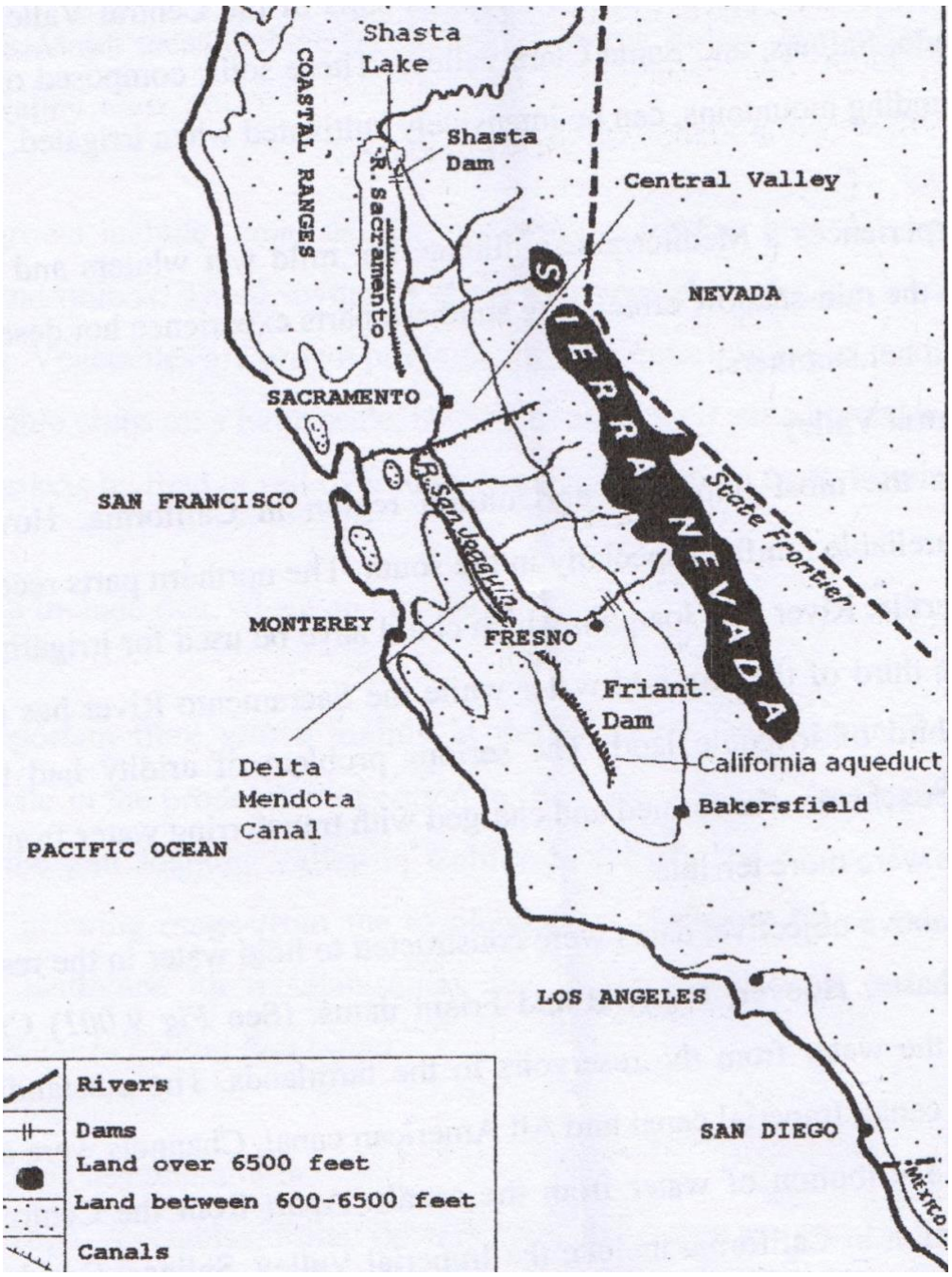
THE STRATEGIC APPROACHES TO THE STUDY OF GEOGRAPHY OF

NORTH AMERICA



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PHYSICAL GEOGRAPHY OF NORTH AMERICA

North America is the third largest continent of the seven continents of the world. The continent is made up of mainly three countries/States namely: - Canada, Mexico and United States (USA).

North America is the fourth most populated continent in the world after Asia, Europe and Africa.

North America is boarders by Atlantic Ocean from the East, Arctic Ocean and Greenland on the north, the Gulf of Mexico, South America and Atlantic Ocean from the south and Pacific Ocean and Bearing Sea to the west.

THE MAIN PHYSICAL/RELIEF REGION OF NORTH AMERICA

North America is divided into five major relief region. This include:-

(i) The Western Highland or western cordillera Region

This region is compose of complex fold mountain Ranges, this mountain ranges runs from

North to South and are parallel to the coast. They have a good numbers of basin and plateau. It consist of Rocky Mountains and Sierra Nevada mountain ranges with many glacial erosional features such as pyramidal peaks, arets, hanging valley v-shaped. This covers the area of central New Mexico, British Columbia.

(ii) Coastal plains.

This is the second region made up of the coastal plains found in most part of the Eastern USA and Mexico.

The area is characterised by sedimentary rocks, relatively flat –low lying with many salt marshes and large fresh water swamp

The coastal plain of North America is crossed by great rivers such as st Lawrence rivers, Mississippi –Missouri rivers.

(iii) The Eastern Highland regions

This regions comprises of Appalachian Mountain, Labrador highlands and the Atlantic coastal area. This highland are formed as the result of folding but they are lower than those highland in the West.

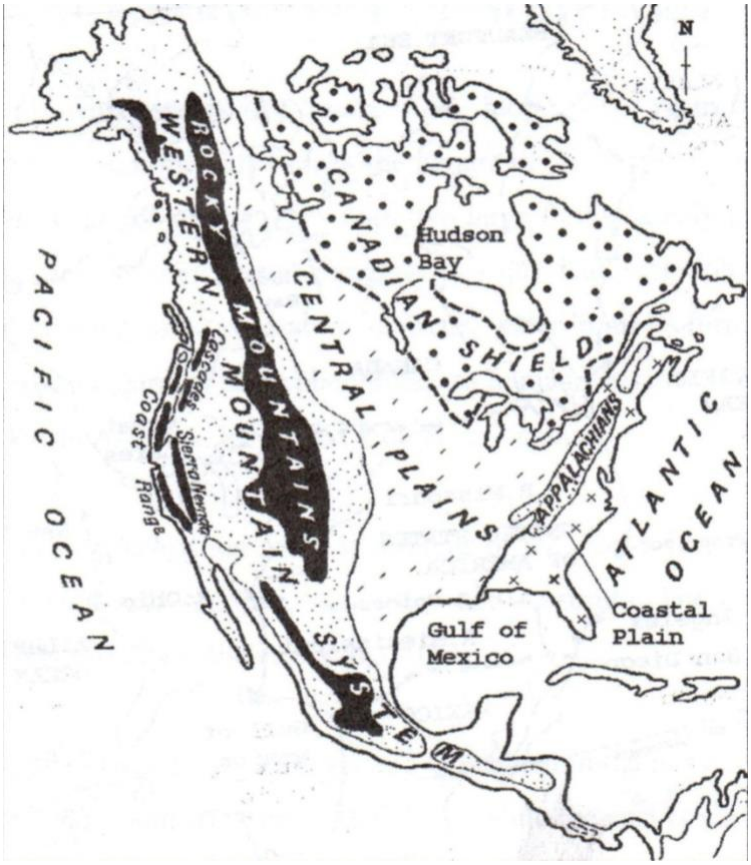
(iv) Canadian Shield

The Eastern half of Canada as well as most part of Green land, Michigan and New York in USA are part of this Canadian Shield which is the plateau region underline by ancient crystalline rocks.

(v) The Central low land or plain

This is a very large relative to flat low land extending from southern Canada from the North to South western Texas to the South. It includes the Mississippi basin and Ozark Plateau. This region from the most productive part of the continent. It is within this regions that the Canadian prairies is located.

SKETCH MAP SHOWING MAJOR PHYSICAL RELIEF REGIONS OF NORTH AMERICA (1)



DRAINAGE

The drainage system of North America consist of various Lakes and rivers. There are two major drainage feature. This include: - The great lake system and the St. Lawrence River system

The great lake system consist of five lakes namely: Lake Superior, Lake Michigan, Lake Huron, Lake Erie and Lake Ontario.

All these drains the North Eastern parts of North America to Atlantic Ocean through St. Lawrence River.

The major rivers of North America include: River Makenzie, St. Lawrence River, River Mississippi etc.

THE CLIMATE OF NORTH AMERICA

Climate is the average weather condition of a place taken and recorded for a long period of time 30 – 35 years.

Several climatic region can be identified as seen below:

Tundra climatic region

The northern two third of Canada and Alaska have Artic climate and sub Artic climate with long dark bitterly cool winters which alternate with mild summer. Most of the area which receive little rainfall in this region is covered with snow and ice.

Mediterranean climate

This climate can be summarized as having bright sunny, hot and dry summer with raining winter.

Cool Temperate interior climate

In this climatic region winter temperature are very low and can go up to $^{-}19^{0}C$ while summer temperature raise to $^{+}18^{0}C$ giving a very large annual temperature range. Rainfall is always below 500mm which occur mostly in summer.

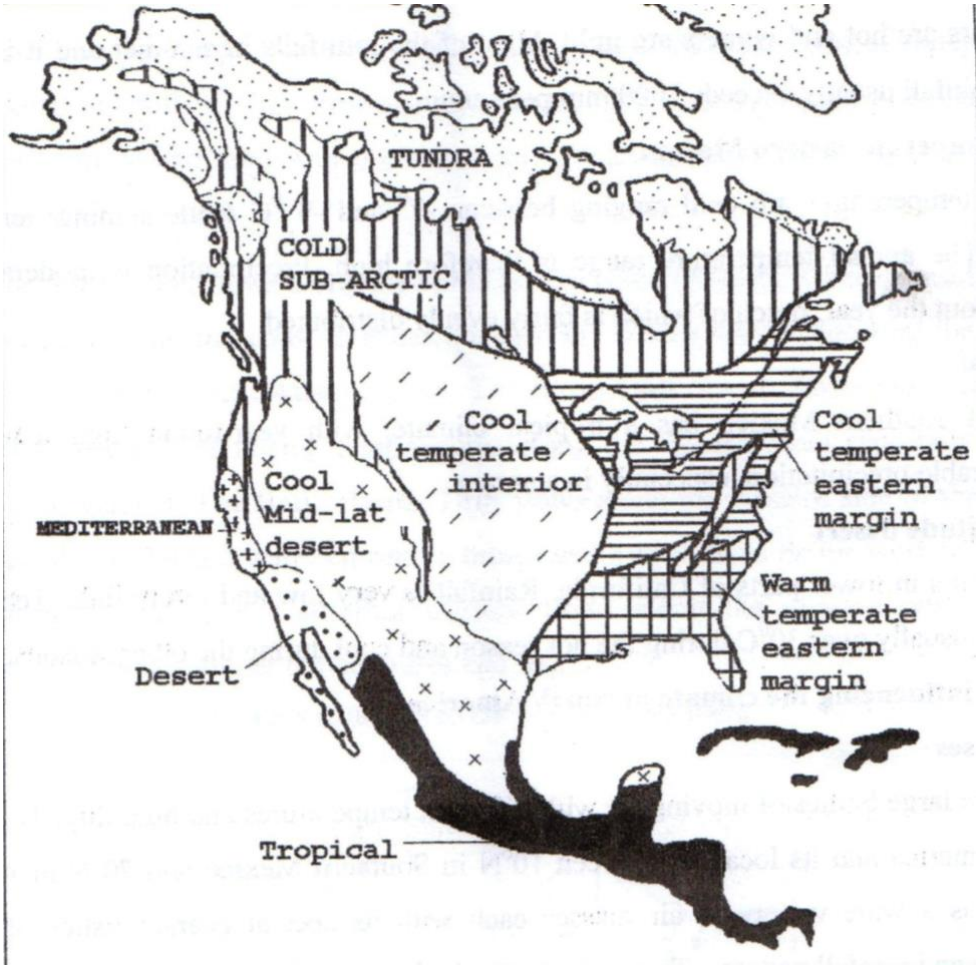
Tropical climatic region

Most of the southern Mexico has tropical climate with hot temperature throughout the years and considerable amount of rainfall in summer.

Desert climatic region

Rainfall is very low and really falls. Temperatures are very hot usually 30^0C during hot season and very cool in other season.

SKETCH MAP SHOWING THE CLIMATIC REGION OF NORTH AMERICA (2)



FACTORS INFLUENCING THE CLIMATE OF NORTH AMERICA.

(1) The size of North America

The continent of North America is very large stretching from artic region to the tropics. This mean that there are different climatic type in the bigger land.

(2) Air Masses

The great size of North America and it location between 15% in the south Mexico and 70^0N Alaska ensure that it has a wide varieties of air masses with its special characteristic of temperature, humidity and rainfall. This air masses include:-

- **The polar continental of air masses** which blows from the region of Tundra in the North throughout the year resulting in to cool and dry winter in the northern Canada.
- **Polar maritime air masses**: This originate from the ocean bringing cool temperature on the Northern and North Eastern coast of North America all the year around.
- **The tropical maritime air masses**: - This originate from the Gulf of Mexico and result into warm and damp condition on the South western part of North America all the year around.
- **Polar maritime air masses**

This originates from Arctic Ocean in the esteem north.it blows southward resulting in to cold temperature

(3) Altitude

The rocky mountain found in the Western part of North America stretching from North to South have and influence on the climate of North America. Wind blowing from Pacific Ocean raises the rocky mountain, cool and condense to form rainfall. The same wind having loss it moisture on the Western side of the mountain blows on the eastern slope as dry wind (chinook) wind causing little or no rainfall.

(4) Ocean current

These are large mowing wind on water which usually cause movement of water from one part of ocean to another. They flow along the coast of North

America. There are two types of Ocean Current. The cool Ocean current and the warm ocean current. These current are:-

- **Cool abrader current**. This flow along the North eastern coast of North America resulting into low temperature along the coast of North America. So it is a cool ocean current. It sometime create fog along the meeting line.
- **The warm Gulf stream** which flows along the Gulf of Mexico. It lead to hot temperature along the eastern coast especially in winter.
- **The North Pacific drift**/current which flows along the western side of the continent from the tropical sea. It is a warm current which bring in rain and warm condition on the western side of the continent during winter.
- **The California current** which flows along the western coast of North America near San Francisco causing lower temperature and fog in summer.

(5) Winds

There are two main wind systems which the westerly's which bring rain of Canadian Pacific coast all year. The north trade wind in summer blow parallels to the California coast causing little or no rain. In winters the westerly's blow on shore causing much rain along these coast.

(6) Distance from the sea.

Places adjacent to the coasts experience moderating influences from the sea. Winds from the sea may cause a rise in temperature either in winter if they are warm or a fall in temperature in summer if they are cold.

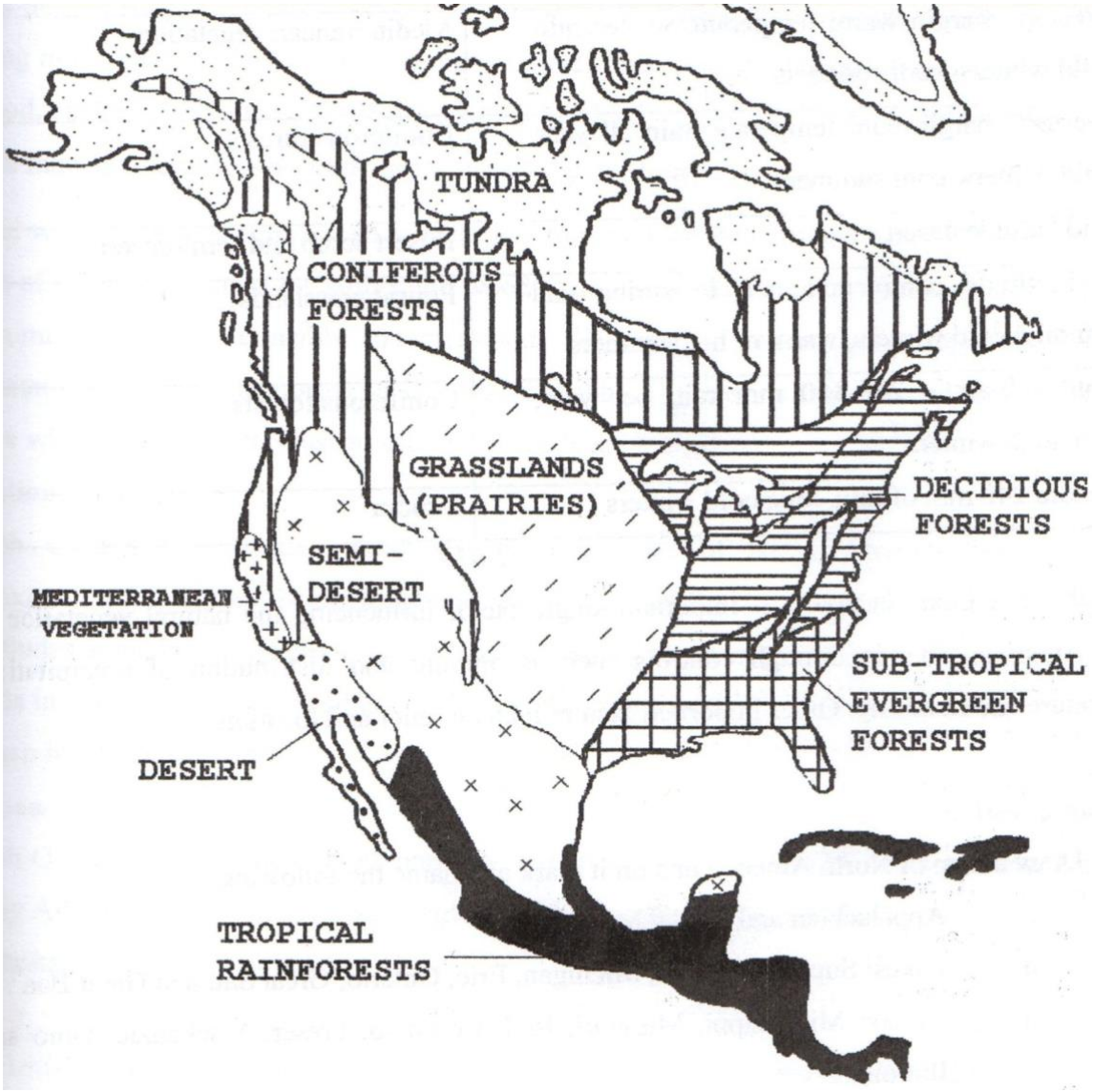
(7) Water bodies

Large water bodies such as the great lakes covering a combined surface area of 244,100kmsqkm have a great influence on the climate. The land and sea breezes help to moderate temperature of the adjacent regions.

NATURAL VEGETATION OF NORTH AMERICA

The natural vegetation of North America has been significantly modified by human activity, but its general nature is still apparent over much of the continent as shown on the map below

A SKETCH MAP SHOWING VEGETATION REGIONS OF NORTH AMERICA (3)



Main climatic Regions and Resultants natural Vegetation

Climate	Natural vegetation
Tropical,Hot and Wet all the year	Forests

Eastern margin,warm temperature, rain all year, hot summer, cool winter.	Coniferous forest and wood land.
Eastern margin, cool temperature, rain all year, cold winters, cool to warm summer.	Deciduous forest
Western margin, warm temperature, winter, cool summer.	Mediterranean vegetation
Western margin, cool temperature, rain all year, mild winter, cool summer.	Coniferous forests
Mid latitude Desert.	Desert scrub-semi desert
Mid latitude continental, rain in spring and summer cold winter, warm or hot summers.	Prairie grassland
Cold sub-arctic, 240 – 360mm rain per year, very long winters.	Coniferous forest
Tundra, 240mm of rain, long cold winter.	Tundra

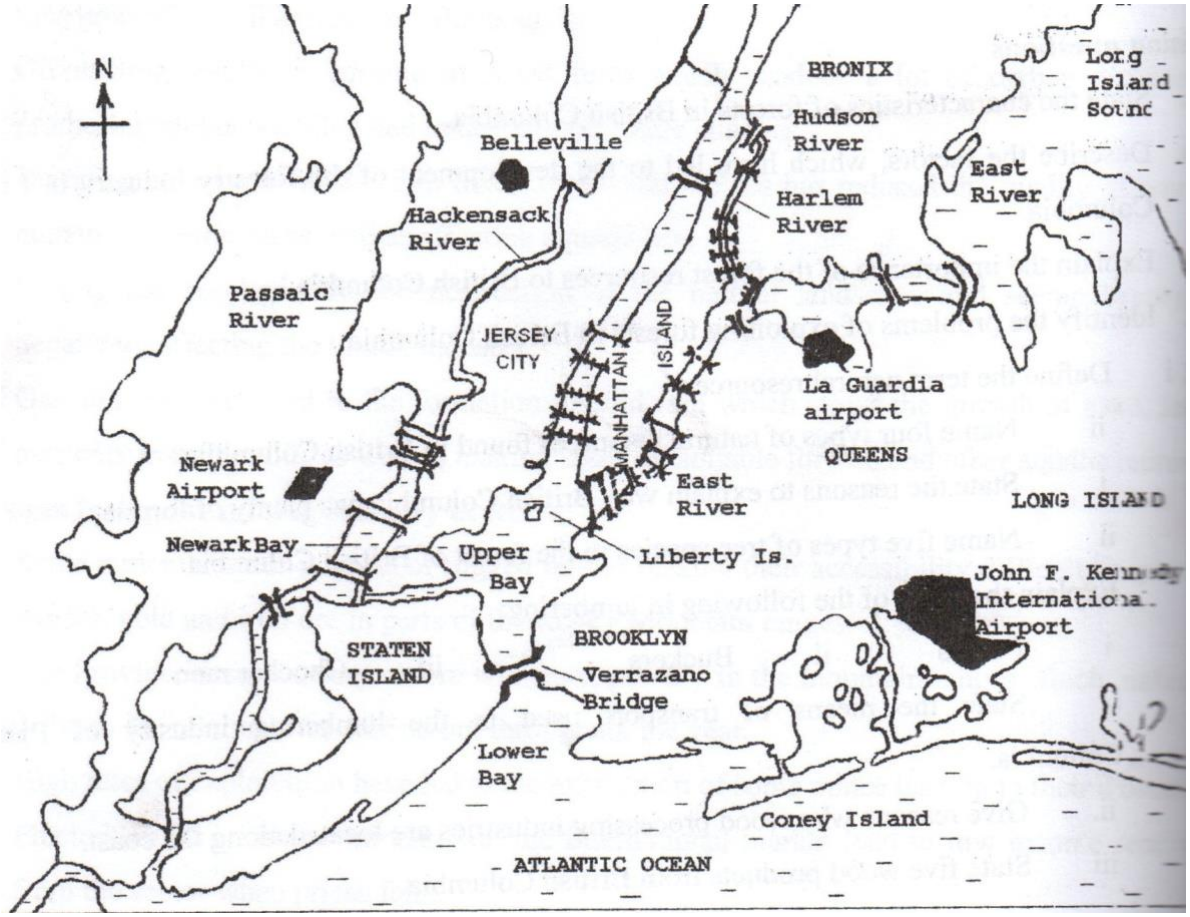
TOPIC 2

THE GROW AND DEVELOPMENT OF URBAN CENTRES

CASE STUDY OF NEW YORK

New York port began as a small trading port and develop within 200 years into an international hinterland and a city. It is now the largest city chief port, banking and trading centre and one of the principal manufacturing centres of in USA

SETCH MAP SHOWING THE SITE OF NEWYORK CITY (4)



Island making up New York

- Manahan Islands
- Long
- Stanten Islands
- Coney Island
- Bronx islands

FACTORS THAT HAVE FAVOURED LOCATION/GROWTH OF NEW YORK AS A PORT

- The presence of deep water of Atlantic Ocean allowing the use of large Ocean going vessel to ship through during water transport.
- The port is located in a well shield harbour for easy protection against strong ocean/sea waves.
- The port is ice free and therefore could be use all the year round without freezing.
- The presence of low tidal range which enable the ship to enter and leave the port freely at any time.
- The presence of hard basemen rock which offer a firm foundation for building of ports facilities like storage.
- The relatively flat land scape which could allowed easy use of machine and buildings of port facilities.
- A very productive hinterland which provide adequate raw material for Agro base industries and mineral industries.
- Availability of large sum of capital use to develop port facilities.
- Presence of skill labour force which has attracted a number of economic activities Like industrialisation ,tourism etc
- Presence of many rivers providing large area of ship entering or leaving the port.

PROBLEMS FACING New York PORT

- Over congestion due to overcrowding of too many ships.
- Constant pollution of water and air as a result of oil spills from the industries or fume from industries and vehicles.
- Limited land for expansion of port facilities like storage.
- Inadequate accommodation leading to development of slums and it related problems like prostitution, rape, robbery, stealing etc.
- Over delay due to congestion of too many ships.
- Unemployment due to over population and high educational level.
- Racial discrimination due to many races and tribes in USA.
- Constant occurrence of fog resulting into poor visibilities.
- High cost of living due to inflation and high population.

SOLUTIONS TO THE PROBLEMS OF NEW YORK

- The use of vertical development of the port facilities by building sky scrapers or storage building to solve the problems of limited space.
- Treatment and proper disposal of industrial waste to reduce on pollution.
- Containerization to solve the problems of limited space and time for loading and offloading of cargos.
- Construction of Port facilities on the main land to reduce the shortage of land.
- Strengthening police forces and other security personnel to fight against crime.
- The use of radars
-
- to solve on the problem of the fog.
- The use of ice breakers to reduce on ice and freezing problems.

EXPORTS HANDLE BY NEW YORK PORT

New York Port handle many goods as it has port which include the following;

- ✓ Machinery
- ✓ Wheat
- ✓ Chemicals
- ✓ Timber
- ✓ Textiles
- ✓ Electronic
- ✓ Canned food etc.

IMPORT HANDLE BY NEW YORK PORT

New York port handle raw materials as it main port these are mainly from agricultural produce and mineral such as:- coffee, tea, sugar, cocoa and mineral produce like:- Diamonds, Iron ore, gold, copper etc.

NEW YORK CITY

New York City is made up of several islands which include the long island, Staten Island, Governor Island, Coney Island, Manathan Island.

This city is on Atlantic Ocean on the lower bay.

FACTORS THAT LED TO DEVELOPMENT OF NEW YORK CITY

- The relatively flat land scape for easy construction of infrastructures like roads, railway and sky scrappers
- Availability of large volumes of water for industrial and domestic uses
- New York develop because it save as a major entry port for USA.
- It coastal location hence nearest to the Western Europe which promote trade.
- It was historically settle by the early European settlers who largely develop it.
- The presence of skill labour with adequate architectural knowledge w
- The well develop transport network by road, railway, water and air for easy transport.
- A very productive hinterland that supplies raw material for the industries and food stuff for the growing population.
- New York is centrally located hence serving a very large area.
- Large supply of powers from HEP And nuclear powers for industrial and domestic uses
- The high level of technology use in the in the industries and construction of road, health centre.

FUNCTIONS OF NEW YORK CITY

- It is **an industrial centre** with more than 40,000 industries making thousand (1,000) of different item. This industries is about textile, food processing. E.g. industries.
- It is **a financial centre** with the main stock exchange of USA as well as the head quarter of all the big Banks and the Insurance finance houses.
- It is **an educational centre** with many collages, schools and university like New York University and Colombia University.
- It is **a cultural centre** with many museums, theatres and concert hall.
- It is **an administrative centre** with the headquarter of New York stage and other international largely like United Nation Organization (UNO)
- It is **a communication centre** and transport centre with many roads, railways and Air route also it is an international point.
- It is a great **international port** second to Rotterdam in the World. It handle both import and export of USA.

- It is a **recreational city** and port with thousands of housing unit, theatre hall and cinema halls.
- It is **a tourist's centre** with various tourist attraction in the area like the museums, the industries, mountains etc.

PROBLEMS FACING NEW YORK CITY

- There are cases of traffic congestion especially due to many vehicles. It is most serious during rush hours.
- Shortage of housing which has resulted into development of slums with many problems like theft, prostitution etc.
- Unemployment due to high educational level and over population.
- High crime rate such as theft cases, murder, robbery due to unemployment.
- Pollution of water, environment and air due to poor waste disposal on the environment or in water or from the tunnels of the vehicle and industries.
- High cost of providing services to larger population like heating houses, lighting system, educational service and garbage disposal.
- Shortage of land for expansion due to over population and over congestion.
- Racial discrimination especially between the black and the white leading to insecurity.
- High cost of living due to inadequate supply of goods and services, large population hence inflation.

SOLUTION TO THE PROBLEMS FACING NEW YORK CITY

- Construction of sky scrapers by building storage structures extending upwards which are self-contained.
- Reclamation of swampy area to create rooms for expansion. These would reduce land shortage.
- Recycling, treatment and proper disposal of industrial waste to control pollution.
- Strengthening police force and other security agency in order to fight crime.

- Construction of more industries to create more jobs to solve the problem of unemployment.
- Construction of tunnels, sub-ways and by-pass to reduce on traffic congestion.
- Establishment of more social and public service to solve the problems of inadequate social services.
- Restriction on the number of immigrants who enters the city.

Sample statistic questions on New York

Study the table below showing means of transport used to enter Manathan port in New York City and answer the questions that follow

Means of transport	**Percentage**
Train	09
Ferry	02
Car,lorry,taxi	13
Subways underground train	70
bus	06
total	**100**

(a) Draw a pie-chart to represent the relative importance of each transport

(b) Identify the means of transport which is

(i) Most

(ii) Least popular on Manhattan island

(c) Outline the problems faced by people living in New York City

(d) Explain the effects of transport sector on the environment in New York City

TOPIC 3

THE DEVELOPMENT OF A RIVER BASIN

A CASE STUDY OF THE TENNESSEE VALLEY AUTHORITY

Introduction

The Tennessee Valley project /Authority is found on river Tennessee valley in United States of America (USA). The project was to develop the Tennessee Riverbasin and the area within its tributary.

The Tennessee region comprise of Tennessee and parts of Alabama, Virginia, Georgia, Kentucky, North Carolina and Mississippi

The Tennessee Valley originally used to receive high amount of rainfall and was very green in term of vegetation. The white settlers who came to the region were agriculturalists and therefore they cleared down the forest, reclaimed all the swamps and block the river valley and this brought in several problem within the Tennessee region.

PROBLEMS FACING THE TENNESSEE VALLEY BEFORE THE TENNESSEE VALLEY PROJECT IN 1930.

- Unemployment and wide spread poverty.
- High spread of water borne diseases such as Bilharzia, river blindness leading to loss of lives.
- Siltation of river Tennessee and its tributary due to deposition in the river valley.
- Wide spread of soil erosion where the top soil were wash away and deposited in the river valley leading to silting of rivers
- Over flooding of the river Tennessee and it tributary because the river channel was block by the silt materials
- Soil had become exhausted
- Remoteness of the area due to poor transport

FACTORS WHICH LED TO THE ESTABLISHMENT OF THE TENNESSEE VALLEY PROJECT

- **Soil erosion** .there was need to control soil erosion which came as a result of poor farming method and clearing off forest.
- **River flooding** .The presence of numerous river which constantly over flood and there was need to control this flooding.
- **Need for power** .there was need to generate Hydro Electricity Power (HEP) for the increasing population and various industries in USA.
- **Soil exhaustion**. There was high need to improve on soil productivity by applying `scientific method like fertilizers application and use of manure.
- **Narrow river channel** .There was high need to improve on water transport within the Tennessee region which led to dredging of water channel.

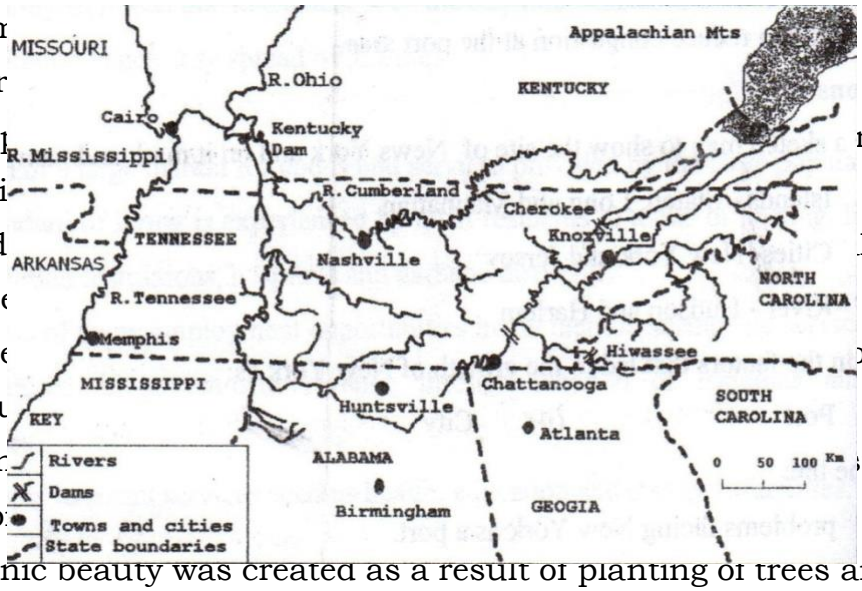
- **Prolonged drought.**There was need to conserve water from the heavy rainfall received to be used for irrigation. This was done through dam construction.
- There was high need to **diversify the economy** of USA through planting of artificial forest for forestry and Agricultural practices.
- There was high need by the government to **harmonize the sustainable utilization of the natural resources.**
- **Water bone diseases** .There was high need to control the water borne diseases. This was done through controlling flooding.
- **Unemployment** The need to develop industryto crates employment

STEPS TAKEN TO SOLVE THE PROBLEM IN THE TENNESSEE VALLEY REGION

- Several dams were constructed to control over flooding, improve on navigation, provide water for irrigation, and generate Hydro Electricity power (HEP).
- Many trees were planted on mountain slope and other places within the valley to reduce on soil erosion and modify the climate of the area.
- Better farming methods were introduce such as terracing, contour ploughing, strip cultivation, mix cropping.
- Several reservoirs were created through dams' construction to holdback water for irrigation.
- The Tennessee River valley and channels were deepened through dredging.
- More grasses were planted to provide soil a protective cover against erosion.
- Demonstration farms were established to teach farmers better methods of crop cultivation
- National fertiliser development centre was establish to develop appropriate fertilisers to enrich the soil fertility for crop growth
- Continuous research on forestry ,fish and wildlife conservation ,watershed protection air and water quality control

BEBEFIT/CONTRIBUTION OF THE TENNESSEE VALLEY AUTHORITY TO THE PEOPLE IN THE AREA.

- Several river flooding of Tennessee and its tributary was control and it mark the end of water born disease.
- Crops yield improve seriously in term of quality and quantity as improve farm
- Incr
- Peo mprovement in Agri
- Hyd l purpose was gene
- Seve develop. This indu
- Mar trialization and imp
- Scenic beauty was created as a result of planting of trees and grass within the Tennessee region.
- It led to wildlife conservation and creation of National Parks to provide tourist attraction which bring foreign exchange.
- Employment opportunity was generated in the industries, agricultural area, dams and in forestry within the Tennessee region.



SKETCH MAP SHOWING THE LOCATION OF THE TENNESSEE VALLEY AUTHORITY (5)

PROBLEMS RESULTING FROM ESTABLISHMENT OF THE TENNESSEE VALLEY AUTHORITY.

- Pollution from the industries which pass out carbondioxide in the atmosphere and other waste products which are deposited in water.
- Displacement of people as their original land is put on government project that is the Tennessee valley scheme.
- The project led to urbanization with it related problems like robbery, rape, prostitution, poor sanitation, theft etc.
- It led to over exploitation of resources and other energy resources such as coal.
- The Tennessee project led to loss of scenic beauty which affected the tourists industries reducing foreign exchange.
- It led to poor sanitation as a result of ver population and urban development.
- Loss of scenic beauty when creating the lakes
- Severe siltation behind the dam hence need for regular dredging

SOIL EROSION IN THE TENNESSEE REGION

Soil erosion refers to the removal away of the top soil layer by agents of erosion such as running water, blowing wind or glaciers.

FACTORS/CAUSES OF SOIL ERSOION IN THE TENNESSEE REGION

1. **Monoculture**

Where same type of crops are grown year after year resulting into soil exhaustion and soil erosion.

2. **De- afforestation**

This is where trees which use to cover top soil cut off meaning that the soil surface was directly exposed to the rainfall and wind action which carry the top soil.

3. **Ploughing up and down hill slope.** This has created man made challenge which are later enlarge into gullies by running water down the slope.

4. The hilly nature of the land scape which accelerates the surface water run off hence soil erosion
5. **The flooding of the river.**

This cause large quantities of top soil to be carry away.

6. **The heavy rain.**

The heavy rain on unprotected ground result into large quantities of top soil to be carry away.

7. **Ignorance** of the people about the cause and the danger of soil erosion.

STEPS TAKEN TO CONTROL SOIL EROSION IN THE TENNESSEE VALLEY

Terracing.

This involved cutting of wide step on hill slope to reduce gradient of the slope to reduce surface turn off.

Afforestation

This involves the planting of trees as the root of trees bines the soil particles together and absorb excess water reducing surface run off and soil erosion

Application of fertilizers and manure

This is to maintain soil fertility in order to support plant growth.

Crops rotation.

This involves the growing of different crop in different season or year in the same plot of land in order to maintain soil fertility.

Building of dams.

This is done to control river flooding which use to cause soil erosion.

Educating farmers.

This is done through advice to farmers on modern method of farming.

Control of population growth through family planning.

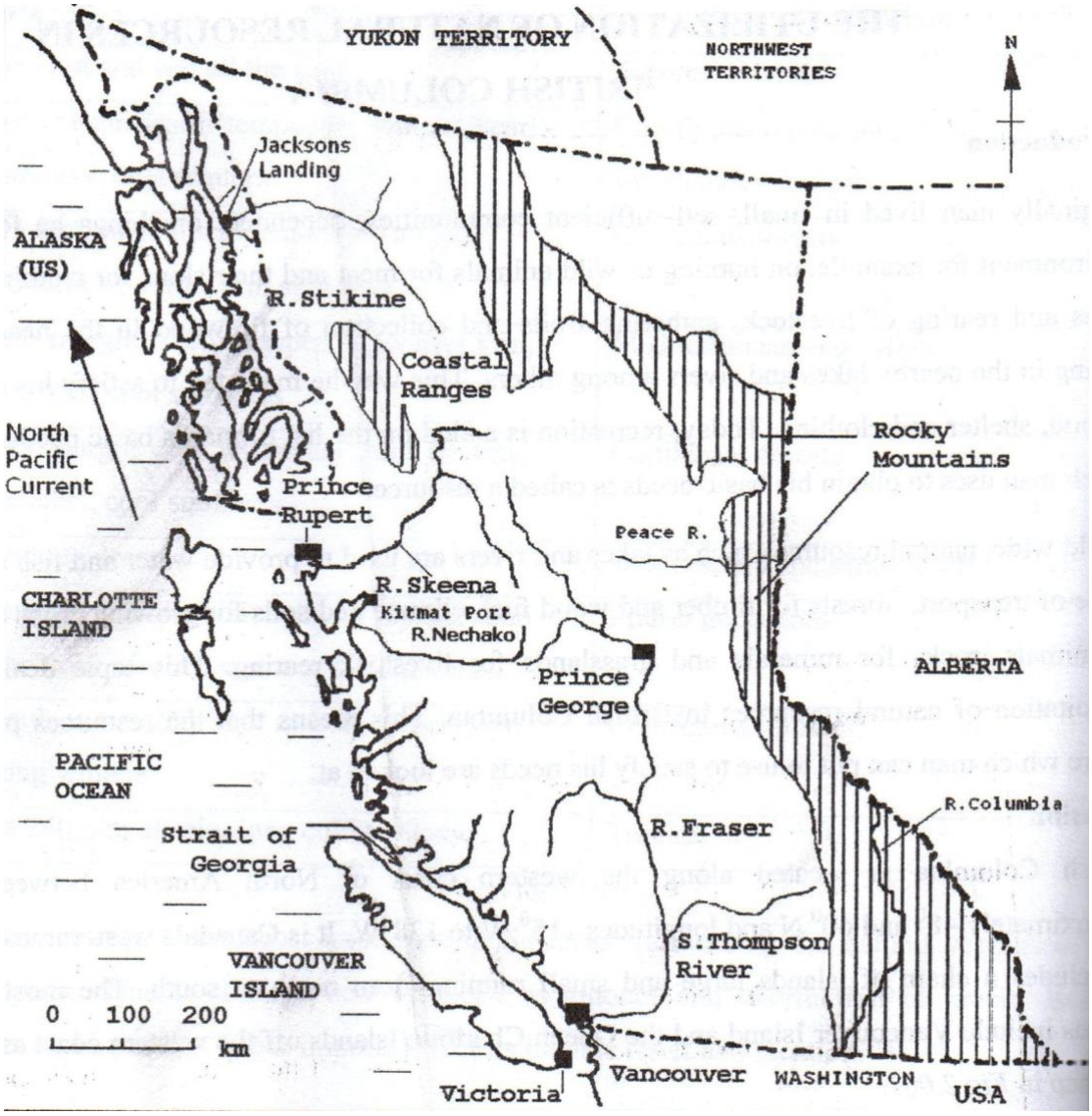
TOPIC 4

THE UTILISATION OF NATURAL RESOURCES IN BRITISH COLUMBIA

British Columbia is located along the Western coast of North America. It is one of the province of Canada.

It is bordered by Yukon Territory to the north, Alberta to the east, Washington on the south, Pacific Ocean to the west and Alaska to the North West

ASKETCH MAP SHOWING LOCATION OF BRITISH COLUMBIA (6)



ECONOMIC ACTIVITIES OF BRITISH COLUMBIA

Economic activities of British Columbia include:-

- ✓ Farming i.e. Arable farming
- ✓ Forestry/Lumbering
- ✓ Fishing
- ✓ Tourism
- ✓ Industrialization
- ✓ Mining
- ✓ Transport and communication.

British Columbia largelydependents on natural resources and the natural resources of British Columbia are;

- The forest,
- Water
- Mineral
- Climate
- Soil
- Land scape.

FORESTRY IN BRITISH COLUMBIA

Forestry is the act of planting, conserving and exploiting forest. In British Columbia 2/3 of the land is forested. Most of the forests are found along the coastal region in the area of Victoria Island, Southern low land and central interior as well as in Prince George, Fort St. John, Fort Nelson, etc.

TYPES OF FOREST IN BRITISH COLUMBIA

The major types of forest in British Columbia is coniferous forest but also deciduous forest, and mixed ever green forest

FACTORS WHICH HAVE FAVOURED THE DEVELOPMENT OF FORESTRY INDUSTRY IN BRITISH COLUMBIA

Physical factors

- The rugged mountainous land scape of British Columbia which limits other land use except forestry
- The low population in the western part of British Columbia leaving large land under forest
- Presence of verity of trees species which are of commercial values e.g. Douglas fir, red cedar
- The cool damp maritime climate which favours the growth of forest
- The existence of infertile soil which are unable to support agriculture but only forestry.

- The presence of ice during winter which helps in the transportation of logs
- The presence of rivers which helps in the floating of logs during transportation
- The coniferous forest occurs in the pure stand making the tree easy to be cut during exploitation.
- The logs are light in weight hence easy to transport.

Human factors

- The low population in British Columbia which makes large land available for forestry.
- Presence of well-developed transport network by road, water and railway transport for transporting logs to the processing centres.
- Availability of sufficient capital to inject in forestry activities e.g. buying of modern machinery, construction of transport routes and setting up of timber processing industries.
- Availability of a large market for forest products at home and abroad especially in USA, Europe and Asia.
- Availability of skilled and experienced labour force to work in the forestry industry.
- High level of technology used e.g. the use of steel spars, tractors, and power saws in forest exploitation.
- Availability of sufficient hydroelectric power for the timber processing industries.
- Development of wood processing industries which increase the value of timber and timber product.
- Favourable Government policy of monitoring forests by setting forest guards, regulating forest harvest levels on public and some private land for sustainable utilisation of forest.

TREE SPECIES/TYPES OF TREE IN BRITISH COLUMBIA

- Douglas fir
- Western hemlock
- Western red cedar
- Spruce

- Balsam fir
- Pines
- Cyprus

CHARACTERISTIC OF CONIFEROUS FORESTS (FOREST OF BRITISH COLUMBIA)

- The trees occurs in a pure stand i.e. a single species of tree covers a very large area.
- The trees have a conical shape with branches sloping downwards to prevent the trees from breaking their branches during snow falling.
- The trees forms hard cones instead of fruit to prevent attack of the snow and frost.
- The trees are tall, straight and slender.
- The trees have flexible trunks which bend easily with the wind to avoid its destruction.
- The trees are fast growing and fast maturing which can be used in ten to twenty years (10 – 20) years.
- The trees are ever green throughout the year.
- The trees grows closes to each other forming a moderate density.
- The trees have shallow root to survive in the thin soil and frozen ground in winter.
- There are cases of limited undergrowth as there are little light to enrich the soil with nutrients.
- The tees form a single canopy.
- The trees consist of soft wood species.
- The trees have small needle shape leaf to prevent excessive water lost and accumulation of snow.

LUMBERING PROCESS IN BRITISH COLUMBIA

Lumbering process in British Columbia is highly integrated and co-ordinated. Trained workers who are highly specialized handle lumbering activities. They worked as a team and therefore three groups of workers who are involve include:-

Felling

This is the cutting down of trees done by fellers. Who wear brightly colour steel elmate and they are careful in sacking at the time and the direction before the trees fall.

Bucking

This refers to the cutting of the trees felled in to sizable logs of about 12 metres in lengths for easy loading and transportation done by buckers

Harding or dredging

This is the movement of logs to the central place for loading into the truck or any modes of transport done by choker men. Thy use steel spars with cables which are attached to the logs .the logs are the hurled with the help of the diesel engine machine which are below the spurs

Transportation

Various mode of transport are use.

- Road transport are use when log are loaded onto the truck and are transported to the Saw mill.
- Water transport are use when the logs have been floated down into the river to the Saw Mills.
- The logs are also made to slide over the surface of ice or snow.

WOOD PROCESSING CENTRES OF BRITISH COLUMBIA

Logs from various forest are transported for processing at the Saw Mill. Most of the Saw Mills are located at the Western coastal port such as Vancouver, Prince Rupert, Victoria and Port Alberni.

PRODUCTS FROM WOOD INDUSTRIES IN BRITISH COLUMBIA

This include:-

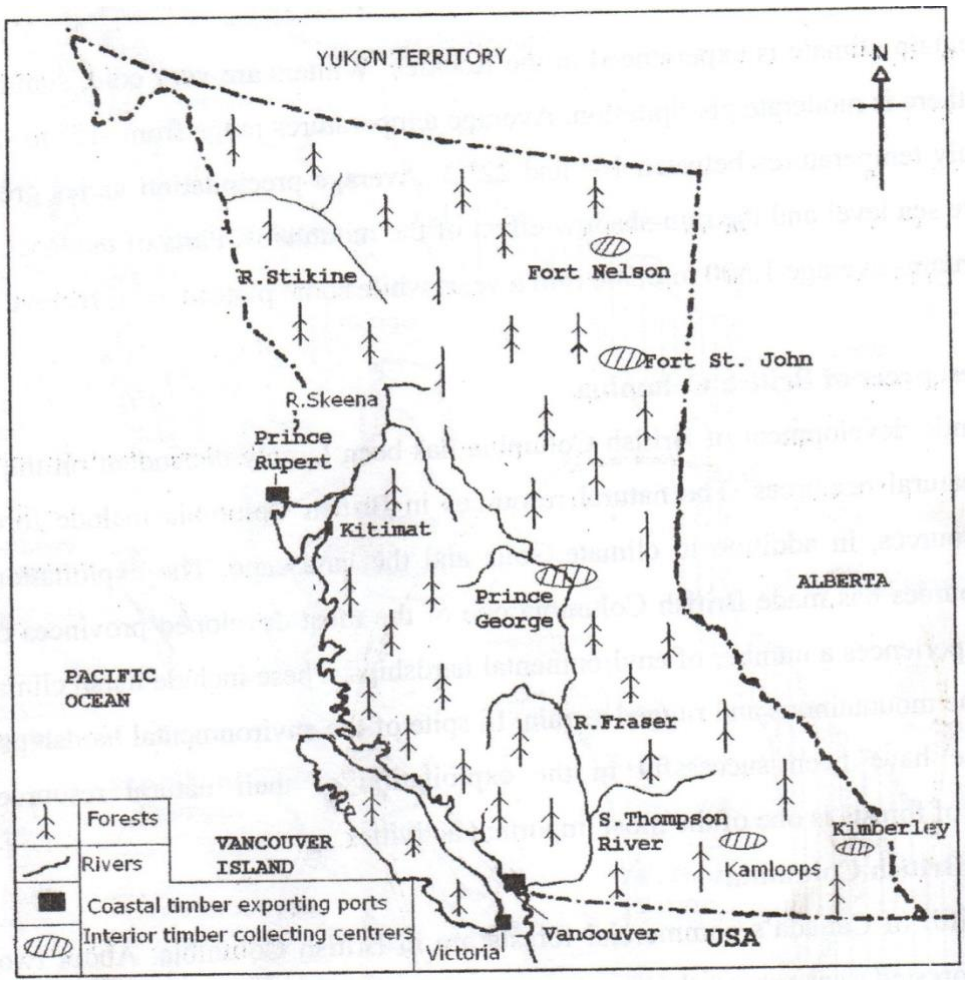
- Ply wood
- Pulps and papers
- Paper cuts
- Furniture
- Lumbers

- Laminated wood
- Shingles and shakes.

REASON WHY WOOD PROCESSING INDUSTRIES ARE FOUND AT THE COAST OF BRITISH COLUMBIA BUT NOT IN INTERIOR

- ❖ Most of the forest are located along the Western part of the country and this minimizes the coast and difficulty in transporting bulky logs.
- ❖ Some of the logs are transported by water. Most of the river flow west wards to the sea or Ocean these logs are then floated up to the Saw Mill at the coast.
- ❖ Availability of large amount of water use in process of wood.
- ❖ The forest products tend to be bulky and therefore located at the coast where the population density is high thus ensuring ready market.
- ❖ The dense population at the coast provide cheaplabour to work in wood processing industries.
- ❖ Availability of cheap and abundant Hydro Electric Power at the coastal area.
- ❖ The relatively flat land scape at the coast giving large space for the Forest development.

MAIN FOREST REGIONS AND PULP AND PAPER MILLD OF BRITISH COLUMBIA. (7)



PROBLEM FACING FORESTRY INDUSTRIES IN BRITISH COLUMBIA

- Fire outbreak which destroyed large area of forest land more especially in summer.
- Over exploitation leading to depletion of the forest.
- Harsh cold winter which limits lumbering activities in winter season
- Freezing during winters when the whole land is covered by snow and transportation become difficult.
- Shortage of labour since the area is sparely populated.
- The rugged terrain/mountainous nature which affect the development of transport route e.g. the rocky mountain and the coastal ranges.
- Existence of pest and disease which attack and destroy the forest.
- Competition in the market with other forest producing countries.
- Accident which occurs when felling the trees leading to loss of lives.
- High transport cost are incurred when exporting timber products to far markets in Europe and Asia

SOLUTION TO THE PROBLEMS FACING FORESTRY INDUSTRIES INBRITISH COLUMBIA

- Fire guard are employed to watch and control any fire outbreak.
- There are regular air patrol to detects and report any fire outbreak.
- They use alternative lumbering system i.e. logging high and logging low during different seasons.
- Forest conservation through Afforestation by planting quick maturing trees species.
- Spraying with chemical, pesticides and insecticides to control pest and diseases.
- Constant research to open up new market and developing new trees varity.
- Introduction of quick and fast maturing trees species.
- Improvement in accessibility through construction of road and railways transport network
- Government control by avoiding over exploitation

IMPORTANCE OF FORESTRY IN BRITISH COLUMBIA

- Generation of employment opportunity to the people who are involve in cutting, transporting, processing and marketing of timber and timber products.
- Provision of raw materials for pulp and paper industries.
- Environmental protection against soil erosion
- Forest act as water catchment area where sources of water like Rivers start from the forests.
- They are habitats for wild animal or wild life which are the sources of fur and meat e.g. beers.
- Forest act tourist attraction were the tourist would see the type of trees, method of cutting and processing wood product earning foreign exchange.
- Forestry lead to development of infrastructure like transport route, power generation station. etc.
- Forests are sources of government revenue through taxes impose in the lumbering companies and on the people who carry out lumbering.
- The development of forestry industries led to improvement in the standard of living of people through the income that they earn from the forestry.

- ❖ It promote international relationship between Canada and other countries that imports forest products from British Columbia.
- ❖ It leads to diversification of economy of British Columbia and Canada hence reducing over reliance on forestry to Industrialisation, mining, agriculture and fishing as an economy.

FISHING IN BRITISH COLUMBIA

Fishing refers to all the process of removing aquatic life from the water body.

Fishing is the process of removing of the fish from the water bodies for man use.

In British Columbia fishing is a second most important economic activities. The province of British Columbia provide 60% of Canada fish.

The major fishing ground in British Columbia include the coastal water in the Pacific Oceanie marine fisheries and to a lesser extend the river and lakesie inland fisheries .

A KETCH MAP SHOWING FISHING GROUND IN BRISTISH COLUMBIA

The major fishing ground in British Columbia include:-

- **North east Pacific fishing ground**. Port in this area include Vancouver port and Prince Rupert as the landing sides. It is a marine fisheries and the major types of fish found in this fishing ground include:-
  - Salmon
  - Herrings
  - Codes
  - Sardines
  - Hake
  - Tuna

- **North West Pacific fishing ground**. Port in this care include New Found land and Halifax. The main type of fish got from this fishing ground include:-Halibut, Mackerel, founlanderand Haddock.
- **Lake and River fishing ground**. This include the great lakes as a major lake with it branches such as Lake Ontario, Huron, Michigan, and Superior. The river also like St Lawrence River, river Fresher and river Skeena. The major types of fish got from the river and lake is Salmon.

METHOD OF FISHING IN BRITISH COLUMBIA

Method of fishing refers to the ways of catching fish in British Columbia. It is only Marine fishing method which include;

1. Purse seining method.

This is a method use for catching pelagic fish. Pelagic fish is the type of fish found near the water surface.

The purse seining net is lad in a semi-circle supported by the flot at the top and weigh at the bottom.

It is use to enclose a school of fish. At the bottom of the net there are strings through which passes a rope and when the circle has been completed the rope is pulled to close the bottom of the net thus trapping the fish inside.

2. Trawling methods

This methods is mainly use for catching dermaSal fish. DermaSal fish species refers to the fish species that live deep at the sea bed.

A trawl is a conical shape net with the circler mouth. The wide circler mouth has a float at the top and weigh at the bottom.

The net is made stronger at the cod end were the fish are caught.

It is tie to one boat which keep of dragging it along the sea flow.

When the trawl is full of fish it is pull and emptied into a ship or boat and after which it is pull back in the water

3. Drifting method.

This involved a drift net which is hang vertically in the sea like a net in a tennis court. They are fill with float on top and weigh at the bottom. Drift net are allowed to drift with a prevailing current. They are used to catch tuna fish, salmon. The drifting method make the fish to be caught by their gills in a mesh of net the fish are unable to move either backward or forward because their heads are caught and their bodies are too big to pass through.

4. Long lining

This is the least popular method of fishing in British Columbia. It is common where the sea flow is ragged unlikely to damage trawl net. It involves the use of rope or lines that trails behind the boat. The rope carry a bailted hooks attach at interval. The line are set vertically or horizontal along the bottom of the sea. The fish are caught or hook as it tries to eat the bailts. Each hooks has a shape point design to pies the mouth of the striking fish with a small reverse point to keep the fish on the hook.

Bottom fish species are caught eg cod, Haddock, Halibut, and Tuna etc.

Once the fish have been caught it has to be preserve such that it does not go

METHOD OF FISH PRESERVATION IN BRITISH COLUMBI

. The preservation method use include:

- Canning method
- Deep freezing
- Refrigeration
- Factories drying
- Salting

FACTORS THAT HAVE FAVOURED THE DEVELOPMENT OF FISHING INDUSTRY IN BRITISH COLUMBIA

Physical factors

- Warm and cold ocean currents meet creating ideal conditions for the growth of Plankton, which fish feed on e.g. the warm north Pacific Drift and the cold Artic current in the Pacific Ocean waters.

- Presence of long coastline with sheltered bays and inlets which offer good sites for development of fishing port and village.
- Presence of many off shore Island along the coast such as Vancouver and Queen Charlotte which increase the area of fishing and landing sites.
- The cool temperate climate which makes the preservation of fish relatively easy.
- The coasts are ice-free during winters hence fishing can take place all the year around.
- Presence of many fish species of commercial value.
- Presence of a large quantities of timber for construction of fishing Vessels and fishing crafts.
- Presence of excellent spawning grounds for the Salmon fish e.g. River Fraser and River Skeena provide fresh water for breeding of young Salmon.

Human factors.

- Most settlements are near the coast hence availability of skilled labour to work in the fishing industry.
- The development of modern methods of catching fish such as Purse Seining and trawling which enable large quantities of fish to be caught.
- Well-developed transport sector by road, railway, air and water for transportation of fish to the market.
- The existence of a large market for fish both at home and abroad.
- Availability of large capital for investment in fishing activities such as pursening method of fishing gear and ships.
- High levels of technology involved in fishing e.eg. Use of trawlers and differ nets.

PROBLEMS FACING THE FISHING INDUSTRY IN BRITISH COLUMBIA

- There is a danger of wiping out some of the valuable fish species due to indiscriminate fishing.
- Over fishing in the territorial water which has reduced the fish stock e.g. Salmon.

- Pollution of the coastal waters by dumping industrial wastes into the water. Where these waters contain chemical which kill fish or make it unfit for human consumption.
- Limited home market for fish due to the low population.
- Competition from other fish producing region e.g. Japan and Norway which reduces the market for fish.
- International restrictions not allowing fishing beyond 100 miles from the coast which limits the quantity of fish caught.
- Shortage of labour due to the small population and due to the fact thatmost people are employed in the forestry and other industries.
- Price fluctuations of fish on the World market which affects the income received from the industry.
- Freezing of inland water bodies during winters which reduces fishing activities.
- Constructions of dams limits the movement of fish for breeding purposes.

SOLUTIONS TO THE PROPLEMS FACING THE FISHING INDUSTRIES IN BRITISH COLUMBIA

- Treatment of industrial waste before disposal in the water in order to control pollution.
- Controlled fishing by establishment of laws by government in order to reduce over fishing and indiscriminate fishing.
- Exportation of fish to other states and countries to widen the market for fish.
- Use of international agreements and bodies such as Northwest Atlantic Fisheries Organization (NAFO) consisting of 17 countries to solve conflicts over territorial water.
- Mechanization of fishing activities to solve the shortage of labour problem.
- Setting up factories that use fish as a raw material e.g. those producing fish oil, animal feeds and fertilizers to increase the market for fish.
- Research to improve fishing and to acquire a wider market
- Construction of fish ladders for fish to move across the dams.

- Introduction of fish farming to supplement the natural sources of fish.

IMPROTANCE OF THE FISHING INDUSTRY TO BRITISH COLUMBIA

- Fish is exported and this earns the province foreign exchange Generation of employment opportunities.
- Sources of raw materials to fish processing industries e.g. the canneries at Vancouver and the fertilizer industries.
- Source of food rich in proteins, which help to improve people's diet.
- Fishing has stimulated the growth of ports and urban centres such as Vancouver, Prince Rupert, Kitimat along the coast.
- Development of industries producing feeds, oil ship building etc.
- Revenue to government through taxes imposed on fishing companies.
- Fishing has contributes to the diversification of province's economy.
- Fishing is a tourist attraction, which earns the province foreign exchange.
- It has encouraged the development of infrastructure e.g. road, railways lines.
- The industries has led to the promotion of international relationship between Canada as a whole and other countries.
- Tourist attraction e.g. game fishing.

TOPIC 5

EXTENSIVE WHEAT FARMING AND INDUSTRIAL DEVELOPMENT ON THE CANADIAN PRAIRIES.

Agriculture is no longer important in Canadian prairies as it was in the 19th century but it is still most important sources of exports.

Canadian prairies form the most important wheat producing region in the world. Wheat is grown in most southern section of three west province of Canada namely Manitoba, Saskatchewan and Alberta .Saskatchewan is the leading producer of wheat in the three province.

RELIEF OF CANADIAN PRAIRIES

The prairies comprise of almost flat land, which gently rise from the east towards the west. The land rises in three levels first, second and third in the province of Manitoba, Saskatchewan and Alberta respectively.

CLIMATE OF CANADIAN PRAIRIES

The region experience cool temperate climate with moderate rainfall, warm sunny summers, high temperature range and long cold winter.in winter

temperature drop to -14C. This makes the ground cover by snow, lake and river frozen, rainfall receives in form of snow.

DRAINAGE OF CANADIAN PRAIRIES

The drainage of Canadian prairies comprise of R. Saskatchewan. The lake include Lake Manitoba, Johnston, Buffalo, Beaver hill and Mountain Lake.

NATURAL VEGETATION OF CANADIAN PRAIRIES

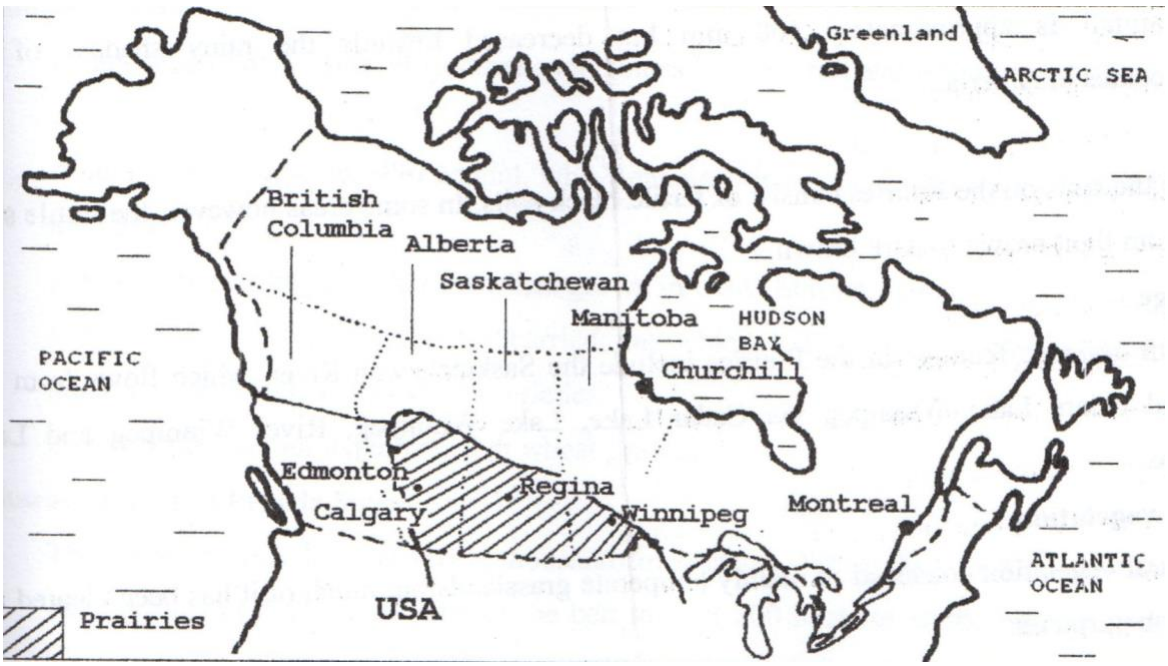
The natural vegetation consists of mainly temperate grassland or prairies but most ofit has been cleared for cultivation purpose.

There are two types of wheat grown in Canadian prairies depending in different season. Spring wheat are grown in the month of spring and harvested in summer Winter wheat are grown and harvested in the early summer.

FARMING ACTIVITIES ON THE CANDIAN PRAIRIES

Month	**Season**	**Activities**
December January February	Winter	• Repair of machines • Preparing Fertilizer and Herbicides • Up-dates of records • Pacing order for seed • Planning for the next year.
March April May	Spring	• Ploughing • Planting • Harvesting winter wheat.
June July August	Summer	• Spraying wheat • Weeding • Harvesting of wheat
September October November	Autumn	• Fertilizer application • Marketing • Planting winter wheat

SKETCHMAP SHOWING LOCATION OF THE CANADIAN PRAIRIES (8)



CHARACTERISTICS OF CANADIAN PRAIRIE FARM

- The farm are very large covering thousands of hectares.
- Extensive farming is practiced. This involves the types of farming in which the area under cultivation is very large in order to maximise production.
- The farm are highly mechanized in which machine such as seed dicers, swathers uses for cutting wheat and combine harvesters which are multi-purpose tractors.
- Monoculture is practiced i.e. large land area is devoted to the growing of a single crop which is wheat.
- The farm is scientifically managed involving the use of improved seed varieties, fertilizers and spraying with pesticides and insecticide.
- Mixed farming is practice through growing crop and rearing livestock.

FACTORS/CONDITIONS THAT FAVOURED WHEAT GROWING IN CANADIAN PRAIRIES.

Physical factors

- Availability of extensive cheap land which enabled the setting up of the farm covering thousands of hectares.

- The relatively flat or undulating land scape which favoured infrastructural development like road, railway lines for wheat export.
- The presence of fertile well drained blackchenozoic soil with high plant nutrient that favoured the growth of wheat.
- The warm and hot summer temperature that favoured vegetative growth and ripening of wheat grains.
- Adequate/heavy rainfall in the growing season of about an average of 500 – 700mm.
- The short growing period of wheat between 100 –120day free from frost.
- The long summer day that favours the ripening of the wheat grain.
- The presence of strong chinook wind which makes winter snow melt to add moisture to the soil in summer.
- The sparse vegetation in form of grassland which are easy to clear and suitable for wheat growing.

Human factors

- Well-developed transport rout by road, railways and water for marketing wheat to USA, Brazil, Mexico, Europe and Asia.
- Availability of large sum of capital which enable extensive mechanisation and buying other farm equipment like fertilizers.
- Availability of large market of wheat in a densely populated states such as New York, UK, USA, Netherlands in Europe, China, Japan as well as Africa.
- Constant research which has enable the development of fast maturing and cool resistance wheat varieties.
- Availability of skill labour forces who are experience in wheat growing.

PROBLEMS FACING WHEAT FARMERS

- Over production leading to price fluctuation of wheat.
- Fluctuation of wold market prices which affects income and the interest of the farmers in growing of wheat.
- Monoculture which lead to soil exhaustion.
- Competition with other wheat producers such as Pakistan, India, China reducing wheat market from Canada.
- Frost/cool temperature delay crop planting during spring.

- Pests such as hessian flies and disease like foot rot and wheat rust which destroyed the wheat crops.
- Soil erosion due to monoculture reducing the fertility of soil and low crops yield.
- Rapid growth of weed due to heavy rainfall received.
- Shortage of labour during the busy periods like harvesting and weeding of wheat.
- There is competition for port along the export route such as Port Arthur and Montreal which result in to delay.
- The freezing of St. Lawrence sea way in winter leading to ice damage to the ship while using a Churchill route.
- Extensive farming system is expensive as it requires large sum of capital
- Over dependence on foreign market due to limited home market.

SOLUTIONS/STEP BEING TAKEN TO SOLVE THE PROBLEMS FACING WHEAT FARMERS

- Mechanization to solve the problem of shortage of labour
- Spraying with chemicals, insecticides, pesticides to eradicate pest and diseases.
- Application of fertilizers and manure to restore soil fertility.
- Crop diversification to reduce over dependence on one crop in order to overcome the effects of price fluctuation.
- Development of seed varieties through research which are resistant to pest and diseases.
- A quarter system of production is emphasize were the level of production are predetermined to avoid over production.
- Government policy of subsidizing wheat farmer with loan, quality seed, fertilizer, etc.
- Construction of Port facilities to reduce congestion.
- Planting of wind breaks or shelter belts to reduce soil erosion more especially in the semi-arid region in the western prairies.

IMPORTANCE OF WHEAT GROWING ON THE PRARIES.

- Source of income tothe farmers from the sale ofwheat

- Source of employment to a number of people of Manitoba, Saskatchewan and Albert who earns income to improve the standard of living.
- Source of raw material for industrial development.
- Provision of market for industrial goods such as fertilizers, pesticides and farm machines.
- Contributed to development of transport rotes e.g. railway lines connection to the Great lakes and Churchill.
- Growth of urban centres e.g. Regina, Winnipeg and Edmonton.
- Source of foreign exchange through wheat export to countries such as United States, Mexico, South Korea, Iran, Brazil, Japan and China.
- Source of revenue to the government through export of wheat.
- Contributes to the diversification of the economy reducing over reliance on industrialisation.
- Provision of food stuff to the people of Canada to fight famine.
- It has encouraged used of mechanization in wheat growing in Canadian prairies'.
- It has stimulated the development of Agro-base industry e.g. flour, milling e.t.c.

CANADIAN WHEAT EXPORT ROUTS

There are three main route through which Canadian wheat are exported and they include:-

- The Western route
- The Northern route
- The Eastern route

The Western route

This is mainly through the port of Prince Rupert; Seattle and Vancouver. The three routes have the advantages of being ice free throughout the year. The wheat which is exported through this route goes mainly to China, Japan and Russia.

Disadvantages of using Western Route

- It has long railway distance to the coast.
- The route crosses the rocky mountain areas with very steep slopes.
- Being along route and on land, transport costs are very high.
- Long route to foreign market

The Northern Routes

This route lead to the port of Churchill located Hudson bay. The wheat exported through this route goes to Britain, Belgium, France, and other European countries.

Advantages of Northern Routes

It is the shortest route to major market in Western Europe.

Disadvantages of Northern route

- Hudson bay is open for only a few month in the year. The rest of the year a long distance is covered on land from Regina to Churchill port hence expensive.
- The limited port and facilities along the route often leads to congestion at the port.
- High transport costs are increased.
- The route is remote passing through a large area of forested land and productive area.

THE WESTERN ROUTE

This is mainly through the port of Prince Rupert and through the great lakes region area and the St. Lawrence sea way. It includes the following ports along this route, Montreal, Quebec and New York port.

ADVANTAGES OF THE EASTERN ROUTE

- Cheap in term of cost due to use of water transport.
- The route is ice-free for the greater port of the year about eight months.

- Accessibility of large market in Europe, Asia and Africa.
- There are many port and port facilities along this route.
- Short distance to the major wheat market in Western Europe
- Presence of New York stead burge canal which connect Lake Erie to Hudson River
- The major disadvantage of Eastern route is that it freezes for about 3-4 months in a year making it useless and unreliable during those months of winter.

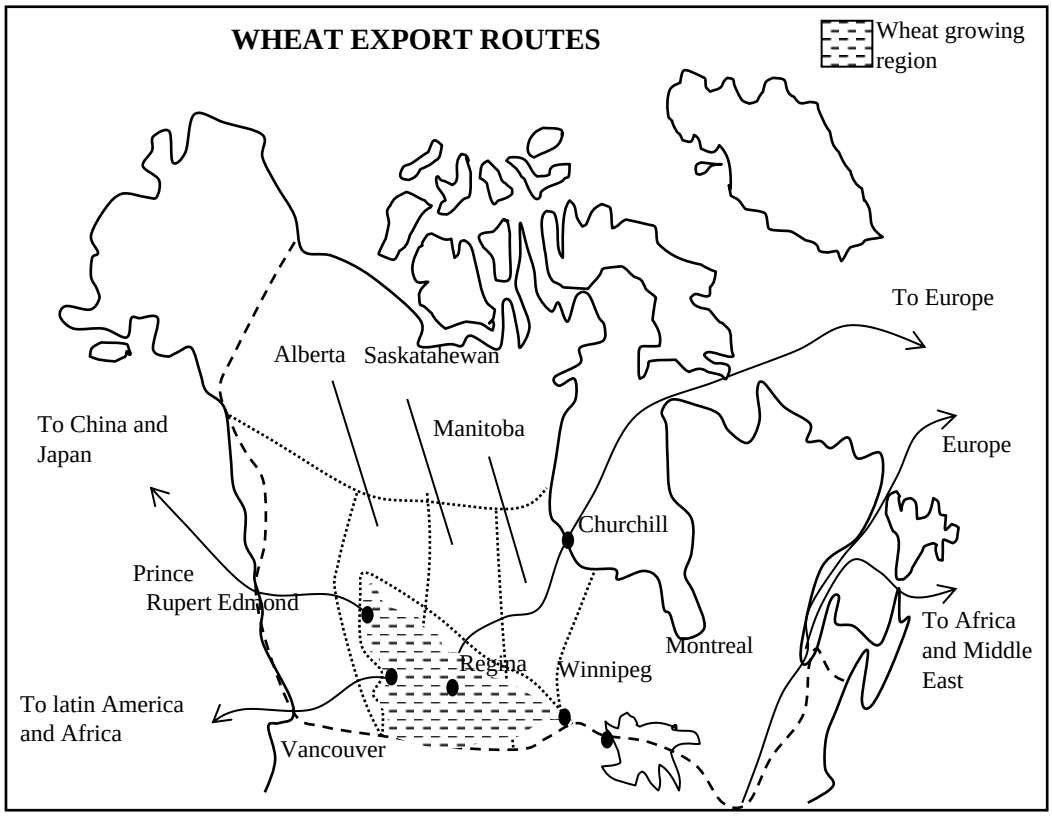
USES OF WHEAT

- For making breads, cakes, biscuits, e.t.c.
- Used in making animals feeds.
- Used in brewing.
-

Canadian wheat is consumed all over the world and major importers are the United kingdom, Netherlands, Japan, China, Africa, India, e.t.c. the straws is used for making papers.

Wheat flour are used as source of raw materials to other industries.

SKETCHMAP SHOWING WHEAT EXPORTS ROUTE(9)



TOPIC 6

INLAND WATER TRANSPORT

A CASE STUDY OF THE

ST. LAWRENCE SEAWAY AND THE GREAT LAKES

The St Lawrence Seaway found on the Eastern part of Canada and North Eastern part of United States.

It is a water way that permits the ocean going vessels to navigate between the great and the Atlantic Ocean.

It is therefore a water way which link between great lakes and the Atlantic Ocean for a distance of over 3760km from the coast of DULUTH of Lake Superior to Montreal.

It is the most important waterway in North America shared by USA and Canada.

AIMS/OBJECTIVE OF CONSTRUCTION OF ST. LAWRENCE SEAWAY

- To overcome the challenges of rapids and waterfalls along the St. Lawrence Seaway
- to control the severe flooding of the St. Lawrence river and its tributaries
- To create deep water for navigation between the mouth of River St. Lawrence at Atlantic Ocean and the great lake region.
- To connect the rich interior of North America and USA with other area on Atlantic sea board

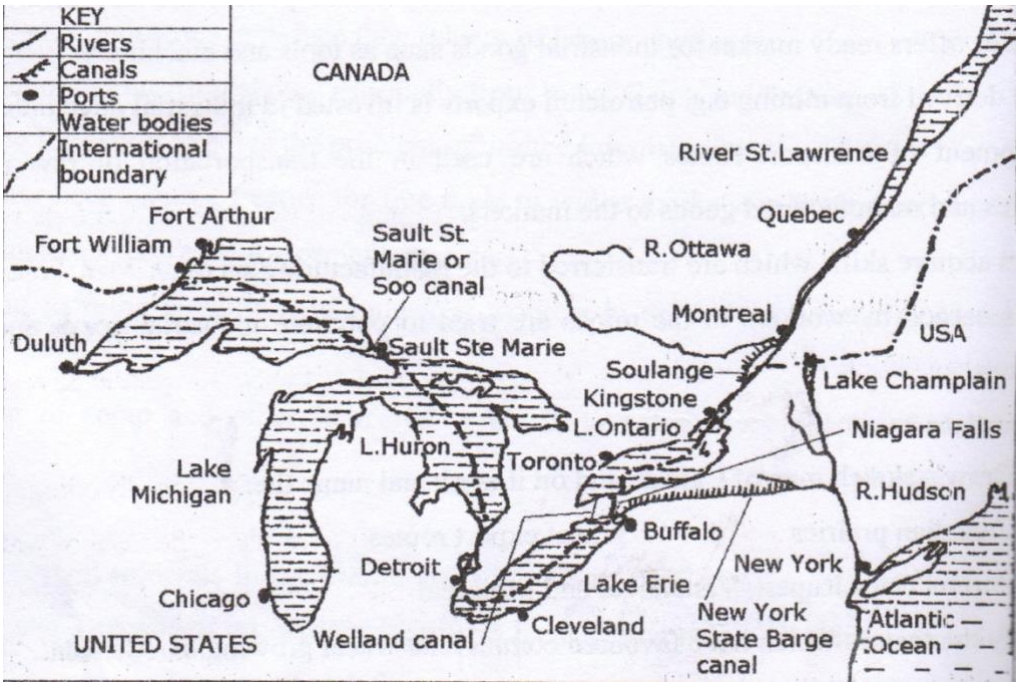
- To make easy transportation of bulky raw material and others commodities for example wheat from Canadian prairies, iron ore and limestone found near the great lake region
- To ease transport along the St. Lawrence Seaway.
- To generate huge hydroelectric powers needed in the industries and for domestic purpose in USA and Canada.

SHIPPING HAZARDS/PROBLEM BEFORE THE CONSTRUCTION OF ST. LAWRENCE SEAWAY

Before the construction of the St Lawrence Seaway, navigation from the coast to the interior was difficult. This was due to the following reason:-

- There were various waterfall and rapids along the St. Lawrence Seaway e.g. Niagara fall and rapid such as international and Lachine.
- There were cases of thousands of islands in form of rock shoal which use to make navigation very difficult.
- The depth of the water way was shallow not allowing large ocean going vessel to be use.
- There were severe siltation of the sea way reducing the depth of the seaway and the water as a hole.
- Severe winter freezing during winter which make the seaway frozen and this normally limit the shipping activities on the St. Lawrence Seaway.
- The constant occurrence of the dense fog especially in spring at the mouth of River Lawrence normally interrupts the shipping activities.
- The regular fluctuation in the water level which reduces the necessary power for hydroelectric power and the volume of water.

THE SKETCHMAP SHOWING ST. LAWRENCE SEAWAY AND GREAT LAKES(10)



STEP TAKEN IN THE CONSTRUCTION OF ST. LAWRENCE SEAWAY

The construction of the St. Lawrence Seaway began in 1954 and was open in 1959.

The coast of the project was founded by US and Canadian government.

The following were the steps undertaken;

- Blasting using explosive on the thousand rocks shoal this was to overcome the obstacle along the Seaway.
- Dredging using caterpillars to deepen the river channels this is to allow the large ocean going vessels to use the water way.
- Strong light and radars were used to overcome the problem of fog.
- Several channels were constructed to bypass the rapids and waterfall e.g. Wellan canal, Niagara canal. The Soo canal etc.
- Several dam and locks were constructed in order to raise the water level.

- The use of ice breaker vessels or ships to keep the river channel open during winter when the Seaway is frozen.
- Co-operation between America and the Canadian government to meet the expensive cost of the Seaway.
- The width of the Seaway was opened to allow large ocean vessel to sailthrugh.

PROBLEMS STILL FACING THE ST. LAWRENCE SEAWAY.

- The Seaway is always frozen during winter from November to April. This reduces the use of the Seaway during this season.
- The occurrence of dense fog especially at the mouth of St. Lawrence River leading to poor visibility and accident during shipping.
- The size of some canal is small and show very large vessel or ship cannot be used.
- The various lock along the St. Lawrence Sea way lead to the delay in movement.
- There are cases of continuous silting on the St. Lawrence sea way reducing the depth and width of the water way.
- There are case of traffic congestion which is experience leading to delay on transport.

  Problems resulted from the construction of the St. Lawrence sea way

  - The building of dams resulted in flooding which became the habitat of pest and disease vectors
  - Displacement of people due to flooding and expansion of the seaway
  - Pollution of environment from the industries establish and from oil spills
  - Over congestion of the sea way due to too many ships
  - The sea way has many locks which leads to over delay in movement

COMMODITIES TRANSPORTED ALONG THE ST. LAWRENCE SEA WAY

Various commodities are transported along the sea way and the great lakes region these are import and export.

Export commodities transported along the St. Lawrence sea way include:-

Wheat, corn, beef and dairy products, timber, vehicle, machineries, chemical.

Import along the St. Lawrence include:-

Crude oil, iron ore, coal, agricultural raw material such as coffee, tea and cocoa.

THE SKETCHMAP OF THE AREA ALONG THE ST. LAWRENCE SEA WAY SHOWING MAJOR CANAL, PORT AND DAM(12)

BENEFIT/CONTRIBUTIONS OF ST. LAWRENCE SEAWAY

- It has provided cheap water transport for carrying heavy and bulky commodities such as raw materials and finish goods. E.g. wheat, iron ore and other dairy products.
- The St. Lawrence Seaway has encourage the exploitation of natural resources e.g. coals and iron ore.
- It has reduced on the coast of transport due to reduce distance.
- It has stimulated industrialization as both raw material and manufactured goods can be acquired and disturbed.
- The Seaway has led to the growth of port and other towns such as Chicago, Duluth, Montreal, and Toronto etc.
- Huge hydroelectric plant has been established went lock and dam were constructed. This provides power for both domestic and industrial uses.
- The seaway with it beautiful scenery like the lock and dam attract tourist and this earn foreign exchange.
- The seaway created international co-operation/political togetherness between USA and Canada because they share same water transport.
- The seaway has promoted trade among nation as finish product can be exported and raw material imported.
- The seaway has generated employment opportunity to thousand people of USA and Canada and from this employment opportunity income is earn to improve on people standard of living.
- A lot of revenue is earned by the government of USA and Canada from the taxes called tariffs levied on transporters.

THE GREAT LAKES

The term great lake refers to the five major lakes found between Canada and USA and these lakes are L. Superior, L. Michigan, L. Huron, L. Erie, and L. Ontario.

Each of these lakes has an attached port of town. The port on L. Superior is Port Arthur and Duluth. On Lake Michigan have port Chicago. On lake Erie has port Cleveland and Detroit and Buffalo on lake Ontario we have Kingston.

INDUSTRIALIZATION IN THE GREAT LAKES

With a construction of St. Lawrence Seaway, there was rapid industrialization in the great lakes region.

TYPES OF INDUSTRY IN THE GREAT LAKES

Iron and steel industries

The major industrial centre for iron and steel industries include Chicago, Cleveland, Detroit, and Buffalo.

The steel and iron industries deal in manufacturing of car, agricultural machinery, railway wagon etc.

Pulp and paper industries

These industries are found near Ottawa and Quebec. They are found near the coniferous forest belt. The product from this industries include paper and paper cards.

Food processing industries

This industries include fruits canning industries, flow milling, meat packing and manufacture of cigarettes.

Chemical industries

Chemical industries deal in the manufacturing of fertilizers, synthetic fibres, polythene, detergent etc.

FACTORS THAT HAVE FAVOURED THE DEVELOPMENT OF INDUSTRIES IN THE GREAT LAKES REGION

The following are the factors that have favoured the development of great lakes region.

- The existence of gently sloping land scape for easy construction of the industries
- Availability of large volume of water for cooling machine, washing and mixing of dyes

- Availability of large quantity of agricultural raw material e.g. cotton, wheat and maize and mineral raw material like iron ore, coal and limestone.
- Availability of large quantity of power inform of coal, natural gas and hydroelectric power for running the industries.
- Availability of large some of capital generated from international trade and is inversed in industrial development.
- Availability of skilled labour made up of immigrant from European nation such as Britain, France and Germany.
- The presence of well-developed transport network by road, railway, air and water like the St. Lawrence Seaway which provide cheap mean of transport for bulky and heavy raw material and finished goods
- Availability of large market of industrial product locally in USA and Canada as well as in foreign market in Europe and Asia
- Favourable government policy of encouraging export promotion of industrial product.
- The high level of technology developed through the use of robots and automation of machines.
- Availability of extensive/large land for industrial development like putting the industry itself.
- The favourable government policy of encouraging investors and export promotion

THE IMPORTANCE/CONTRIBUTIONS OF INDUSTRALIZATION IN THE GREAT LAKE REGION

- Generation of employment opportunity to local people working in machinery engineer and sale agent.
- It is the source of market for the raw material needed for development of industries e.g. cotton, iron ore, etc.
- Generation of foreign exchange through export of manufactured goods to other countries.
- Improvement in infrastructure such as development of road, railway, etc.

- It leads to development of port and urban centres such as Chicago, Detroit, and Buffalo etc.
- Generation of government revenue through taxing the industries established.
- Many people acquired skills in various field such as technical and managerial.
- Improvement in the standard of living of the people due to high wages earned.
- Promotion of international relationship due to import of raw material and export of finish manufactured goods.
- Diversification of economy by creating alternative source of income

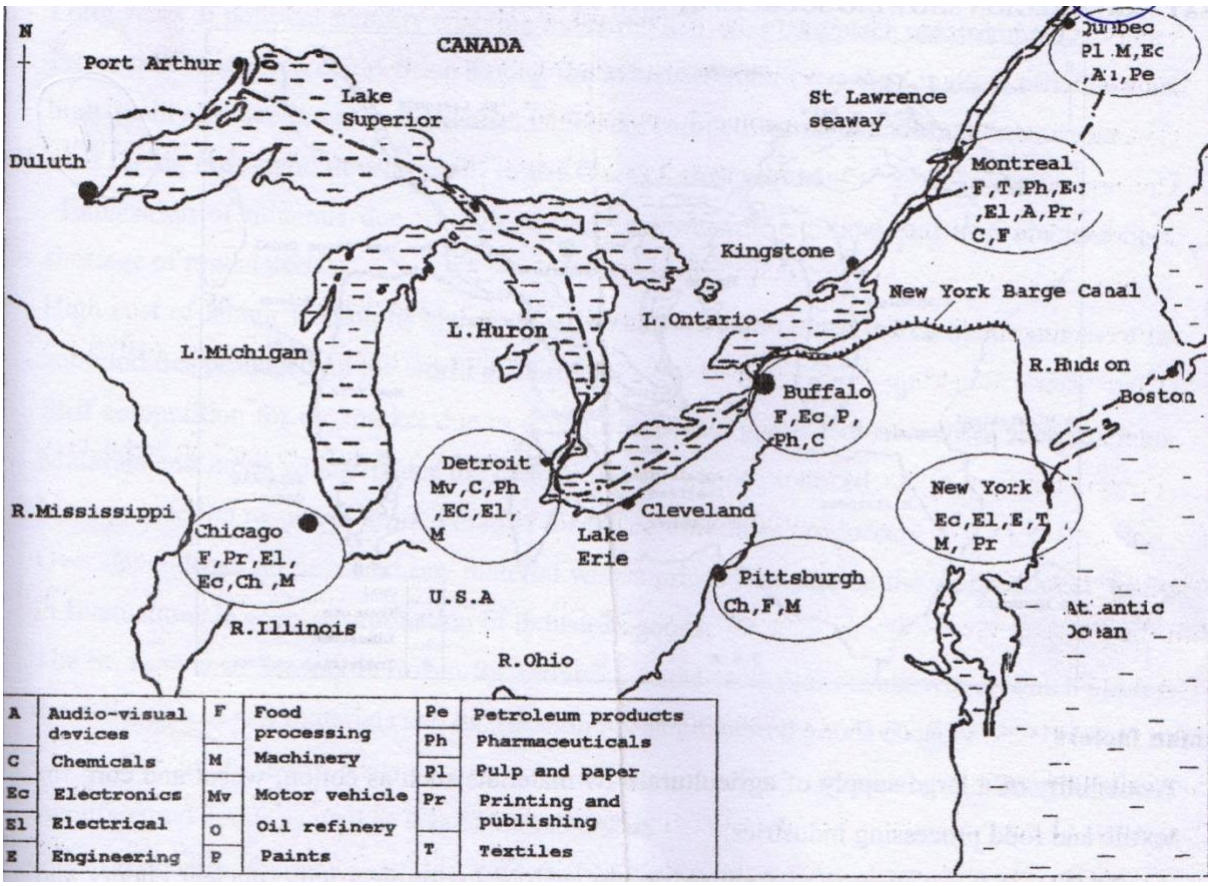
ENVIRONMENTAL PROBLEM RESULTING FROM INDUSTRALIZATION IN THE GREAT LAKE REGION

- Pollution of air from industrial fumes and water from dumping of industrial waste.
- Overcrowding in the region leading to poor sanitation. Poor sanitation due to overcrowding leading to high spread of diseases.
- Development of slums due to poor accommodation.
- Traffic congestion especially during the rush hours leading to accident.
- High level of unemployment due to over population in the region.
- High crime rates due to unemployment.
- Distraction of vegetation cover due to high demand of space for putting up the industries.
- Soil erosion due to over use of the soil leading to land degradation
- High cost of living due to over population.
- Exhaustion of mineral due to high rate of exploitation
- Limited land for expansion of industrial facilities due to over population in the region.
- Displacement of people from their settlement area due to high demand of land for setting up the industries.

STEPS BEING TAKEN TO SOLVE THE PROBLEMS FACING THE INDUSTRIAL SECTOR IN THE GREAT LAKES REGION (SOLUTIONS TO THE ABOVE PROBLEMS)

- Recycling, treatment and proper disposal of industrial waste in a proper place
- Containerization at the port to reduce congestion
- Development of alternative sources of energy to supplement on the natural sources of energy like natural gas and coal
- Automation and use of robots during production to reduce on the coast of production.
- The use of police and other law organ to fight crime
- Government legalization against pollution through the use of clean air acts
- Importation of raw materials in order to reduce on shortage of raw material
- Encouraging location of industries outside the city to reduce on issues of limited land and over congestion
- Building skyscrapers to solve the problem of land shortage.
- Building of underground tunnels or subways to reduce on traffic congestion.

SKETCHMAP SHOWING LOCATION OF MAJOR INDUSTRIAL CENTRE IN THE GREAT LAKES REGION.(12)



TOPIC 7

NEW ENGLAND

An established agricultural and industrial region

New England is a collective name given to the six states of north eastern US namely Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut.

LOCATION

New England is bordered by New York State on the west, Canada on the north, Atlantic Ocean on the East and the long island sound to the south.

THE MAIN PHYSICAL FEATURES OF NEW ENGLAND

These include the hills, lake, swamp, Road Island, valleys, the Appalachian Mountain.

DRAINAGE OF NEW ENGLAND

There are many river and stream in New England, the largest is R. Connecticut other include R. Penobscot, R. Kennebec, R. Housatonic and L. Champlain.

CLIMATE OF NEW ENGLAND

The northern parts of New England have a humid continental type of climate with a short cool summer and long cool winter.

The Southern New England states have a continental type of climate with long hot summer and cool winter.

Precipitation/ rainfall receive is moderate and in same area like the Appalachian Mountain region it is high with over 2500mm per year and in some case there is no fall.

VEGETATION OF NEW ENGLAND

Before the coming of Europeans settlers in New England 90% was covered by deciduous forest with species of trees such as hemlock, maples, birch and so on. These forests were rapidly destroyed for timber and to create more land for agriculture. Today the northern mountainous region is still having forest with species such as spruce and fir.

AGRICULTURE IN NEW ENGLAND

Agriculture refers to the growing of crops and rearing of animals.

TYPES OF FARMING/AGRICULTURE IN NEW ENGLAND

There are two major types of farming in New England; Arable farming, Livestock farming.

ARABLE FARMING

Arable farming refers to the growing of crop only it can be in form of plantation or market gardening while

Livestock farming this refers to the rearing of livestock onlyeg dairy farming ranching etc

MARKET GARDENING

This involves the growing of fruits, vegetables and flowers to supply the large urban centres.

In market gardening crop production is highly scientific involving the use of green houses.

In New England the leading market gardening areas include Massachusetts.

The major crop grown under market gardening in New England include potatoes, oats, corns, apples, cabbages, pumpkins, beans, tomatoes, beans, etc.

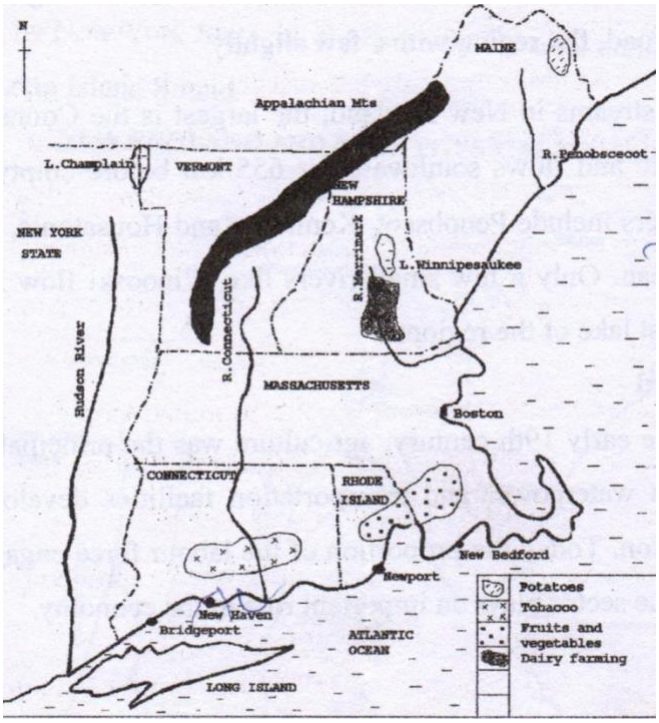
LIVESTOCK REARING IN NEW ENGLAND

The most important livestock rearing in New England is dairy farming where the farmers specialize in animals rearing for production of Milk for urban market.

Here, milk product such as cheese, butter, milk, chocolates are produce.

Other farm of animals rearing in New England includes rearing of Beef cattle, sheep, dog and poultry.

A SKETCHMAP OF NEW ENGLAND SHOWING MAJOR AGRICULTURAL AREA (13)



FACTORS WHICH HAS FAVOURED AGRICULTURIAL ACTIVITIES IN NEW ENGLAND

Physical factors.

- The presence of well drained fertile alluvial soil supporting agriculture in the Connecticut and Merrimack River valley
- Abundant well distributed rainfall during the growing season of the crop supporting the growth of crops pastures and hay for the livestock.
- The long warms to hot summer in the southern states which are useful in the ripening of the crop.
- The gently sloppy to flat relief for mechanization and construction of farm houses.
- The long growing season of more than 120days with free frost atmosphere which support the growing of crops.

Other factors

- Availability of skill labour forces to work on the farm.
- The presences of large market for goods produce within USA and in the New England.

- Availability of adequate capital to set up modern farm using application of fertilizer, green house etc.
- The use of high level of technology through the use of green house, fertilizer application
- intensive research is carried out leading to production of high yielding crop varieties and animal breeds.
- Favourable government policy of carrying out research, development of infrastructure, etc.
- The well-developed transport network with intensive high ways, electrified railway line and air routes.

CONTRIBUTION/IMPORTANCE OF AGRICULTURE IN THE DEVELOPMENT OF NEW ENGLAND

- Agriculture is the source of food to feed the population of New England and North America as a whole.
- Agriculture provide raw material for the agro-base industries e.g. fruit canning industries, Tobacco industries etc.
- Source of employment opportunity were people get income to improve their standard of living.
- Agriculture diversity the economy of New England and therefore avoiding over reliance on industrialization, transport sectors.
- It provides foreign exchange through export of Agricultural products to other countries like USA, UK, China etc.
- It provide government revenue through taxes impose on the farmers and agro base industries.
- It stimulates infrastructure development through road and railway construction.
- It led to development of town and port with better social services like bank, market, school, hospital etc.
- It provide market for other industrial products such as fertilizer, farm machinery etc.

PROBLEM FACED BY FARMERS IN NEW ENGLAND

- The rocky soil make mass of the mine and New Hampshire unsuitable for Agriculture.

- The harsh weather with cold winter limited the growing season hence low crop production.
- Constant prices fluctuation affecting farmers' income.
- The hard wood forest is difficult to clear making land opening for agriculture difficult.
- The rugged mountain relief consisting of Appalachian Mountains accelerates soil erosion and also makes mechanization difficult.
- The constant occurrence of pest and diseases which destroy crop reducing the quantity and quality of the crop product
- Stiff competition with other sectors in term of land, labour and market leading to low crop production.
- Pollution of soil due to over use of fertilizer making soil living organism inactive in soil forming process.
- Shortage of labour to work on the farm due to better paying job in other sector like industries, tourism, transport sector etc.

SOLUTIONS/STEPS TAKEN TO IMPROVE ON AGRICULTURIAL SECTOR IN NEW ENGLAND.

- Soil conservation through mulching, crop rotation etc to reduce on soil erosion.
- Heavy fertilizer application to enrich the soil to improve on soil fertility.
- Contour ploughing on the hilly areas to control on soil erosion.
- Specialization in agriculture in other to compete favourably in the market.
- Constant research to developed better crop and animals' variety and also to widen market.
- Positive government policy that encourages quality production through seed supply, use of chemical and fertilizer.
- Mechanization to solve the problem of labour shortage.
- Scientific method of production through the use of green houses, fertilizer application, spraying with chemical etc.

INDUSTRIALIZATION IN NEW ENGLAND

There are two types of industries in New England this include;

1. Traditional industry
2. New industry

The traditional industry in New England include Textile industry, ship building industries, iron and steel industries, Saw milling industries, fish processing industry.

The New industry include electronic machineries, transport equipment, fire harms, plastic, office machine, electronic equipment, chemical, optical instrument metal fabrication etc.

Today New England is the most industry region of USA were New industrialization has replace the traditional industry.

TYPES OF INDUSTRIES IN NEW ENGLAND

Engineering industries.

These produces item such as electric machineries, a ball and roller bearing turbines, engines, fire arms, hardware and hand tools.

Precision industries.

These produces clock, watches, optical instrument, lenses and surgery machines.

Aerospace industries.

These produces helicopter, air craft engine and propellers.

Petro chemical industries.

These produce pharmaceuticals, dyes, detergent , soap, chemicals and plastics.

Agro-base industries.

These deal in processing agricultural product such as milk into cheese, butter as well as canning fruits.

Forest base industries.

This derive it raw material from forest and produced item such as furniture, plywood, paper etc.

MAJOR INDUSTRIAL CENTRE IN NEW ENGLAND

Boston

The city has industries producing electronic instrument, computer, office machinery, communication equipments, printing and publishing, textile, etc.

New Bedford

Industries include electrical instruments, textile industry, foot ear food processing industries. Etc.

Harford

Manufactured item include aerospace equipment, industrial machinery and fire arms.

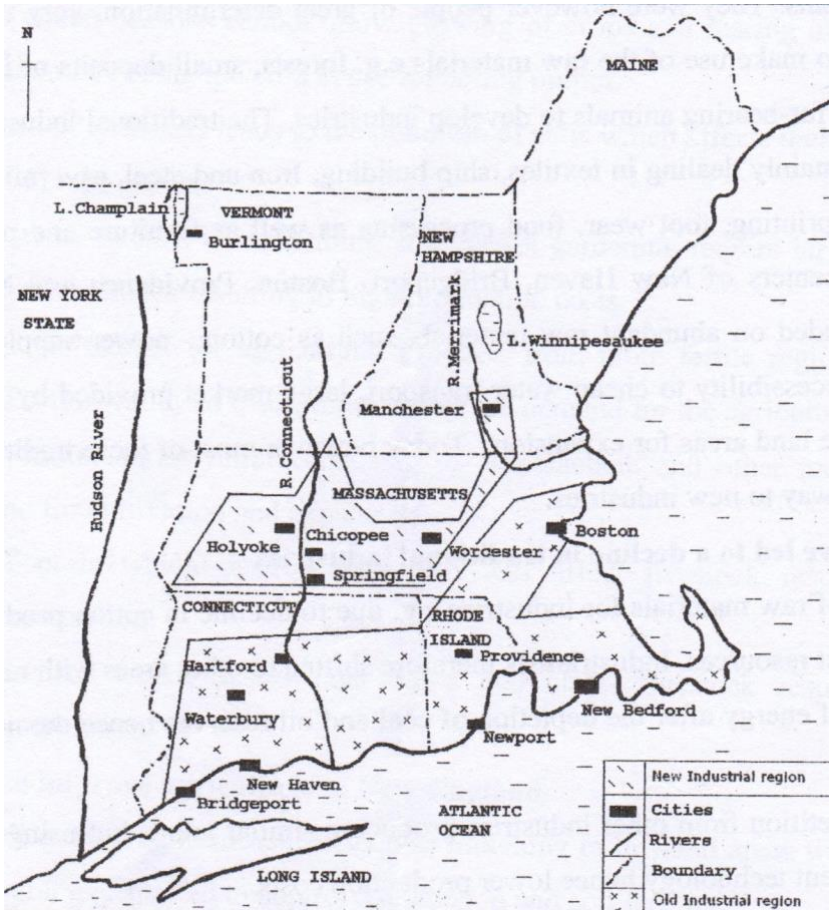
Holyoke

They include the manufacturing of textile products, paper, printing materials, and electrical machineries, metal and chemical.

Burlington

Major product manufacturer include electrical equipment, steel and wood item, business machineries and textile.

SKETCH MAP SHOWING MAJOR INDUSTRIAL CENTRES IN NEW ENGLAND



FACTORS THAT FAVOURED THE DEVELOPMENT OF INDUSTRIES

Physical factors

- Availability of large land for industrial establishment in the New city in New England such as new Bedford, Boston and Newport.
- Availability of variety of raw material which are in large quantity such as limestone, clay product, forests, fish, etc.
- The presence of numerous waterfalls from river which produces huge hydroelectric power to run the industries.
- Availability of large volume of fresh water from the numerous river such as river Connecticut, Black stone this is use for cooling engine in industry and for washing item to be manufactured.
- The relative flat landscape for easy construction of industrial facilities
- Strategic location on the Eastern part of Canada hence easy access for market in Europe, Africa, Asia.

Human factors

- Availability of skilled labour to work in the industry as transporters, mechanic etc.
- Availability of large domestic and foreign market for the manufactured goods in Africa, Asia and Europe.
- Availability of adequate capital to inject in the process of machinery, land and payment of labour who work in industry.
- The presence of well-developed transport network by road, modern railway, water and standard airport for transporting raw materials and finish product to the market.
- High level of technology through of robots and automation of machine in the industries.
- Favourable government policy through task holiday development of infrastructure, research and looking for better market.
- Attraction of large scale investors in the industries who come with technical skill and their own capital for industrial development.

BENEFITS/CONTRIBUTION OF INDUSTRIAL DEVELOPMENT IN NEW ENGLAND

- Generation of employment opportunity to 1000 people in the region. This made them earns income to improve on their standard of living.
- Generation of foreign exchange through export of industrial product to other countries.
- Improving the standard of living of people from the income and higher payment earn from the industries.
- It led to development of infrastructure such as road railway and power station which provide social services to the people.
- It led to the growth and development of urban centres e.g. Boston, New bed ford, New port, etc.
- It diversified the economy of New England which reduces over reliance on agriculture and mining.
- Industrialization led to development of research institution for training skilled labour to handle industrial activity.
- It generate revenue to the government through taxes impose on the industries and the workers.

- It provided market for agricultural, mineral and forest product such as milk, oil, natural gas etc.

PROBLEM RESULTING FROM INDUSTRIAL DEVELOPMENT IN NEW ENGLAND

- Severe pollution of the environment e.g. land, water and air from industrial waste which are discharge.
- Overcrowding resulting in to poor sanitation due to large number of people.
- Shortage of land for expansion of industrial facilities leading to slum development around the industrial region.
- Over population in the industrial centres leading to unemployment and high cost of living.
- Over congestion in the industrial centres due to indequate facilities leading to accident and easy spread of diseases.
- The occurrence of urban related problem like high crime rates, prostitution, unemployment.
- High cost of living in term of food, housing, transport and recreational facility.

PROBLEMS FACING INDUSTRIAL DEVELOPMENT OF NEW ENGLAND

- High cost of labour as a result of looking for labour from other country. This also results into high cost of production.
- Competitions for market due to over industrial production and cheaper commodities produce from Japan, China etc.
- Strict environmental regulations which have made many industries to relocated their manufacturing operation in the countries with less restrictive regulation such as Mexico, Brazil, etc.
- High cost of borrowing money from financial institution which discourage additional investment in industrial development.
- Shortage of labour since most people are attracted to work in a more paying services such as hotels, tourist resort, transport sector, etc.
- Shortage of raw material due to their exhaustion and depletion e.g. cotton and mineral resources.

- Periodic water shortage which affected the production of HEP to run the industries.
- The harsh weather condition with humid continental short summer and long cool winter which discouraged people from going to work in the industrial areas of New England.

TOPIC 8

THE DEVELOPMENT OF A SEMI-ARID AREAS

A CASE STUDY OF SOUTHERN CALIFORNIA

The Southern California is among the region which is very difficult to develop this is because of the following reasons:-

The rage land scape, harsh climatic condition, infertile soil, infested with pest and diseases, geologically unstable, poor drainage and lack of mineral. This made the region to be refers to as the region of difficulties.

LOCATION OF CALIFORNIA

California is one of the state in USA. It is located in the south western part of the country. It is border by Pacific Ocean in the west, Oregon State in the north. Nevada to the East and Mexico in the south.

Sanfransico is the largest city in the State while city like Los Angeles and Santiago are very important city with various functions.

RELIEF OF CALIFORNIA

California can be divided into three major regions. This include the coastal ranges, the Sierra Nevada Mountain ranges, the central valley.

THE COASTAL RANGES

This coastal ranges raise from the sea level toward the east. The relief consist of low fold mountain system which run parallel to Pacific coast.

SIERRA NEVADA MOUNTAIN RANGES

This mountain ranges run from the north to the south in the eastern part of the State. The Sierra Nevada mountain ranges joined with the coastal ranges just south of Bakersfield.

THE CENTRAL VALLEY

This is the valley of California which is about 720km long lying between the coastal ranges and Sierra Nevada mountain ranges. This region comprises of the valley of Sacramento River of the north San Joaquin River in the south.

The valley flow of central valley is broad and generally flat with thick deposit of gravel and silt washed down from the Seria Nevada mountain region.

DRAINAGE OF CALIFORNIA

California is drained by two large river namely: River Sacramento and River San Joaquin. Both rivers flow through the central valley because they originate from the highland area of Seria Nevada mountain region.

SOIL OF CALIFORNIA

The most productive soil in California are the alluvial soil of the central valley as well as the imperial, San Fernando, Salinas and Santa Clara valley.

The soil in the central valley comprise of material wash down from the surrounding mountain which are very productive when irrigated.

CLIMATE OF CALIFORNIA

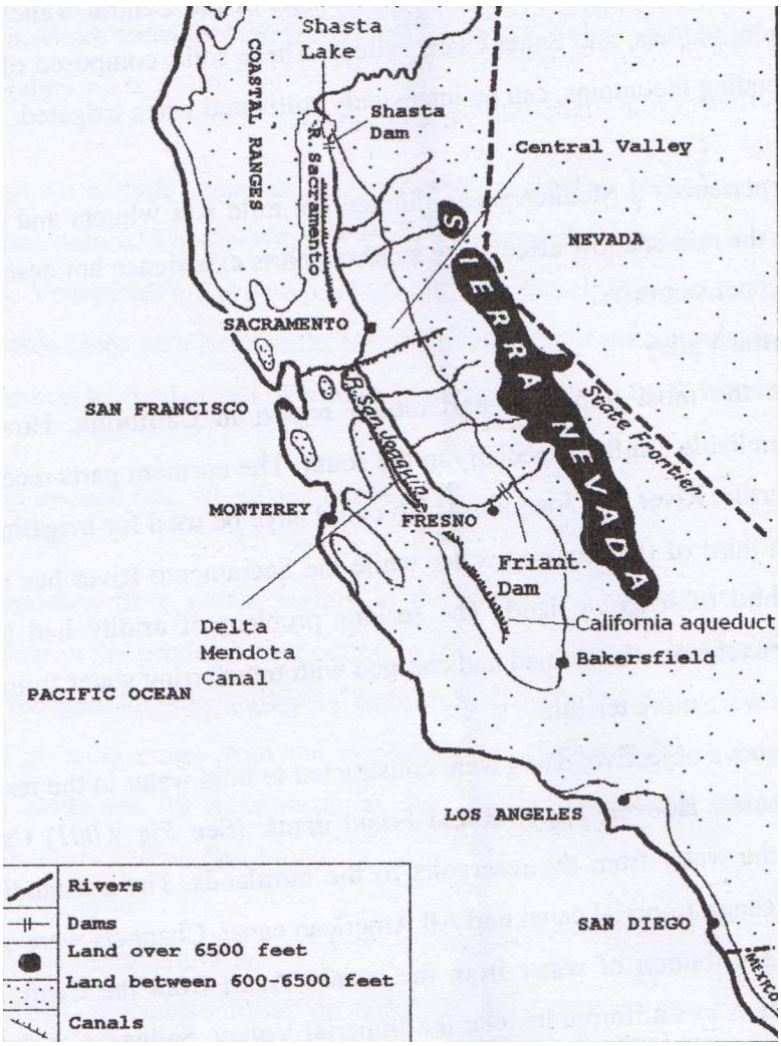
The central valley experience Mediterranean climate with mild wet winter and hot dry summer.

Rainfall is low due to rain shadow effects. The southern part experienced hot desert condition with very warm winter and hot summer. Rainfall varies from 760mm to less than 150mm at the southern end.

VEGETATION OF CALIFORNIA

Mediterranean vegetation dominate the area with ever green shrubs and small trees especially in the northern parts of the central valley. In the southern central valley, plant growth tends to be sparse throughout these areas consisting of cacti, chaparral and other desert species.

SKETCH MAP SHOWING MAIN RELIEF, DRAINAGE AND TOWNS



AGRICULTURE IN CALIFORNIA

(THE CENTRAL VALLEY IRRIGATION PROJECT)

TYPES OF CROPS GROWN IN THE CENTRAL VALLEY OF CALIFORNIA

- **Fruits** e.g. oranges, lemons, grapes, apples, avocados e.t.c.
- **Vegetables** like carrot, tomatoes, cabbages, onion, lima beans e.t.c.
- **Cereals**. This includes rice, wheat and maize.
- **Fodder** crops this include hay and alfalfa
- **Fibres**. Cotton is the main fibres here.

FACTORS THAT HAVE FAVOURED SUCCESSFUL IRRIGATION FARMING IN THE CALIFORNIA

Physical factors

- The gently sloppy land scape in the central valley and the Southern part of California which makes mechanization easy.
- Availability of large volume of water supplied by River Sacramento and R. San Joaquin use for irrigation.
- The presence of fertile alluvial soil deposited by River Sacramento and San Joaquin favoured the growth of crops.
- The dry climate is an added advantage to the growth, maturity and harvesting of the crops.
- The hot climate discourage the growth of pest and disease within the region.

Other factors

- High level of technology use in the construction of dams, canal and aqueducts.
- Availability of large sum of capital to set up and maintain the irrigation project.
- Existence of large market for the products of the central valley both locally and internationally.
- The use of skilled labour in maintaining irrigation and growing of crops in the central valley.
- Existence of well-developed transport network by road, railway and air for transporting the agricultural products from California.
- The various processing industries for processing the product until required by a consumer.
- The favourable/supportive government policy for putting up the irrigation scheme and it maintenance.

BENEFIT/CONTRIBUTION OF IRRIGATION FARMING TO THE ECONOMY OF CALIFORNIA

- It has converted waste or marginal land into a more productive land through irrigation for farming.
- Control of flooding of R. Sacramento and San Joaquin through dam construction.
- The central valley irrigation projects provides employment opportunity to the people through which they earn income to improve their standard of living.
- It stimulated the growth of agro-based industries such as fruit canning, juice making, and textile industries.
- It has stimulated the development of infrastructure e.g. road, railway, ware houses etc.
- The irrigation project provides training opportunities to farmers concerning modern methods of farming e.g. fertilizer application, use of insecticide etc.
- The project act as source of government revenue through taxes paid to the government of California. This revenue is used for the construction of road, schools etc.
- The project provide water through dams and canal for domestic and industrial use.
- It is the source of tourist attraction which earns Californiaforeign exchange e.g. dams and canals.
- Provision of food to feed the population
- Promotion of international relations between California and other trading countries eg japan, uk,Canada etc.

PROBLEM RESULTING FROM THE ESTABLISHMENT OF THE CENTRAL VALLEY IRRIGATION PROJECT.

- It has encourage the spread of water borne diseases such as bilharzia in the central valley.
- Excessive soil salinity due to excessive evaporation during irrigation.
- Over pollution of R. Sacramento and soil in the central valley due to excessive use of fertilizer and chemicals.
- Displacement of people in the central valley when the dam and canals were being constructed.

- Constant fluctuation in the water flow of river Sacramento and San Joaquin led to crop failure and low crop yield.
- Irrigation farming has encourage easy spread of water weeds such as rhizomes which has led to reduction of land productivities.

MARKETING GARDENING IN CALIFORNIA

This refers to the growing of fruits, vegetables and flowers to feed the urban area. In California market gardening is concentrated in the central valley.

TYPES OF MARKET GARDENING

Fruits. Oranges, strawberry, avocados, melon, grapes etc.

Vegetables .tomatoes, carrots, cabbages, onions Lima beans etc.

The major market gardening are San Francisco, Sacramento and Oakland.

CHARACTERISTICS OF MARKET GARDENING AS PRACTICE IN CALIFORNIA

- It involves the growing of fruits, flower and vegetable.
- The fruit, flower and vegetable are grown for sale or commercial purpose.
- Irrigation is applied to avoid crop failure due to drought.
- It involves scientific method of cultivation were fertilizers is applied, insecticides and pesticides are used.
- The products are sold while they are still fresh.
- The market gardening plots are highly mechanized where various machines are used.
- The products are highly demanded in the nearby urban centre.
- Intensive cultivation is practices where the land is intensively cultivated.

FACTORS THAT HAVE FAVOURED MARKET GARDENING IN CALIFORNIA

- The presence of large land area in the central valley where market gardening are established e.g. Fresno, Oakland and Sacramento valley.
- The ideal Mediterranean climate with hot and sunny summers which support crop ripening and a maid winter for crop growth.

- Relatively flat land scape in the central valley which allows mechanisation and irrigation.
- Availability of sufficient water supplies for irrigation from R. Sacramento and San Joaquin.
- The presence of fertile well drained alluvial soil deposited from Sierra Nevada ranges.
- Presence of efficient/well developed transport network by road, railway, air, water and channel for distribution and marketing of crop product.
- Presence of large sum of capital invested in purchasing farm machinery, chemical and fertilizer.
- The high level of technology involving the use of refrigerated Trucks, construction of channels. Etc.
- Supportive government policy that gives tax incentive to the farmers, looks for the market, advertise and construct transport network.
- Availability of ready market for the farm product within California, locally in Los Angeles or San Francisco and externally in states of Tennessee and Texas.
- Presence of skilled labour force with experience in market Gardening activities.

BENEFIT OF MARKET GARDENING TO CALIFORNIA

- Source of income to the farmers through the sale of vegetable and fruits.
- It provides food stuff like tomatoes, onion to people hence improving on diet and standard of living.
- Source of government revenue through taxation of farmers.
- Promote economic diversification reducing over reliance on fishing and tourism.
- Promotes international co-operation between California and other country in UK and Europe due to import and export.
- Provides raw material for agro base industries such as fruit canning, fruits industry.
- Provides employment opportunity to farmers hence source of income to improve their standard of living.

- Provides market for industrial products such as fertilizers, chemical and other farm machinery e.g. Tractor.
- It has encourages urbanisation in which several town developed such as Los Angeles.

DISADVANTAGES OF MARKET GARDENING

- Overuse of fertilizers and chemicals leads to land degradation.
- Overuse of irrigation leads to soil salination (increase of salt solution in the soil) hence decline in land production.
- Leads to urbanization and it related evils such as slum development, over congestion etc.
- It has led to reclamation of swamps near urban centres and this has destroyed the habitant of wild life as well as destroyed water cycle.
- Over use of chemical and pesticides contaminate the crops grown hence causing health problem.

PROBLEMS FACING MARKET GARDENING IN CALIFORNIA

- Soil exhaustion due to monoculture reducing crop yields
- Occasional occurrence of pests and diseases which destroyed the crop hence discouraging the farmers.
- Price fluctuation due to over production limiting income from the fruits and vegetable.
- Competition for market due to over production which reduces the profit from Market Gardening.
- Most of the product from Market Gardening are perishable which can easily get destroyed if it takes long and so they are ever sold at low prices.
- Prolong drought in some season which delay crop growing and result into low yields.
- Over dependence of foreign market leading to high cost incurred
- Constant occurrenceof pest and diseases reducing the values of the crops

INDUSRTIALIZATION IN CALIFORNIA

A wide range of industries exist in California. These industries are found in the major industrial centres i.e.

San Francisco, industries in these region include food processing e.g. fruits canning and vegetable canning, meat packing, electronic equipments, textile/clothes making industries, furniture, ship building, oil refineries, grain milling, steel and iron production industries and aircraft industries.

Los Angeles. The main industries in this city and port include, film industries, (Holly Wood), aircraft industries, food processing, oil refineries, iron and steel production, textile and garment, furniture, electronic production, pharmaceutical and detergent industries.

San Diego. The city has industries dealing in food processing, Automobiles, electronic, ship building, electric equipment, air craft and machineries industries.

FACTORS FAVOURING THE DEVELOPMENT OF INDUSTRIES IN CALIFORNIA

- The existence of variety of raw material such as cotton for textile industries, fruits and vegetables for food processing industries and iron ore for steel and iron industries.
- Existence of reliable water supply from river Sacramento, San Joaquin and R. Colorado.
- Availability of cheap and adequate land for establishment of industries in Los Angeles and San Diego.
- Existence of well-developed transport network inform of electrified railway network standard tarmac road that facilitate distribution of raw materials and finish product.
- The presence of skilled labour forces inform of electrical, mechanical and chemical engineers.
- Availability of ready market for industrial product locally from the large population and frozen market such as Europe, Germany and Africa.
- Production huge electrical power for running the machine produce at Horse dam.

- Existence of high level of technology such as the use of robot and Automation.
- Availability of large sum of capital invested in buying machine, raw materials and pay labour.
- The intensive recharge which is carried out in Los Angeles, San Francisco and SanDiego to improve on quality and quantity of industrial products.

CONTRIBUTION OF INDUSTRIAL SECTOR IN THE DEVELOPMENT OF CALIFORNIA

- It is a source of foreign exchange from the export of industrial product.
- It generates employment opportunity to many people in which the people could earn income to improve their standard of living.
- It led to development of transport route e.g. road, railway and air.
- It stimulated the development of hydroelectric power station which is use even for domestic purposes.
- It diversified the economy of California thus reducing over reliance on Agriculture, mining etc.
- It is a source of government revenue through taxing the workers in the industries, industrial compound
- It provide market for raw materials from agricultural and mining sectors.
- It promotes international relationship between California and other countries due to import and export of industrial products.
- It led to urbanization were cities and port such as Los Angeles, San Francisco development.
- Led to improvement of infrastructure such as health centre, recreational centres,
- Industrialisation provide consumable good for the people of California.
- It has encourage research through improving on method of production, quality.

PROBLEM RESULTING FROM INDUSTRIAL DEVELOPMENT IN CALIFORNIA

Environmental problem

- Pollution of air, water and land due to release of carbondioxide into the air or damping of industrial waste in water or any how on land.
- Land degradation due to construction of industries.
- Deforestation in the process of putting infrastructure such as road, store and industrial buildings.
- Loss of valuable land which could have been use for agriculture as most land have been occupied by industries.
- Exhaustion of natural resources like mineral needed by the industries.
- Soil erosion due to over use of land or clearing of vegetation for putting up industries.
- Encroachment on gazetted area due to high demand of land for putting industries e.g. forest resources.

Other problems.

- Overcrowding in the region due to increase population of industrial workers.
- High cost of living due to increase demand for the various goods due to increase population.
- Shortage of social services e.g. water, health facilities etc.
- Leads to urbanization with it related problem such as prostitution, theft, congestion etc.
- It leads to displacement of people as a result of high demand of land.
- There are cases of accident which are common due to over congestion in the region.

TOPIC 9

THE DEVELOPMENT OF AGRICULTURE AND INDUSTRIES ON THE COTTON BELT IN THE SOUTH

THE COTTON BELT

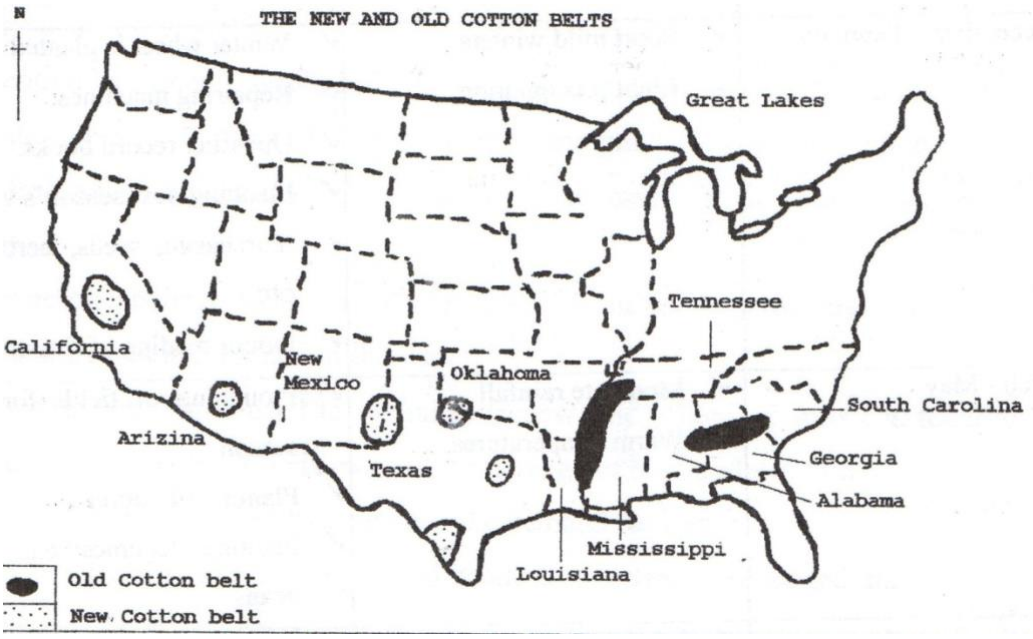
The cotton belt is the state famous Agricultural region in the Southern state of USA were cotton was grown as the main crop.

The region within cotton belt include Texas, Louisiana, Arizonian, Mississippi, Albama, Georgia, North Carolina, South Carolina, and Virginia.

The economy of the region was original base on cotton growing belt now many changes have taken place in the cotton belt. Cotton is no longer the dominant crop grown and in most part of a region manufacturing industries have replaced agriculture.

In the cotton belt cotton growing shifted to the western state from the southern state.

THE SKETCHMAP OF COTTON BELT SHOWING LOCATION OF STATE OF OLD COTTON AND NEW COTTON BELT(16)



FACTORS THAT FAVOURED COTTON GROWING IN THE OLD COTTON BELT

Physical factors.

- ✓ Availability of adequate and heavy rainfall between 500-1000mm in the first 60 days and reopening of cotton.
- ✓ Hot summer temperature ranging between 23-270C good for ripening and harvesting cotton.
- ✓ The presence of fertile well drainage day alluvial and loam soil for vegetative growth of cotton and ripening.
- ✓ The existence of free froze period of 200 days in the growing period of cotton.
- ✓ Availability of large land for growing of cotton on the large scale.
- ✓ The gently sloping land scape for easy cultivation and mechanization.

Human factors

- ✓ Availability of cheap slave labour provided by the slave to work on the cotton plantation.
- ✓ The discovery of ginning machines which make work of cotton ginning much easies.
- ✓ Availability of large market for cotton especially in Western Europe.
- ✓ Availability of large sum of capital to research agricultural equipment such as machine and farm implements.

CHANGES WHICH TOOK PLACE IN THE COTTON BELT

Disrupted activities in the old cotton belt and the salve were made free after the America war.

Shared cropping was introduced because plantation fell into disorder.

The large plantation was sub divided into fifteen hectare farm each was worked by free slave and their families who pay shared of the main crop to the owners of the land.

Severe soil erosion set in leading to decline in crop production and wide spread of poverty.

FACTORS THAT LED TO DECLINE IN COTTON PRODUCTION IN THE OLD COTTON BELT.

- ➢ Soil exhaustion due to monoculture had led to low crop yield hence decline
- ➢ Severe soil erosion has led to loss of soil fertility and hence low crop production and so decline.
- ➢ The attack from pest and diseases such as ball weevils due to humid climatic condition.
- ➢ Shortage of labour to work on the farm as the slave labour had been stopped.
- ➢ Introduction of new crop to improve on the soil fertility has limited the land area under cotton.
- ➢ Introduction of synthetic fibres which reduce the demand for cotton.
- ➢ The price fluctuation characterise by low price and income earn from cotton discourage the farmer and many abandon cotton growing.

- Introduction of livestock rearing where many cotton field in some areas were replace with pasture to feed the cattle.
- Many Agricultural workers look for better paying jobs in the emerging industries.
- The government policy of compensating farmers for their land for the purpose of planting trees and ranching scheme.
- The irrigational practice open up in a dry area to lead to the decline of cotton growing in the cotton belt.

NEW COTTON BELT

As a result of the change in the old cotton growing shifted west ward to the state of California, Arizona, New Mexico, Texas, Oklahoma or the new cotton belt.

FACTORS THAT HAVE FAVOURED COTTON GROWING IN THE NEW COTTON BELT.

- The relief of new cotton belt is generally flatter than in the south east for easy mechanization.
- Availability of sufficient water supply for irrigation from red rivers, Altus reservoirs which is well connected with change for irrigation in the New Cotton belt.
- Presence of fertile chernozonee and chestnut soil in the Texas for Kalohama and Mexico and fertile alluvial soil in San Joaquin valley.
- The warm unit climatic condition and dry condition in the new cotton belt lead to little growth of weed.
- The presence of light soil in the new cotton which are easy to cultivate.
- The dry condition in the New limit the growth and spread of cotton weevil a pest which has been destroying cotton in the south east i.e. old cotton belt.
- Mechanization in full scale which has solve the problem of shortage due to freeing of the slaves.

- High level of technology involving the construction of dams and aqueducts that enabled easy transfer of large quantity of water for large scale irrigation.
- Availability of sufficient capital to set up irrigation scheme for cotton and to purchase modern machinery.
- Existence of extensive land in the new cotton belt. For cotton growing.
- Existence of large market for cotton produce in the new cotton belt due to it quality.
- The presence of well-developed transport network linking the cotton producing areas in various places.

PROBLEM FACING COTTON GROWING IN THE NEW COTTON BELT

- Severe soil exhaustion due to over cultivation of the land
- Over pollution of soil due to excessive use of fertilizer and chemical on the farm affecting living microorganism in the soil.
- Constant price fluctuation of Agricultural products including cotton due to over production lowering micro-organism in the soil.
- Shift competition for market with other country producing cotton e.g. China, Sudan and Egypt.
- High level of population pressure mainly due to immigrants from countries in South America and Caribbean countries which limits available land for Agriculture.
- Occasional draught which lead to crop failure in Texas and New Mexico.
- Constant land fragmentation which limits land for expansion of cotton farms.
- Dangerous Pest and diseases like cotton weevils which reduce the quality and quantity of cotton.

SOLUTION TO THE PROBLEMS

- Use of fertilizer and manure to restore soil fertility and soil structure.
- Mechanisation is practice to solve the problem of labour shortage during planting weeding and spraying with pesticide, insecticide and other chemical to combat pest and disease.

- The use of herbicide and other weeds killer to destroy weeds of their life cycle.
- Crop rotation is practice to maintain soil fertility and to avoid monoculture.
- Subsidization by the government to reduce production coast and competition from other country.
- Irrigation is practice were rainfall is inadequate in the state of California, Arizona, New Mexico.
- Importing labour/use of migrant labour from Africa, Mexico in the busy period of cultivation.
- Land cononsolidation to reduce land fragmentation.
- Increase research to widen market for the crop.

CHANGES IN THE SOUTH

Today the south has undergone many changes which include the following:-

- Diversification of agricultural sector through introduction of new crops e.g. tobacco, maize, bean etc. Large scale animal rearing has been introduce where beef, dairy and pig farms were set up. This diversification reduces the losses in case of pest and draught which could lead to crop failure.
- Mechanization is practice with mode manual labour unnecessary e.g. Hand picking of cotton.
- Application of fertilizers and crop rotation was practiced in other to maintain soil fertility in crop rotation, nitrogen bacteria were cultivated e.g. peas, beans, clove and alfalfa.
- The farms are scientifically control and managed through the use of herbicide to control weed and chemical to control pest and diseases.
- Specialization in the agricultural sectors by farmers e.g. those dealing in sisal production, ranching, piggery and poultry.

EFFECTS OF COTTON GROWING ON THE PHYSICAL ENVIRONMENT IN THE SOUTH

- Destruction of natural land scape through deforestation when constructing transport route.
- Promotion of soil erosion when the land is cleared for construction.
- Environmental degradation due to destruction of forest covers.

- Soil exhaustion due to over cultivation.
- Pollution of water, air and land due to overused of chemical and fertilizer on the farm.
- It lead to urbanization with its related problem like congestion, poor sanitation, etc.
- Encroachment on gazetted area due to increase population and land shortage.
- Constant siltation of rivers as most cotton stalks are dumped in the river valley.

CONTRIBUTION OF AGRICULTURIAL SECTORS TO THE DEVELOPMENT OF THE SOUTH.

It has generated the employment opportunity to the farmers, transporters and others

INDUSTRIALIZATION IN THE SOUTHERN USA

The greatest change in the southern California has been the establishment of industries. There are various industries establish in the southern California this industries include:-

- **Petro chemical industries**. This industries produce agricultural fertilizer, chemical, paints, pesticides, etc
- **Electronic industries**. This is engaged in the production of computers, Television sets, amplifiers e.t.c
- **Engineering industries**. This industries include iron and steel industries, metal fabrication, Automobile machine spare part.
- **Food processing industries**. This deals in the processing of diary producteg , beef, butter and cheese.
- **Textile industries**. This deals in the production of clothes.
- **Printing and publishing industries**. This deals in production of printers materials like newspapers, magazines and books.
- **Mining industries**. Deals in oil and natural gas and iron bars.

MAJOR INDUSTRIAL IN THE SOUTHERN COTTON BELT

- **Houston;** the main industries in this city include;- oil refinery, engineering, cheap building, electronic, petrochemical, iron and steel, textile industries, printing and publishing.
- **New Orleans.** Industries include petroleum refining, food processing, textile, sugar refineries, cheap building.
- **Birmingham.** Industries include, aircraft, food processing, Auto mobile, chemical, metal fabrication, pulp and papers.
- **Dallas.** This city concentrate on technology related product including, computers, biomedical product and electronics.
- **Mobile city in Albama**. Industries include pulp and papers, petrochemical, food processing, textiles industries etc.
- **Jacksonville**. This is a prohides most industrialist city dealing in productions of chemical, food processing, plastic, paint, pulp and papers product etc.
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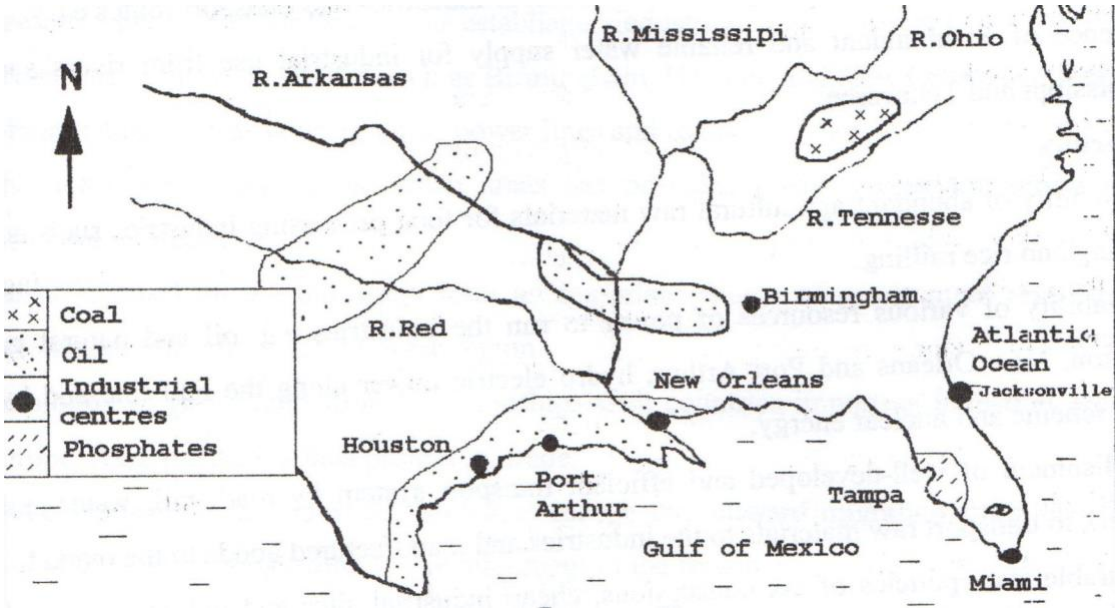
A SKETCH MAP SHOWING MAJOR INDUSTRIAL CENTRE AND MINERIAL FROM THE SOUTH (17)



FACTORS WHICH HAS FAVOURED INDUSTRIAL DEVELOPMENT IN THE SOUTHERN USA

- Availability of sufficient supply of raw material e.g. forest products, agricultural products, oil, petroleum, and iron ore from mining sectors.

- Strategic location and proximity to the international market in Europe, Asia, South America, with a reduce transport coast.
- Relatively flat land scape for easy construction of industrial building, and transport route e.g. roads, railways.
- Availability of sufficient and reliable water supply for industrial use from rivers e.g. Missippipi and Tennessee.
- Availability of sufficient power supply inform of oil and natural gas at Houston, New Orleans and Port Arthur to run the machine.
- The presence of large rivers which are used as cheap mode of transport for raw materials and finish goods.
- Favourable government policies of tax holidays, cheap industrial sites and development of infrastructure which attracts industrialists.
- Availability of sufficient capital for investment from wealthy company used for buying other machines.
- Availability of large market for the industrial products both at home like Houston, Port Arthur as well as abroad.
- High level of technology eg automation of industries ,the use of robots
- Availability of highly skilled labour force who works as engineers and machine operators
- Existence of well-developed transport network by roads ,railways water and air

BENEFITS OF INDUSTRIAL DEVELOPEMNT IN THE SOUTH

- Employment opportunity to the people working in the industries and they earn income to improve their standard of living.
- Economic cooperation between the south and the north has been created due the steady supply of industrial products .
- Foreign exchange is earned through manufactured commodities exported to other countries eg, canned fruits to Canada and Europe.
- The people standard of living has improve because of high income.
- The economy of the south has been diversified hence reduction on over reliance on tourism and agriculture.
- It led to infrastructure development like road and railway line.

- Urban centres have developed such as Birmingham, Houston and New Orleans with better infrastructures and social services.
- The industries provided market for agricultural product like food for the workers in industries, raw materials for agro base industries.
- It is a source of government revenue through taxes impose on industries and the workers.
- Promotion of international relationship with the country which are source of raw material and market manufactured goods

PROBLEMS FACING INDUSTRIAL DEVELOPMENT IN THE SOUTHERN USA

- Congestion of buildings, traffic and people due to over concentration of industries in few centres such as Houston, New Orleans, Port Arthur and Baton Rouge.
- Pollution of the environment through poisonous industrial fumes and dumping industrial waste in water hence affecting the aquatic life.
- Competition for market for goods produced in other regions like Japan and China.
- Limited room for expansion in the industrialized towns due to over population.
- Depletion of raw materials due to large scale operation e.g. oil and gas reserves in the State of Florida.
- High cost of labour resulting in high production costs which reduces the demand for the goods produced.
- High cost of industries inputs which results in high production costs.
- The demand for locally manufactured goods is declining due to the several factors like economic depressions characterized by low output and sales.