

# NOTE: Copy notes for Germany and Switzerland only

## REGIONAL GEOGRAPHY OF RHINELANDS

### Introduction

Rhinelands refers to the region in Western Europe that is drained by the great Rhine river comprising of five basic countries.

- Netherlands
- Germany
- Luxemburg
- Switzerland
- Belgium

Rhinelands has a land coverage of 350,000 sq.km and a population of about 120 million people. It is currently getting populated by migrants from all over the world seeking for jobs, citizenship, medication and education opportunities.

Latitudinally it extends from 42°- 54° N and 03°- 13° E.

It is bordered by the North Sea in the North, Poland, Czechoslovakia and Austria in the East, Italy in the South and France in the West.

(Sketch map of Rhine lands region)

### Drainage

Rhine lands is drained by a diverse drainage system with the Rhine river as dominant plus its tributaries and other rivers which stream from different parts of the region and empty their water into large water bodies like North sea, Baltic sea, Black sea and Mediterranean sea. These include the following; Rhine, Rhone, Danube, Elbe, Inn, Ticino/Po, Weser, Scheldt etc.

- Rhine river- streams from the Swiss Alps through Switzerland, Germany and Netherlands into the North Sea.
- Rhone river- streams from the Swiss Alps through France to the Mediterranean Sea.
- Weser river- streams from Germany flowing into the North Sea.
- Elbe river- streams from Czechoslovakia through Poland and Germany into the North Sea.
- Danube river- streams from South Germany through Austria into the Black sea.
- Inn river- streams from the Swiss Alps through Austria and links with Danube in South Germany flowing into the Black sea.
- Ticino/Po river- streams from the Swiss Alps through Italy to the Adriatic Sea.
- Scheldt river- streams from Belgium through Netherlands into the North Sea.
- Oder river- streams from the Poland region into the Baltic sea via the Germany border

(Sketch map showing Rhine lands drainage)

### Climate

Rhine lands receives varied climate patterns. These include;

- Maritime- this is the most wide spread climate experienced in Netherlands, Germany and Belgium. It has warm summers and cool winters.
- Cool Continental- this is particularly experienced in Southern Germany with short warm summers and cool winters.

- Alpine- this is dominant in Switzerland caused by the Alpine mountains/ Alps that induce snow throughout the year.

Comparative study between Rhinelands and East Africa.

- East Africa is made up of three countries- Uganda, Kenya and Tanzania including the Islands of Pemba, Zanzibar and Mafia. As per 2007, Rwanda and Burundi became part of East Africa following the revival of the East African Community. While Rhine lands is made up of five countries- Netherlands, Germany, Belgium, Luxemburg and Switzerland.
- East Africa has a population of about 110 million people with a population density of 25 persons per sq.km. While Rhine lands has a population of about 120 million people with a population density of 350 persons per sq.km.
- East Africa's total area is nearly 5 times than that of Rhine lands while Rhine lands is estimated to be nearly  $\frac{3}{4}$  of Tanzania.
- East Africa has two out-spoken arms of the Rift valley (eastern and western) bordered by plateaux and volcanic features while Rhine lands has one major Rift valley – Rhine, which is short and narrow from Basel in Switzerland to Mainz in Germany.
- East Africa's landscape is largely influenced by vulcanicity while in Rhine lands; vulcanicity is limited to areas around the Black forest- at Harz and Eifel.
- East Africa comprises of old basement rocks punctuated with vulcanicity while Rhine lands is made up of young basement rocks.
- In East Africa, glaciation is limited to Rwenzori, Kilimanjaro, Meru and Kenya mountains while in Rhine lands glaciation has largely influenced landscape.
- East Africa has many tribes with few ethnic groups while Rhine lands are basically made up of ethnic groups.
- East Africa's dialect is dominated by Kiswahili and English as official languages while in Rhine lands German is the official language used besides others like Dutch, Latin, Swiss, Spanish.
- East Africa is situated in the Tropics while Rhine lands are situated in the Temperate region.
- East Africa's highland areas are very fertile suitable for agriculture and settlement while the Rhine lands highland areas are infertile.
- In East Africa some rivers are not navigable while in Rhine lands all rivers are navigable e.g. Rhine, Danube, Scheldt, Iyssel, etc.
- East Africa experiences two climatic seasons – dry and wet, while Rhinelands has four climatic seasons- winter, spring, summer and autumn.

## SWITZERLAND

This is one of the countries in the Rhinelands region located South of the region in the centre of Europe with a very mountainous relief e.g. Jura and Swiss Alps.

It has a population of about 7.7 million people with land coverage of 42,000 sq.km,  $\frac{1}{4}$  of which is cultivable and the rest is covered with forests and snow.

The major economic activities practiced are dairy farming, tourism, sports and industrialization.

Today, it is highly industrialized with major economic/commercial centres like Zurich, Geneva, Lucerne, Neuchâtel, etc. and headquarters of international agencies like World Bank.

### Relief

Switzerland is generally a mountainous country with three basic physical regions;

- Jura

- Swiss plateau
- Alps

#### The Jura

This makes up 10% of the land coverage in the Western part of the country composed of mountain ranges that rise up to 1500m above sea level stretching from the Southwest to the Northwest characterized by;

- Poor soils
- Rocky upland
- Underground caves
- Limited surface drainage
- Parallel ridges and valleys

The area is less inhabited with economic activities like forestry, dairy farming, fruit growing, salt mining and industrialization.

#### Swiss plateau

This makes up 30% of the general land coverage forming a corridor between the Jura and the Swiss Alps (Alpine foreland-mittchard) occupying the central part of the country stretching from the South to the North. It comprises of low undulating land that rises up to 580m above sea level characterized by;

- Undulating land with rolling stones
- Very fertile soils by moraine deposition from Alps, Jura and Black forest.
- Well drained with lakes like Thurn, Neuchatel, Geneva, Zurich and rivers like Aares, Sarire, etc.

The area is highly inhabited with mild climate receiving rainfall in summer and snow in winter suitable for arable farming, dairy farming, market farming, mixed farming and transportation.

#### Swiss Alps

This makes up 60% of the land coverage stretching from the central eastwards and from South to North. It has a general altitude of about 3000m forming a snow line characterized by;

- Glacial features like arêtes, pyramidal peaks, U and V-shaped valleys, etc
- Thin and infertile soils
- Snow capped
- Watershed for many rivers like Rhine, Rhone, Ticino and Inn.

The area has limited economic activities particularly tourism, forestry, viticulture and dairy farming with settlement basically at the foothills.

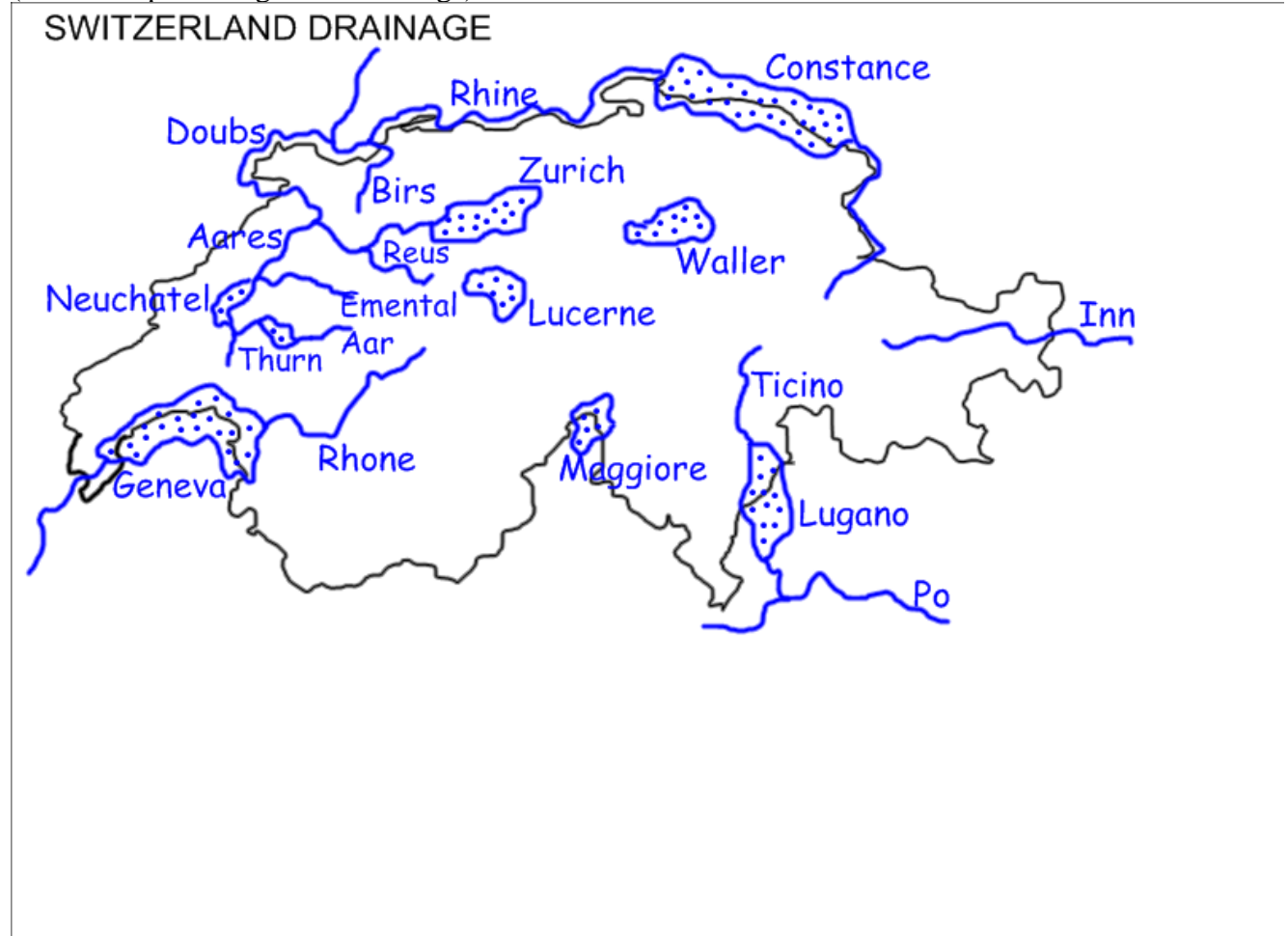
(Sketch map showing Swiss relief regions)

#### Drainage

Switzerland has a well drained system dominated by the Rhine river and its tributaries which covers 2/3 of the drainage. The rivers include Rhine, Rhone, Ticino, Inn, Birs, Doubs, Aares, Reus, Emental, Aar, Sarire and lakes include Geneva, Zurich, Neuchatel, Thurn, Zug, Lucerne, Lugano, Maggiore, Constance and Waller.

Because of the nature and pattern of drainage, it earns Switzerland the title of ‘Fountain heart of Europe’.

(Sketch map showing Swiss drainage)



#### Climate

The climate of Switzerland is dominated by high atmospheric pressure originating from Northeastern Europe causing sunny conditions in summer ( $16^{\circ}$  -  $21^{\circ}\text{C}$ ) with convectional rainfall (80 – 100mm) and cool conditions in winter and spring.

Switzerland experiences a variety of climatic patterns influenced by its location and relief. These are;

- Cool Temperate Continental
- Alpine or Montanne
- Mediterranean

Cool Temperate Continental climate- experienced in the North and Central parts of the country receiving rainfall of 513 mm which reduces eastwards.

It has summer temperatures of about  $18^{\circ}\text{C}$  and reduce to as low as  $-19^{\circ}\text{C}$  in winter.

Alpine/ Montanne climate- experienced basically in the eastern part in the Swiss Alps arising from altitude that reduces pressure and increases precipitation.

Mediterranean climate- experienced in the South having hot dry summers with temperatures up to 21° c and rainfall of between 500 -750 mm per annum.

### Vegetation

Switzerland's vegetation is varied mainly influenced by climate, altitude, soil and man's activities. Each relief region has a peculiar vegetation type such as;

#### The Jura

This is dominated by the deciduous and coniferous forests supported by a modified Cool Temperate Continental climate.

#### Swiss Plateau

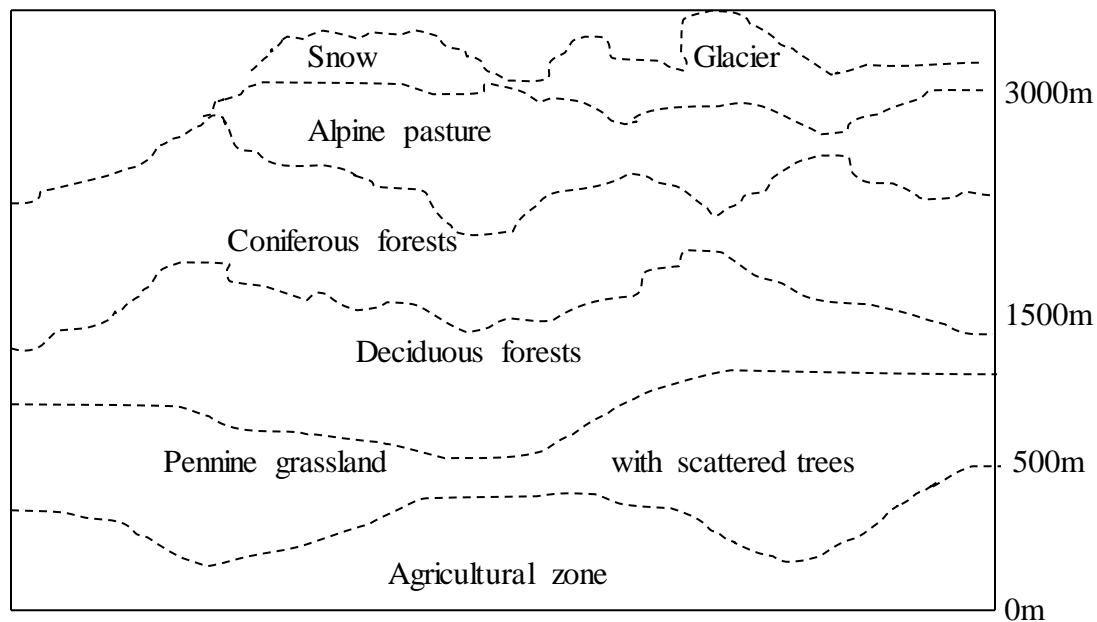
This was originally occupied by mixed forests and pasture which were later altered by man.

#### Swiss Alps

This has typical montanne vegetation that varies according to altitude, that is,

- 500- 1200m is an agricultural zone with fruit growing, tobacco, stone fruit grapes in areas of lake Geneva, river Ticino and Valais.
- 700- 1500m is a mountainous deciduous level in the Alps areas with species like spruce, beech, lime, walnut, mountain ash, accassia etc.
- 900- 1700m is dominated by vegetation of ahush, aletsh forests, aralla pine, yew, larch, juniper, silver fir, etc.
- Alpine snow line at 3000m comprising of alpine pasture, dwarf pine, alpine rose, scotch pine proceeded by bare rock, snow and permanent ice.

Sketch diagram showing Alpine vegetation



## Economic importance of Relief regions

The physical landscape in Switzerland has got a variety of benefits to the country.

### The Jura

- Industrialization at centers like Le Locle, La Chaux-de-Fonds, Bienne, etc.
- Forestry in the lower slopes with trees like elm and fir.
- Extensive farming in the south west due to loess soils.
- Pastoral farming with goats and sheep due to poor pasture on limestone rocks.

### The Swiss plateau

- Industrialization at centers like Zurich and St. Gallen for textile and engineering.
- Arable farming for maize, wheat, fruits and fodder crops due to fertile soils.
- Dairy farming because of permanent pasture.

### The Swiss Alps

- Arable farming on the slopes and valley areas having deposited soils.
- Fishing on rivers like Rhine, Inn, Ticino and Rhone.
- Winter sport center for domestic and foreign tourists.
- HEP production due to the hanging valleys and upland areas.
- Animal rearing particularly transhumance due to good pastures in spring.
- Forestry due to pine forests that exist
- Industry particularly smelting and refining non-ferrous metals.

### The Rhone valley

It stretches for 150 km in the Alpine zone bordered by the Bernese-Oberland and Pennine Alps in the North and South and Gothard massif and lake Geneva in the east and west respectively. It is glaciated with steep slopes and a wide floor.

- Arable farming for rice, potatoes and vegetables
- Mining of oil and natural gas
- Tourism especially in winter and summer.
- Transportation acting as the corridor linking southern Switzerland to other parts of the world.

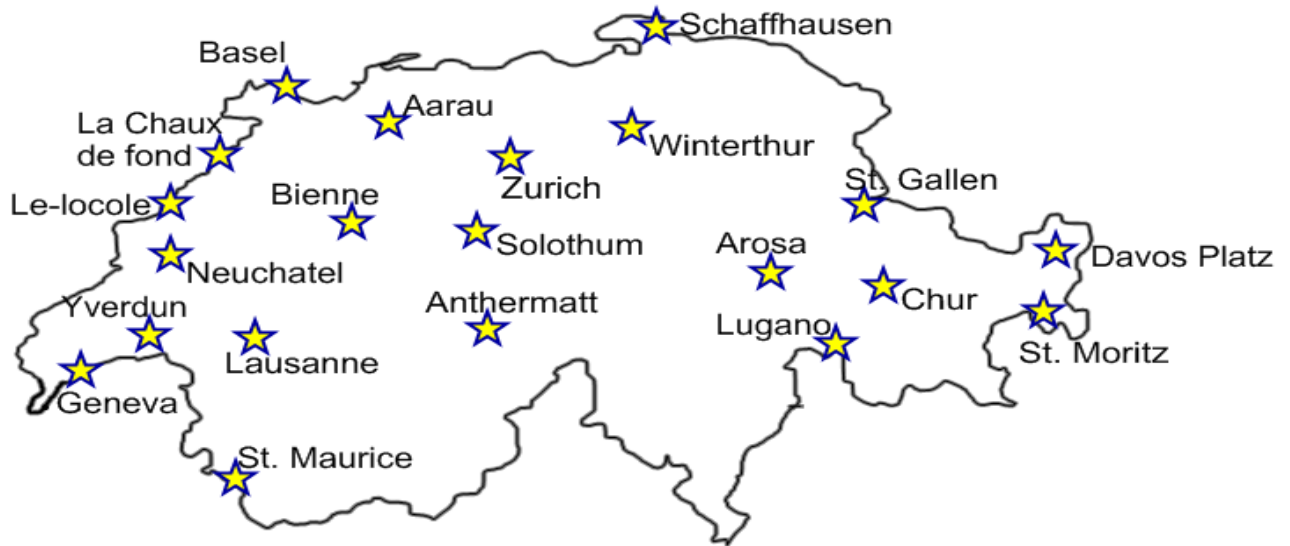
## Industrialization

Switzerland is one of the most industrialized countries in Europe due to its neutrality dating back to the 16<sup>th</sup> century, diverse citizens and a central position which attracted investment.

Today the country boasts of a textile industries, engineering, watch making and precision industries at towns like Zurich, Bern, Basel, Geneva, St. Gallen and Winterthur.

(Sketch map showing major industrial centers)

## SWITZERLAND INDUSTRIAL TOWNS



### Factors

- Raw materials like coal, non-ferrous metals and iron ore from France for iron and steel industries.
- Extent land in the Swiss plateau
- Well established transport and communication networks like water, railway, cable cars and road.
- Good government policy based on self reliance
- Domestic and foreign market for industrial products
- Advanced technology for converting raw material into finished goods
- Investment capital to buy factors of production
- Electricity from many dams like at scheff-haussen
- Abundant skilled and semi-skilled labor for innovation and production
- Involvement in international trade creating more market potentials
- Strategic location at the heart of Europe being accessible
- Abundant water supply facilitating industrial production
- Mountainous relief sparing no option but industrial development
- Political stability attracting domestic and foreign investors
- Technical biased education providing skilled labor
- Influx of refugees particularly the Jews and Italians.

### Major industries

- Chemical and pharmaceutical industries- located at Geneva, Bern, Zurich and Basel making soap, plastic, insecticides, cosmetics, explosives, etc

- Engineering industry- located at Basel, Zurich and Neuchatel making machines, locomotives, turbines, electric appliances, etc
- Textile and footwear- located at Basel, St. Gallen and La chaux de fond making high quality skiing boots, lady shoes, synthetic fiber, etc
- Watch making industry- located at Le locole and La chaux de fond making high quality Swiss watches.
- Precision industry- located at Bern, Neuchatel, etc making optical instruments like binoculars, navigation and meteorological tools like telescopes, microscopes, survey cameras, etc.
- Others include food processing, cigarette making, tourism, etc.

#### Importance

- Cheap and good quality industrial products have been provided.
- Government revenue through licensing and taxation
- Foreign exchange through export
- Promotion of international trade and relations
- Industrial profits develop other sectors like tourism, agriculture, etc
- Market for local raw materials
- Employment opportunities
- Income to the workers improving their standard of living
- Improvement in transport and communication for goods and passengers
- Skill acquisition for better living
- Avenues for academic research and training
- Utilization of natural resources. However, industries have negative importances as explained below;
- Environmental pollution by releasing toxic waste in water bodies, land and air.
- Exposure to extreme body temperatures causing skin illnesses
- Unbalanced development in different parts
- Social imbalance in income for industrial workers and others
- Rural-urban migration where able-bodied men and women leave the countryside
- High crime rate especially by the unemployed
- Exploitation of semi-skilled and unskilled labor due to inadequate experience
- High labor mobility of skilled labor from one institution to another with better pay
- Profit repatriation by foreign investors.
- Limited land for settlement, expansion and future development.

#### Problems facing the Industrial sector

- Limited domestic market due to low population
- Limited labor to engage into the production process
- Limited raw materials causing dependence on imported items like cotton from Egypt and iron ore from France.
- Limited flat land for setting up industries due to mountainous nature
- Depreciation of industrial products due to change in global trend of technology
- Competition from other industrialized countries like Japan, USA and China.
- Landlocked nature limiting accessibility
- Limited electricity to run industrial machinery
- Duplication of industrial products and importation of sub-standard foreign goods



- Congestion on river Rhine which provides access to the outside market by water through port Rotterdam
- High cost of production for high quality capital goods
- High cost of transport due to landscape which is mountaneous and being landlocked.

#### Tourism

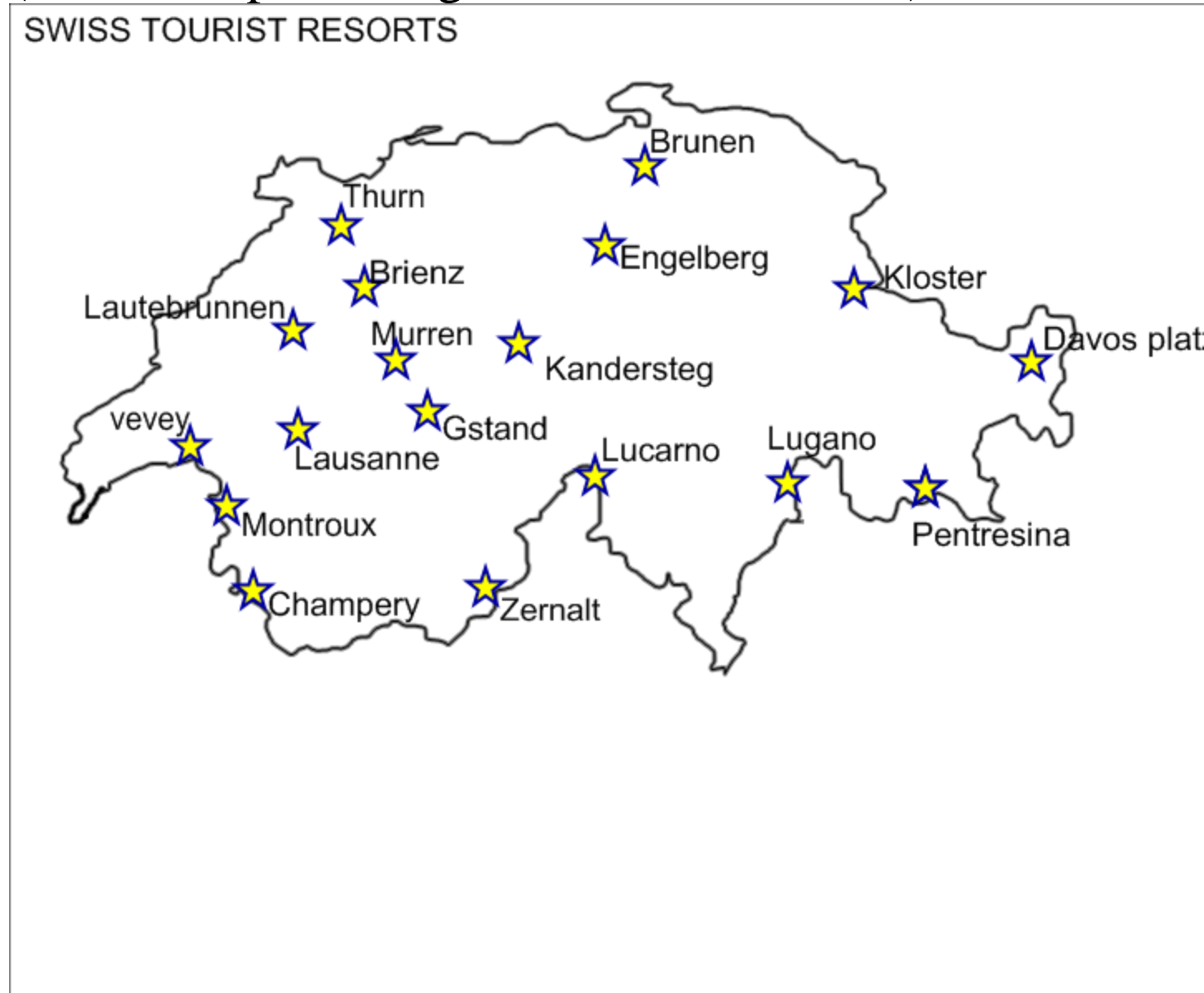
This is the art of visiting geographical places with an aim of appreciating the beauty of nature- ecosystem.

Tourism in Switzerland is one of the foreign exchange earner and an invisible activity which has been favored by the variety of tourism potential like fauna and flora, glaciated scenery, relief, culture drama and climatic variations.

These tourism potentials ranging from the Jura to the Alps earn Switzerland the title of the “playground of Europe”. Tourism activities in Switzerland occur basically in two seasons.

- Winter season- major tourism centre are Zermatt, Gothland, Murren, Grandervolt, Lauterbrunnen, Kanderstag, Gstaad, Maritze, etc.
- Summer season- major tourism centres are Geneva, Ticino, Zurich, Bern, Mutterland, Brunnen, Lucarno, etc.

(Sketch map showing Swiss tourist resorts)



## Factors

- Tourism potentials ranging from glacial features to flora and fauna.
- Neutrality and political stability dating back from the 16<sup>th</sup> century

- Developed transport and communication networks to tourism centres
- Improved social amenities like hotels, motels, restaurants, etc
- Positive government policy aimed at diversifying the economy.
- Abundant capital to invest in the tourism industry
- Hospitality of the Swiss people to foreigners
- Being multi-lingual with the ability to speak different languages like Latin, German, French, English, etc
- Strategic location of Switzerland located in the heart of Europe making it accessible.
- Affluent society that values recreation in life
- Domestic and foreign tourists who come to see the beautiful sceneries
- Skilled and semi-skilled labour that runs the industry
- Limited land for agriculture that prompted government to utilize the existing landscape in its natural state.

## Importance

- A lot of revenue to the government by taxing tour agencies, hotels, etc.
- A lot of foreign exchange to the government by the foreign tourists
- Profits from the tourism industry is used to develop other sectors
- Many employment opportunities to the Swiss people e.g. as tour guides, drivers of cable cars.
- Improved international relations with countries where tourists come from
- Establishment/improvement of social amenities like hotels, hospitals, etc.
- Improvement in transport and communication services like railway, road and water transport.
- Provision of market for domestic goods and services e.g. banking, transport and agricultural products.
- Conservation of the eco-system thus conserving nature/environment

- Earning of a lot of income by the Swiss people thus improving their standards of living
- Proper utilization of marginalized land especially glaciated areas and rugged landscape
- Preservation of the native culture of the Swiss people
- Attraction of industrial investors to boost the tourism industry and other industries
- Environmental degradation of some fauna and flora species that are trampled upon as tourists travel to certain areas
- A lot of land is gazetted for tourism leaving little for other economic activities to be practiced.

Comparative study between Switzerland and East Africa Tourism Industries.

- Both have a variety of fauna and flora
- Both experience a variety of climate patterns based on latitudinal location
- Both have a rich peculiar traditional culture with songs, dance and drama

- Both have varied infrastructure suitable for tourism
- Both have a Well sculptured landscape with volcanic and glaciated features
- Both have relative stability in many parts
- Both have local small scale and large scale industries that make tourism tools
- Latitudinal location that attracts tourists like Switzerland in the temperate region and East Africa in the Tropics

Reasons for variation in development of tourism sectors.

- Switzerland has a large capital investment unlike East Africa
- Switzerland has enjoyed peace from as early as 1270 unlike East Africa
- Switzerland has limited agricultural land hence less options for survival unlike East Africa
- Switzerland is surrounded by an affluent society unlike East Africa

- Switzerland has high level of technology and industrial development unlike East Africa
- Switzerland has a mountainous nature of over 70% unlike East Africa
- Switzerland has more captivating social amenities unlike East Africa
- Switzerland has greater publicity and advertisement unlike East Africa

## Agriculture

Switzerland is basically a mountainous country with limited cultivable land of nearly 14% particularly in the Swiss plateau. Switzerland caters for 6% of her food requirements and the rest is provided through international trade.

The Jura and Swiss Alps are ideal for forestry and pastoral farming. However agriculture has greatly improved due to advanced technology in agricultural machinery, provision of high yielding seeds and land consolidation.

## Land use distribution

Land use	Percentage
Arable	6.3
Fodder	19.4
Pasture	23.2
Forestry	25.5
Unproductive land, lakes and glaciers	25.6

## Major agricultural practices

- Arable farming- involves the growing of cereals practiced mainly in the Swiss plateau.
- Market gardening- involves the growing of fruits and vegetables for direct supply into the urban market centers mainly practiced in the Rhone valley.
- Pastoral farming- involves the rearing of animals particularly dairy farming for milk, beef practiced in the lower Alpine area rearing red spotted semental and schuzy breeds producing over 37,000 liters of milk per year.



## Factors favoring agriculture in the Swiss plateau

- Fertile alluvial soils in the plateau areas deposited by running water and alpine glaciers
- Undulating land favoring mechanization
- Well drained area with required water
- Natural pastures and fodder crops in the low altitude areas that are fed to animals.
- Mild climate with a combination of Mediterranean and cool temperate continental climatic conditions for proper plant growth
- Well established transport and communication networks that ease accessibility to the gardens and markets.
- Positive government policy aimed at fully maximizing the limited arable land and that has encouraged the farmers to carry out agriculture.
- Availability of large sums of/adequate capital to invest in the agricultural sector.
- Abundant/cheap labor especially in the Swiss plateau which is greatly inhabited,

labor is needed in the planting harvesting and tending to the animals.

- Relatively sparse population providing enough land for agriculture

### Factors limiting agriculture in the Alps

- Thin stony and infertile soils limiting plant growth
- Mountainous terrain limiting establishment of transport networks
- Difficulty in mechanization due to mountainous nature
- General altitude of the Alpine region favors forestry and alpine vegetation
- Presence of snow and glaciers limiting land for cultivation
- Alpine climate is very unfavorable for growth of arable crops
- Government prefers utilizing marginalized land for activities that maintain the natural eco-system like tourism
- Limited open surface water to support farming

- Occurrence of avalanches that destroy farmland at the foothills
- Floods in Spring and Summer seasons

## Importance

- Provision of a lot of food to the people
- Provides raw materials for agro-based industries
- Provision of meaningful employment to many people working in farms and gardens
- Government earns a lot of revenue by taxing farmers and farm owners
- A lot of foreign exchange is earned by exporting agricultural products
- Micro-climate modification through evapo-transpiration
- Properly utilizing marginalized land especially the lower slopes of the Alps
- Improvement of social amenities like schools, hospitals that are used by the workers.

- Development of international trade and good international relations due to exporting of agricultural products to the neighboring countries like Belgium.
- Avenues of agricultural research and academic study
- Clearing of natural vegetation for cultivable land has degraded the environment
- Intensity of agriculture has limited land for the practice of other economic activities
- Agro-based industries led to environmental pollution by discharging dangerous industrial waste in the water and land.

### Problems faced

- Pests and disease vectors that attack the crops and reduce the yields.
- Limited labor for harvesting and planting hence, delays in production.
- Flooding in the plateau area that affects the crops grown.
- Inaccessibility of the mountainous areas in the Alps and the Jura

- Limited land for expansion in the plateau region
- Pollution from the industries that destroy the farm land
- High cost of irrigation and maintaining farms in the plateau area

## Dairy farming

This involves the rearing of animals particularly dairy farming for milk, beef practiced in the lower Alpine area rearing red spotted semental and schuzy breeds.

## Factors

- Warm summers which allow growth of pastures and out-door grazing
- Cold winters which permit indoor grazing
- Variety of pasture and fodder crops that are so nutritious.
- Presence of variuos co-operative movements providing subsidies and market
- Developed milk processing plants to preserve milk

- Large/ready market for milk and other dairy products within Switzerland and abroad.
- Sufficient capital to invest in the dairy industry
- Well developed transport and communication networks for transportation and marketing
- Supportive government policy that has encouraged dairy farming in the area.
- Relatively flat land in the Swiss plateau that ease the movement of animals.
- Variety of animal breeds that are highly yielding e.g. The Red spotted segmental and scuzzy breeds.
- Advanced technology of automated milking that eases work.
- Intensive research to improve quality
- Cheap skilled labor to handle the cattle and produce
- Large quantities of fresh water for the animals
- Moderate rainfall for pasture growth

## Contribution

- Source of a lot of food for the natives
- Many people have been employed in rearing and processing of dairy products
- Provision of abundant raw materials for agro-based industries like milk.
- Provided ready market for industrial and arable products
- Infrastructure development in the area e.g. roads and railways.
- Urbanization and its related advantages like provision of social services i.e. hospitals and schools.
- A lot of foreign exchange through exports of dairy products to other countries.
- A lot of income to the natives improving their standards of living
- A lot of revenue to government through taxation and licensing
- Diversification of the economy reducing dependence on industry but also dairy farming.
- International trade and improved relations with other countries that import Switzerland's dairy products.

- Animal waste is used as fertilizers/ manure
- Development of research in animal breeds, fodder crops, etc
- Use of would-be waste land for transhumance
- Source of bio-gas for domestic use

## Urbanization

Switzerland has steadily developed industrially leading to the emergence of industrial and other urban centers where commercial and administrative functions are carried out.

The major towns of concern include;

- Zurich- largest city in Switzerland though not the capital city with a population of nearly a million having a variety of industries like textiles, engineering, chemical and pharmaceutical industries among others.
- Geneva- is of international value housing headquarters of major international agencies like the Red Cross, International Labour



Organization, etc. It's a re-known industrial center for textile and precision industries.

- Bern- the federal capital of Switzerland and a major industrial center having industries such as engineering, paper and pulp, watch making, chemical and pharmaceutical, etc.
- Basel- a territorial town linking Switzerland with Germany and France and a major gateway on the Rhine river for importing and exporting Swiss products.

Basel- Factors for growth and development

- Strategic location with easy access to France and Germany
- Being at the headway of the navigable Rhine
- Great trade potential handling all the imports and the exports of Switzerland
- Availability of fertile soils that attracted human settlement for agriculture.
- Developed transport and communication network for easy movement
- Undulating relief with an altitude of 950m attracted settlement

- Conducive climate of Cool Temperate Continental with warm summers attracting tourists in the area
- Growing level of industrialization especially for heavy industries
- Prevailing peace and stability favoring human settlement
- Presence of large salt deposits that attracted industrial development
- Desire by government to set up calling stations in very remote areas

(Sketch map of Basel town/port)

### Problems faced

- Limited land for expansion
- Occasional flooding during Spring and Summer seasons
- Congestion at the port and the Rhine water way
- Slum development with related problems like easy spread of diseases
- High cost of living

- High costs of infrastructure development and maintenance
- High crime rate e.g. murder, theft and burglary, drug abuse.
- Unconducive weather like fog, frost which affect visibility and transportation

## Transportation

Switzerland has a well-built transport and communication system ranging from air, water, road, railway and cable cars. This has made it very accessible to the outside world because it is a landlocked country.

- Air transport- well developed but shared with the neighboring countries for easy movement of tourists and other trade items. Air ports include Kloten at Zurich and Cointin at Geneva.
- Road transport- well laid out particularly in the Swiss plateau which is suitable for human settlement, agriculture and industry. Major road links are between Jura and

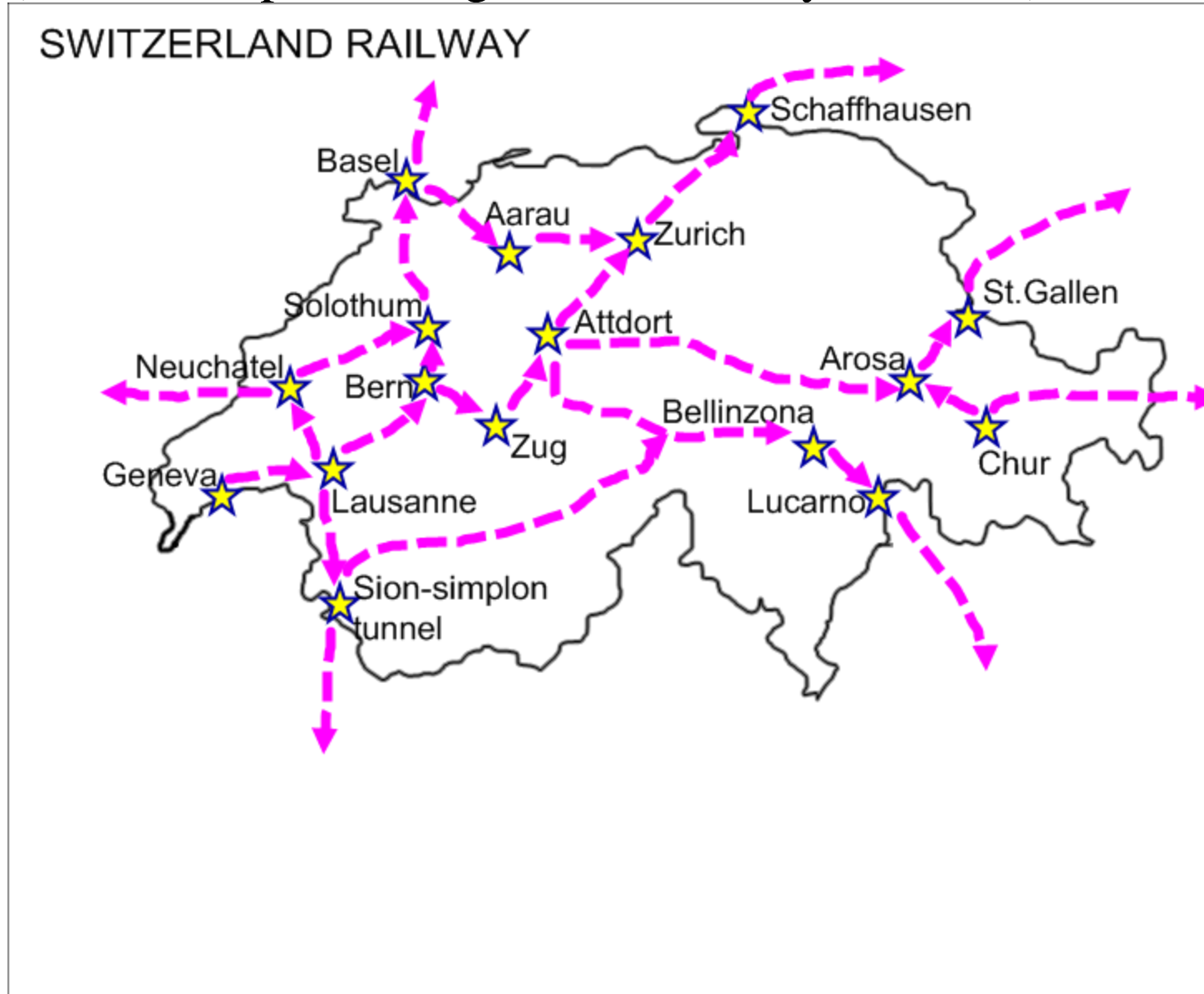
Basel, Rhine river and Leon, Paris and Geneva and the Rhone valley through to Italy.

- Water transport- well developed on the Great Rhine linking Switzerland to the outside world via port Basel to the North Sea. Basel holds all the international river traffic of Switzerland with a fleet of 400 vessels.
- Railway transport- well spread linking Basel to all the major urban centers in the interior. There are also international links like;
  - North-South line stretching from Basel to Chiasso connecting with Germany to Italy through Gothland.
  - Bern-Mullen line through Sion-Simplon tunnel linking with Italy
  - Traffic line linking France through Valla-belauson passing through the Rhone valley and the Simplon tunnel.

- West-East line from Geneva through Bern and Zurich connecting with France, Germany and Austria.

Plans are underway to establish the Trans-Swiss canal linking the upper rail to Lake Constance and a water way along the foothills of the Jura using locks.

(Sketch map showing Swiss railway network)



Factors for development of the railway Network.

- Nature of relief that was not suitable for road and air transport
- Positive government policy to improve on transportation

- Increasing number of travelers with daily responsibilities
- Need to transport bulky industrial raw materials and finished products
- Prevailing political stability that attracted investment in railway transport
- Abundant electricity that necessitated electric train
- Availability of adequate capital for constructing and maintaining the railway network
- Need to facilitate the transportation of imports and exports through port Basel which handles all international river traffic
- Need to supplement on electric cable cars in order to promote tourism
- Presence of cheap/abundant skilled labour to manage the system
- Strategic location of Switzerland and need to link with neighboring countries
- Advanced technology that facilitated the modern electric train system

- Increasing level of industrial development with need to link industrial centers and market potential areas

### Problems facing transportation in Switzerland

- High transport costs of bulky goods that hike the prices of goods.
- Conducive weather conditions like snow and glaciers in winter covering up roads, airports and rivers
- High cost of construction and maintenance due to good quality systems
- Congestion especially at the peak hours hence delays.
- Some rivers with sources in the Alps are not navigable with rapids and falls
- Limited manpower to man the system
- Being a landlocked country, limited access to the sea
- Mountainous nature of the Jura and the Alps limiting establishment
- Fuel shortage especially for the road and air transport