig .No : 02 Eurostar trains at the station

*Source:*https://en.wikipedia.org/wiki/Eurostar#/media/File:Eurostars_at_waterloo_international.jpg

In Russia, railways account for about 90 per cent of the country's total transport with a very dense network west of the Urals. Moscow is the most important rail head with major lines radiating to different parts of the country's vast geographical area. Underground railways and commuter trains are also important in Moscow.

Fig .No : 03 corporate livery of Russian Railways

Source:https://en.wikipedia.org/wiki/Russian_Railways#/media/File:Platz-karte_car_rzd_new_style.jpg

North America has one of the most extensive rail networks accounting for nearly 40 per cent of the world's total. In contrast to many European countries, the railways are used more for long-distance bulky freight like ores, grains, timber and machinery than for passengers. The most dense rail network is found in the highly industrialised and urbanised region of East Central U.S.A. and adjoining Canada. The high level of economic development coupled with high urbanisation are the main reasons for the concentration of rail networking the eastern United States of America.

Fig No; 04 Train in San Diego

Source:http://maxpixel.freegreatpicture.com/Del-Mar-California-Usa-Train-San-Diego-2777092

In Canada, railways are in the public sector and distributed all over the sparsely populated areas. The transcontinental railways carry the bulk of wheat and coal tonnage.

Fig No: 05 A Canadian Pacific Railway

Source:https://en.wikipedia.org/wiki/Rail_transport_in_Canada#/media/File:Eastbound_over_SCB.jpg

Australia has about 40,000 km of railways, of which 25 per cent are found in New South Wales alone. The west-east Australian National Railway line runs across the country from Perth to Sydney. Major North-South line links Adelaide and Alice Spring but as yet this has not been joined to the line from Darwin to Birdum. New Zealand's railways are mainly in the North Island to serve the farming areas.

Fig No; 06 Railway Transport in Australia

Source:https://en.wikipedia.org/wiki/Rail_transport_in_Australia#/media/File:Countrylink_XPT_at_Sydney_Central_station.jpg

In South America, the rail network is the most dense in two regions, namely, the Pampas of Argentina and the coffee growing region of Brazil which together account for 40 per cent of South America total route length. There is only one trans-continental railway in South America linking Buenos Aires (Argentina) with Valparaiso (Chile) through the Uspallata Pass across the Andes located at a height of 3,960 metres above mean sea-level. Of the

remaining countries only Chile has a considerable length of railway lines, running from Iquique to Puerto Montt, with branch lines that link coastal ports with mining sites in the interior. The railway routes of the other Andean states, e.g. Peru, Bolivia, Ecuador, Colombia and Venezuela, are short and consist mainly of single lines from ports to the interior with no inter-connecting links.

Fig No; 07 The Rainforest Ecological Train in Argentina

Source:https://en.wikipedia.org/wiki/Narrowgauge_railways_in_South_America#/media/File:Tren_Ecologico_de_la_selva4.JPG

In Asia, rail network is the densest in the thickly populated areas of Japan, China and India. Other countries have relatively few rail routes. Railway network is good in India, Japan and China, India with about 108,706 km of railways cover 63,028 route km and more than 8,500 stations. Indian Railways runs around 11,000 trains every day, of which 7,000 are passenger trains. Indian Railways is a multi-gauge, multi-traction system It has the densest networks in Asia. In Japan, the total length of railway is 27,268 km km. China has more than 121,000 km km route length. Other countries of Asia have relatively few rail routes. West Asia is least developed in rail transport because of vast deserts and sparsely populated regions

Fig No; 08 Shinkansen train

Source:https://en.wikipedia.org/wiki/Rail_transport_in_Japan#/media/File:JRC_N700_series_Z28.jpg

Africa continent, despite being the second largest, has only 40,000 km of railways with South Africa alone accounting for 18,000 km due to the concentration of gold, diamond and copper mining activities. The important routes of the continent are: (i) the Benguela Railway through Angola to Katanga-Zambia Copper Belt; (ii) the Tanzania Railway from the Zambian Copper Belt to Dar-es-Salaam on the coast; (iii) the Railway through Botswana and Zimbabwe linking the landlocked states to the South African network; and (iv) the Blue Train from Cape Town to Pretoria in the Republic of South Africa. Elsewhere, as in Algeria, Senegal, Nigeria, Kenya and Ethiopia, railway lines connect port cities to interior centres but do not form a good network with other countries.

Fig No; 09 Johannesburg in South Africa

Source:https://commons.wikimedia.org/wiki/File:South_Africa-Metrorail-001.jpg

Trans–Continental Railways

Trans–continental railways run across the continent and link its two ends. They were Constructed for economic and political reasons to facilitate long runs in different directions. The following are the most important of these:-

Trans-Siberian Railway

This is a Trans-Siberian Railway major rail route of Russia runs from St. Petersburg in the west to Vladivostok on the Pacific Coast in the east passing through Moscow, Ufa, Novosibirsk, Irkutsk, Chita and Khabarovsk. It is the most important route in Asia and the longest (9,332 km) double-tracked and electrified trans–Continental railway in the world. It has helped in opening up its Asian region to West European markets. It runs across the Ural Mountains Ob and Yenisei rivers Chita is an important agro-centre and Irkutsk, a fur centre. There are connecting links to the south, namely, to Odessa (Ukraine), Baku on the Caspian Coast, Tashkent (Uzbekistan), Ulan Bator (Mongolia), and Shenyang (Mukden) and Beijing in China.

Fig No;10 Baikal tunnel in west of Kultuk

Source;https://en.wikipedia.org/wiki/Trans-Siberian_Railway#/media/File:Trans-Siberian_tunnel.jpg

Trans-Siberian Railway

Trans-Canadian Railways

This 7,050 km long rail-line in Canada runs from Halifax in the east to Vancouver on the Pacific Coast passing through Montreal, Ottawa, Winnipeg and Calgary It was constructed in 1886, initially as part of an agreement to make British Columbia on the west coast join the Federation of States. Later on, it gained economic significance because it connected the Quebec-Montreal Industrial Region with the wheat belt of the Prairie Region and the Coniferous Forest region in the north. Thus each of these regions became complementary to the other. A loop line from Winnipeg to Thunder Bay (Lake Superior) connects this rail-line with one of the important waterways of the world. This line is the economic artery of Canada. Wheat and meat are the important exports on this route.

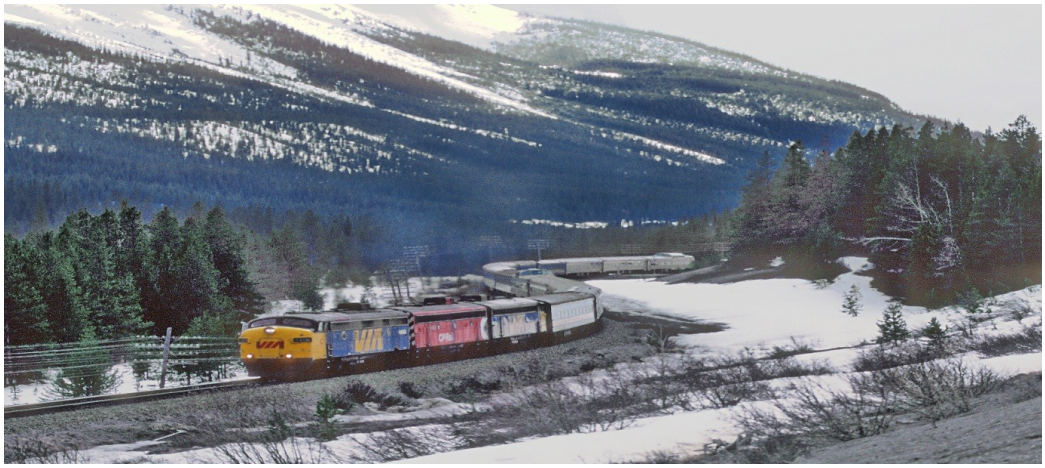

Fig No;11 Canadian Railway

https://upload.wikimedia.org/wikipedia/commons/d/d0/More_of_the_Canadian_from_Roger_Puta_--_4_Photos_%2832156189541%29.jpg

Trans-Canadian Railways

The Union and Pacific Railway

This rail-line connects New York on the Atlantic Coast to San Francisco on the Pacific Coast passing through Cleveland, Chicago, Omaha, Evans, Ogden and Sacramento. The most valuable exports on this route are ores, grain, paper, chemicals and machinery.

Fig No;12 Union Pacific Railway

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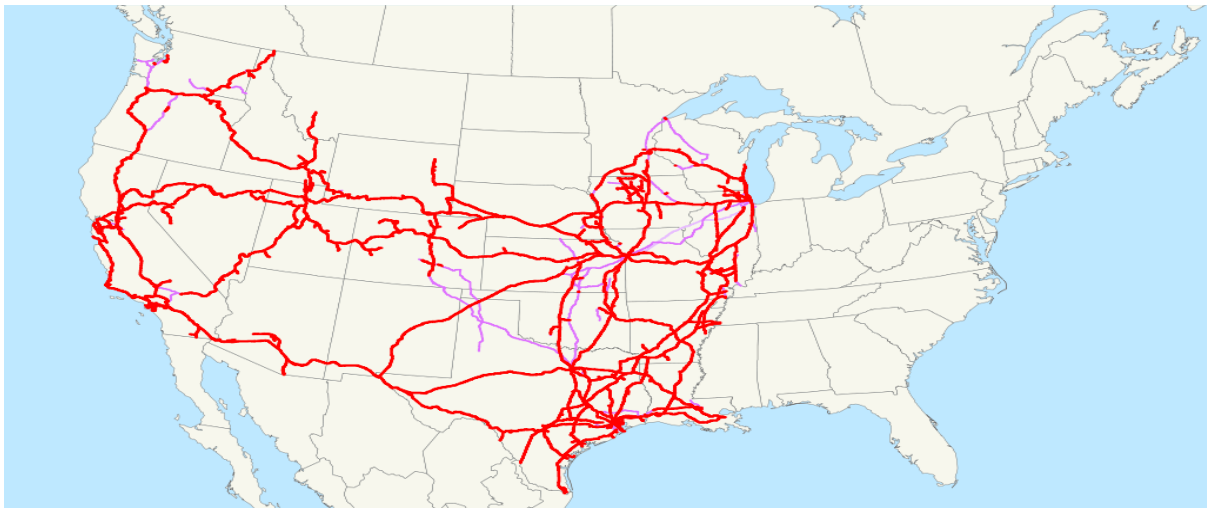


https://en.wikipedia.org/wiki/Union_Pacific_Railroad#/media/File:Union_Pacific_Railroad_system_map.svg

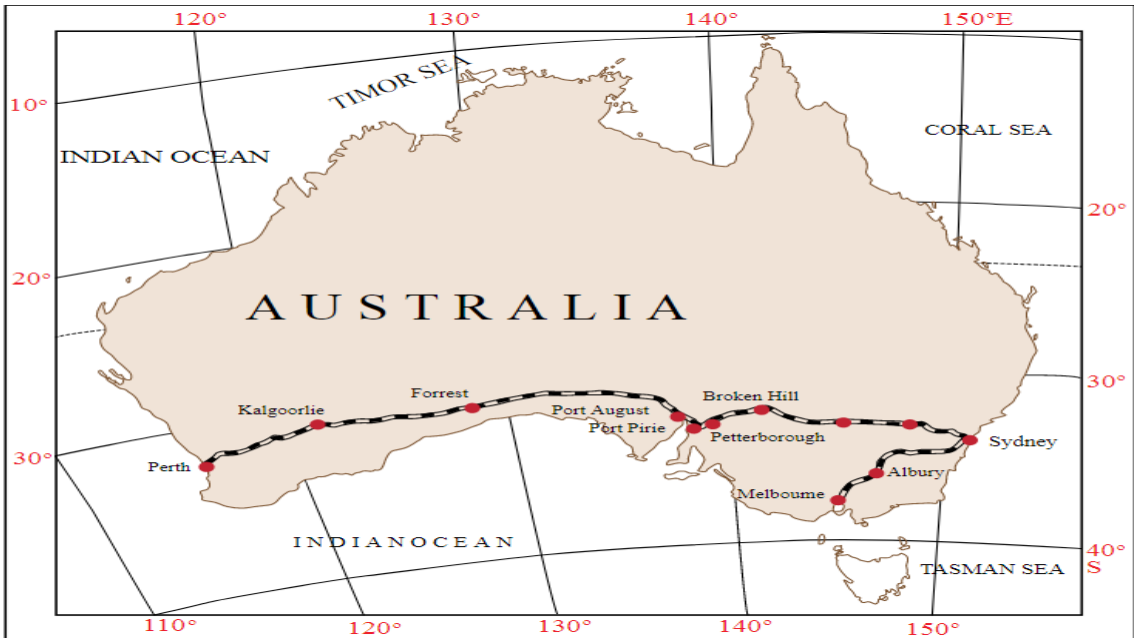
The Australian Trans–Continental Railway

This rail-line runs west-east across the southern part of the continent from Perth on the west coast, to Sydney on the east coast. passing through Kalgoorlie, Broken Hill and Port

Augusta. Another major north-south line connects Adelaide and Alice Spring and to be joined further to the Darwin–Birdum line. Main stations on this route are Broken Hill, Port Augusta, and Kalgoorlie.

Fig No;13 Trans- Australian Railway

https://en.wikipedia.org/wiki/Trans-Australian#/media/File:GM36_Cook,_1986.JPG

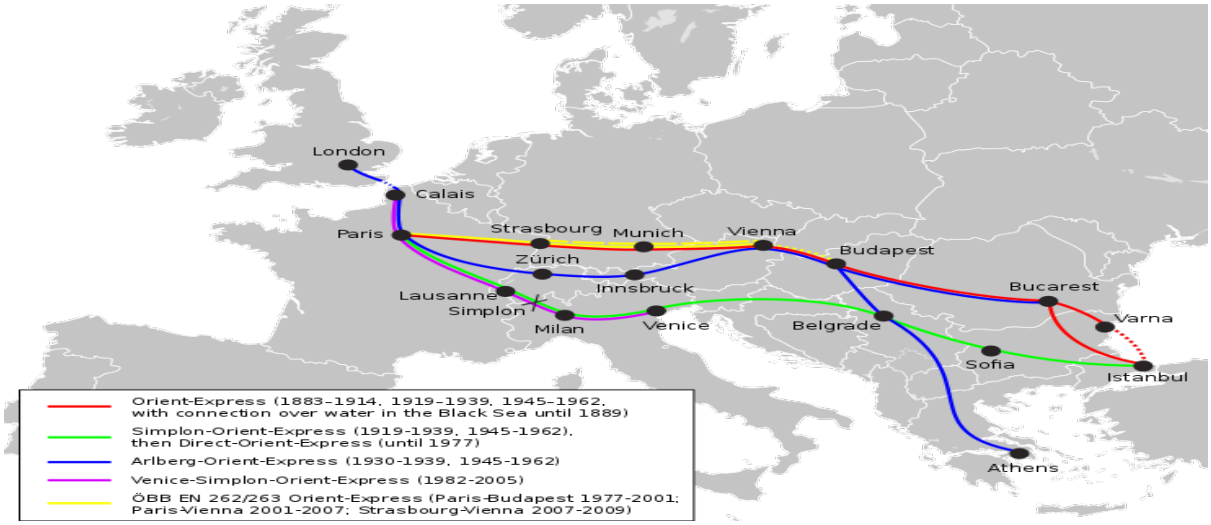


The Orient Express

This line runs from Paris to Istanbul passing through Strasbourg, Munich, Vienna, Budapest and Belgrade. The journey time from London to Istanbul by this Express is now reduced to 96 hours as against 10 days by the sea-route. The chief exports on this rail-route are cheese, bacon, oats, wine, fruits, and machinery.

Fig No;14 Orient Express Railway

https://en.wikipedia.org/wiki/Orient_Express#/media/File:Orient.Express.in.Poland.02.jpg



https://en.wikipedia.org/wiki/Orient_Express#/media/File:Orient-Express_Historic_Routes_(en).svg

There is a proposal to build a Trans–AsiaticRailway linking Istanbul with Bangkok via Iran, Pakistan, India, Bangladesh andMyanmar.

Summary

Railways contribute to reduce the Distance in modern times. It is now apparent that transport, communication and trade facilitate the movement and exchange of people, goods and services. It also contributes to social vibrancy and economic competitiveness by transporting multitudes of customers and workers to city centres and inner suburbs.