

*S2, Term II: November 4, 2020*

*Geography notes:*

*RegionII: The Rhineland Geography.*

*Activity:*

- (i) *Print out a hard of this work and Copy these notes in your note books.*
- (ii) *If alternatively you are interested in the text book the better call 0775534057 and shall be delivered to you.*
- (iii) *Be free to call any of your teachers(Mr. Ochieng H @ 0702399834 for explanations.*
- (iv) *Use the same contact for explanations, send your questions through WhatAssp 0775534057.*

## TOPIC: BELGIUM

### Introduction

**Belgium** officially the **Kingdom of Belgium**, is a country in Northwest Europe. It is a founding member of the European Union (E.U) and hosts its headquarters, as well as those of other major international organizations, including The North Atlantic Treaty Organization (NATO).

It has prospered in the past half century as a modern, technologically advanced European state.

**Asketch Map Of Belgium Showing The Major Provinces And Cities.**



### Area

Belgium covers a total area of 30,510 sq km, of which land covers 30,230 sq km and water occupies 280 sq km. She has a population of about 10,700,000 people.

**Location:** Belgium is located in Western Europe bordering the North Sea to the North West, France to the south, Netherlands to the North, Luxemburg to the East and Germany to the North – East

## Relief.

### Physical Regions of Belgium.

Belgium has three main geographic regions:

- (i) the coastal plain,
- (ii) the central plateau,
- (iii) the Ardennes highlands.

Belgium has flat coastal plains in the northwest, central rolling hills, rugged mountains of Ardennes Forest in southeast.

### **The coastal plain** (in the north-west):

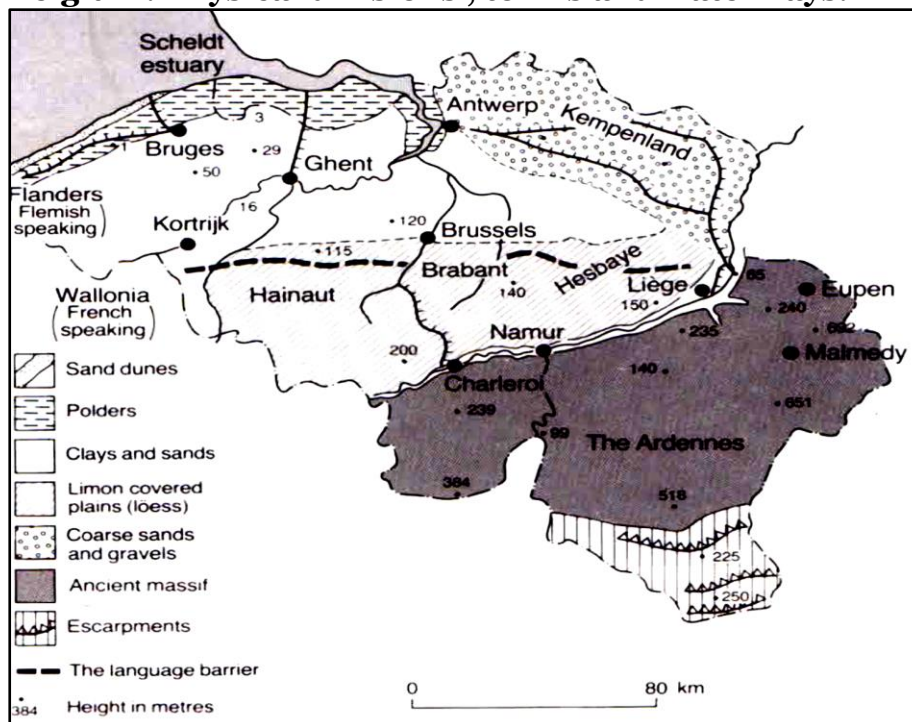
This consists mainly of sand dunes and polders.

**Polders** are areas of land, close to or below sea level that have been reclaimed from the sea, from which they are protected by dikes or, further inland, by fields that have been drained with canals.

### **The Ardennes** (uplands in the south-east):

- This is more rugged than the first two.
- It is a thickly forested plateau,
- very rocky and not very good for farming, which extends into northern France and in Germany where it is named Eifel.
- This is where much of Belgium's wildlife can be found.
- Belgium's highest point, the Signal de Botrange is located in this region at only 694 metres (2,277 ft).
- Belgium has relatively few natural lakes, and none of any great size.

### **Belgium: Physical divisions , towns and waterways.**



### **Belgium's coastline,**

- in the northwest, stretches 66 km (41 mi) along the North Sea.
- A low coastal plain extends inland 16 to 48 km (10 to 30 mi).
- Nearest the North Sea is a low-lying area consisting mainly of sand dunes and polders.
- The polders, sections of land reclaimed from the sea and protected by dikes, were developed between the 13th and 15th centuries.
- Lying farther inland is a flat pastureland drained by canals.
- The coastal plain's elevation ranges from sea level to about 20 m (65 ft).

### **The central plateau:**

- This lies further inland.
- This is a smooth, slowly rising area that has many fertile valleys and is irrigated by many waterways.
- Here one can also find rougher land, including caves and small gorges.
- The central plateau is a gently rolling, slightly elevated area.
- Irrigated by many waterways, it contains a number of wide, fertile valleys with a rich, alluvial soil.
- Caves, grottoes, and ravines are found in parts of this area.

### **The Ardennes highlands,**

- a densely wooded plateau, extends across southeastern Belgium and into northeastern France.
- Located here is Botrange, the highest peak in Belgium, with an elevation of 694 m (2,277 ft).
- The average elevation of the Ardennes highlands is 460 m (1,500 ft).
- The area is generally rocky and poorly suited to agriculture.
- Main land use is forestry.

### **Drainage and Rivers:**

The chief rivers are:

- (i) the Scheldt (known as the Escaut in French)
- (ii) the Maas (most commonly known by its French name, Meuse).
  - The Scheldt and Meuse and their tributaries run slowly through the central plateau to the sea in a generally southwest to northeast direction.
  - Both rise in France and are for the most part navigable throughout Belgium.
  - On the Scheldt, the principal waterway of Belgium, are the ports of Antwerp and Ghent.
  - Although the Scheldt flows through Belgium, the river meets the sea in Netherlands.
  - The chief tributaries of the Scheldt are:
    - 1) the Leie (Lys),
    - 2) Dender (Dendre),
    - 3) Zenne (Senne), and
    - 4) Rupel rivers.
    - 5) The Sambre and
    - 6) Other rivers are the main tributaries of the Meuse.

## **CLIMATE;**

Belgium generally has a temperate climate, with characteristics of:

- (i) cold winters and
- (ii) mild, rainy summers.
- (iii) humid and mild near the sea.
- (iv) a marked increase in the range of temperature occurs farther inland,
- (v) Highly influenced by the moderating maritime conditions.
- (vi) Winters are damp and cool with frequent fogs,
- (vii) The annual mean temperature is around 10 °C.

## **Factors that influence the climate of Belgium:**

Belgium has a temperate, maritime climate predominantly influenced by:

### **1. Air masses from the Atlantic Ocean.**

Rapid and frequent alternation of different air masses separated by fronts gives Belgium considerable variability in weather.

### **2. Frontal conditions moving from the west produce heavy and frequent rainfall, averaging 750 to 1,000 mm a year.**

### **3. Influence of relief:**

- In **the Ardennes highlands** hot summers alternate with cold winters.
- Heavy rains are confined almost exclusively to the highlands.
- Fog and drizzle are common, and April and November are particularly rainy months.
- The Ardennes region, the highest and farthest inland, is the coldest.
- In winter, frost occurs on about 120 days, snow falls on 30 to 35 days, and January mean minimum temperatures are lower than elsewhere.
- In summer, the elevation counteracts the effect of distance inland, and July mean maximum temperatures are the lowest in the country.

### **4. In Brussels, located at the center of the nation, the average temperatures range from - 0° to 5°C in January and from 13° to 22°C in July.**

In Oostend, on the coast, the average range is 1° to 5°C in January and 14° to 20°C in July. Rainfall in Brussels is uniformly spread throughout the year, with a yearly average of 820 mm; mean annual precipitation in Oostende averages 580 mm.

### **5. Proximity to large water bodies like North sea;**

Farther inland, maritime influences become weaker, and the climate becomes more continental, characterized by greater seasonal extremes of temperature.

### **6. Because of relatively high topography,**

- The region has the highest rainfall in Belgium.
- In contrast, the Flanders region enjoys generally hot temperatures throughout the year.
- There are fewer than 60 days of frost and fewer than 15 of snow.

- On the seacoast temperatures reduce to below 50°C and 10°C, respectively.
- There are a few hot days, especially on the coast, where the annual rainfall is the lowest in the country

### The People of Belgium.

- Belgium is home to two main linguistic groups, the Dutch-speakers, mostly **Flemish**, and the French-speakers, mostly **Walloons**, plus a small group of German-speakers.
- Belgium's two largest regions are the Dutch-speaking region of Flanders in the north and the French-speaking southern region of Wallonia.
- The Brussels-Capital Region, officially bilingual, is a mostly French-speaking enclave within the Flemish Region.
- A small German-speaking Community exists in eastern Wallonia.
- Belgium's linguistic diversity and related political and cultural conflicts are reflected in the political history and a complex system of government.

### People of Belgium.

Population	10,403,951 (2008 estimate)
Population density	344 persons per sq km 890 persons per sq mi (2008 estimate)
Urban population distribution	97 percent (2005 estimate)
Rural population distribution	3 percent
Largest cities, with population	Brussels, 1,031,215 Antwerp, 466,203 Ghent, 235,143
Official languages	Dutch, French, German
Chief religious affiliations	Roman Catholic, 81 percent Muslim, 4 percent Protestant, 1 percent
Life expectancy	79.1 years
Infant mortality rate	5 deaths per 1,000 live births
Literacy rate	99 percent

### Land use in Belgium:

Arable land:	27.42%
Permanent crops:	0.69%
Other:	71.89%
<b>Total Land Area:</b>	<b>30,278 sq km</b>

#### Exercise

Draw a Pie – Chart to represent the information given above.

### AGRICULTURE, FORESTRY, AND FISHING

Belgium has favorable conditions for agriculture:

- (i) moderate temperatures,
- (ii) Evenly distributed precipitation, and a long growing season.

- (iii) The Flanders plain, is an area of intensive cultivation.
- (iv) Today, about 28 % of the country is under cultivation.
- (v) Farming engages only 2 percent of the total labor force, but it produces sufficient quantities to make Belgium a net food exporter.
- (vi) About two-thirds of the farms are intensively cultivated units of less than 10 hectares (25 acres).
- (vii) In 2006, the leading crops were sugar beets (5.7 million metric tons), potatoes (2.6 million), wheat (1.6 million), and barley (367,348).
- (viii) Other important crops included **fruits, tomatoes, and flax**.

### **Livestock and dairy farming**

- Are major agricultural industries.
- In 2006 the livestock population of Belgium numbered some 6.3 million pigs, 2.7 million cattle, 153,976 sheep, and 34,799 horses.
- more than one-fifth of Belgium comprises meadows and pastures.
- About one-fourth of Belgium's land area is agricultural and under permanent cultivation;

### **Arable farming:**

#### **Major crops are:**

- (i) sugar beets,
- (ii) chicory,
- (iii) flax,
- (iv) cereal grains, and
- (v) potatoes.
- (vi) fruits,
- (vii) vegetables, and
- (viii) Ornamental plants also are important, particularly in Flanders.
- (ix) Forage crops, barley, oats, potatoes, and
- (x) wheat grown especially in the southeast.

### **Factors that have favored the development of Agriculture in Belgium.**

- The presence of fertile loess soils in the central plateau to support the growth of crops.
- The presence of various rivers like Scheldt, Lys and Meuse which act as transport routes for agricultural products.
- Availability of R. Meuse and Rhine River as a major waterway for the transportation of both agricultural raw materials and finished products to market centers.
- Presence of mild maritime climate characterized by warm wet summers and cold winters support the growth and ripening of variety of crops.
- Existence of undulating relief which encourage easy mechanization of agricultural activities.
- The establishment and growth of co-operative societies which have helped to mobilize the farmers and provide easy access to loans and market their produce.
- Availability of local and foreign market like from both the BENELUX countries and the European Union for agricultural products.
- Existence of high levels of technology like; automation of activities using tractors, use of Green Houses in crop production, etc.
- Availability of favorable government policies that encourages farmers through provision of cheap loan facility, research on crop and animal diseases, including improved variety of breeds.



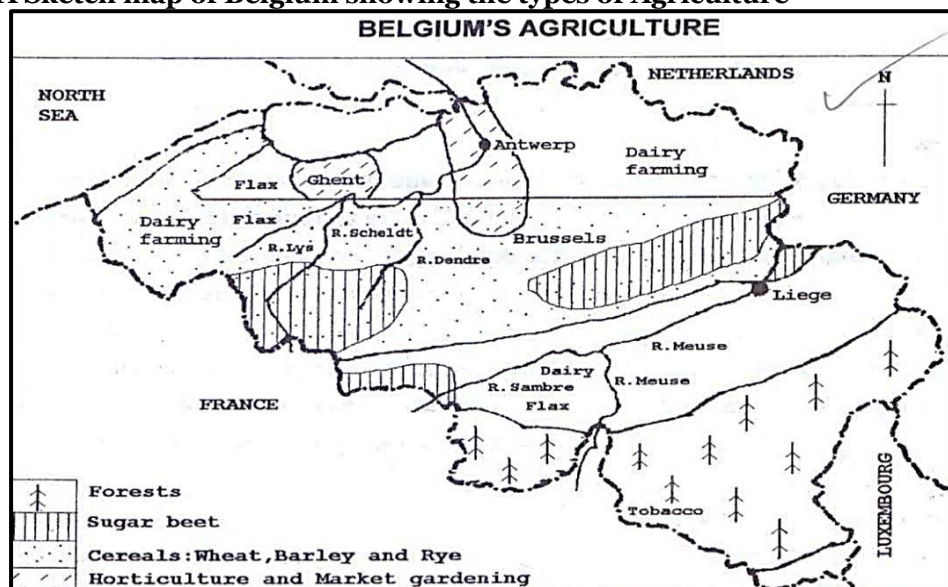
### Explain the Problems faced by farmers in Belgium.

- Shortage of land for expansion for agricultural activities due to loss of land to other sectors of the economy.
- Salination of soil from the sea waters for areas at the coast like the Flanders.
- River floods during heavy rains that increase volumes of water which end up into farms to destroy the crops.
- Shortage of labour especially during the busy periods due to competition for labour from other sectors lead to delay and post-harvest losses.
- Price fluctuations of agricultural products due to over production and economic depressions.
- Extreme environmental pollution from excessive use of chemicals for spraying crops and animals, use of fertilizers much of their time to improve soil fertility.
- Traffic congestion at the port causes delays of perishable fresh agricultural products on transit to markets on time.
- Stiff competition for market with other countries like The Netherlands and Germany affect profit margins and demoralize farmers.

### Outline the Benefits of Agriculture to the development of Belgium.

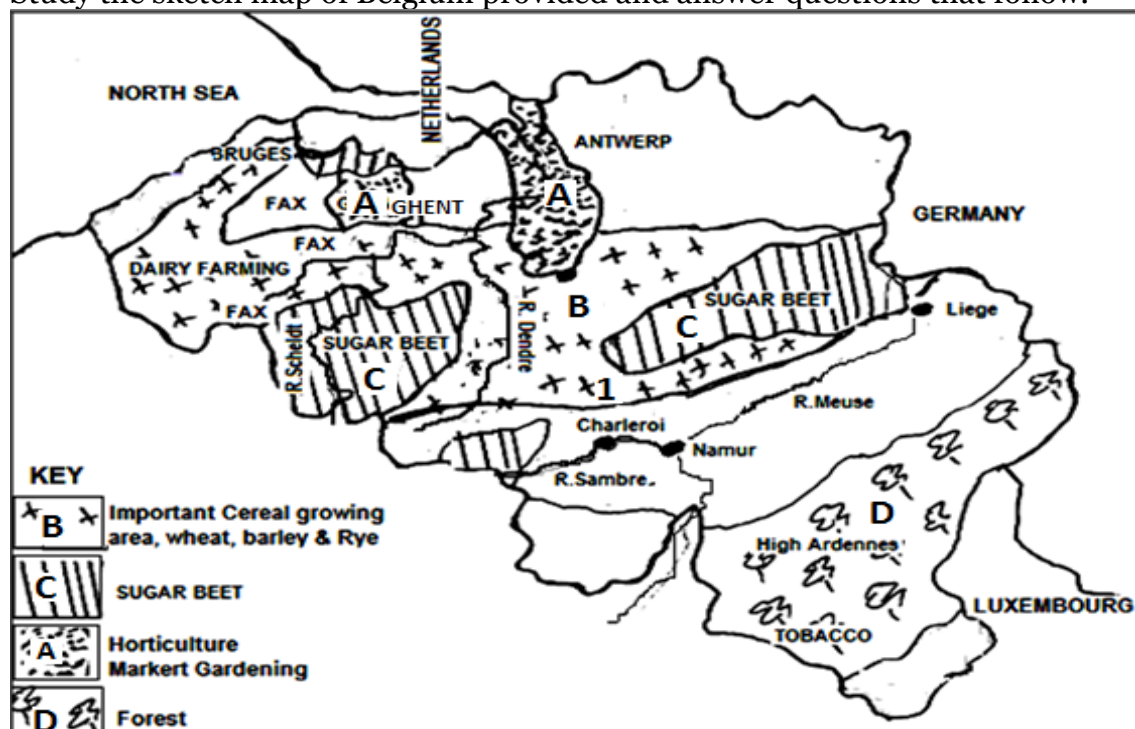
- Promotion of international relations with the countries to which agricultural exports are made.
- Led to generation of foreign exchange through the export of both agricultural raw materials and products to facilitate the provision of services to people.
- Led to development of agro-based industries to provide consumer goods and employment opportunities to people
- Source of revenue to government through taxations required to facilitate provision of services to people.
- Creation of various employment opportunities in agricultural related activities to improve the standard of living of many people directly.
- Source of income to farmers which has improved their standards of living.
- Source of food to the people of Belgium that has improved their diet and health.
- Led to diversification of the economy to reduce over dependence on one sector mainly agriculture helped to widen the sources of revenue to Belgium.

### A Sketch map of Belgium showing the types of Agriculture



### Study Question

Study the sketch map of Belgium provided and answer questions that follow.



- a) Name the:
  - i) Crops grown in areas marked A, B, C, and D.
  - ii) Land use in area marked D.
  - iii) Sea marked: E
  - iv) River marked 1
  - v) Port marked 2
- b) State the importance of the following to Belgium.
  - i) The river marked 1
  - ii) The port marked 2
- c) Describe the factors that have influenced the type of:
  - i) farming in areas marked A.
  - ii) Land use in area marked D on the map.
- d) (i) What are the problems faced by farmers in area marked B?  
 (ii) How are the problems in (d) (i) above being solved.

### C) (i) Farming in areas marked A. (Horticulture and market gardening)

- Existence of a mild maritime climate with relatively warm temperatures to support the growth and ripening of the horticulture products.
- Availability of fertile alluvial soil on the polders and delta regions support the growth of luxuriant growth of horticulture plants for high yields.
- Presence of highly trained skilled farmers to work in the growing horticultural fields.
- Existence of credit facilities extended to the farmers through the cooperatives to boost their capital requirements.
- Availability of advanced research and advisory boards for farmers to consult and provide assistance on management of horticulture fields and marketing.
- Belgium farmers possess along experience in farming provide extra skills in horticulture practice.
- Availability of a ready market for horticulture products both in Belgium and abroad in the neighbouring countries.
- Existence of developed transport and communication systems to transport horticultural products to market centres by the Meuse river waterways, Albert canal, air transport, and roads.
- Existence of high levels of advertisements used through various media platforms like journals, magazines, televisions, documentary, etc.



**ii) Land use in area marked D on the map.**

**Factors that have favored the development of forestry in Belgium**

- Presence of large forested land to promote commercial lumbering and forestry.
- Existence of trees in pure stand for exploitation.
- Presence of moderately heavy rainfall which supports the growth of trees.
- Availability of skilled labour to work in the forestry industry.
- Existence of ready market for forestry products both in Belgium, European countries and other countries in the world.
- Presence of plenty of water from river Sambre, Meuse River to float the logs.
- Availability of stable energy/ power e.g. Oil, Coal, thermal and hydroelectricity to run the machinery in processing wood and powered saws.
- Availability of positive government policy that supports the sector through providing capital, market research and concessions in the forests through licenses.

**d) (i) Explain the Problems faced by Arable farmers in Belgium.**

- Shortage of land for expansion for agricultural activities due to loss of land to other sectors of the economy.
- Salination of soil from the sea waters for areas at the coast like the Flanders.
- River floods during heavy rains that increase volumes of water which end up in farms to destroy the crops.
- Shortage of labour especially during the busy periods due to competition for labour from other sectors leads to delay and post-harvest losses.
- Price fluctuations of agricultural products due to over production and economic depressions.
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- Traffic congestion at the port causes delays of perishable fresh agricultural products on transit to markets on time.
- Stiff competition for market with other countries like The Netherlands and Germany affects profit margins and demoralizes farmers.

**(ii) How are the problems in (d) (i) above being solved.**

- Belgium farmers are organized in cooperative societies to access credit to acquire necessary farm inputs.
- Farmers emphasize intensive production since the land is limited to grow high yielding crops which can mature fast.
- Organic farming is being emphasized by using farming techniques that do not harm the natural environment e.g. use of composted manure, crop rotation, etc.
- Intensive research in disease and pest control is being emphasized to reduce pest and disease outbreaks on animals and plants.
- Building of strong embankments to minimize flooding from river Meuse and canals.
- Diversification of crops is being taken seriously to get crops suitable to climate conditions e.g. cucumber; tomatoes, water melon etc. are introduced.
- Spray crops using chemicals to kill pests and diseases.
- Application of manures and fertilizers to improve soil fertility for high yields.
- Intensive research is being carried out to improve glass house technology and crop maintenance.
- Containerisation in refrigerated trucks and railway wagons or airplanes for easy transport of products.
- Importation of improved seeds by the cooperatives for farmers to buy at subsidised costs.

## **Belgium: Forestry.**

- Forests cover 22 percent of the area of Belgium, and
- wooded areas are used primarily for recreational purposes.
- conifers have been planted, and
- forestry activity has increased; however, timber is still imported for the country's paper industry.

### **Factors that have favored the development of forestry in Belgium.**

- Presence of large forested land to promoted commercial lumbering and forestry.
- Existence of trees in pure stand for exploitation.
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- Availability of stable energy/ power e.g. Oil, Coal, thermal and hydroelectricity to run the machinery in processing wood and powered saws.
- Availability of positive government policy that support the sector through providing capital, market research and concessions in the forests through licenses.
- Supportive government policy that encourages environment conservation.

### **importance of forests:**

- Provides raw materials for forest related industries like paper and pulp, saw mills, etc.
- Source of fuel wood for the natives of Belgium.
- Helps in climate modification through evapo-transpiration lead to formation of convectional rainfall.
- Gaseous exchange in the environment by absorbing carbon dioxide and releasing oxygen through photosynthesis.
- Provides a habitat for fauna promoting tourism as a source of foreign exchange.
- Helps to controls soil erosion through shading off leaves reducing intensity of rain droplets and roots bind soil particles together to maintain soil fertility.
- Wind breakers reducing the effect of destructive air masses.
- Helps in soil formation as roots break down rocks into small particles mixed with decomposed matter.
- Provide recreation grounds for vacations.
- Water catchment areas where rivers stream from like Mosel from Haardt forest and Danube from the Black forest.
- Provides materials for electrification and construction thereby improving people's standards of living.
- Avenues for research and study in zoology, micro-biology, botany, etc.

### **Problems facing forestry sector.**

- Fire outbreak during summer where temperatures rise to 19° C
- Limited labour especially during tree harvesting.
- Difficulty in cutting and transporting logs because during winter the motorable roads get covered with snow while the rivers get frozen.
- Rugged nature of landscape as forests are located in the mountainous areas like high Ardennes.
- Limited transportation networks due to remoteness.
- Forest encroachment by people for settlement, agriculture, industry, etc.
- Accidents during the lumbering process leading to loss of skilled labour
- Over exploitation of forests especially for coniferous trees that are on high demand.
- Illegal cutting of trees leading to loss of valuable tree species.

- Limited capital due to the on-going industrialization.

## **INDUSTRIALISATION IN BELGIUM.**

Belgium was the first country on the European continent to industrialize, following the lead of Britain in the industrial revolution.

- In 2004 manufacturing accounted for only 17 percent of total economic activity.
- Belgium is one of the most industrialized nation in Europe.
- Belgium is still a major producer of iron and steel, although production has fallen since the 1970s.
- About 11 million metric tons of crude steel were produced annually in the early 2000s.
- Belgium also has an old and important nonferrous metal industry. It was, for example, Europe's largest zinc producer into the 1990s, although several European countries have since surpassed Belgium in zinc production.
- Belgium also furnishes metallurgical, chemical, and other industries with copper, lead, tin, and uranium.
- The availability of steel and nonferrous metals has encouraged the manufacture of heavy equipment, especially at Liège, Antwerp, and Brussels.
- Products include **machine tools, railroad cars, diesel engines, pumps, and other industrial equipment.**

Legislation approved in 2003 calls for Belgium to close its seven nuclear reactors between 2015 and 2025. This means that Belgium will have to find a replacement for about two-fifths of its energy supply. Total electric power production was 79 billion kilowatt-hours in 2003.

### **Types of Industries in Belgium**

As a European Industrialized country, Belgium has the following industries.

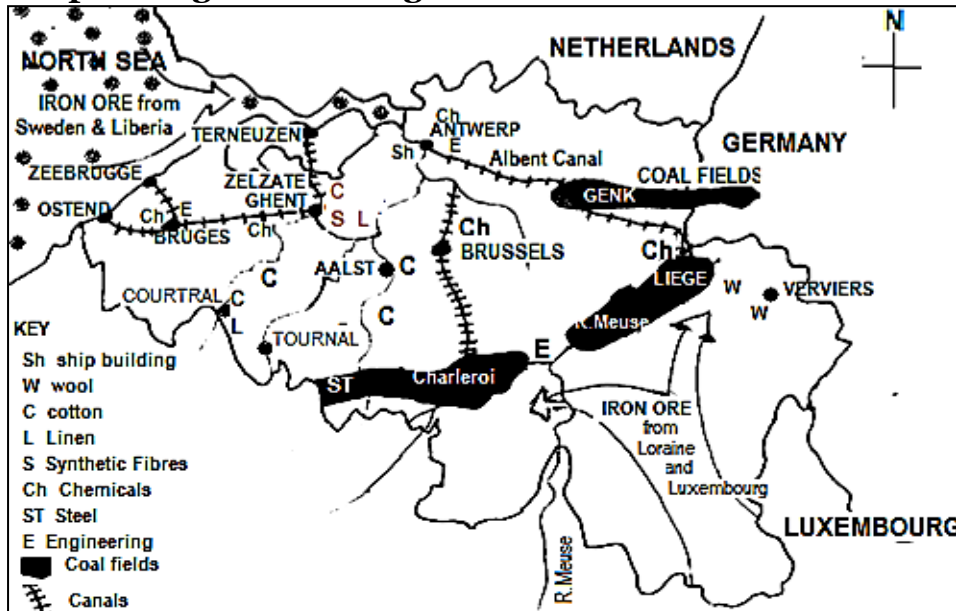
- Engineering and metal products,
- Motor vehicle assembly,
- Transportation equipment,
- Scientific instruments,
- Processed food and beverages,
- Chemicals,
- Iron and steel,
- Textiles,
- Glass,
- Petroleum
- Oil Refining
- Printing and publishing
- Ship building

### **Energy resources of Belgium.**

- The natural resources of Belgium are almost entirely mineral.
  - (i) Coal was mined in abundance for many years, but supplies have been exhausted and the last mine closed in the early 1990s.
  - (ii) Copper,
  - (iii) lead,
  - (iv) zinc.

- (v) has 7 nuclear power plants are the main source of electricity, supplying 57% of the country's electric power.
- (vi) Belgium has rely on imported coal, petroleum, and natural gas.
- (vii) There is greater reliance on renewable energy sources, such as solar power, biomass, and geothermal technologies; a gas-powered generator was also constructed.

### Map of Belgium showing industrial centers



### IRON AND STEEL INDUSTRY.

Has long been the major industrial sector for the Belgian economy. Belgium is the world's leader in steel production for more than a century.

Production of iron and steel declined in 1970's with about 11million metric tons of crude steel annually in the early 2000s.

Iron and steel industry is based in Leige, Mons La Louviere, Charleroi and Huy. The steel mills are close to the Grand Duchy of Luxembourg, south of the Arlon, Zelzace on the banks of the Ghent-Terneuzen canal.

Iron and steel production centres are located at the coast to reduce the cost of transportation of bulky raw materials, iron ore and export of finished products.

### MOTOR VEHICLE ASSEMBLY.

Belgium has a large number of international companies like *Leyland, Ford, and General Motors (Buick, Chevrolet, and Cadillac), Opel, Renault, Volkswagen, and Volvo* assembles cars in Belgium.

In 1999, the country produced 1.3million cars. It also produced specialty vehicles including vans, trucks, buses and minibuses.

95% of the vehicles manufactured in Belgium are exported to the main markets such as France, Germany and the United Kingdom.

The Automotive industry also produces a variety of parts for specialty cars.

The industry specializes in manufacture of cars produced on order which involves in producing products to be used immediately.

Motor vehicle assembly is located at Antwerp, Ghent, and Michelin for Ford, Volvo, and British Leyland by General Motors.

### **THE ENGINEERING INDUSTRY.**

The industry is located in the southern region of Belgium in the cities such as Charleroi, Mons, Liege, Brussels and Antwerp.

The presence of steel and non-ferrous metals has favored the location and manufacture of heavy equipment.

Examples of products produced are; diesel engines, railway equipment, caterpillar tractors, and industrial equipment.

### **GLASS MAKING INDUSTRY.**

Glass is made from silver sand of the Kempenland and Limestone obtained from Sambre-Meuse Basin.

The industry is located in Liege district, Charleroi, Mons and Mol in Kempenland.

Glass is used by car assembly or exported to Germany, United States, France and Italy.

### **DIAMOND CUTTING INDUSTRY.**

Diamond stones are cut, polished and mounted. Mainly located at Antwerp and Kempenland.

Antwerp is the leading diamond-cutting centre in the world after 2<sup>nd</sup> world war producing up to 70% of the world's finished diamonds.

The 19<sup>th</sup> century colonization of Congo was the major factor to the early growth of trade in diamonds.

### **FOOD PROCESSING INDUSTRY.**

The industry is located in Anderlecht, Uccle in Brabant provinces of Brussels.

The industry processes; eggs, chicken, pork, beef, and meat into variety of products like eggs into cakes, cookies, mayonnaise and variety of other products.

The food products are exported to the European Union; mainly France, The Netherlands and Spain.

Preservatives and other food processing ingredients are also exported.

Organic processors like milk, fresh fruits and vegetables are processed into canned or frozen products.

### **The brewery industry;**

Is located in Leuven, is known for the product of chocolate, made from almonds and caramelized sugar wrapped in chocolate and beer. 600 varieties are produced and exported widely.

### **Describe the factors that have favored the development of industries in Belgium.**

- Presence of abundant supply of high grade coal used as energy to run industries from coal fields like Sambre-Meuse.
- Presence of adequate supply of skilled labour from the Belgian population to work in industries.
- Availability of large sums of capital from rich Belgian population to invest in manufacturing industries.
- Existence of a modern transport and communication systems to transport raw materials and manufactured goods to market centers by railways and roads.
- Availability of a favorable government policy towards supporting industrial development by negotiating for low interest loans on behalf of manufacturers.



- Presence of plenty of water supply from rivers Scheldt and Meuse for industrial use and cooling industrial machines.
- Existence of adequate supply of raw materials both agricultural and mineral resources to feed industrial machines for manufacture of quality products.
- The central location of Belgium in the Western Europe richest region with large population close to the iron ore mines near foreign market centers for sell of goods to neighbours in Europe.
- Presence of adequate imported raw materials like iron ore France, Luxembourg and Sweden.
- Presence of Rhine river as important waterway through R. Scheldt and R. Sambre has linked to canal offer accessibility of Belgium to large markets in Europe.
- Availability of high levels of technology to harness nuclear energy, development of petro-chemical industries with high range of products like polythene, ethylene, benzene, plastics to maintain Belgium competitive goods on the market.
- Existence of a long history manufacturing reputation especially the iron and steel industry, Belgian woolen and linen cloth and Lace make Belgian goods highly competitive.
- Availability of abundant resources invested into high levels of research and innovations to produce goods reputable in Europe.

### **Explain the Problems facing the Industries of Belgium.**

- Over dependence on imported raw materials such as iron ore which leads to high cost of production due to high import prices limit profit margins.
- High costs of transportation of iron ore due to bulkiness from the mines to processing centers.
- Low grade iron ore from the Loraine fields leading to low quality products.
- Competition for raw materials with other industrial centers like iron ore for the Ruhr region in Germany.
- Competition for market with other producing countries like Germany and USA for manufactured products.
- Stiff competition for land from activities like urbanization, transport infrastructure, extensive farming has limited space for expansion of industries.
- Unnecessary delays during transportation of raw materials and manufactured goods due to traffic congestion along canals and at ports like Antwerp.
- Depletion of some minerals like coal, iron ore deposits at Mons, Charleroi mines due to over exploitation has led Belgium to rely on imported iron ore from Brazil and Mauritania.
- High costs of labour with 75% of the workforce employed in service sector and just 24% is employed has led to shortage which limits performance.

### **Outline the Measures being taken to improve on manufacturing industry in Belgium.**

- Importation of high grade iron ore from Brazil and Mauritania to feed industries.
- Migration of some industries like the Iron and steel to the coastal areas to reduce transport costs.
- Use of raw materials saving techniques i.e. production of precision goods that are raw material saving. to reduce the costs of production.
- Production of high quality products to minimize competitions.
- Reduction of taxes in order to reduce on the cost of production.
- Diversification of the manufacturing industries to include agro-processing industries.
- Treating industrial discharges before emission to minimize the danger of environmental pollution.
- Emphasis regional cooperation like European Union to widen the market size for manufactured goods.
- Use of raw material saving technology that involves automation of various industrial activities.
- Reclamation of land for expansion of industries pulverization e.g. the Flanders.
- Recycling of industrial scrap for re-use e.g. iron scrap.

### **Contribution of the Industrial sector to the development of Belgium.**

- The industries have created different employment opportunities related to industrial activities to many people which have improved their standard of living.
- Source of government revenue through the taxes collected to facilitate the provision of social services to people.
- Industries earn the country foreign exchange to Belgium through the exportation of industrial products to enable provision of various goods and services to people
- Industries have led to improvement of international relations between Belgium and the countries through exports and imports to trade in industrial products.
- Industrialization leads to economic diversification to reduce dependence on one sector like agriculture for revenue.
- Industries provided market for the agricultural produce bought as raw materials for the agro – industries.

### **Effects of industrialization on physical environment in Belgium.**

- Pollution of land, air and water bodies through of industrial wastes like gasses, industrial fumes that lead to environmental degradation.
- Severe effects on climate change due to greenhouse gases and fumes in the atmosphere lead to the destruction of the ozone layer and degradation of environment.
- Formation of fog in industrial cities leads to poor visibility and eventually traffic accidents.
- Loss of aquatic life due dumping of poisonous Industrial wastes in water bodies lead to degradation of environment.
- Destruction of forests cover during establishment and growth of Industries have led to serious effects on climate and destruction of bio-diversity.
- Exhaustion of mineral resources from some has led to closure some mines.
- Overcrowding of people has led to easy spread of diseases.
- High crime rates such as gambling, theft, rape, prostitution, etc has led to social insecurity.
- Unemployment due to large population attracted by industrialisation leading to low standard of living.
- Displacement of people leading to high costs of resettlement.

### **Positive effects.**

- Increased the standards of living of people due to increased incomes to people employed.
- Led to the development of socio- economic infrastructure such as schools, roads, railways, etc. to facilitate extension social services and goods to people.
- Diversification of the economy reducing over dependence on one sector to widen the tax base for the country.
- Provision of revenue to government through taxes for improved service delivery to people.
- Provision of foreign exchange through export of iron manufactured industrial products to facilitate the delivery of social services to people of Belgium.
- Led to development of urban centres like Antwerp, and Brussels to extend services nearer to people like commercial, administrative, residential, etc.
- Promotes tourism that earns foreign exchange to the government as a source of income.
- Provision of employment opportunities to improve the standard of living of people.
- Provides market for both agricultural, mineral and forestry products locally and finished products abroad.
- Led to improved international relationship between importing and exporting countries to trade.

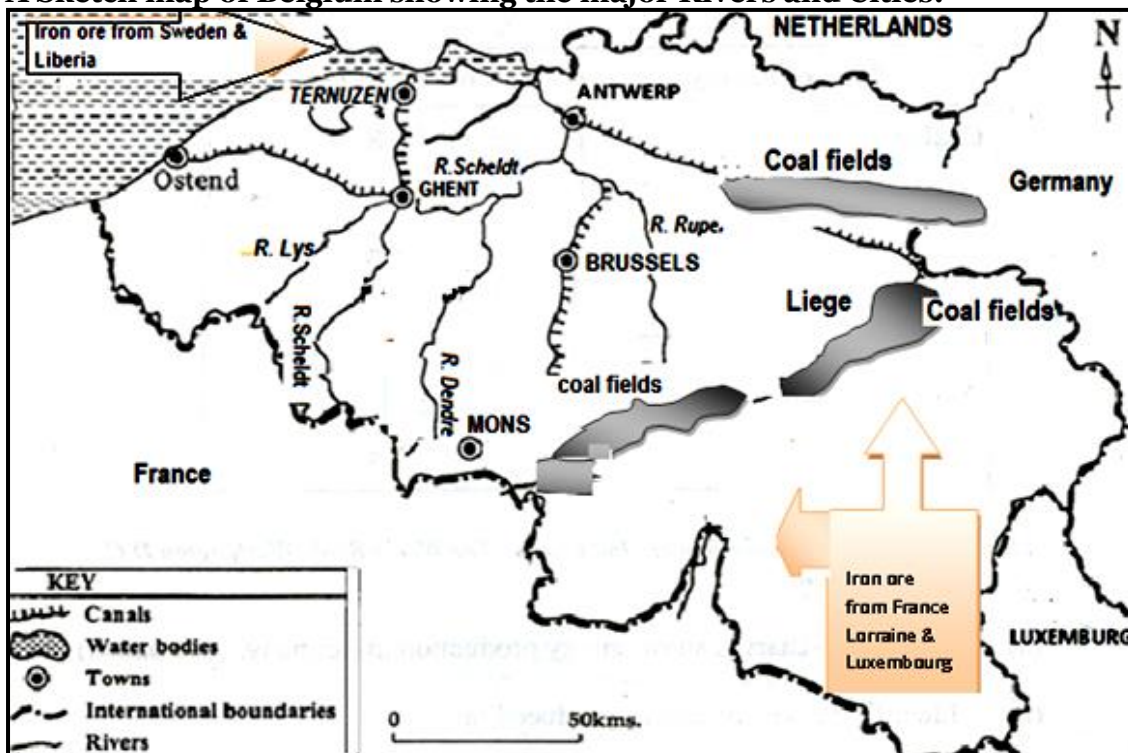
## **MINING.**

- Belgium has very limited mineral resources.
- Coal was the chief mining product for much of the 20th century, but deposits were severely depleted by the 1950s.
- In the 1980s many of the mines were closed, and the last remaining coal mine was shut down in 1992.
- Coal and oil must now be imported for steelmaking and other industries.

### Oil in Antwerp

Antwerp, Belgium's second largest city, has a long and glorious history as a port and trading center. Today, it remains a leading port and diamond center. This oil refinery testifies to the city's role in the international oil industry.

A Sketch map of Belgium showing the major Rivers and Cities.



### Factors that led to the development of coal mining in the Belgian coalfields

- The presence of power in form of coal which was initially used to run the industries. Large quantities of coal were mined in the region.
- Availability of easy accessibility to the coal fields which is well served by developed network of; Sambre-Meuse Rivers, canals, railways and roads to ease transport for imports and exports of the region.

- Presence of large skilled labour supply from Belgium and neighbouring migrants from France to work in the coal fields.
- Availability of alternative sources of energy, e.g. nuclear, thermal etc which supplemented coal and hydroelectric power was introduced to run machinery in processing coal.
- The presence of large market for coal as raw material and source of fuel for industries from both within and outside Belgium.
- Availability of adequate sums of capital invest in purchasing of mining equipment, development of related infrastructure, payment of labour force among other things.
- Presence of advanced technology employed in the mining and processing of coal e.g. the introduction of automated operations which eased work and ensured effectiveness and efficiency.
- Availability of plenty of water supply from R. Sambre and R. Meuse for cooling machines, processing coal and transport provided by the navigable R. Meuse to transport coal market centres.
- Presence of favourable government policy which encourages the coal mining for self-reliance in energy for industrial development.

### **Explain the Problems faced by coal mining in Belgium.**

- Exhaustion of coal in the mines which has left behind dilapidated buildings.
- Increasing costs of mining with increased depth of the mines.
- Increasing competition with other forms of energy like oil, hydroelectricity power, solar, nuclear energy, etc.
- Unemployment due to closing of some mines after exhaustion of the mineral.
- Stiff competition from cheap imported coal from other coal producers whose production costs are relatively low e.g. USA.
- Environmental degradation due to large pits and holes from digging the mineral lead to destruction of scenic beauty and breeding places for dangerous pests and diseases.
- Pollution from burning Coal with much gas carbons to environment.
- Development of slums and high rates of crime.
- Traffic congestion due to busy mining and trade around the coal fields.

### **Outline the Steps being taken to solve the problems.**

- Recycling of industrial wastes to minimise costs of importation of raw materials.
- Strict legislation on waste management has been under taken.
- Under taking massive re – forestation programmes / Green belts creation.
- Encouraging raw material and labour saving technology.
- Importation of raw materials like iron ore from France and Sweden.
- Diversification of the economy to reduce over dependence on industries.
- Treatment of industrial wastes before disposal.
- Use of alternative sources of energy especially oil and natural gas which have less pollution effects on environment.
- Vertical expansion / building sky scrapers to solve the problem of limited land.
- Construction of sub ways / underground tunnels to reduce congestion.
- Refilling of old mines / pits.

## **BELGIUM TOWNS:**

### **BRUSSELS CITY.**

- Brussels (French *Bruxelles*), city in central Belgium, capital and largest city of the country. Bilingual Brussels became one of Belgium's three federal regions in 1993, along with Dutch-speaking Flanders (Flemish Region) and French-speaking Wallonia.
- The city is located on the Senne River, and boasts tree-shaded boulevards, splendid parks, imposing monuments, and beautiful buildings.

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- Centrally situated in northern Europe, Brussels is internationally important as the headquarters of the European Union and the North Atlantic Treaty Organization (NATO).
- Brussels is the hub of the Belgian railway system and is linked by canal to the national network of inland waterways and to the sea. The city's port area is situated in the north near Vilvoorde.
- Among the chief exports are nails, iron, marble, coal, candles, glass, and sugar. Imports include minerals, palm oil, and coffee.
- The city has long been known for the production of fine lace, called Brussels lace, and for tapestry weaving. Other industries include printing, brewing, distilling, sugar refining, iron and brass casting, and the manufacture of textiles, electronic equipment, and furniture.
- The city was made the capital of the Netherlands in 1530.
- Trade and industry in Brussels benefited from the promulgation of the charters of 1312 and 1356.

### **ANTWERP (CITY),**

- city in northern Belgium,
- administrative center of the province of Antwerp,
- is located on the Scheldt River, near the North Sea and Brussels.
- Antwerp is one of Europe's major seaports, the chief port and second largest city of Belgium.
- **Communication centre:**  
It is connected with the industrial regions of southeastern Belgium by the Albert Canal, which links it with Liège;
- **Commercial centre:**  
Antwerp also trades actively with the Ruhr district in Germany. Grain and unrefined metals are major imports; exports include machinery, textiles, and other manufactured products.
- **Industrial centre.**  
Antwerp is an *industrial centre* such industries as diamond cutting, shipbuilding, automobile assembly, and the manufacture of metal goods, electronic equipment, chemicals, and dyes.
- **Tourism Centre:**  
The most interesting edifice in Antwerp is *the Gothic-style Cathedral of Notre Dame* (14th and 15th century), which is surmounted by a spire 121.9 m (400 ft) high. The cathedral contains several paintings by the 17th-century Flemish artist Rubens, who spent most of his life in Antwerp.

Other points of interest in the city include *the town hall and the Gothic-style Church of Saint Paul*, both completed in the 16th century, and the many guild houses dating from the Middle Ages that still line the marketplace.

The city has a *museum of fine arts* with paintings by several of the Flemish masters and botanical and zoological gardens.

- **Antwerp is a port** of commercial importance, developed when the first European stock exchange was founded in the city.
- **Cultural center.** The city was also an active cultural center, renowned particularly for *the Antwerp school of painting*.

### **CHARLEROI TOWN.**

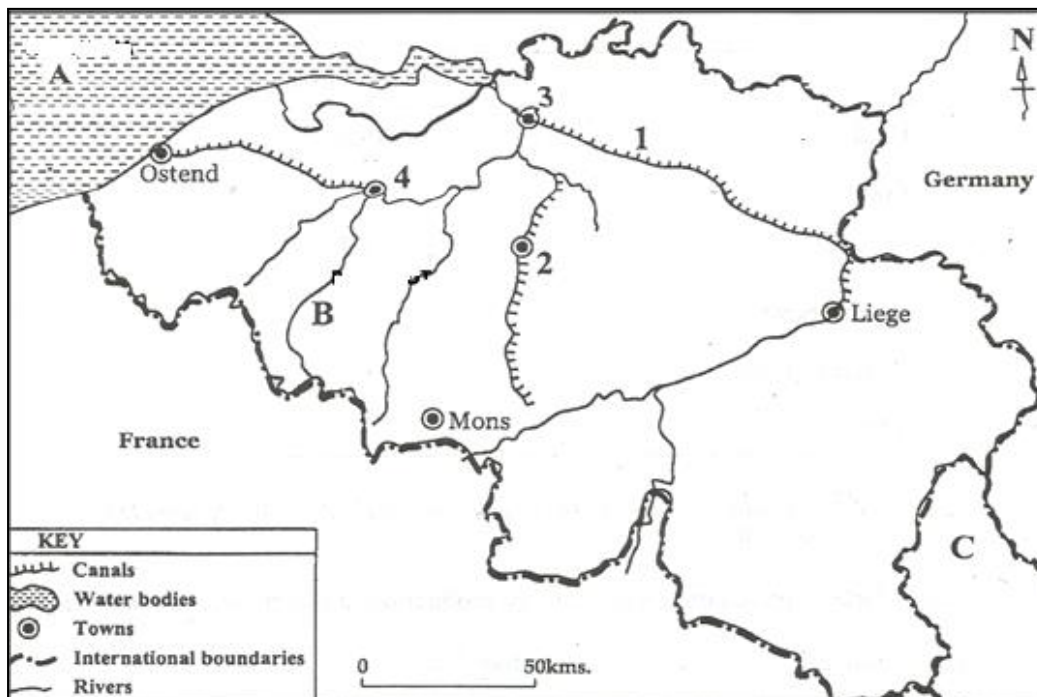


- Located in southern Belgium, in Hainaut Province, located on the Sambre River, near Brussels (with which it is connected by canal).
- The town was formerly the centre of the most important **coal-mining region of the country**, but all mines were closed by the early 1990s.
- Metalworking and glass manufacturing are principal industries.

### Liege city.

- Located in eastern Belgium, capital of Liège Province, on the Meuse River.
- The city is one of the most important river ports in Europe and the transportation and industrial center of eastern Belgium.
- The chief industrial products include armaments, chemicals, glass, rubber goods, electronic equipment, and cutlery.
- Liège is also the center of Walloon (French-speaking) culture in Belgium, and is the home of a well-known museum on Walloon life. It is also the site of the 10th-century churches of Saint Paul and Saint Denis. A third old church, the 8th-century Cathedral of Saint Lambert, was destroyed by the French in 1794; Saint Paul was elevated to a cathedral to take its place in 1801.
- Also in Liège are the University of Liège (1817); the 16th-century Palace of Justice, former residence of the ruling prince-bishops; and several archaeological and art museums.
- In recent years, financial difficulties have plagued some of the city's municipal projects. Population (2007 estimate) 188, 907.

**Study the map of Belgium provided below and answer the questions that follow.**



- a) Name the:
- (i) Water bodies marked A and B,
  - (ii) Canal marked 1,
  - (iii) Country marked C,
  - (iv) Urban centers marked 2, 3 and 4.

- b) Giving specific examples, describe the factors which have led to the development of urban centers in Belgium.
- c) Explain the effects of urbanization on the environment in Belgium.
- d) Outline the steps being taken to solve the problems resulting from urbanization in Belgium.

### **Solution.**

a) Name the:

- (i) Water bodies: A - **The North Sea**  
B- **River Scheldt,**
- (ii) Canal           1- **Albent Canal.**
- (iii) Country        C - **Luxembourg,**
- (iv) Urban centers 2 - **Brussels,** 3 – **Antwerp** 4 - **Ghent.**

### **b) Describe the factors which have led to the development of urban centers in Belgium.**

- Presence of a positive government policy towards development of urban centers e.g. approved Brussels to capital city status of Belgium and European Union to play numerous functions like administrative, industrial, entertainment, etc.
- Presence of a variety of mineral resources e.g. coal fields lead to growth of mining industry e.g. the Sambre-Meuse and Kempenland regions have become densely populated attracting growth of towns.
- Existence of growing industries attract people to seek employment and developed industrial infrastructure accelerate growth of towns e.g. Charleroi. Namur, Liege. Genk. Mons, Genk, etc. hold industries like chemical, iron and Steel, textile, engineering, etc.
- Availability of well-developed transport and communication systems by roads, railways, waterways using rivers Meuse, Scheldt, canals like Albent canal, Bruges-Ghent canal, etc. to transport raw materials, goods and services.
- Strategic location to the North Sea and through R. Meuse that like up to Rhine river water bodies has led to growth of ports e.g. Antwerp, Ostend, Zeebrugge, Liege, etc.
- Historical factors e.g. the world wars restricted settlements and farming to some areas due to presence of landmines in some areas e.g. Liege was a Fort.
- Strategic location in Western Europe with access to North-Sea e.g. Ostend, Antwerp Brussels and Ghent made access to overseas easy opened up the Belgian territories to investors from all over the world.
- Availability of adequate capital invests in development of city and port infrastructures to modern status e.g. Antwerp, Brussels and Ghent.
- Existence of high levels of technology inform of modern engineering techniques required in design and planning ports and city infrastructure like buildings, roads to connect to canals.
- Presence of improved international trade which brings in raw materials and taking out industrial goods encouraged port development, etc.

**Explain the effects of urbanization on the environment in Belgium.**

**Negative effects.**

- Pollution of air, water and land through improper disposal of urban wastes lead to environmental degradation.
- Competition for land with other economic activities (sectors) making it expensive.
- Traffic congestion in canals, roads, at ports leads to delays in delivery of goods, raw materials and services for growth.
- Easy spread of diseases due to high population increase in cities.
- Unemployment leading to crime rates in the city by urban dwellers.
- Development of slums due to shanty house conditions of low standards of living.
- Loss of vegetation cover for settlements and industrial development.

**Positive effects.**

- Growth of infrastructures e.g. roads, roads, waterway, ports, education centers, etc. to facilitate the provision of goods and services.
- Provision of employment opportunities lead to improved standards of living.
- Source of market for goods and services to facilitate the growth of various economic sectors to create more sources of income and trade.
- Provide both skilled and semi-skilled labour attracted to settle in cities to work in various economic sectors like industries and service providers.
- Source of revenue to government through taxes to enable effective provision of social services to the people.
- Leads to improved international relations with other countries through imports and exports to trade in tourism, industrial goods, etc.

**d ) Outline the steps being taken to solve the problems resulting from urbanization in Belgium.**

- Treatment of industrial wastes before disposal to minimize environmental degradation.
- Environmental legislation on “Clean Air Act”, and standards to help rectify environmental climate change disasters.
- Widening and dredging of canals to accommodate large ocean-going vessels.
- Building sky scrapers / vertical expansion to accommodate the increasing population.
- Enforce urban renewal to replace shanty housing units in slum areas.
- Expansion of markets through regional economic integrations - EU
- Construction of tunnels, flyovers, and sub-ways to increase accessibility routes to minimize traffic congestion.
- Timetabling of voyages and flights to reduce on congestion on specific hours.
- Creation of greenbelts in urban centers and a forestation.

**END**

