

MSCE HUMAN & ECONOMIC GEOGRAPHY

BASED ON NEW SYLLABUS 2018



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HUMAN & ECONOMIC GEOGRAPHY

WORLD FISHING

Success criteria:

- Explain the development of the world fishing industry
- Identify world fishing grounds
- Explain the main fishing methods used in world fishing
- Explain the importance of the fishing industry
- Explain other resources from the sea apart from fish
- Explain challenges faced by the fishing industry
- Suggest possible solutions to the challenges faced by the fishing industry

They include fishing grounds such as :-

- North East Pacific
- Peru
- Brazil
- South Africa
- North West Pacific
- North East Atlantic
- North West Atlantic

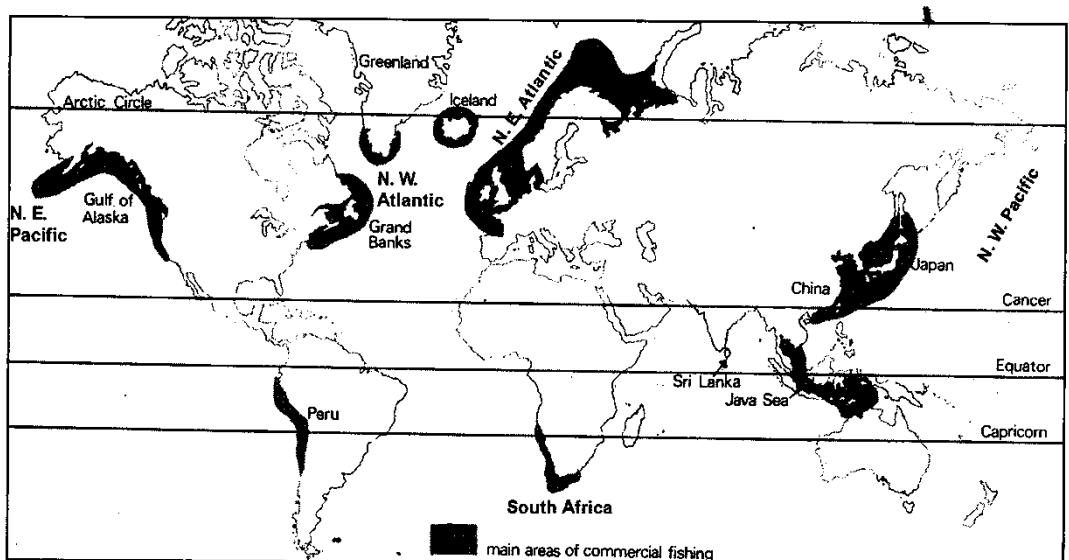


Figure 11.1: The World's main fishing grounds

North Western Pacific fishing ground

They include places such as : China, Japan among others

Reasons for the development of the fishing ground:

- Poor land for agriculture activities made people to rely on the sea for their livelihood
- Meeting of the Kurosiwo and the Kamchatka ocean currents created a conducive environment for the plankton
- Indented land in the Japanese landscape created good natural harbor for ports
- Less pasture for livestock farming made people to concentrate of fishing
- Advancement in fishing skills and technology

Fish caught include

Cod, salmon, halibut, herring, mackerel, sardine, tuna,

North West Atlantic (Eastern Canada)

Fishing done in places such as Cape Cod, New Foundland, East USA

Reasons for development of the fishing ground

Indented coast that created natural harbor for the fishing boats

- Harsh climate and infertile soil forced people to resort to fishing
- The meeting of the North Atlantic Drift and the Labrador created a conducive environment for plankton growth
- Large continental shelf also supported the growth of planktons for fish

Fish caught include:-

Mackerel, Hake, haddock, Halibut, Flound, sardines

North East Atlantic (NW Europe)

Norway, Britain, Iceland, Barent Sea, Denmark, Germany, Spain, Great Britain

Reasons for the development of the fishing ground

- Harsh climate that does not favor farming hence people decided to go for fishing
- Large continental shelf
- The meeting of the North Atlantic Drift and the Labrador cold ocean current encouraged fishing

Fish caught include:-

Mackerel, herrings, haddock, plaice, halibut, sole, Hake Skate

North East Pacific (North West America)

Location: California, Alaska

Reasons for fishing

- Poor soil for agriculture activities following the development of the California desert
- Presence of important fish species such as the Salmon

Peru fishing ground

Location:- West of the South America

Reasons for the fishing:

- Upwelling of the water that allowed mineral salts from the sea to rise up for fish food
- Poor soil following the development of the Atacama desert
- Presence of the important fish species such as Anchovy

South African fishing ground

Location: - Port Elizabeth, Nollath, Durban and Saldana Bay

Reasons for the fishing ground

Shallow continental shelf which allowed sunlight to penetrate to the bottom sea

The growth of planktons

Examples of fish caught include:-

Cape hake, Cape Anchovy, Pilchards.

MAIN TYPES OF FISH CAUGHT

They are in two groups

1. Pelagic Fish

Fish that swim close to the water surface

Examples:

Tuna, pilchards, mackerel, sardines, anchovies

2. Demersal Fish

Fish that swim close to bottom of the sea (sea floor)

Example:

Sole, cod, haddock, halibut, hake, skate, Baroup,

METHODS OF FISHING

This is determined by a number of factors that include:

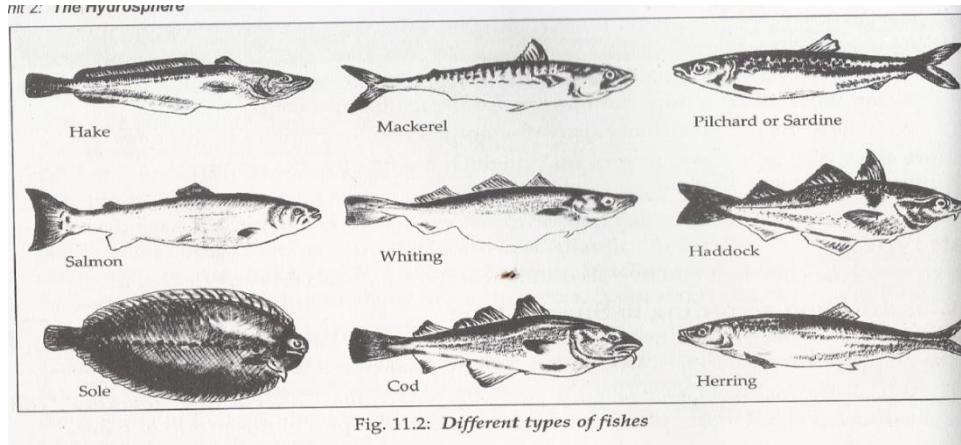
1. The concentration of fish
2. Nature of fishing area
3. Size of fish to be caught

METHODS OF FISHING

1. Trawl netting
2. Seine netting
3. Drift netting
4. Gill netting
5. Line or hook
6. Harpoon only used when catching whales in cooler regions
7. Traps

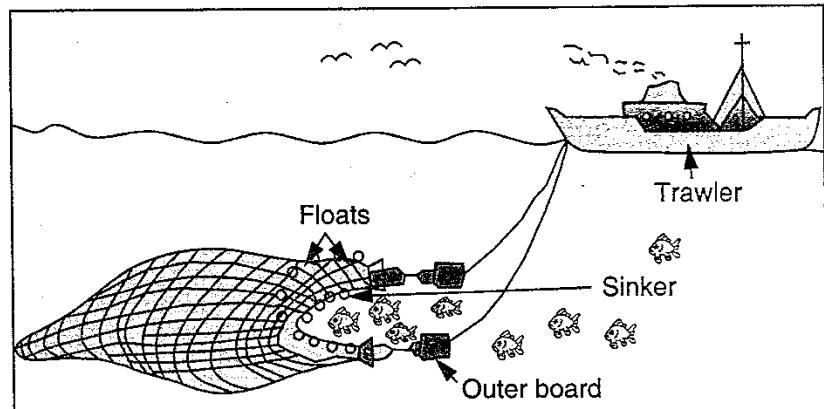
TRAWL NETS

Fish are caught by dragging a conical shaped net that is normally pulled by big boats (see below)



Trawl netting

Fish caught include demersal fish

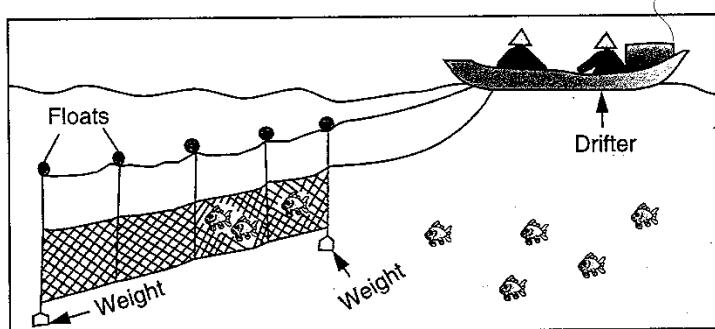


SEINE NETS

They include purse, haul

Purse nets are used to catch a shoal of fish and are normally used by two fishing boats that surround that shoal of fish (see below)

Haul nets: one end of the net is dropped into the sea/water and the other end remains on the main land. However both ends of the net are pulled to the main land with much effort



(Nkhoka)

GILL NETS (DRIFTING NETTING)

- Under this method the big eyed nets are used to catch fish
- The nets are left hanging over the night and as fish tries to pass across them they are caught by their gills (see below)

LINE / HOOKS

A long line with several hooks and baits attached to it is normally dropped into the sea and fish are caught as they try to swallow the bait (nyambo) attached to the hooks. The line could carry hundreds of baits / hooks

TRAPS

- They are normally used at the mouth of a river where fish are caught as they try to go and feed
- The traps are designed in such a way that when fish enters it cannot get out (see below)

IMPORTANCE OF FISHING INDUSTRY

1. It produces raw material for some industries such as whaling produce fertilizer, meat, glue, oil etc.
2. They provide proteins diet and other minerals needed for body growth
3. It attracts tourism to study fish e.g. World fish-Domasi Zomba
4. It provides employment opportunities to those employed in fishing
5. In some countries fishing is a source of foreign exchange earnings

CHALLENGES FACED BY FISHING INDUSTRY

1. Pollution of water from industrial wastes affect aquatic life
2. Overfishing by fishermen due to advanced methods of fishing
3. Destruction of fishing grounds due to oil drilling
4. Indiscriminate catching of fish using small nets
5. Growth of water hyacinth (namasupuni) that may affect aquatic life
6. Use of poison when catching fish that affects aquatic life

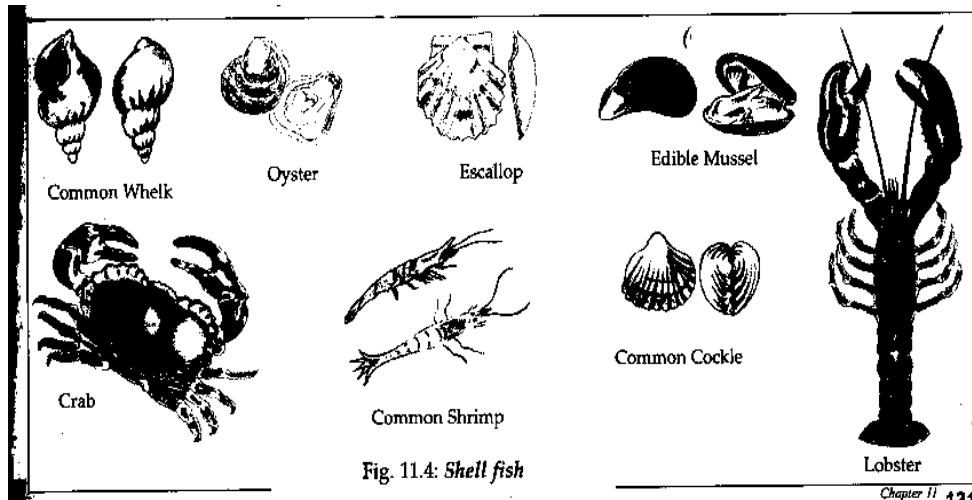
POSSIBLE SOLUTION TO FISHING

1. Strict measures against unnecessary dumping of wastes
2. Use of recommended fishing nets that would catch big fish
3. Developing fish farming to control fishing
4. Introduction of new fish species in water
5. Closing fishing during breeding time (rain season)

6. Introduction of the quarter system of catching fish to avoid overfishing

OTHER RESOURCES FROM THE SEA

1. Fresh water especially from fresh water bodies as through desalination process
2. Sand and gravel that is used for construction
3. Petroleum oil that is often distilled from the sea
4. Food in form of sea weeds
5. Mineral and metals such as gold, tin, sodium chloride salt, sulphur
6. Whales
7. Shell fish, oysters



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REGIONAL & INTERNATIONAL TRADE BLOCKS

Success criteria:

- Explain the term trade block
- Explain the aims of regional and international trade block
- Explain the benefits and challenges of trade agreements
- Explain the roles of the customs in international trade

Trade block:

It refers to the exchange of goods and services done by countries within the same geographical or economic region.

Trade block helps in compensating what other countries within the region are lacking, hence it coordinate in proper planning and specialization

Examples of trade block within in Africa.

Southern Africa Development Community (SADC)

Established in 1979 in Arusha Tanzania

Membership include:-

Angola, Malawi, Zimbabwe, Zambia, Botswana, Lesotho, South Africa, Namibia, Tanzania, Swaziland, Mauritius, Seychelles

The secretariat of the SADC is in Gaborone Botswana

Aims of the SADC

- To enable trade to be conducted smoothly
- To improve international cooperation so that members could have access to a larger market
- It helps member countries to mobilize resources within the region for the benefits of all members eg. HEP, Fisheries, Mineral, Forests etc.
- Determine the socio-economic development of member states by improving transport and communication
- Promotes regional and industrial strategy through value added process of goods
- Encourage sustainable use of natural resources through protection of the environment and wildlife.
- Aim at achieving growth in order to improve quality of life
- Promotes and defend peace and security of members states
- Develop and defend common political values such as human rights

Achievement of the SADC

- It has created trade links with other groupings such as the European Union (EU) where Malawi Exports its tobacco
- It has mobilized development of resources such as the HEP at Caborra- Bassa in Mozambique for the benefits of member states
- It has helped promote viable regional industrial development with increased raw material
- It has assisted in the rehabilitation and development of infrastructure
- It has strike a deal with the international cooperation

Common Market for East and Southern Africa (COMESA)

Member states include:

Zimbabwe, Zambia, Lesotho, Mozambique, Malawi, Djibouti, Ethiopia, Eritrea, Kenya, Uganda, Burundi

Headquarters, is in Lusaka Zambia

AIM OF COMESA

1. To promote trade by reducing custom

2. To promote the volume of investment and trade
3. To promote cooperation and development in trade
4. To foster peace and security in order to increase development

ACHIEVEMENTS OF COMESA

1. It has improved privatization and liberalization of trade and industries
2. It has enhanced volume of trade due to elimination of trade barrier
3. Member states are free to plan and undertake joint venture in business e.g. road construction
4. It has worked easily with other international organization such as the EU
5. Transportation and communication has improved across member states
6. Specialization of production of goods based on availability of raw material

CHALLENGES OF COMESA

1. The changes are yet to be seen giving meaningful benefit to those living below poverty line
2. There is high corruption and inefficient in leadership and low trade bargaining power
3. Infant industries are not protected as they get challenged with multinational companies
4. Member states within the region who produce poor quality products fail to compete well with others

ECONOMIC COMMUNITY OF WEST AFRICA STATES (ECOWAS)

It was founded in 1976 and it has member states including cape Verde islands

AIMS OF ECOWAS

1. To develop a common market for member states by removing trade barrier
2. It has brought in free movement of people within the region by removing VISA
3. To promote regional development and cooperation in areas of fishing, agriculture, manufacturing, industry, energy, transport and telecommunication

ACHIEVEMENT OF ECOWAS

- Established trade links with Britain and France

IMPORTANCE OF REGIONAL TRADE GROUPING IN Africa

1. There is rational division of labour and specialization of production among member countries
2. The local or domestic market is normally expanded and services provided
3. There is full political and economic union of member countries to achieve proper industrial planning

ROLE OF CUSTOMS IN INTERNATIONAL TRADE

1. To reduce custom on goods produced and sold within the trade block of member states
2. Increase tariffs or customs when other countries outside the trade block wish to sell its goods within the region
3. To promote regional industrialization and protect infant or local industries from strong multinational industries
4. To encourage regional economic growth and investment

REMOTE SENSING & GEOGRAPHIC INFORMATION SYSTEM (GIS)

Success criteria:

- Explain remote sensing and geographical information system
- Interpret information from geographical information system

Geographical information system:

It's a system designed to capture, store, manipulate, analyze, manage and present all types of spatial or geographical data.

Remote sensing

It refers to collection of information about an object without being in direct physical contact with the object.

It is the process of detecting and monitoring the physical characteristics of an area by measuring its reflected and emitted radiation at a distance from the targeted area.

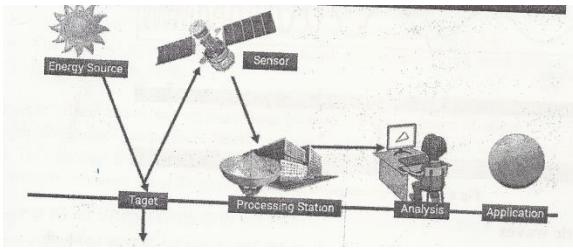
Features and processes of remote sensing

Features include:

- The **sun** which is the major sources
- **Land** features which are targeted areas
- **Sensors** which are cameras mounted on airplanes or satellites
- **Processing stations** which are computers in offices

Processes include:

- **Radiation** from the sun
- **Energy reflection** scattering from the target
- **Energy/image transmission** from sensors to computers
- **Analyzing and interpretation** of data on the computers
- **Application of information/data** on people and the environment



REMOTE SENSING PROCESS

SUN:

This is the **primary source** of energy that is required in remote sensing. The sun releases **solar radiation** in form of **short waves**.

Some of the **solar radiation** from the sun is lost in the atmosphere while the remaining is absorbed by the earth's surface and later emitted back into the atmosphere in form of **thermal infrared waves**.

Sensors

These are special cameras mounted on airplanes or satellites and are used to collect remotely sensed images of the earth. Remote sensed images are integrated within GIS and are very useful to researchers and people's everyday lives.

Examples of uses:

- Cameras on satellite and airplanes take images of large areas on the earth's surface, allowing us to see much more than we can while standing on the ground.
- Sonar system on ships can be used to create images of the ocean floor without needing to travel to the bottom of the ocean
- Cameras on satellite can be used to make images of temperature changes in the oceans

Types of remote sensors

Remote sensors are mainly classified as passive remote sensors and active remote sensors.

(i) Passive remote sensors

They detect only radiation emanating from naturally from the object on the earth's crust as reflected from the sun

Active remote sensors

- These sensors actually beam their own artificially produced energy to a target and record the reflected component such as radar (radio) and sonar
- An active remote system emits and receives energy at the same time whereas a passive system only receives
- Components of an imaging radar system of an active sensor include a **transmitter, receiver, an antenna array and recorder**
- A receiver accepts the reflected signal as received by the antenna then filters and amplifies it as required
- An antenna array transmits a narrow beam of microwave energy. The same antenna is also used to transmit the radar signal and receives its echo from the terrain
- A recorder records and or displays the signal as an image

Remote sensing platforms

Remote sensing platform are carriers of remote sensors from which photographs or images of the earth's surface are taken from the atmosphere or space from the atmosphere or space. Remote sensing platform are classified according to their height as follows:-

- (i) Ground based platform
- (ii) Airborne platform
- (iii) Space borne platform

(a) Ground based platform

I. Mobile hydraulic platform:

- They are carried on vehicles
- They are extendable to a height of 15 meters above the surface
- At the top of the platform are spectrum reflectance meters and photographic system
- The microwave scanners are linked to data

II. Limitations

Vehicle are limited to the road and the range is confined to small areas along or around the road

III. Towers

They are limited to the road and target area

They can be dismantled and removed from one place to another

They offer great rigidity than most

IV. Limitation

They are less mobile and require more time to erect

i. Weather surveillance radar

a weather surveillance Radar is of long range type which detects and tracks tropical cyclones and cloud masses at a distance of 400km or less

This radar has a rotating antenna disk preferably mounted on top of a building free from any physical obstruction.

(b) Airborne platforms

(i) Balloon

High flying balloon provide an important tool for probing the atmosphere and form an essential part of the altitude atmospheric research

Advantages

- They can cover an extensive range of altitudes in the stratosphere
- Balloon based platform constitutes an important and inexpensive venue for testing instrument underdevelopment. These can either be potential instruments for unmanned aerial vehicles or in some cases for satellite based remote sensing instruments

(ii) **Aircrafts**

Advantages

- Aircrafts can fly at relatively low altitudes thus allowing for sub-meter sensor spatial resolution
- Aircrafts can easily change their schedule to avoid weather problem such as clouds which may block a passive sensor's view of the ground
- Sensor maintenance, repair and configuration changes are easily made to aircraft platforms
- Aircraft flights paths known no boundaries except political boundaries
- They offer very high spatial resolution images

Disadvantages

- The low altitude flown by aircraft narrows the field of view to the sensor hence require many passes to cover a large area on the ground
- **Getting permission to intrude into foreign airspace can be a length and frustrating process**
- Not cost-effective to map a large area

(c) Space borne platforms

In space borne remote sensing sensors are mounted on a spacecraft (space shuttle or satellite) orbiting the earth.

Space borne platform include the following: Rockets, satellites and space shuttles

Space borne platform range from 100 to 36,000km above the earth's surface

Advantages

Large area covered

Semi-automated computerized processing and analysis

Relatively lower cost per unit area of coverage

Frequent and repetitive coverage of an area of interest is possible

Disadvantage

Spatial resolution of images is lower as compared to those by airborne platform

Data output and cartography

Cartography is design and production of maps or visual representation of spatial data. The vast majority of modern cartography is done with the help of computers, usually using GIS but production of quality cartography is also achieved by importing layers into a design to refine it

Most GIS software gives the user substantial control over the appearance of the data.

Remote sensing data are processed and analyzed with computers with software known as remote sensing application

Application of remote sensing

Some specific uses of remotely sensed images of the earth include:

- a) Large forest fires can be mapped from space, allowing rangers to see a much larger area than from the ground.
- b) Tracking clouds to help predict weather or watch erupting volcanoes, and help watch for dust storms.
- c) Aspects such as species inventory, biomass estimation and forest health and growth are accounted for by using remote sensed data.
- d) Mineral exploration targets and superficial deposits are mapped using satellite images.
- e) Mapping the ocean bottom-discovery and mapping of the rugged topography of the ocean floor such as huge mountain ranges, deep canyons, and the “magnetic striping” on the ocean floor using laser and radar altimeters on satellites.
- f) Weather satellites are used in meteorology and climatology.
- g) Satellite images are used in the identification of earth’s surface types such as water body, bare soil and vegetation.
- h) Aerial photographs have often been used to make topographic maps by imagery and terrain analysts in trafficability and highway departments for potential routes. It is also used in modeling features of terrestrial habitats.
- i) Helps in measuring sea levels, tides and wave direction in coastal and offshore areas using ultrasound (acoustic) and radar tide gauges.
- j) Some instruments such as radiometers and photometers are used in collecting reflected and emitted radiation in a wide range of frequencies. The most common are visible and infrared sensors, followed by microwave, gamma rays and rarely, ultraviolet. They may also be used to detect the emission spectra of various chemicals and providing data on chemical concentrations in the atmosphere.

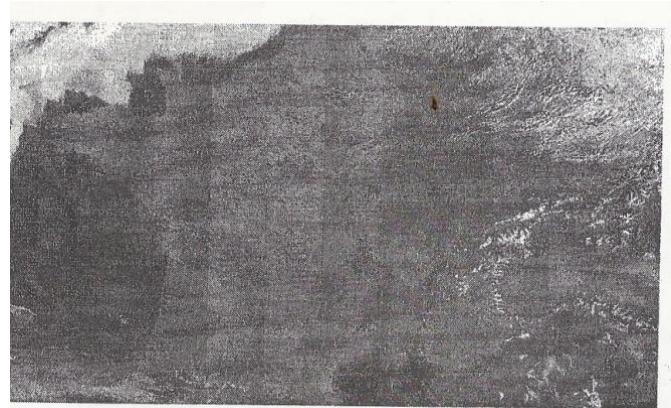
- k) Remote sensing allows to follow up and monitor risk areas, determine desertification factors, support decision-makers in defining relevant measures of environmental management and to assess their impacts.

How to interpret satellite images

Five Tips and Strategies

Satellite images are like maps: they are full of useful and interesting information, provided you have a key. They can show us how much a city has changed, how well our crops are growing, where a fire is burning, or when a storm is coming. To unlock the rich information in a satellite image, you need to:

- a) Look for a scale.
- b) Look for patterns, shapes, and textures.
- c) Define the colors (including shadows).
- d) Find north.
- e) Consider your prior knowledge.



Look for a scale

Some images are less detailed but cover a wider area, ranging from the landscape scale (185 kilometers across) to an entire hemisphere. The level of detail depends on the satellite's spatial resolution. Like digital photographs, satellite images are made up of little dots called pixels. The width of each **pixel** is the satellite's spatial resolution.

Depending on the image resolution, a city may fill an entire satellite image with grids of streets or it may be a mere dot on a landscape. Before you begin to interpret an image, it helps to know what the scale is. Does the image cover 1 kilometer or 100? What level of detail is shown?

Look for patterns, shapes, and textures

Bodies of water-rivers, lakes, and ocean are often the simplest features to identify because they tend to have unique shapes and they show up on maps. Other obvious patterns come from the way people use the land. Farms usually have geometric shapes-circles or rectangles. A straight line anywhere in an image is almost certainly human-made, and may be a road, a canal, or some kind of boundary made visible by land use.

Define Colors

The colors in an image will depend on what kind of light the satellite instrument measured. There are three primary colors of light and these are **red, green and blue**.

‘True color’ images show colours that are similar to what a person would normally see from space. ‘False-colour’ images incorporate infrared light and may take on unexpected colours which the eyes may not normally see. These images indicate colours that have been assigned to three different wavelengths by computers.

Water

Water absorbs light, so it is usually black or dark blue. Sediment reflects light and colours the water. When suspended sand or mud is dense, the water looks brown. As the sediment disperses, the water’s colour changes to green and then blue.

Plants

Plants come in different shades of green, and those differences show up in the true-colour view from space. Grasslands tend to be pale green, while forests are very dark green. Land used for agriculture is often much brighter in tone than natural vegetation.

Bare ground

Bare or very lightly vegetated ground is usually some shade of brown or tan. The colour depends on the mineral content of the soil. In some deserts the exposed earth is red or pink because it contains iron oxides like hematite.

Cities

Densely built areas are typically silver or gray from the concentration of concrete and other building materials. Some cities have a more brown or red tone depending on the materials used for rooftops.

Atmosphere

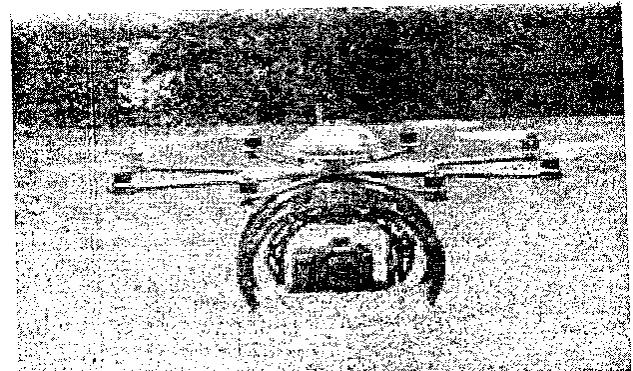
Clouds are white and gray, and they tend to have texture just as they do when viewed from the ground. They also cast dark shadows on the ground that mirror the shape of the cloud. Some high, thin clouds are detectable only by the shadow they cast.

Find North

When you get lost, the simplest way to figure out where you are is to find a familiar landmark and orient yourself with respect to it. The same technique applies to satellite images. If you know where north is, you can figure out if that mountain range is running north to south or east to west, or if a city is on the east side of the river or the west.

These details can help you match the features to a map.

AERIAL PHOTOGRAPHS



Aerial photography - as it sounds - is the process of taking photographs from the air using aircraft or other flying object. Platforms for aerial photography include fixed-wing aircraft, helicopters, unmanned aerial vehicles balloons, drones, rockets, kites, parachutes, stand-alone telescoping and vehicle-mounted poles. Mounted cameras may be triggered remotely or automatically; hand-held photographs may be taken by a photographer.

TYPES OF AERIAL PHOTOGRAPHS

Aerial photographs are basically classified based on the angle from which they were taken.

There are therefore two types namely:

- i. Oblique aerial photographs
- ii. Vertical aerial photographs

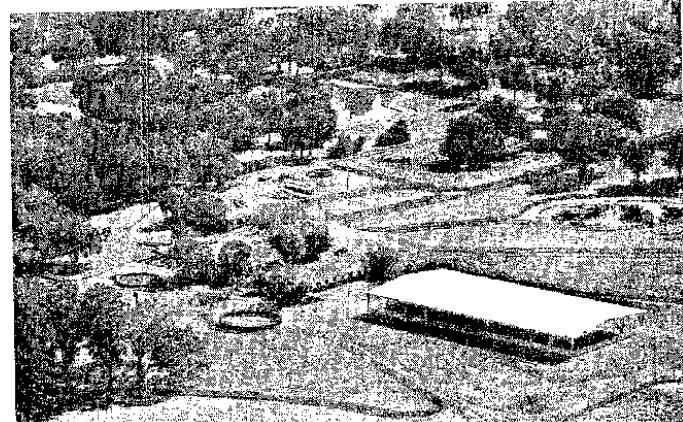
Oblique aerial photographs

These images are usually taken at an angle, typically 45 degrees but as they are often taken manually, they can be whatever angle gives the view of the features or landscape.

These photographs may be taken from high mountains, tall buildings or airplanes with the camera held at an angle to the optical axis. However, oblique aerial photographs are usually taken at a lower elevation than vertical aerial photographs.

Oblique aerial photographs may be taken at a low angle or high angle.

Those that are taken at a low angle, i.e. below 30 degrees, show a larger amount of ground but the horizon is completely hidden. High-angle oblique aerial photographs on the other hand, are taken at a wider angle and the target is at a longer distance. On these photographs a larger amount of the ground is hidden but the horizon is completely visible.



Vertical aerial photographs

In a vertical aerial photograph, the camera is nearly perpendicular to the horizon. In other words, the optical axis of the camera is held (90) to the field of view on the ground. The



photographs show a vertical view of features on the ground.

Differences between aerial photographs and satellite images

- i. Aerial photographs are taken at lower altitudes, basically within the atmosphere while as satellite images are taken from high above the atmosphere (in space) by satellites orbiting around the earth.
- ii. Aerial photographs are taken by a camera in an airplane while satellite images are taken and recorded by electronic scanners mounted to satellites in space.

APPLICATION OF AERIAL PHOTOGRAPHY

a) In Cartography

Cartographers or mapmakers use aerial photographs and satellite images in order to make a map of an area. These images provide the exact details of the landscape and hence help in accurate representation of the land features on the piece of paper (map).

b) In Archaeology

In archaeology aerial photography is ideal for locating minerals, lost monuments and tracking features, especially those that are not visible at ground level, those that are under the soil and cannot be seen on a field walk and those that can only be seen under certain conditions.

c) In Urban Studies

In modern urban planning, town developers need to study the impact of expansion and development of urban centres on the landscape and the impact on the environment. New facilities (for example a new sports stadium) will require a rethink of the infrastructure and the impact that the new facility will have on people living in the area – will we need to build more houses? Upgrade the roads? Will this affect protected areas? Aerial photography taken at low levels is vital to examining the existing infrastructure.

d) In Climate Change

Localized aerial photographs will highlight the die-off of certain vegetation or the increase of invasive species which may lead to climatic hazards such as river beds drying up, persistent dry spells (droughts), frequent floods and the reduction of inland lakes (such as Lake Chirwa). Researchers keep vital records in changes over seasons and years to track local effects of climate change and risks to local ecosystems using data from aerial photographs.

Other Earth Sciences

e) In other Earth Sciences

They can also be used to study the process of natural changes, such as variations in soil and geology over time as well as changes to the underlying ground that leads to disasters such as landslides.

Though increasingly taken over by satellite images and digital mapping of GIS in recent years, photogeology still has some practical applications for finding mineral and fuel deposits, mapping areas and tracking geological changes and water management as well as general geological research that other applicants cannot contribute to.

WETLANDS

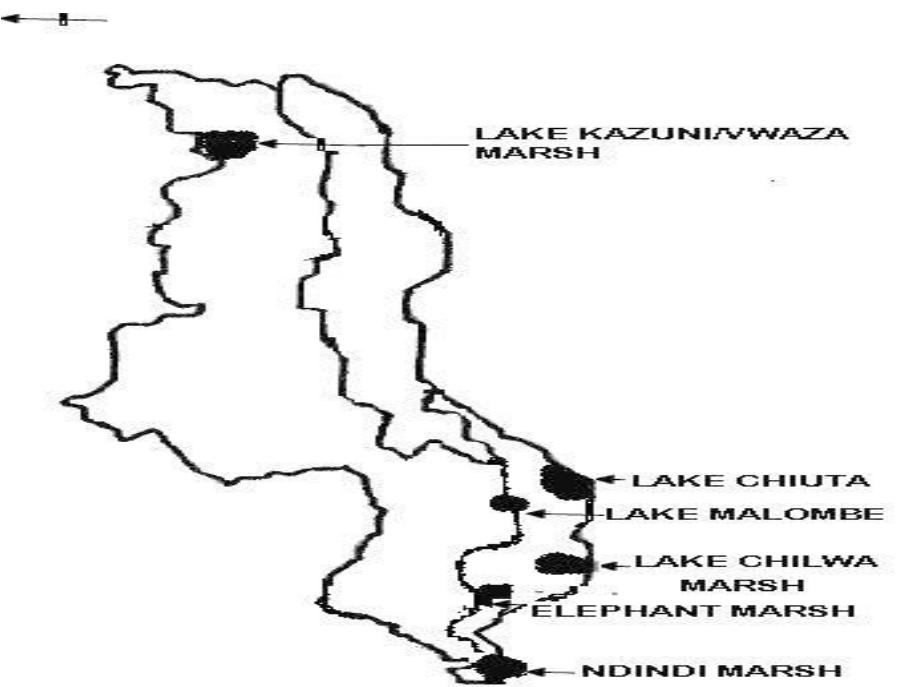
Success criteria:

- Locate wetlands on a map of Malawi
- Explain the importance of wetlands
- Describe activities that threaten wetlands
- Suggest strategies for managing wetlands

It refers to swamps, marshes and bergs

Examples of wetlands in Malawi

See below



The importance of wetland

- a. They beautify the environment by providing a place for recreational observation and biological studies
- b. They are a breeding place for fish and other aquatic life
- c. They stabilize shore lines by controlling the impact of sea waves
- d. They are habitat for birds and other endangered species
- e. They lock-up carbon in form of peat, thus preventing it from entering the atmosphere hence control global warming
- f. They absorb and filter pollutants that would degrade rivers and lakes thus providing clean water
- g. At coast, they buffer the impact of tides and in-land wetland absorb run-off reducing flood waves down stream

Human activities that threaten wetland

Draining of wetland for cultivation of crops

Pollution that involve dumping of wastes into wetland that affect aquatic life

Construction of roads and other infrastructure across wetland that results in drying of wetlands

Destruction of vegetation that may cause drying of wetlands

Effects of draining wetlands

- a. It reduces the quality of water by allowing water to continue carrying suspended load into a lake or river
- b. It may result in silting of rivers and lakes as the suspended load is dumped into river or lake that may cause flooding
- c. They help control effects of flooding by reducing the speed of water (run-off)
- d. It affects the ecological balance of wildlife and other adapted species hence may lead to extinction of some animal species

Management of wetlands

- a. The government and other public sectors should provide civic education to the general public on importance of wetland
- b. Developing of strict laws against illegal dumping of wastes in wetlands
- c. The community living around the wetland should be taught on some of the benefits they may get from wetlands if it is protected

WILDLIFE IN MALAWI

WILDLIFE

Success criteria:

- Explain the term wildlife
- Explain the importance of wildlife in Malawi
- Describe human activities endangering wildlife in Malawi

It refers to all undomesticated or wild animals (fauna) and uncultivated or wild plant life (flora)

It also refers to various forms of natural flora or plant life

IMPORTANCE OF WILDLIFE

1. They provide food in terms of fish, birds, reptile etc.
2. They are a source of medicine from the plants animals found in the wild life

3. They are educational value where scientist could do their research
4. They are of economic value where game having could be sold for money and some people find employment as game rangers in parks
5. They are of ecological value where they assist in rain formation and replacement of nutrients
6. They promote the tourism industry that brings into the country the foreign exchange
7. They are of aesthetic value where people could enjoy watching wildlife
8. They act as a national pride for instance lions, leopard, eagles used by police, army and Malawi flags coat of arms

HUMAN ACTIVITIES ENDANGERING WILD LIFE

1. Setting of harmful bush fire that destroy trees and kill wild life
2. Deforestation that lead to extinction of some wild life
3. Illegal poaching into protected areas such as game reserves and National parks
4. Misuse of pesticides that tend to destroy life of aquatic life
5. Overfishing that lead to extinction of some fish species
6. Poor waste disposal that may endanger aquatic life
7. Draining of swamps, marshes for infrastructure development may interfere with marine species

NEGATIVE EFFECTS OF WILD LIFE

1. May cause damage to crops e.g. baboon, monkey
2. May attack human beings e.g. snakes, crocodiles, lions
3. Creation of national parks may be done at the expense of large agriculture land
4. They may lead to transmission of diseases such as foot and mouth diseases

THREATS TO WILD LIFE RESOURCES AND ENDANGERED SPECIES

(Economic Threats)

1. Over harvesting where large logs of trees are destroyed for timber
2. Over hunting where a number of wild life is lost through hunting e.g. elephants, whales, buffalo
3. Poaching into protected areas
4. Traded for scientific purposes or placed in Zoo in the western Europe for studies
5. Population pressure in the game and national parks that threaten habitat for wild life

(Ecological Threats)

1. Habitat degradation and destruction due to climate change
2. Industrial pollution that may affect the food chain of wild life
3. Natural disease and pests that may kill wild life

4. Drought due to rain failure may affect survival of wild life
5. Introduction of foreign / exotic fierce may lead to increased competition with indigenous plants

PROTECTION CONSERVATION OF WILD LIFE RESOURCES

1. Setting up of wild life conservation areas such as game reserves and national parks
2. Law enforcement against illegal hunting and giving stiff penalty
3. Recognition of international laws and agreement on conservation of wild life and species
4. Setting up of Zoos and botanic gardens where people could be educated on the need to protect wild life

WASTE MANAGEMENT

Success criteria:

- Explain different types of wastes
- Explain the effects of poor waste disposal
- Explain ways of managing different types of wastes
- Explain the importance of waste management

It's the proper way of caring for waste products in order to reduce pollution and wastage of resources

Type of wastes

- Liquid wastes
- Solid wastes

Liquid wastes

These include:- sewages, used oils, discharging chemicals from industries, waste grease, etc

Solid wastes

These include:- plastics, metal scrap, waste papers, food remains, dead animals, etc

Management of wastes

The could be done in the following ways:-

- Recycling
- Burning
- Burying
- Purifying
- reusing

(1) Liquid wastes management

Management through purifying

- Water may be purified in order to use it for other purposes
- Sewages may be treated and purified and then the water may be reused

Management through reusing

Water too may be reused for other purposes for instance water that have been used for washing plates may be used for watering flowers

(2) Solid waste management

(i) Managed through recycling

Plastic and other metal scrap may be taken back to the recycling plant where they may be melted and then made into a new product

(ii) Management through burning

Waste papers, and some plastics that may not be recycled may be burned done to avoid waste pollution

(iii) Management through burying

Those objects that may not be recycled or burned such as food remains and dead animals may be buried to avoid air pollution

Effects of poor waste management

- a) Wastes may cause body injury for instance broken pieces of glass and metal scrap
- b) Uranium wastes may cause death through radiation
- c) Some wastes may cause disease for instance broken sewers
- d) They may cause depletion of resources from the environment
- e) They may cause air pollution for instance the dead animals
- f) They may cause unsightly to the environment
- g) They may result in cholera out-break

Importance of managing wastes properly

- a) To prevent spread of disease such as cholera
- b) To prevent the danger of radiation
- c) To prevent injury of people and accidents
- d) To reduce depletion of resources from the environment
- e) To reduce bad smell from the environment
- f) To improve the cleanliness of the environment

RESPONSES TO CLIMATE CHANGE

Success criteria:

- Identify national and international responses to climate change
- Explain benefits and challenges of climate change interventions

National & international interventions on climate change

- Afforestation on bare land
- Re-afforestation on pieces of land that experienced deforestation
- Avoid harmful bushfires that may destroy vegetation
- Practice proper farming methods such as avoiding shifting cultivation
- Adhere to international agreement on banning use of CFC gas
- Adopt more advanced technology that result in reduced industrial pollution
- Provide civic education to the general public on the danger of climate change

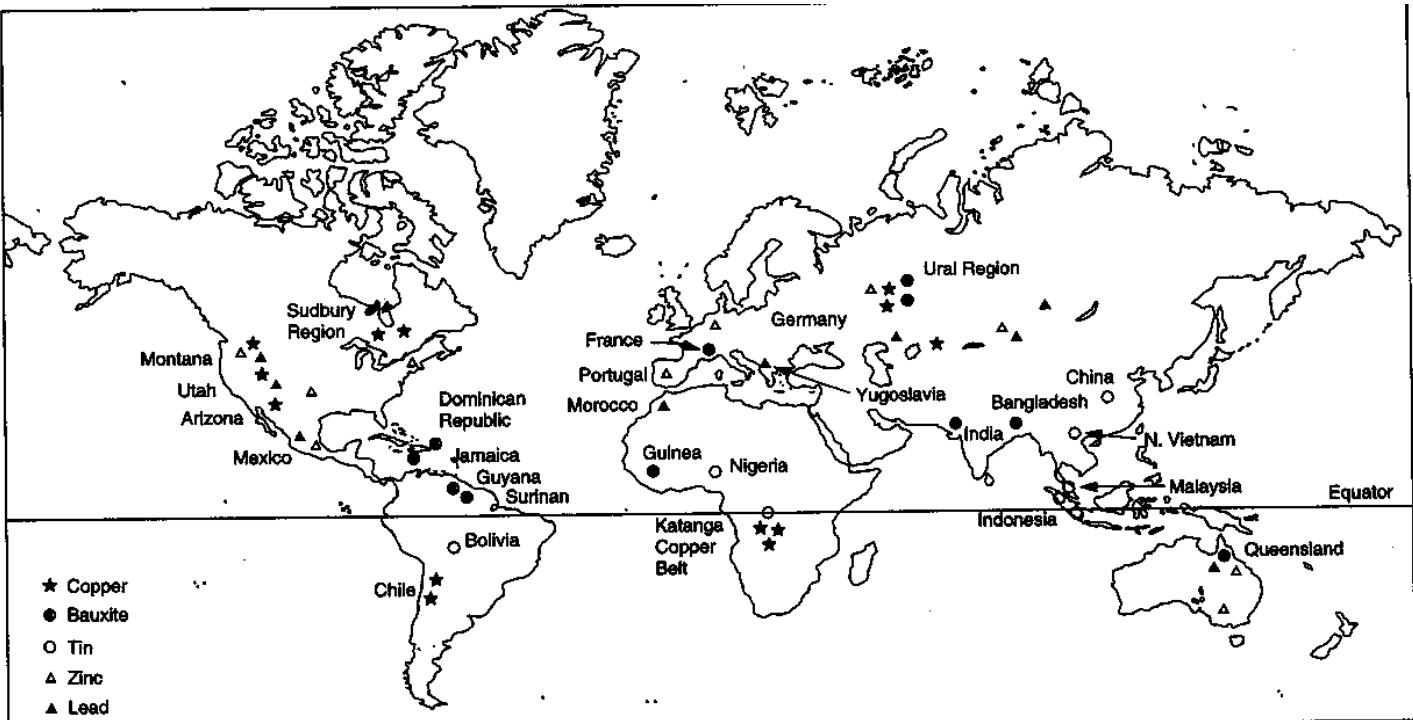
Challenges associated with climate change

- a) Global warming (green house effect) with the increased accumulation of methane, carbon-dioxide, nitrous-oxide, and CFC gas
- b) Rising level of sea and oceanic water due to the melting of ice caps in polar region
- c) Shrinking of the arctic and Antarctic ice caps that reduces size of the earth surface
- d) Some polar animals are finding it hard to survive due to the changing climate
- e) Changing ocean current direction that affect sea navigation
- f) It may result into increasing storms and flooding due to high temperature and evaporation
- g) Changing of plant and animal species characteristics in order to try and adapt to the changing climate
- h) Persistent droughts and flooding affecting agriculture productivity and loss of property
- i) Poverty due to continuous crop failure

MINERALS

Success criteria:

- Explain types of minerals
- Explain the uses of minerals
- Describe mining methods
- Describe the effects of mining
- Explain the occurrence of uranium in Malawi
- Explain the importance of uranium
- Explain the possible environmental effects of uranium mining in Malawi



A **mineral** is a chemical compound which forms the basis of the rock

A **metal** is a chemical element which can be separated from a mineral by special treatment.

An **ore** is a rock which has metallic content sufficiently high to make it worthy mining

Decisions to mine a mineral

This depends on a number of factors:-

- The quality of the mineral ore
- The quantity of the ore
- The availability of the market
- The cost of mining the ore
- The availability of power
- The accessibility of the place to mine the ore
- The feasibility study of the place
- The method of mining to be used

Types of minerals

- a) Power producing (organic minerals) minerals eg coal, petroleum
- b) Metallic minerals
 - (i) Non-ferrous metallic eg tin, copper, gold diamond etc
 - (ii) Ferrous minerals eg iron
- c) Non-metallic minerals eg salt, asbestos, sulphur etc

d) Rock which is a combination of minerals

Uses of minerals

- Granite and other crystalline igneous rocks are used for construction of roads
- Marble, limestone, slate and sandstone used for building houses
- Clay used for moulding of bricks
- Limestone used as a raw material for making cement
- Metallic minerals used for transmission of electricity for instance aluminium
- Ferrous metal are used for making rail sleepers
- Uranium metal used for production of nuclear energy
- Other minerals such as tin may be used as metal-plating for food preservatives
- Gold and other minerals may be used for making money and also plating valuable objects
- Asbestos mineral may be used for roofing houses and making firefighting clothes

Mining methods

- **Opencast mining (strip mining), open pit, surface mining**:- it done where a mineral lies close to the earth's surface eg Bauxite mining, coal mining, uranium mining etc
- **Underground mining (shaft or deep mining)** :- it normally practiced to extract a mineral that lies deep into the earth's surface eg gold and diamond mines in South Africa
- **Adit mining**:- it's normally practiced where a mineral lies on the side of a steep slope, or hill side and a tunnel is normally used to go into the mountain to extract the mineral eg Mchenga mines in Rumphi district
- **Alluvial (placer mining)**: mainly done in a stream of river with alluvial deposits of a mineral such as gold, copper etc
- **Hydraulic mining**: where a high pressure of water is used to dissolve the alluvial and expose the mineral

Effects of mining a mineral

- a) It may occupy a large agriculture land for instance open cast mining
- b) It may cause land subsidence due to blasting and digging
- c) It may cause earthquake that may interfere with infrastructure development
- d) The collapsing of a deep shaft mining may cause death as workers may get trapped
- e) Mining may result in extinction of non-renewable resource
- f) Open-cast may leave the land unsightly if left uncovered
- g) Mining may result in air and water pollution
- h) It may affect the long standing tourism industry as it interfere with wildlife

OCCURRENCE OF URANIUM IN MALAWI

Uranium is mined at Kayerekere in Karonga district.

- ✓ Uranium may develop in any material that is exposed to radiation for instance water, soil, rock, animals, plants etc
- ✓ The leaching process may result in accumulation of the uranium into the rocks where it is mined mostly through open-cast.

Processing of uranium ore

The ore is processed by grinding the material into uniform particles size and then treating the ore through **chemical leaching process**. The milling process(grinding) commonly yields a dry powder-form consisting of a natural uranium called **YELLOW CAKE** which may be sold on the uranium market as U_3O_8

Importance of uranium

- The nucleus of uranium are bombarded with a stream of neutrons in order to produce abundant energy that assist in production of electricity 1kg of uranium can produce as much as 1500tonnes of coal energy
- They may be used in making weapons of mass destruction eg nuclear bombs
- It is used as ballast in aircraft and boat for balancing
- It is used in hospitals x-ray machine for high energy target in detecting fractures
- It is used to harden tank and vehicle armour
- used as a shield to transport and store radioactive material
- It is used in halting radioactive material than lead since it has high density
- Counter weight for aircraft control surface
- As ballast for missile re-entry vehicles
- Used in yellow glass and pottery ware
- It can easily be machined and casted for other uses than other metals
- The radium from uranium may be used making glow in the dark paints for clock and aircraft dials
- Used for pottery glazing in the making of tiles of different colors
- Used in photography as toner especially uranium nitrate
- In lamp filament for stage lighting bulbs
- To improve the appearance of dentures
- For stain and dyes in leather and wood industries
- Uranium salts are mordant of silk or wool
- Used in microscope to increase contrast of biological specimen
- Used in estimating the earliest age of igneous rocks
- Used in estimating the dates of other radiometric dating

Environmental effects of uranium

- It may affect the quality of water due contamination of rivers and lakes if it is not monitored closely resulting in water pollution
- Tailing disposal sites may be a source of contamination to environment
- Natural events such as earthquake, hurricanes droughts may lead to the potential contamination on the site
- It may lead to exposure to radiation of higher levels hence cause health problems
- It lowers the groundwater levels due to mining activity and may affect wells of water around the local community
- It may lead to closure of soil pores due to soil compaction and removal of overburden soil hence affect the micro-organism that improve soil
- Leads to dust arising from the mining activity at the site hence cause health respiratory problems
- It may leads to ecological disaster due to spilling of radioactive materials into streams
- Extreme exposure to radioactive material from uranium may cause health problems such as cancer disease

PETROLEUM IN THE WORLD

Success criteria:

- Explain the formation and occurrence of petroleum
- Describe how petroleum is extracted, transported and refined
- Explain the uses of petroleum
- Describe the environmental impact of petroleum drilling, refining and transportation

Petroleum is made up from hydrogen and carbon atoms formed from decomposition of minute (small) marine organism which were collected in sediments of ocean floor millions of years ago

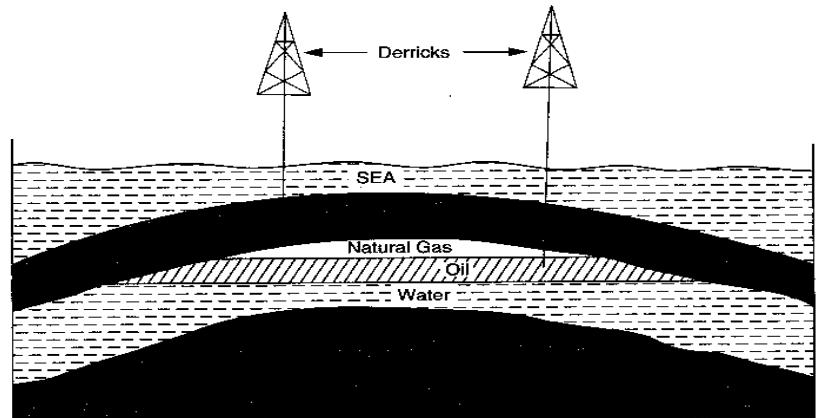
Necessary conditions for the formation of oil

- Pressure exerted on the decomposing plant and animal matter in the ocean floor.
- Heat created by piling of sediments on plant and animal matter in the sea
- Passage of a million of years allowing for decomposition and oil formation to take place
- Exclusion of air from decomposing matter due to piling pressure from sediments

Extraction of oil:

This is done using a metal structure known as a Derrick. This equipment is used to drill holes into the oil bearing rocks. The Metal structure has a diamond tip which cut across rocks. The cutter is sometimes lubricated with mud to make drilling easy

When the oil inside the rock was under pressure it comes out on its own however when it was not under pressure it is pumped out (see below)



Transportation of oil

- Oil is transported using pipeline to the refinery plant
- However oil may be transported by super-tankers across the sea from the Middle East
- Road transport is used to transport refined oil such as petrol, paraffin, and diesel to consumers
- Rail transport is sometimes used instead of road tankers because it is cheap over long distance and carries bulky goods

Refinery plant

Oil refining is done in three ways:-

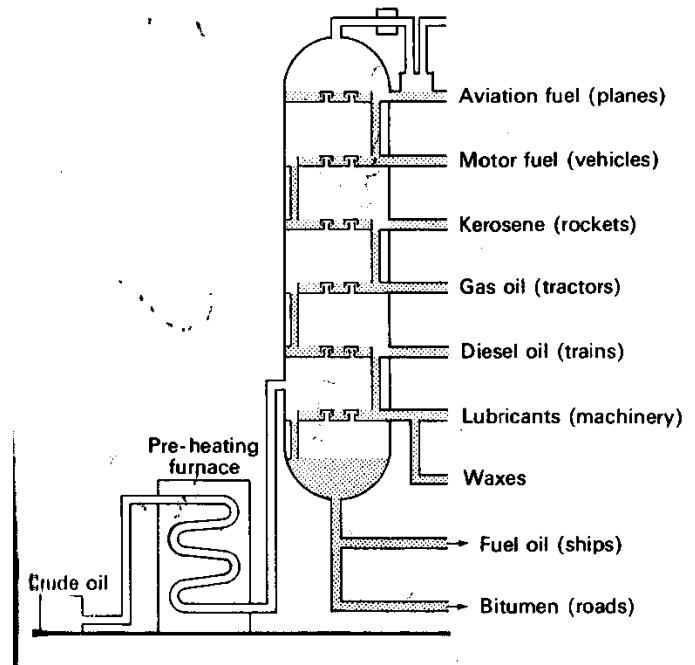
- (i) Fractioning distillation
- (ii) Thermal
- (iii) Catalytic
- (iv) Purification
- (v) Polymerization

Fractioning distillation

Crude oil is exposed to a high temperature in a pre-heating furnace where oil vaporizes into the condensation chamber, here oil start condensing depending on the size of the hydro-carbon. Those with lighter hydro-carbons condense at a higher level in the condensation chamber while those with heavier hydro-carbons condenses at the lower level of the condensation chamber.

Heavy hydro-carbons include; grease, bitumen, waxes etc

Lighter hydro-carbons include; petro, paraffin, aviation oil etc



Thermal cracking

It's' when the heavier hydrocarbons (grease, bitumen) are further exposed to intense heat of above 540⁰C in order to break them up further into useful lighter hydro-carbons eg petro or benzene

Catalytic cracking (cat-cracking)

It's' when a certain substance is add into the heavy hydro-carbon in order to speed-up a chemical process of cracking or breaking the hydro-carbons

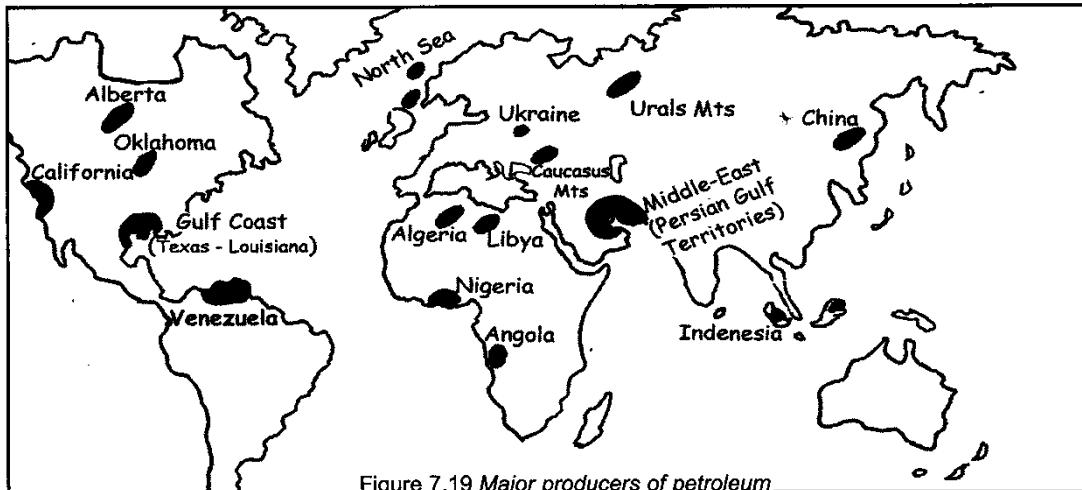
A cut-cracking such as clay may be added up into hot vaporized oil in order to come-up with fine lighter fractions

Purification

It's' when Impurities such as sulphur formed together with oil are removed to make oil pure or clean

Polymerization

It's where two or more simpler hydro-carbons molecules from the refinery plant, are made to combine with others through chemical bonding (polymer) in order to produce heavier and larger hydro-carbons molecules



Uses of oil (petroleum)

- Used in the transport industry, motor vehicles, aviation fuel etc
- Used in the industrial area especially Gen-sets
- Used for lighting and heating in homes
- Used in petro-chemical industries for making paints, insecticides
- Used as lubricants eg grease
- Used in road construction work eg bitumen
- Used as waxes for candles
- Used for making oil ointments such as Vaseline

Environmental impact of oil

- ✓ Oil drilling may cause land subsidence
- ✓ Spilling of oil on the sea or oceans during drilling may interfere with aquatic life
- ✓ The burning of oil products causes pollution hence contribute to global warming

World producers of crude oil

- USA, Middle East countries (Kuwait, Iraq, Iran Saudi Arabia), Venezuela, Russia, Indonesia, Canada, Nigeria, Angola, Algeria, Libya

Organization of Petroleum Exporting Countries (OPEC)

Members states include:

Saudi Arabia, Iraq, Iran, Kuwait, UAE, Bahrain, Qatar, Venezuela, Nigeria, Algeria, Libya, Gabon, Angola, Indonesia

Purpose of the OPEC

- To control oil production in order to avoid over production that could affect prices
- Fixing oil prices per barrel (220 litre) to assist member states make maximum profits
- To determine the production quotas of each member states in order to control prices and reduce over production
- To intervene in political misunderstanding with member states
- Use oil as an economic weapon with other states

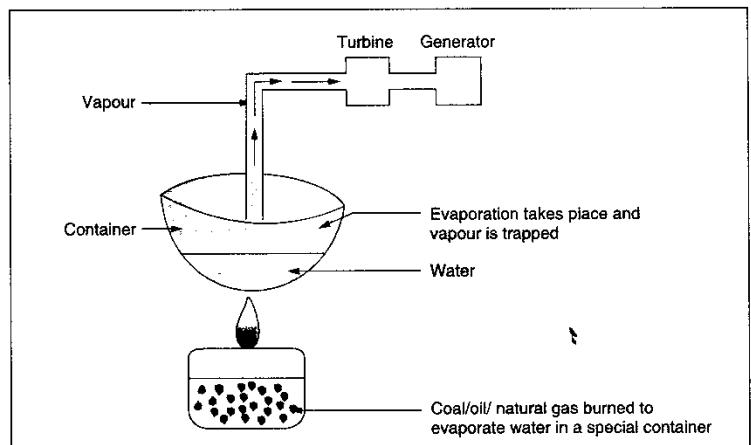
ENERGY

Success criteria:

- Describe types of energy
- Explain advantages and disadvantages of each type of energy
- Explain the environmental impact of various sources of energy

Types of energy

1. Thermal energy generated from coal, petroleum oil, or natural gas
2. Nuclear energy
3. Hydro electric energy
4. Solar energy
5. Biomass or bio-gas
6. Wind energy
7. Geothermal energy
8. Tidal energy or wave energy



Thermal energy

It the energy that comes from steam which is used to drive turbine that produces electricity through generators. Under thermal energy it uses coal or petroleum oil, or natural gas in order to generate the required steam from boiling water.

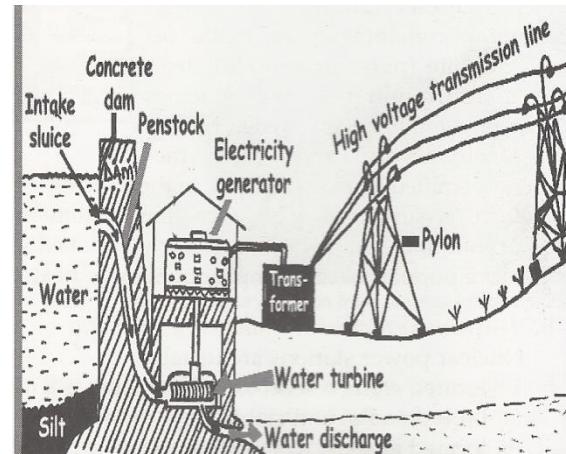
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Hydro Electric Power (HEP)

Its' energy that is generated from the vertical descending of water which drives turbines in the power house to produce electricity through generators

Conditions necessary for HEP

- Sufficient water head from a good height to drive the turbine
- Large volume of regular flow of water
- Narrow passage or gorge for easy dam construction to store water for the HEP
- A large natural water storage such as the lake Malawi
- A large market to benefit from the HEP



Advantages of HEP

- Easy transmission through power line cables
- It is cheaper than coal or petroleum
- No need for energy storage facility
- It is clean and environmentally friendly
- It is a renewable form of energy than coal or petroleum that uses fossil fuels
- Dam construction may be multipurpose hence assist in several ways eg used for irrigation water storage too Aswan Dam on Nile river

Disadvantages of HEP

- It demands high capital investment on the construction of dams and procurement of transformers
- It demands high transmission costs such as power cables, poles, power station among others
- It has no storage facility for surplus energy
- Power supply is often interrupted by rain- failure or drought condition

- Dam construction may affect a large agriculture land and also cause unnecessary relocation of people in an area

Atomic or Nuclear power

- It's the energy that is produced by splitting the nucleus of an atom (neutrons / ions) and destabilizing the nucleus in order to make it reactive to its environment
- The splitting is achieved bombarding (attacking) the nucleus with a stream of neutrons causing nucleus fission and a chain reaction that causes a sudden explosion of energy
- The abundant energy produced may be used to heat water in order to produce super steam which is used to drive turbine attached to generator for electricity production

LOCATION FACTORS FOR A NUCLEAR ENERGY

1. Close to a body of water which provides water for cooling reactors
2. Built on a flat stable piece of land
3. Located far from populated areas to reduce accidents of radiation
4. Good transport to bring In raw material (Nuclear rods) and also dumping of nuclear wastes

ADVANTAGES OF NUCLEAR ENERGY

1. It is relatively cheap form of energy
2. A single charge of nuclear rod may cost for several years without replacement
3. Uranium rods are less bulky than any other form of energy
4. Uranium releases abundant energy

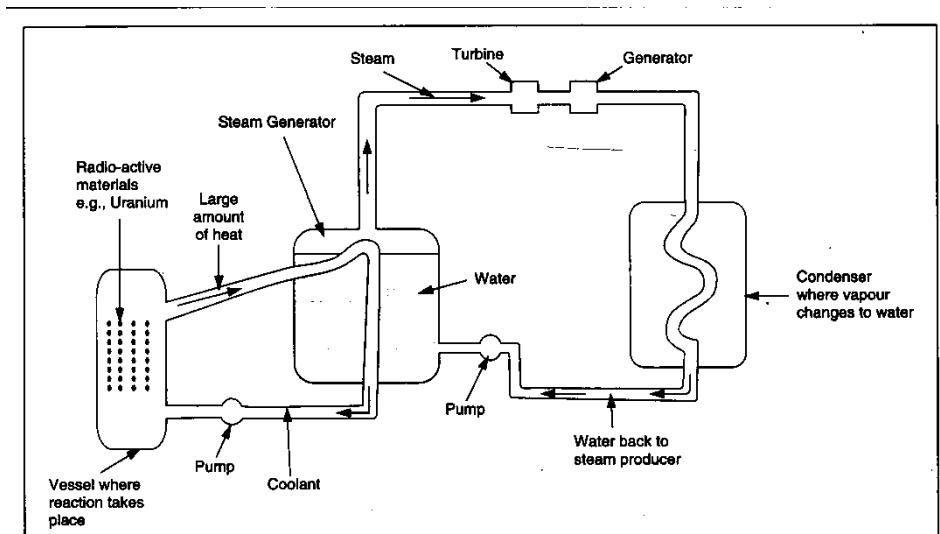


Diagram showing production of nuclear energy

DISADVANTAGES OF NUCLEAR ENERGY

1. Nuclear power stations are very expensive to build due to high skills needed (high technics)
2. Many safety measures must be put in place to avoid spilling of radiation in case of an accident e.g. in Ukraine more than 31 people died and still more others have birth defects
3. Disposal of radioactive material/wastes is a great challenge as some wastes remain active and discharge radiation that is dangerous

4. Nuclear plants are opposed because some countries end-up manufacturing weapons of mass destruction

URANIUM PRODUCING COUNTRIES

USA, Canada, South Africa, Australia, Zaire

NUCLEAR POWER STATIONS

Britain, Japan, South Africa, France, Egypt, India

SOLAR ENERGY

It is the energy that is generated from the sun with the help of solar panels and absorber pipes
(SEE BELOW)

ADVANTAGES OF SOLAR ENERGY

1. It is environmental friendly or pollution-free
2. It is clean and free from noise
3. It is convenient to small scale schemes of lighting and heating for domestic purposes
4. It is cheap once installed no need for bills

DISADVANTAGES OF SOLAR ENERGY

1. It is expensive to install and buy
2. It is easily affected by adverse weather conditions
3. Solar cells are inefficient and only transfer 30% of the energy collected
4. It is mainly applicable in tropic regions with abundant sunshine

BIOMASS (BIOGAS) ENERGY

- It's all the energy that is generated by plant and animal wastes
- Animal and human wastes are collected into the digester where fermentation takes place to produce methane gas which is used for heating and lighting while the wastes may later be used as fertilizer
- Agriculture or crop wastes such as cassava, sugar cane, may be processed to produce ethanol energy used in cars

(SEE BELOW)

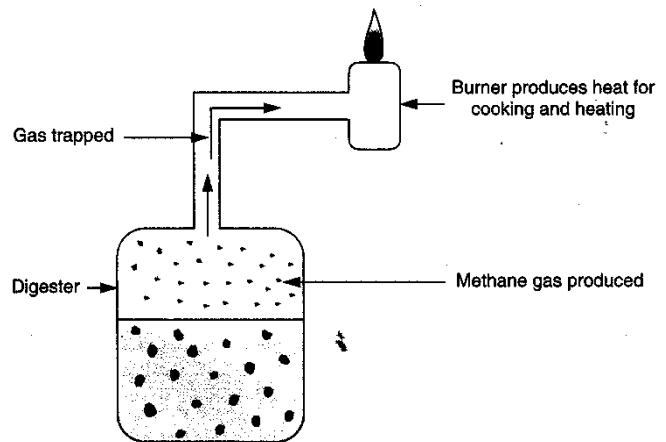


Diagram showing production of bio-gas

ADVANTAGES OF BIOMASS ENERGY

1. Cheap and uses waste products or by products
2. It is used in cooking and heating
3. It has the potential to be produced locally from cassava waste and human wastes
4. It can be stored for future use
5. It is a better way of disposing wastes from sewages
6. It may be used in any country

DISADVANTAGES OF BIOMASS

1. The burning of methane gas from biomass may contribute to greenhouse effect (global warming)
2. It is opposed morally by some people who feel human waste is dirty and should not be used for cooking
3. It requires a regular supply of wastes in the digester which may not be possible
4. Lack of capital and technology for rural masses to take advantage of it

WIND ENERGY

- It's the energy that is produced by wind which drives windmills
- The windmills may generate electricity through turbine and a generator

(SEE BELOW)

ADVANTAGES OF WIND ENERGY

1. It is clean and environmental friendly
2. It is renewable form of energy
3. It does not lead to pollution of environment
4. It is cheap to develop
5. It is ideal for remote areas

DISADVANTAGES OF WIND ENERGY

1. It is only applicable in places that experience continuous strong wind
2. It requires many windmills in order to generate enough energy
3. Rotation of windmills may cause noise pollution
4. Windmills required for large scale use may be expensive to build

3. WIND ENERGY

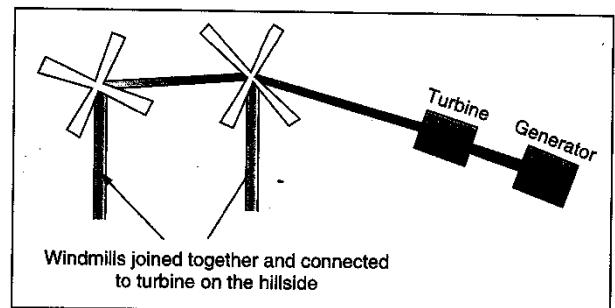
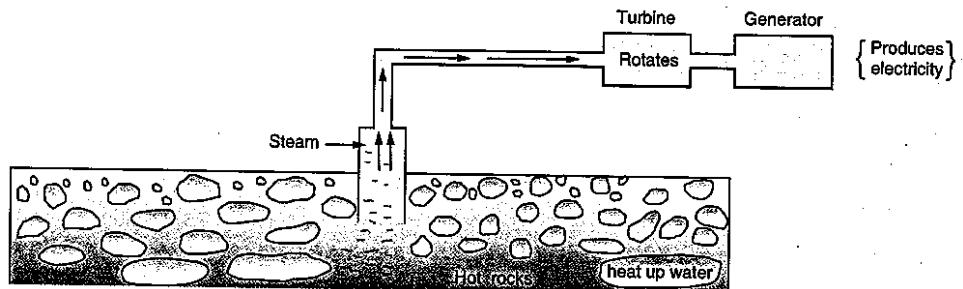


Diagram showing Wind Energy Production

GEO THERMAL ENERGY

It's the energy that is generated from super-heated water that is formed when ground water get in contact with magma ($200-300^{\circ}\text{C}$) which produces a steam used to turn turbine and produce electricity in the generator



ADVANTAGES OF GEO THERMAL ENERGY

1. It use energy produced naturally (no need for raw materials)
2. It is cheap to produce
3. It is free from siltation
4. It doesn't affect large agriculture land as compared to Hydro Electric Power
5. It is environmental friendly free from pollution

DISADVANTAGES OF GEO THERMAL ENERGY

1. It is too expensive to develop, requires drilling and installation of pipes
2. Its only possible in places that has hot rocks in contact with ground water
3. It may be affected by movement of plates
4. Geyser are not commonly found

TIDAL AND WAVE ENERGY

It's the energy that is generated when water from a sea is allowed to move to and fro through a passage to the estuary and back into the sea in both cases the high tide and low tide help in rotating the turbine attached to generator

ADVANTAGES OF TIDAL ENERGY

1. It is free from pollution
2. It is cheap
3. It is renewable

Disadvantages of Tidal or Wave energy

- Wave power depends on wind conditions hence not reliable
- Generation of power maybe too far from place of consumption hence incur high transmission costs
- The construction of dams may affect ship and fish movements
- Sedimentation of dams in tidal energy may be expensive to dredge

Importance of energy

- It facilitates industrial development in a country
- Energy may be used for domestic purposes such as heating and cooking
- It facilitates communication and movements of people
- It promotes agriculture development through irrigation
- It enhances diagnosis of disease through X-ray and microscopes

Indicators of energy crisis

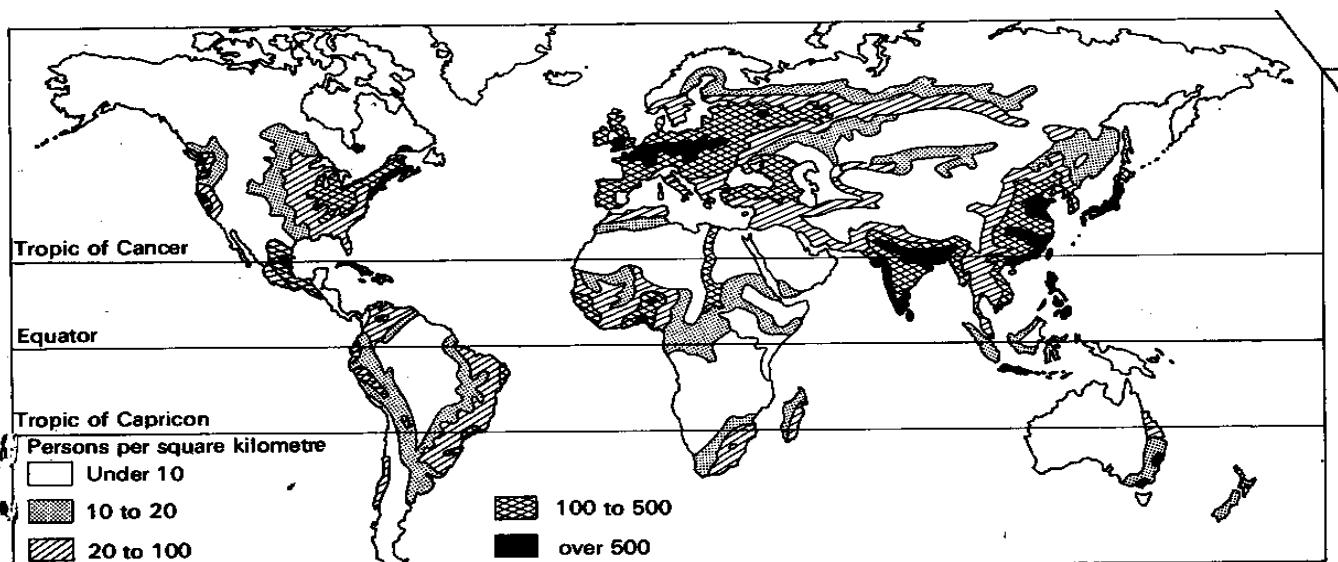
- Rising cost of firewood
- Deforestation in the environment
- Continuous black-out of electricity
- Rising costs of fuel eg petrol, diesel
- Increasing demand for alternative form of energy
- Transmission of fossil fuel over long distance

Solution to energy crisis

- Campaign for use of renewable form of energy
- Recycling of energy producing materials
- Emphasizing of afforestation and re-forestation
- Encouraging people to practice family planning in order to reduce pressure over energy sources
- Re-using objects or substances in order to save energy
- Encouraging use of energy saving devices such as Mbaula, energy saving bulbs etc

WORLD POPULATION DISTRIBUTION & DENSITY

Success criteria:



Distribution of the World's Population

- Identify areas of low population and high population densities on a world map
- Account for world population distribution

Factors influencing high population growth in specific areas

- a) South East Asia
 - Fertile alluvial soil along Ganges and Yangtse valley that encouraged early settlement for agriculture activities
 - Need for big families to assist with farming activities
 - Early trade settlement in India
- b) Western Europe
 - Early industrial revolution
 - Trade links with others
 - Early settlement
 - Employment opportunities in industries
- c) North East America
 - Development of industries
 - Centre for commerce and industry
 - Good agriculture land in the prairies
- d) Nile Valley
 - Good water supply surrounded by a desert
 - Fertile soil along the valley
 - Trade route in Egypt cross the Suez canal
- e) Witwatersrand in South Africa
 - Gold mines in Johannesburg
 - Mining settlements
 - Improve living standards that attracted from surrounding countries to come and settle

Factors influencing low population in some areas

- (a) Hot deserts
 - Harsh climatic conditions
 - Poor soil for agriculture
- (b) Equatorial forest regions
 - Thick forests and dangerous animals
 - Poor drainage system and heavy rainfall
 - High humidity and insects bite
- (c) Tundra Land of Europe, America and Asia
 - Poor soil for agriculture

- Snow falling in winter
- Very cold climate which doesn't support crop growth
- (d) Mountainous area of the Himalaya, Rockies, Andes, Alps, Tibet Plateau
 - Very cold
 - Thin soil for agriculture
- (e) Inaccessible places such as the Amazon Basin, the Jungle of South East Asia

Other factors influencing the distribution of population include:-

- Political factors such as decision by the government to relocate people
- Commerce and trade as well as strategic position of a place like Lilongwe city etc
- Good climatic conditions and beautiful scenery such as Greece, Italy, France among other that provide good summer weather

POPULATION DYNAMIC

Success criteria:

- Explain the structure of a given population
- Compare the population structure of developing countries with those of developed countries
- Describe the implication of various population structures on development
- Describe the demographic transition model
- Explain the causes of rapid population growth
- Assess the effects of rapid population growth on development
- Suggest strategies for controlling population growth

These are changes in the size of the people as caused by fertility rate, migration, death rate and birth rate.

Population structure

This refers to the composition of a given population in terms of "age" "sex" and "number"

POPULATION STRUCTURE / PYRAMID OF DEVELOPED AND DEVELOPING COUNTRIES (see below)

COMPARISON ON THE TWO POPULATION STRUCTURE

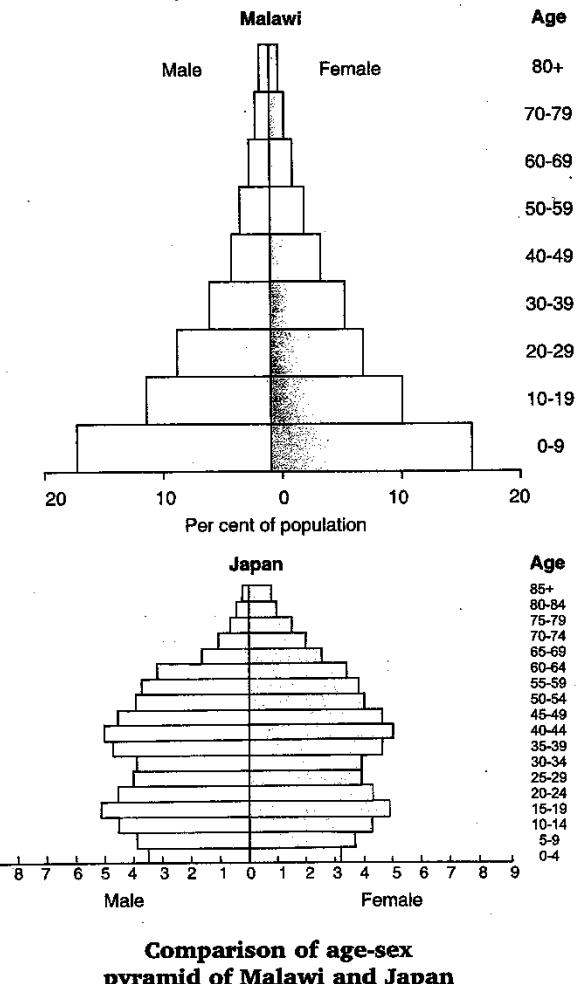
1. The population structure of developing country has a wide base than that of a developed country
2. The population structure of developing country indicates a narrow ending while that of a developed country indicates high survival rate
3. The population structure of developing country indicates high youthful population as compared to developing country with high aging rate

IMPORTANCE OF POPULATION STRUCTURE FOR GOVERNMENT

1. Help government to make appropriate policies regarding population change such as emphasizing on free family planning to control population growth
2. Help government to plan well in advance on the future needs of the growing population in terms of schools, employment opportunities etc.
3. Help government to consider the socio-economic development of the country such as markets, roads, salary of its people
4. Help government to set-up program that would help population growth match with resources available

WHAT THE GOVERNMENT WOULD NEED TO CONSIDER WHEN USING POPULATION STRUCTURE DATA

1. The birth rate of the population
 - Defined as the number of children born (live birth) per 1 000 people per year (CBR)
2. The death rate of people
 - Defined as the death per 1 000 people per year (CDR)
3. Natural increase
 - It refers to excess of birth over death per 1 000 people
4. Dependency ratio
 - The number of non-working dependents in a population of every 100 workers
5. Life expectancy
 - The average age at which people die
6. Sex ratio; which is the number of male per 100 female



Comparison of age-sex pyramid of Malawi and Japan

7. Net reproductive ratio; which is the rate at which women are replaced with girls or young ladies who bear children

IMPLICATION OF VARIOUS POPULATION STRUCTURE ON DEVELOPMENT

1. Youthful population structure would indicate to developing countries the future needs of people such as
 - i. Basic education
 - ii. Health facilities
 - iii. Employment opportunities
 - iv. Housing and food

In this case government would need to plan well for such services

2. Aging population like that of developed countries (65 years above) the country would need to plan a budget for rehabilitation facilities such as

- i. Walking sticks
- ii. Medical facilities
- iii. Pension schemes
- iv. Nursing homes

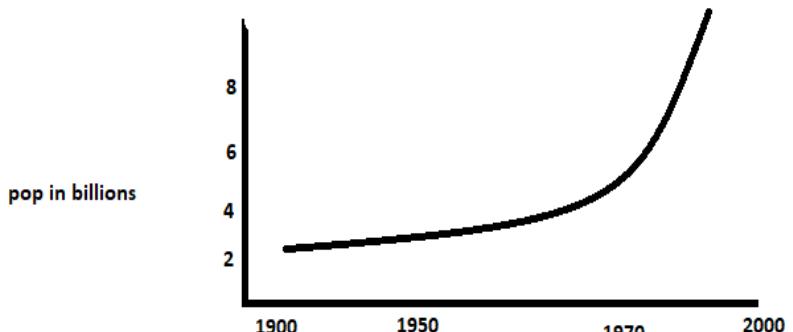
3. A wide base of population structure indicates high dependency rate on small working class as such it leads to poverty

4. High life expectancy of developed country indicates high survival and productivity of a country while low expectancy means the productivity is less since people die earlier

DEMOGRAPHIC TRANSITION MODEL

DIAGRAM

The demographic model interpretation indicates that before 1900 the death rate and birth rate were high due to



- i. Poor family planning
- ii. Poor food
- iii. Poor medical facilities
- iv. Poor sanitation and diseases

- After the 1900 century the population boom was seen with high birth rate, low death rate that saw population growing rapidly. Reasons could be:

- i. Improved food
- ii. Good medication
- iii. Improved standard of living

CAUSES OF RAPID POPULATION GROWTH

These can be divided into three groups

- i. Fertility
- ii. Mortality
- iii. Migration

(A).High fertility rate

- The value placed on male child
- Religion factor that discourage family planning
- Children as a source of cheap labour
- Bearing many children with a belief that some may survive
- Culture and ignorance on disadvantages of rapid population growth
- Early marriages
- Polygamy

(B). Mortality rate

- Improved medical services such as immunization
- Public health education on improved sanitation helped control diseases
- Improved farming methods that increased food production
- Improved access to family planning helped to control birth rate

(C). Migration

Push factors:

- Political strife (wars)
- Natural disaster e.g. floods
- Limited access to land for farming
- Poverty and unemployment

Pull factors

- Mining industries (employment opportunities)
- Availability of fertile land for agriculture
- Urbanization such as good road, markets etc.

EFFECTS OF RAPID POPULATION GROWTH

Positive effects

- Pressure over land for agriculture
- Environmental degradation
- Pressure over social services
- Rural-urban migration which leads to rural depopulation and un development
- Poverty due to poor access to employment
- Overcrowding

Negative effects:

- Large population provides cheap labour for development
- Large population provides a readily available market
- Large population stimulates urbanization needed for development

STRATEGIES FOR CONTROLLING POPULATION GROWTH

- Improving peoples attitude towards family planning services through civic education
- Improving standard of education for women so that they stay a longer time for schooling before they get married
- Strengthening the teaching of population issues through school curriculum
- Encouraging sterilization vasectomy and tube ligation as birth control measures
- Providing high education and career opportunities especially among women in order to encourage knowledge of family planning as well delay marriage
- Increasing marriageable age and enforcement of laws

NATURAL WAYS OF CONTROLLING POPULATION GROWTH

- Delayed marriage
- Deciding not to marry
- Decision to have limited number of children
- Disease outbreak such as HIV/AIDS, Cholera etc.
- Death due to old age

ARTIFICIAL WAYS OF CONTROLLING POPULATION GROWTH

- Civil wars that leads to death of many people
- Use of family planning services
- Sterilization, tube ligation, vasectomy as birth control measures

BENEFITS OF CONTROLLING POPULATION GROWTH

1. Reduced environmental degradation
2. Increased employment opportunities
3. Increased standard of living

4. Reduced depletion of resources both renewable and non-renewable
5. Reduced air and water pollution
6. Reduced poverty among people due to increase access to land

SETTLEMENTS

Success criteria:

- Identify different types of settlement
- Describe settlement pattern
- Explain factors that influence settlement pattern

Settlement:

- It's a place where people live and their buildings including their type of work
- It's a place where people live, work and their buildings

Hamlet: it's a settlement that has two or three houses without a shop or school

Conurbation: it's a settlement several towns are joined together

Megalopolis: it's a settlement where many cities are joined together e.g. Pretoria and Johannesburg

Metropolis: it's a settlement that forms the main city of a region (chief city) capital city e.g. Lilongwe

TYPES OF SETTLEMENT

1. Rural settlement
2. Urban settlement

TYPES OF RURAL SETTLEMENT PATTERN

1. Nucleated / Compact / Clustered settlement pattern where houses built close to each other
2. Dispersed / Scattered settlement pattern where house are built far from each other
3. Linear / Ribbon settlement pattern where houses are built following a road, river or lakeshore edge of flood plain etc.

CHARACTERISTICS OF RURAL SETTLEMENTS

1. Mostly engaged in farming
2. Land value is very low
3. Houses built of temporary material
4. People mostly related by blood
5. People don't accept change

- Land customary owned

CHARACTERISTICS OF URBAN SETTLEMENTS

- Land value very high
- Most building are permanent
- Made-up of different tribes
- The population is high
- Pressure of social amenities e.g. banks, hotels, schools etc.

FACTORS INFLUENCING NUCLEATED RURAL SETTLEMENT PATTERN

- Presence of water supply such as a river, lake etc.
- Flat fertile soil for farming
- Presence of road junction
- Gap through hills for easy passage and control trade eg Machinga Boma
- Fishing area e.g. Salima, Mangochi
- Cash crop farming such as Thyolo, Mulanje etc.

FACTORS INFLUENCING DISPERSED RURAL SETTLEMENT PATTERN

- Presence of mountains such as Viphya pattern, Nyika etc.
- Presence of forest protected area e.g. Game reserves
- Harsh climatic conditions such as hot deserts
- Extensive farming such as the prairies of wheat farming
- Poor soil for agriculture
- Marshy, swampy areas such as lake Chilwa plain

ADVANTAGES OF LINEAR SETTLEMENT PATTERN

- Easy access to social amenities
- Easy to trade/do business
- Create land for other beneficial purposes
- Easy access to information and social services

DISADVANTAGES OF LINEAR SETTLEMENT

- Noise disturbance
- Land conflicts
- Land and water pollution

ADVANTAGES OF NUCLEATED

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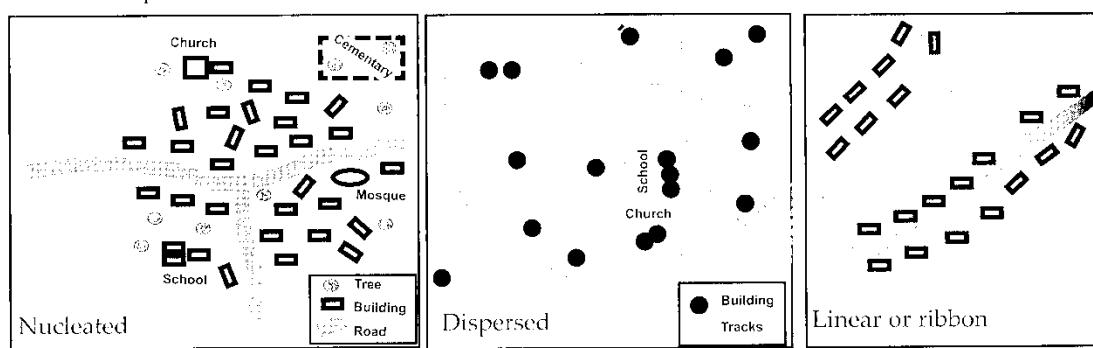


Figure 8.1 Rural settlement patterns

SETTLEMENT PATTERN

1. Social security
2. Easy access to social services by government
3. Social interacting enhanced
4. Creates land left for other beneficial purposes

DISADVANTAGES OF NUCLEATED PATTERN

- Easy disease spreading
- Pollution of environment is high
- Control of disease outbreak is difficult
- Land conflicts very common
- Establishment of a new social service is very difficult

CHARACTERISTICS OF A SETTLEMENT

1. It has a **site** ; Actual place where a settlement is established
2. It has a **situation**; The relationship between a settlement and other surrounding
3. It has a **pattern**; It's the situation of a buildings in relationship to each other
4. It has a **shape**; It's the appearance of individual settlement or the internal structure of the settlement

URBANIZATION

Success criteria:

- Explain the meaning of urbanization
- Explain factors that influence urbanization
- Describe the effects of urbanization
- Suggest possible solution to urbanization

It's an increase in the number of people living in towns and cities as compared to those in rural urban

FACTORS INFLUENCING RURAL-URBAN MIGRATION (URBANIZATION)

1. Social factors such as the need to break away from traditional constraints of social set-up
2. Demographic factors such as high population leading to shortage of land for cultivation and to seek for employment in towns
3. Cultural factors such as the attractive life of living in towns with wide roads , electricity, higher education piped water
4. Economic activities such as the need to start-up a business

EFFECTS OF URBANIZATION

1. It leads to traffic congestion on the road
2. It leads to high unemployment and socio-economic problems such as crime rate etc.
3. It leads to increased pollution and health problems from poor sanitation
4. It leads to inadequate infrastructure such as schools, health services, police stations, etc.
5. It leads to poor housing and development of squatter settlements
6. It leads to ‘urban sprawl’ a situation where some urban spaces are occupied by slum settlement while others by suburbs on the outskirts

POSSIBLE SOLUTIONS TO CHALLENGES ASSOCIATED WITH URBANIZATION

1. Encouraging better and effective town planning to avoid congestion
2. Building near small town satellite towns
3. Creation of proper spacing of buildings and roads with a future vision
4. Planning for needs of urban poor people to avoid congestion and socio-economic problems
5. Controlling population growth through family planning
6. Emphasizing on Information Education and Communication (I.E.C) in order to bring an awareness of urban problem / challenges to general public

LILONGWE CITY

Urbanization in Lilongwe has both positive and negative effects as follows:

1. Positive Effects

- It has led to the creation of readily available market for manufactured goods from industries
- It has created enough cheap labour for industrial development
- It has led to increased number of social services to cater for increasing population
- It has led to controlled import and export of goods
- It is a centre for consumption of goods produced from the hinterlands

2. Negative Effects

- It has led to increased moral decay e.g. prostitution, crime, drug and substance abuse, etc.
- It has led to shortage of housing in the city
- It has led to traffic congestion in the city especially at rush hours
- It has led to environmental pollution due to poor waste disposal

WORLD AGRICULTURE

Success criteria

- Explain agriculture as a system
- Explain factors that influence agriculture

- Explain types of agriculture
- Locate on world map areas where different types of agriculture are practiced
- Differentiate between intensive and extensive farming
- Identify on the world map places where extensive farming is practiced
- Differentiate between extensive crop farming from extensive animal farming

FARMING:

It refers to the cultivation of crops and the rearing of animals on a piece of land for the production of food or materials

Farming as a system:

It is regarded a system because it requires inputs and process for the output to be achieved

The **inputs** involved can be divided into two parts such as:

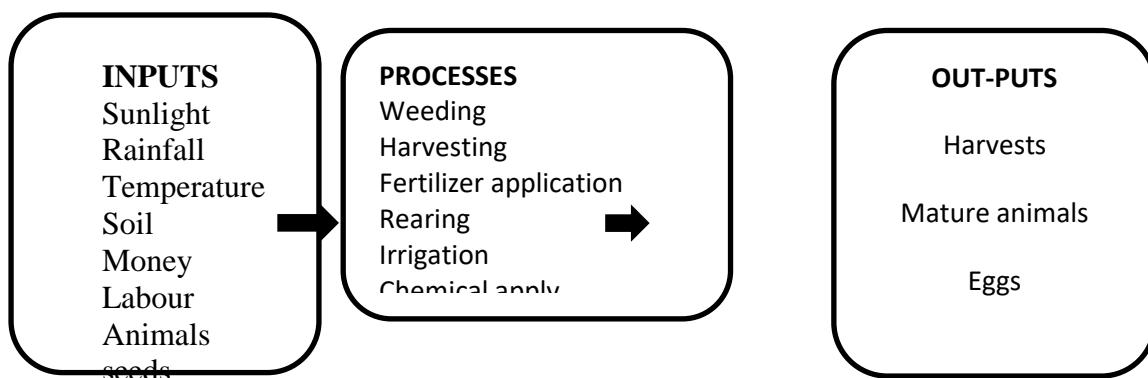
1. Physical
2. Human

The **physical inputs** includes sunlight, rainfall, soil and temperature

The human inputs include; labour, seeds, animals, money and tools

The **processes** involves; the farming activities or rearing of animals that the farmers undertakes in the growing of crops or animals

The **outputs** involves actions that the farmer takes to farming such as weeding, fertilizer application, chemical application, adding manure as well as irrigation. It also involves rearing of animals as well as feeding poultry and livestock



Physical factors affecting agriculture

- (i) Climate (temperature, rainfall, wind, humidity)
- (ii) Relief

- (iii) Type of soil
- (iv) Growing season

Biotic factors affecting agriculture

- (i) Pests eg tsetse fly
- (ii) Disease eg fungi bacteria
- (iii) weeds
- (iv) Type of seeds

Human & economic factors

- (i) Capital
- (ii) Transport
- (iii) Labour
- (iv) Government policies
- (v) Markets
- (vi) Land policies

Types of agriculture systems

They are two:-

- (i) Subsistence farming
- (ii) Commercial farming

Subsistence agriculture is the growing of crops or rearing of animals for self-sufficiency, prestige or social status while commercial farming is the growing of crops or rearing of animals for sell

SUBSISTENCE AGRICULTURE

This can be divided into two parts:

- (i) Pastoral nomadism
- (ii) Shifting cultivation

Pastoral nomadism

This is a system of rearing animals whereby the animals are moved from place to place in search of pasture

COMMERCIAL AGRICULTURE

This can further be divided into two parts:-

- (i) Intensive farming
- (ii) Extensive farming

Intensive farming involves:-

The growing of crops or keeping of livestock on a piece of land with heavy capital investment

Characteristics of intensive farming

- Double or triple cropping is practiced
- Cross breeding of animals to improve milk production
- High capital investments in purchasing of fertilizers, water pumps etc
- High labour intensive throughout the year
- High milk or meat production
- Milking or slaughtering houses for animals are installed

Differences between intensive farming and extensive farming

Intensive farming	Extensive farming
<ol style="list-style-type: none">1. Farming done on a small piece of land2. Selected high milk producing animals kept3. High yield of crops per unit area4. Double or triple cropping is possible5. Important farming activity in areas of high land value6. Labour intensive and high capital investment	<ol style="list-style-type: none">1. Done on large or extensive piece of land2. High meat producing animals kept for beef3. Low yield per unit area but high per farm4. Double may not be possible due to absence of irrigation5. Important farming activity in places of low population and low land values6. High use of mechanization

Extensive crop farming:

Its' the growing of crops on a large piece of land for commercial purposes and involve heavy use of mechanization, such as combine harvesters and farm tractors to obtain high yield per farm

Extensive animal farming:-

Its' the raising of animals on a large piece of land for commercial purposes, it involves keeping of high beef producing animals

Differences between Extensive Crop Framing and Extensive Animal farming

Extensive crop farming	Extensive animal farming
<ol style="list-style-type: none">1. It involves growing of crops on a large piece of land2. It involves heavy use of mechanization eg tractors3. Fertilizers may be used to enhance crop	<ol style="list-style-type: none">1. It involves keeping of livestock on a large piece of land (ranch)2. It doesn't need tractor3. Fertilizers are not necessary in animal farming

growth 4. Hybrid seeds may be used to achieve high yield	4. Cross breeding may be done to improve quality of meat
---	--

(A) Intensive crop farming

This is said to be well developed in the monsoon land of S.E Asia where population is high (**see map above:**

Characteristics of intensive farming

- a. It demands high labour especially during planting and harvesting period
- b. It is usually operated on small pieces of land as compared to extensive commercial farming
- c. Since cultivation is done year-round animals farming is not well developed
- d. Manure, fertilizers are used consistently to improve soil fertility of the land
- e. There is double or triple cropping system with the help of irrigation where rainfall is not enough

Intensive rice growing

Conditions necessary for rice

- a. A growing season of about 5 months from planting to harvesting period
- b. A minimum temperature of 21°C throughout the growing period and dry sunny period as the crop ripens
- c. An annual rainfall of 2000mm per annum with a minimum of 120mm per month during growing period'
- d. A flat land that permits soil to retain water
- e. Heavy alluvial soils or clay to retain water

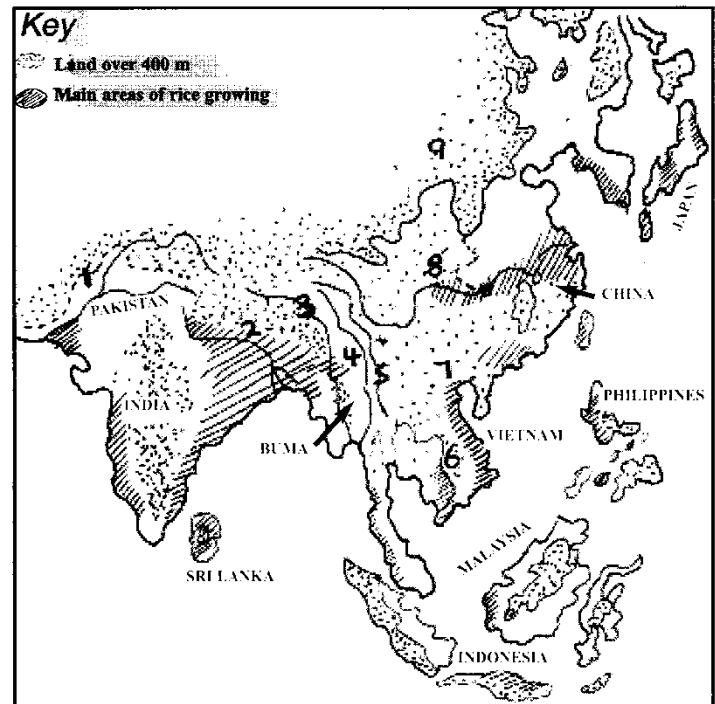


Figure 2.1 Rice growing areas in South-east Asia

Stages of cultivation of rice

Stage 1 (preparation of fields)

Before the beginning of rainy season farmers construct bunds to separate fields, weeds are removed, and land ploughed

Stage 2 (nursery sowing and transplant)

Seedlings are raised in nursery beds and then transplanted to the prepared fields

Stage 3 (fields maintenance)

Weeding and thinning are carried out, water is supplied to ensure crop growth, however fields are dried close to harvest

Stage 4 (harvesting and processing)

Rice is harvested using a sickle or a sharp knife. Thereafter the rice is threshed, winnowed and stored

Note: rice in India is harvested by hand because:

- i. Labour is abundant and its cheap
- ii. Most of the farmers are peasant and can't afford machinery

However in parts like Japan, USA harvesting is done by machinery

Advantages of farming

- a. There is double or triple cropping due to the use of irrigation
- b. There is high yield per unit area as compared to extensive farming
- c. It provides source of employment through-out the year
- d. It does not require much land for cultivation hence suits well in places with high population and experiencing shortage of land
- e. It ensures food security because cultivation is done throughout the year

Disadvantages of intensive farming

- a. The irrigation used may create breeding places for mosquitoes and other parasites e.g. Bilhazia
- b. It may lead to leaching and eventually loss of soil fertility if manure is not applied
- c. The farming activity is laborious (tiresome) since it is done throughout the year
- d. It requires large supply of water which may not be available or may be too expensive to source

DAILY FARMING

Specific objectives:

- Explain factors favoring dairy farming in Denmark
- Identify breeds of dairy cattle in Denmark
- Identify crops grown for Dairy farming

- Relate farming activities to cycle of seasons
- Describe main products of dairy farms in Denmark
- Explain how the dairy farms are managed
- Explain the importance of cooperatives in Dairy farms
- Locate on world map other dairy farms in the world

Map of the world showing dairy industries

This involves the rearing of livestock with the aim of producing milk

Factors favouring dairy farming

- a. Fertile pasture-land for dairy animals
- b. Accessible markets especially close to urban centers
- c. Cool climatic conditions that also help in milk storage
- d. Efficient transport to consumers

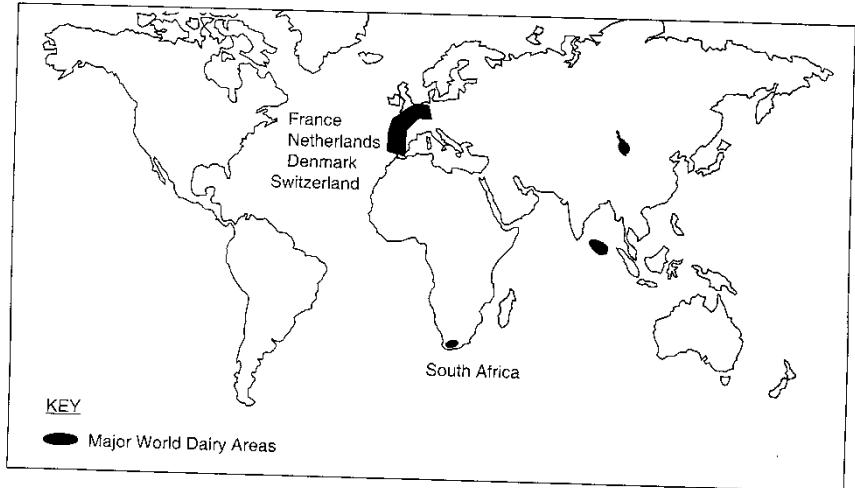


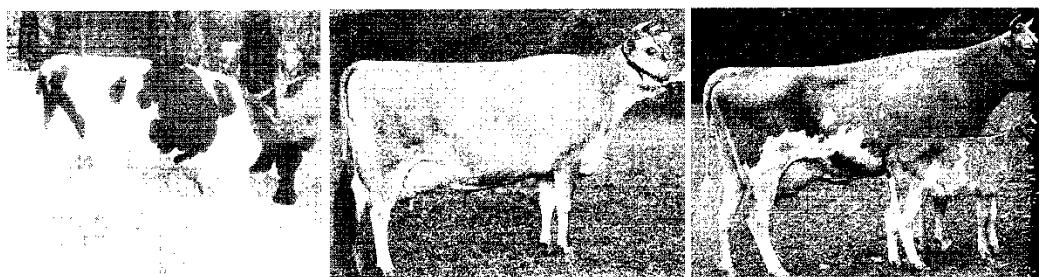
Figure showing major world dairy areas

Characteristics of dairy farms

- Mostly dairy animals are kept at the farm
- The main source of farm produce is milk
- Limited number of dairy animals are kept at the farm
- A variety of high milk producing food for animals are kept and processed

Dairy cattle animals

- Milking short horn, Guernsey, Friesian, Brown Swiss, Jersey, Alderney



(i) Friesian

(ii) Jersey

(iii) Guernsey

Figure 2.8 Some dairy cattle breeds

Examples of animal feed

Hay clover (alfalfa pasture)

Silage (fermented grass)

Madeya (mixture of grains and seeds by-products)

Case study 1: Dairy farming in Denmark

See map of Denmark below

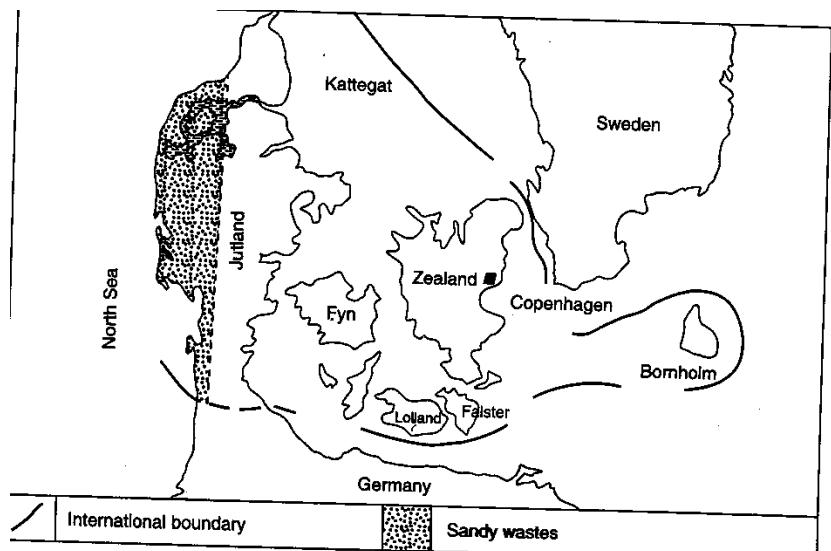
Denmark is made up of four main islands such as Fyn, Zealand Falster and Holland and the mainland peninsula of Jutland

Denmark Asserhoigaard farm

DIAGRAM

Cooperatives in Denmark

A cooperative is an association of people with little capital who voluntarily work together to achieve a common economic goal



Functions

- Collects, grades and store farm produce in readiness for sale (marketing)
- Purchases farm inputs for farmers to reduce production costs
- Give out loans to farmers when need arises
- Processes farm products for farmers to increase their value and profitability
- Provides advice to farmers depending on research findings from farms

Importance of dairy industry in Denmark

- It has created employment opportunities
- It provides a source of foreign exchange from milk exports
- It has led to the development of other industries that use milk as a raw material for production e.g. butter and cheese making
- Other non-dairy products such as eggs, chicken, bacon are produced for sale and consumption

INTENSIVE FARMING

It is system of farming where the farmer use much labour, time, care and capital on a relatively small piece of land in order to obtain high yield /product

Countries practicing Intensive Farming

Britain, France, Holland, Netherlands, Denmark, Germany, Sweden, Russia, Canada, USA, Cape provide of R.S.A, South East Asia, Australia

Characteristics of Intensive Farming

- a) Small sized farm
- b) There is intensive land use
- c) It demands high labour
- d) High application of organic fertilizer
- e) High out-put per unit area
- f) It is carried-out in densely populated areas to take advantage of available food market
- g) It is practiced in densely populated areas where land for cultivation is scarce
- h) It is associated with high scientific research and technological management such as use of fertilizer, cross breeding, irrigation among others

INTENSIVE RICE FARMING IN THE SOUTH EAST ASIA

It is commonly practiced in the monsoon lands of the South East Asia such as:- (MAP NEEDED)

India, Sri-Lanki, Pakistan, Bangladesh, Burma, Thailand, Cambodia, Vietnam, Malaysia, Indonesia, Papua New Guinea, Philippine, Taiwan, China, North and South Korea and Japan

CHARACTERISTICS OF INTENSIVE RICE FARMING

1. It involves development of small pad (wet- fields)
2. There is intensive land use with double or triples cropping system
3. There is intensive land use with little or no use of machinery
4. There is high application of organic manure
5. Low capital investment because work is normally done manually
6. High crop yield per unit area

CONDITIONS NECESSARY FOR RICE GROWING

- a. Abundant water supply especially during the transplanting of seedlings with rainfall ranging from 1500mm-2000mm per annum (average 120mm per month)
- b. It demand high temperature especially during ripening or harvesting season
- c. It needs high fertile loam soils with high moisture retentive capacity
- d. It needs a flat piece of land for easy use of irrigation
- e. Requires abundant human labour especially during planting and harvesting season

CYCLES OF FARMING ACTIVITIES IN THE SOUTH EAST MONSOON LAND OF ASIA

MONTH	PAD FIELD ACTIVITIES
MAY	<p>Field preparation:</p> <ul style="list-style-type: none"> • Dyke /bund construction to control flow of water • Weeds removed and fields ploughed • Soil fertilization or application of manure • Seedlings bed prepared
JUNE-JULY	<p>Nursery Preparation:</p> <ul style="list-style-type: none"> • Seedlings sown • Manure applied on bed • Field ploughed and flooded
AUGUST	<p>Transplanting and Sowing:</p> <ul style="list-style-type: none"> • Broadcast seeds/transplanting done • Field flooded with water
September-October	<p>Field Maintenance:</p> <ul style="list-style-type: none"> • Weeding • Application of second fertilizer • Control of water level
November	<p>Field maintenance:</p> <ul style="list-style-type: none"> • Field made dry in preparation for harvesting • Birds chased • Control of insects and pests
DECEMBER	<p>Padi harvesting and processing</p> <ul style="list-style-type: none"> • Harvesting using sickle or sharp knife • Threshing • Winnowing • Milling (shelling mill)
JANUARY, FEBRUARY, MARCH AND APRIL	<ul style="list-style-type: none"> • Ploughing and sowing of second crop such as beans, rice, peas lentils • Weeding • Harvesting

ADVANTAGES OF RICE FARMING IN THE SOUTH EAST ASIA

- a. It has created employment opportunity all year round
- b. It results in high yield per unit area
- c. It has helped improved the export earnings
- d. It has improved food security to the people ie local farmers

DISADVANTAGES OF RICE FARMING IN SOUTH EAST ASIA

- a) It has resulted in the fragmentation of the land that is difficult to use machinery
- b) Some fragmented land are located very far from farmers' home and walking on foot to such places has proved very difficult and time consuming
- c) Local farmers lack capital to introduce innovation

- d) Planting of rice laborious and may cause rheumatism to the farmer

INTENSIVE ANIMAL FARMING IN DENMARK

Location (MAP NEEDED):

Denmark is located in Western Europe

FACTORS FAVORING DAIRY FARMING IN DENMARK

- a. Mild climate of the temperate latitude which support milk life
- b. Availability of pasture for dairy cattle such as the alfalfa grass and silage
- c. Flat topography that encourages growth of grass
- d. Swift transport for dairy products
- e. Scientific research and management of farms in order to improve milk production such as cross breeding, processing of milk into powder in order to improve its' life
- f. High capital investment to improve food grades for animals and use of milking machines

Crops associated with dairy farming in Denmark:-

- Barley, Rye, Wheat, Oats, Potatoes, Vegetables, Grass, Sugar beet

Animals kept at a Dairy in Denmark

- ✓ Dairy cattle, Pigs, Poultry

Products produced on a dairy farm

- Milk, Pork meat, Eggs, Cheese, Chicken, Butter

Cycles of activities in Denmark

- ✓ October:- land ploughing and sowing of seeds
- ✓ November –January:- animals stall fed (winter weather)
- ✓ March –April :- land ploughed and seeds sown
- ✓ May –July:- weeding in farm fields
- ✓ August:- Harvesting cereal crops eg wheat, barley etc
- ✓ September:- harvesting of root crops eg potatoes

Examples of dairy cattle in Denmark

- Friesian (Holstein) produce a lot of milk
- Jersey produces high quality butterfat milk
- Guernsey and Alderney produce deep yellowish milk that is mostly used for making butter and cheese
- Aryshire and Swiss Brown produce high yields of milk

COOPERATIVES IN DENMARK

A cooperative is an association of poor farmers who decides to put their resources together in order to achieve one common goal

Examples of cooperatives in Denmark

- Dairies cooperatives
- Bacon factory cooperatives
- Egg collecting and exporting cooperatives

Roles of cooperatives in Denmark

- Processing of dairy products and its' by-products produced in creameries
- Marketing of dairy products after they have been graded and sorted
- Purchasing of farm inputs such as fertilizer, machinery as well as foodstuff
- Provisions of loans to members to enable them acquire farm equipment
- Conducting research on the farm in order to improve production
- Providing extensive service and advise to farmers on the proper management of dairy breeds, pigs as well as poultry

Importance of dairy farming in Denmark

- It marks up about 75% of the country's export earnings
- It has created employment opportunities for masses of people employed in the industry
- Dairy products are a source of food for infants as well as the aged, where it is processed into yoghurt, ice cream, butter etc
- Some drugs and synthetics are made from casein which is a by-product of butter milk
- Animal dung also help in improving soil productivity through manure
- It helps save the country's foreign earnings by reducing milk imports
- It is a source of meat, milk, chicken, eggs as well as pork

Challenges faced in Dairy farming:

- a. Adverse weather conditions that make stall feeding expensive
- b. Labour scarcity as most young people opt for white collar jobs
- c. Insufficient land to expand dairy farming due to increasing population

Islands that make-up Denmark

- Jutland, Fyn, Lolland, Falster, Bornholm, Zealand

Dairy farming in Malawi

Areas include:-

- Katete farm
- Mzuzu dairy plant
- Blantyre dairy plant
- Lilongwe dairy plant
- Ndaka farm
- Capital city dairy plant

Importance of dairy farming in Malawi

- ✓ Source of nutrients both to young children and adults
- ✓ Source of income to local farmers
- ✓ Provision of manure to improve soil productivity
- ✓ Source of meat from the aging dairy cattle
- ✓ Saves Malawi's foreign earnings

Challenges dairy farmers faces in Malawi

- Lack of capital to purchase high quality breeds
- Difficult to access loans in order to purchase machinery for the farm
- Difficult to find hybrid of animals that produce high quality milk
- Lack of scientific technique that improve dairy farming
- Grazing of dairy animals becomes expensive since rainfall is seasonal
- Poor storage facilities for the milk
- Poor road infrastructure for local farmers to access markets in urban areas

IRRIGATION FARMING

It is the artificial application of water to soil in order to meet the moisture requirements for crop production

Irrigation is commonly practiced in arid conditions experiencing shortage of rainfall

Some of the world irrigation areas include:-

- a) Nile river valley
- b) USA in the central California valley along the Sacramento and San Joaquin rivers
- c) Iraq along the Euphrates and Tigris rivers
- d) Ganges
- e) Sudan- Gezira
- f) Israel – Negev desert
- g) China along the Hwang Ho and Yangtze-Kiang river valley
- h) Australia in the Murray river basin

Factors encouraging irrigation farming

1. Abundant regular water supply such as the Nile river
2. Availability of a gentle sloping that allows flow of water through gravity
3. Water retentive soil such as the fertile clay soil which hold moisture for a long time
4. High temperature of about $21-27^{\circ}\text{C}$ that is ideal for triple or double cropping
5. Vast land is needed for extensive irrigation such as Nchalo
6. Large market that demands raw materials or food supplies

Modern methods of irrigation

- Perennial irrigation where water is supplied into the field throughout the year through canals
- Overhead or sprinkler irrigation where water is supplied to crops from above their leaves, which also helps in cooling of the plants
- Trickle irrigation where water is supplied directly to planting stations to reduce water loss. This is common in fruit or orchard farms
- Furrow irrigation where water is taken to the fields through perforated pipes from the main canals
- Centre pivot irrigation methods

Advantages of irrigation methods

- a) Cultivation of crops in arid and semi-arid conditions is made possible
- b) There is regular supply of water to crops that supports crop growth
- c) Double or triple cropping is made possible throughout the year
- d) The constructed dams for water storage could be used for other purposes such as HEP
- e) It brings soil fertility for instance basin irrigation which relies on flooding of a river
- f) It stimulates industrial development due to regular provision of raw materials e.g Illovo sugar.
- g) It improves the living standard of the people through regular produce sales(income).
- h) It may earn a country forex e.g sugar Illovo

CHALLENGE FACED IN IRRIGATION

- 1) High irrigation due to arid conditions makes irrigation to be too expensive.
- 2) Soil salination due to heavy application fertilizer
- 3) Soil exhaustion that make soil lose its fertility
- 4) Depletion of fish resources due to reduced water level as well as lack of food for fish
- 5) It may lead to water logging which may affect crop production
- 6) Irrigation may be associated with water borne diseases of Malaria, Bilharzia, Cholera etc.
- 7) It is normally associated with sedimentation or silting of dam which is expensive to clear.

- 8) It enhance growth of pest and insects especially when cereal crops are growth under irrigation hence affect yields.
- 9) Construction of canals is done at high costs.

IRRIGATION IN MALAWI

Irrigation in Malawi is mainly practiced on small scale by local farmers

Other places include:

- Nchalo Illovo sugar
- Dwangwa Illovo sugar
- Kasinthula sugarcane growers
- Hara rice scheme
- Vovwe rice scheme

Ways of Improving Irrigation in Malawi

- 1) Construction of dams (water storage facility)
- 2) Avoid deforestation in water catchment areas
- 3) Reducing costs of fuel/energy used for pumping water
- 4) Construction of concrete canals to reduce infiltration of water before it reaches its' target
- 5) Use of pipes to transport water in order to reduce evaporation
- 6) Relocation of people to upland in order to embark on large scale irrigation

IRRIGATION FARMING IN ISRAEL

- The physical environment of Israel is very difficult and harsh
- Mostly the country is hilly characterized by poor stony soils, with Mediterranean type of climate
- It is a desert in the south (Negev)

MAJOR PHYSICAL REGION OF ISRAEL

- 1) "Coastal plain" along Mediterranean sea (fertile soil, humid)
- 2) The Jordan Rift Valley on the eastern side
- 3) The "hilly areas of Galilee" which are humid but has poor soils for agriculture
- 4) The "Negev desert" which is very dry and has no rivers

Note:

Climate of Israel

- Israel has a Mediterranean type of climate with rainfall in winter between November and March

- High rainfall experienced in the North 1000mm and the south of Negev desert has 30mm
- The humid North has helped supply water for irrigation
- The desert climate of Negev region has necessitates use of irrigation at Eliot town where a desalination plant is located

Relief of Israel

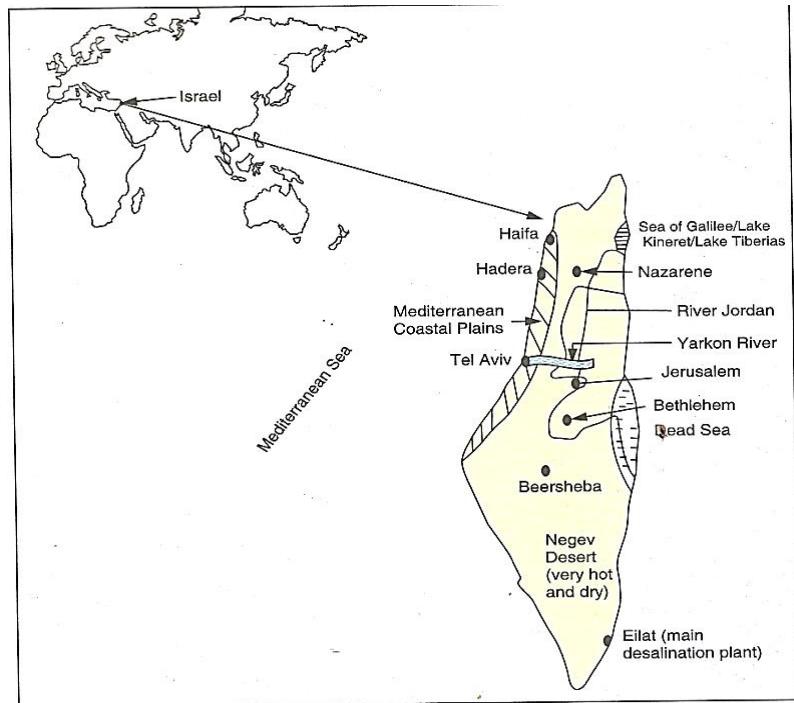
The high canal in the humid North has assisted in the flow of water from the wet north to the dry south through gravity by the National water carrier (Negev conduct) where it is very arid (dry)

SOIL OF ISRAEL

The fertile soils located in the Negev desert has encouraged use of irrigation in order to make the place land productive

METHODS OF IRRIGATION IN ISRAEL

- 1) Sprinkler irrigation
- 2) Spray irrigation mainly for orchards plants
- 3) Drip irrigation where wastes are installed along canals to reduce blockage of pipes
- 4) Buried irrigation where drip irrigation are controlled by sensors connected to computers to sense moisture content of soil
- 5) Pipe line irrigation
- 6) Canals irrigation



CHALLENGES OF IRRIGATION IN ISRAEL

- 1) Most of the sources of water are salty making it too expensive to process through desalination plants
- 2) Water is transported over long distance from the Lake of Galilee to Negev desert distance of 160 km
- 3) Pumping of water *from lake Kinnerete (Galilee)* which is 210mm below sea level is too expensive
- 4) High rate of evaporation especially in the Negev desert affects water for irrigation
- 5) Leaching and salination is yet another challenge encountered due to irrigation
- 6) Low rainfall affects availability of water for irrigation

CROPS GROWN IN ISRAEL

- Wheat, Barley, Oranges, Lemons, Grapes, Olives, Tobacco, Vegetable, Cotton

ANIMALS KEPT

- Sheep's
- Dairy cattle

PLANTATION FARMING

- It's the specialized commercial cultivation of perennial crops on a vast estate initiated by European colonies
- It's commonly practiced in the tropical and subtropical areas receiving high rainfall

AREAS WHERE PLANTATION AGRICULTURE IS PRACTICED

CROP	COUNTRIES GROWING
Rubber	Malaysia, Thailand, Indonesia, Sri Lanka, Nigeria, Liberia,
Sugar cane	Australia, Brazil, Cuba, India, South Africa, Caribbean
Cocoa	Ghana, Nigeria, Ivory Coast, Cameroon, Brazil, Peru, and Ecuador
Tea	China, Japan, India, Sri Lanka, Bangladesh, Indonesia, Kenya, Malawi
Coffee	Brazil, Venezuela, Colombia, Mexico, Guatemala, El Salvador, Costa Rica, Kenya, Ivory Coast, Uganda, Ethiopia, Angola
Palm oil	Nigeria, Democratic Republic of Congo, Cameroon, Gabon, Malaysia, and Indonesia
Bananas	Brazil, Central America, Ecuador, Caribbean, Costa Rica, West Africa, India, Indonesia
Coconut oil	Philippines, Indonesia, Malaysia, Singapore, Sri Lanka and Ivory Coast

CHARACTERISTICS OF PLANTATION AGRICULTURE

- 1) They are extensive farms owned by foreigners
- 2) Mono cropping is common and plants may remain productive for more than 30-50 years
- 3) They are foreign owned but use local labour. They can be owned by multinational company e.g. Uniliver, Fire Tyre Company
- 4) They concentrate on cash crops and export oriented
- 5) They are scientifically managed i.e. use of fertilizer, chemicals, machine and grafting is also done

- 6) They require high capital investment in areas of feasibility studies, clearance and land preparation processing factory and staff house, payment of staff, hiring of machine
- 7) They have an on-site processing factor to reduce e.g. Ralply, Illovo etc.
- 8) Hire skilled and unskilled labour during planting and processing and managerial staff
- 9) Provides social services such as housing, clinic, school, recreation, halls, clubhouse, sporting facilities

ADVANTAGES OF PLANTATION AGRICULTURE

- 1) There is maintaining productivity with on-site processing and inputs purchased in bulk cheaply.
- 2) Highly quality outputs due to good management.
- 3) Wastage control as by products due processed into useful products e.g molasses in sugar production.
- 4) There is guaranteed regular supply of produced due to continuous generating of crops
- 5) Skill development as most of the laborers gets hand-on training on job and specialize into product
- 6) They help protect soil through tree planting that control run-off
- 7) They have led to general development of an area through railway, road network
- 8) They create local employment opportunities to rural masses
- 9) They provide government revenue through taxes on salary, duty on exports, products and leased land

DISADVANTAGES OF PLANTATION AGRICULTURE

- 1) They are very expensive to manage or run considering high capital investment on roads, salary, machinery
- 2) They take a long period to start realizing profits 3-5 years
- 3) They have a colonial background hence local people still feel cheated
- 4) They are prone to climatic hazards and may reduce products
- 5) They are prone to disease and pests due to continuous cultivation of the same crop
- 6) It's a rivalry agriculture system considering price fluctuation at world market
- 7) Being a mono crop they are also prone to disease outbreak that may affect farmers profit
- 8) Soil deterioration due to leaching since they rely on heavy rainfall
- 9) Socio-political effects where the government decides to reduce farm size to create land for local people

TEA PLANTATION IN MALAWI

Tea is grown in Mulanje, Thyolo and Nkhata Bay districts

CONDITION NECESSARY FOR TEA GROWTH

1. High rainfall 1150-1500mm
2. Cool temperature of 23°C
3. Frost free areas but develops morning dew
4. High land areas with good drainage(gentle slope)
5. Fertile loam soil that is water retentive (potash soil)
6. Shade is necessary to protect tea shrubs from strong winds hence big trees are left uncut in tea estates
7. Cool, humid weather conditions and morning dew that encourage growth of new tea leaves

CYCLES OF AGRICULTURE ACTIVITIES IN TEA

1. Land clearing to reduce tea disease called armillaris
2. Nursery seed preparation
 - Seeds are sown in sandy soil and left for 1-2 years and then transferred to main field
 - However tea "clones" may be used and planted in polythene bags for 2 years before transferred to main field
3. weeding and fertilizer application is done regularly to boost tea growth and yields
4. Pruning: This is done to a height of 1.5m which is a good working table. It is also done to increase growth of new tea leaves
5. Plucking: It begins when tea leaves are about 3-4 years and continue regularly

CYCLES OF ACTIVITIES FOR TEA GROWTH

DIAGRAM

Stages of PROCESSING OF TEA

1. Withering - Hot air blown to reduce moisture content for easy breaking
2. Rolling -used to cut tea leaves into small pieces
3. Sifting - meant to remove old tea leaves and midrib
4. Fermentation & Firing -fermentation is meant to bring out the tea flavor while firing 100-220 - - is meant to reduce moisture content of tea
5. Sorting & Grading - so that the best grade may obtain (fetch) high cost than the second grade
6. Testing - done every 4-5 hours to check on quality tea
7. Packing - aluminum foil used
8. Blending - mixing of different grades of tea in order to improve on quality

NOTE:

"Black tea" processing follows the whole above process, while in "Green tea" fermentation is not conducted to produce the desired flavor

ECONOMIC CONTRIBUTION OF TEA TO MALAWI

- 1) It is an export crop (earning Malawi 25% on exports)
- 2) It is a source of employment to masses of people
- 3) It has led to general development of places through roads, railway, clinics , schools etc.
- 4) It has contributed many industrial development through tea factories
- 5) Malawian access cheap tea since it is producing locally

CHALLENGES FACING THE TEA INDUSTRY IN MALAWI

- 1) Price fluctuation at world market
- 2) Labour shortage as some youth prefer white jobs
- 3) Poor quality bushes as some bush have overstayed 30-70 years
- 4) Infertile rock areas that do not support proper growth of tea
- 5) Disease and pests such as armillaria affect productivity
- 6) Competition with other beverages such as coffee and cocoa

TEA EXPORTS:

Japan, U.K., USA, Pakistan, RSA

INDUSTRIALIZATION

It's a process by which a country expands its capacity to set up more industries to produce secondary goods and services

ADVANTAGES OF INDUSTRIAL DEVELOPMENT

- 1) It creates employment opportunities in manufacturing, transport, etc.
- 2) It promotes international trade through imports and exports of goods
- 3) It promotes availability of forex in a country
- 4) It stimulates rural development in sparsely populated areas i.e. roads, social services, etc.
- 5) It promotes development of good infrastructure such as electricity, water supply, hospital, railway, schools etc.
- 6) It encourages development of self-reliance of a country
- 7) It saves forex due to reduced import and expanded export that save forex

PROBLEM OF INDUSTRIAL DEVELOPMENT

- 1) It leads to rural-urban migration that lead to increased social evils such as robbery
- 2) Industrialization is normally associated with use of machinery that may cause unemployment in a country
- 3) Industrialization may lead to environmental pollution due to emission of gases
- 4) It may lead to displacement of people in order to create land for an industry

- 5) It leads to neglect of agriculture activities as people rush for white collar jobs in towns/cities

INDUSTRY

TYPES OF INDUSTRIES

- 1) Primary industry
- 2) Secondary industry
- 3) Tertiary industry
- 4) Quaternary industry

PRIMARY INDUSTRY

It involves the collection and extraction of raw materials/natural resource

EXAMPLE

Mining, Farming, Fishing, Quarrying, Forestry

SECONDARY INDUSTRY

It involves the turning of raw material from primary industries into finished products and developing high-tech gadgets such as computers

EXAMPLE

- 1) Car manufacturing
- 2) Cement manufacturing
- 3) Cigarette manufacturing
- 4) Sugar refining
- 5) Textile manufacturing

TERTIARY INDUSTRY

These are service industry; they provide services to general public

EXAMPLE

ESCOM, Water Board, Libraries, Travel Agents, Transportation, Nursing, Teaching, Engineering, Law, Marketing, Advertising, Insurance

Quaternary Industries

They provide information and expertise in different fields

EXAMPLES

- 1) University
- 2) Media house
- 3) Political policy units
- 4) Consultants
- 5) Research & development

AN INDUSTRY AS A SYSTEM

- An industry is a system in the sense that it has interrelated parts such as inputs, processes and output
- It is an example of an open system with inputs, process and outputs

INPUTS	PROCESS	OUTPUTS
Energy	Manufacturing of raw material	Finished goods
Transport		Wastes
Machinery	→	By products (molasses) Profits
Labour		Services
Building		
Capital		
Raw material		

MAJOR INDUSTRIALIZED AREA OF THE WORLD

(MAP)

- 1) Western Europe: Britain, France, Belgium, Germany, Italy, Denmark, Sweden, Switzerland, Netherlands
- 2) North-East USA & Canada
- 3) Japan (ship building and car manufacturing)
- 4) Russia
- 5) China, India, Bangladesh, S.E. Asia, Brazil, Argentina, south Korea, Thailand, Australia, South Africa etc

LOCATION FACTOR OF INDUSTRY

1. Physical factors:-

- i. Raw materials
- ii. Power supply
- iii. Water supply
- iv. Flat topography (gentle slope)

2. HUMAN & ECONOMIC FACTORS

- i. Skilled and unskilled labour
- ii. Capital
- iii. Access to market
- iv. Good network of transport
- v. Political stability
- vi. Government policies on taxes

ENVIRONMENTAL ISSUES RELATED TO INDUSTRIALIZATION

- 1) Air and water pollution
- 2) Destruction of environment through extraction of raw materials (environmental degradation)
- 3) Land subsidence in case of mining deep shaft
- 4) Planting of bombs may cause earthquake
- 5) Radiation in case of uranium mining
- 6) It may affect agricultural land in case of open cast mining
- 7) Water pollution may endanger aquatic life
- 8) Contribute to climate change and global warming

DISASTER RISK MANAGEMENT OF INDUSTRY

- 1) Zoning of town and urban where industries are located on outskirts
- 2) Policy and legislation of laws against pollution
- 3) Advancement in technology to reduce pollution
- 4) Planting of trees
- 5) Filling all holes created through open cast mining
- 6) Control of water pollution by treating water waste by discharging into rivers

MOTOR VEHICLE INDUSTRY IN JAPAN

LOCATION

Tokyo, Osaka, Yokohama, Hiroshima, Nagasaki

FACTORS FOR GROWTH OF JAPAN INDUSTRY

- 1) The presence of engineering experts with the history of ship building
- 2) Location of men of genius who could design motor car and engine parts
- 3) Access to raw material i.e. iron, steel deposits
- 4) Cheap transport through the sea that made Japan to access raw material and market
- 5) Presence of labour both skilled and unskilled
- 6) Presence of power supply from Nuclear power plant
- 7) The development of automation that led to increased production of motor car, i.e. production of car is now computerized in Japan

- 8) The development of cheap motor cars that consume less fuel increased demand for Japanese car worldwide

Stages in the motor vehicle production

Motor-cars undergo several production stages that include:-

- Production of pistons
- Production of engine blocks
- Production of valves
- Production of tyres
- Production of bolts

1st stage

Assembly of different parts from production units into one unit ie engine

2nd stage

Assembly of whole vehicle parts

3rd stage

Painting of the motor vehicle

4th stage

Fixing of tyres and window-screen

Importance of motor vehicle in Japan

- It led to increased mobility of people due to presence of personal cars
- It created employment opportunity to the masses of people in Japan
- It led to the development of other industries that produce parts related to car manufacturing such as iron and steel industries, glass and tyre industries, zinc and copper industries as well as oil production industries
- It has also boosted the country's economy through car sales
- It has boosted the transport system in Japan
- It has reduced congestion in housing projects such that houses are now located far from each other and people enjoy driving to work

Problems associated with motor vehicle industry in Japan

- Increased air and water pollution from car manufacturing industries
- Reduced public transport as most people own their cars
- Increased accidents due to traffic congestion in towns and other urban areas

- Increased demand for non-renewable resources such as iron and steel
- The automation in car manufacturing plants has reduced employment opportunities as most work is computerized

TOURISM IN AFRICA

Tourism:- it's the visiting of places of interest for pleasure or recreation purposes

Tourist:- it's a person who travel to places of interest for different purposes such as religion medical or studies

Tourism resort:- It's a place of interest which attracts many holiday makers

Tourism Industry:- It the economy that is generated in a country through travel and visits

Factors promoting tourism in Africa

- ✓ The presence of wildlife and national parks
- ✓ Physical beauty of mountains, waterfalls, big sandy beaches and fresh water lakes
- ✓ Vegetation such as the tropical Savanna climate and the grasslands where scientist study the flora and fauna
- ✓ Conducive climate with plenty of sunshine unlike Canada and North Pole
- ✓ Accessibility of tourist attraction centers by road and air
- ✓ Adequate accommodation such as hotels and lodges
- ✓ Cultural and traditional heritage centers such as the Masai of East Africa
- ✓ Publicity of tourist attractive centers in missions of USA and France
- ✓ Government commitment to construction of good roads, hotels and Lodges

Importance of tourism in Africa

- Source of foreign exchange through foreign currency
- Source of revenue for the government through taxes and fees charge on entry into National Parks and Game reserves
- Source of employment in Hotels and holiday resort centers
- Conservation and preservation of cultural and natural environment
- Stimulates farming activities through food supplies into hotels and restaurants
- It has led to the development of better infrastructure such as roads, hotels and motels to attract tourists
- It increases cooperation and international understanding of people from different countries

Challenges of tourism in Africa

- It encourages foreign ownership of infrastructure such as Hotels who have enough capital for investments hence all profits are foreign owned
- It erodes traditional values by encouraging moral decay among indigenous people
- It may lead to environmental degradation through demand for wood carvings
- It increases insecurity and civil wars as some tourists sponsor certain political parties against others
- Limited infrastructure such as good roads may make some places of interest inaccessible
- Lack of appreciation by local people who invade the wild life through illegal hunting

Eco-tourism (green tourism/ responsible)

It involves travelling to places where the flora and fauna as well as cultural heritage are a major attraction

It emphasizes on programs that minimizes the adverse effects on traditional and natural environment while at the same time improving the welfare of local people

Ecotourism is beneficial to the local community economically through protection of the flora and fauna which are considered of economic value

Characteristic of ecotourism

- Tourists take an active part in ensuring that their visit do not have negative effect on the environment
- It benefits local people and controlled by the local communities who find job opportunities
- It promotes the conservation and preservation of the entire local system while attracting more tourists

Impact of ecotourism

- It creates employment opportunities to local people as tour guides, wood curving, craft work etc
- Local people benefits from the environment through collection of local resources such as bee honey, fruits
- Enhances cooperation of eco-tourism operators and local people as they both benefit from the environment
- Maintain local environment setting by avoiding any possible harm through pollution
- Reduces poaching in game reserves by engaging former poachers as game rangers

MAJOR WORLD TRANSPORT ROUTES

Types of transport:-

- Land : eg pipe lines, railway, road
- Water : sea, canals
- Air transport

ROAD

Advantages:

- ✓ Provide local transport and operate on door to door
- ✓ It is very flexible and convenient
- ✓ It stimulates local economic activities such as farming and agro-marketing
- ✓ It is faster than water and rail transport

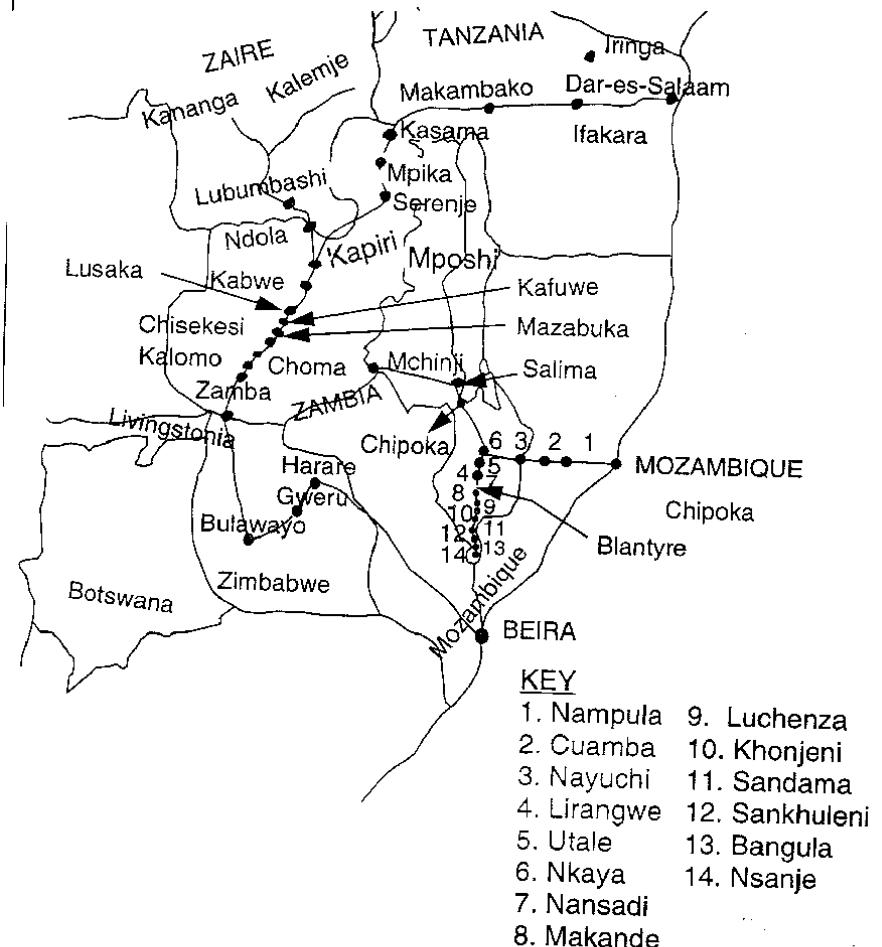
Disadvantages:

- It may lead to traffic congestion on roads
- It may contribute to loss of life through accidents
- It is associated with air and noise pollution
- It's less accessible in remote areas due to poor road infrastructure

RAILWAY TRANSPORT

ADVANTAGES OF RAILWAY TRANSPORT

1. It is cheap transport bulky goods e.g. coal, iron, copper, petroleum
2. They don't experience traffic jam
3. Carry large number of passengers especially electric trains
4. They are efficient in terms of time use
5. Maintenance of rail takes a long time



DISADVANTAGES OF RAILWAY TRANSPORT

1. It's expensive to build since it needs flat land
2. Rail transport is not flexible in movement
3. Rail tracks and sleepers may need regular maintenance
4. Rail line is difficult to construct in desert areas

PIPE LINES

These carry petroleum gas and water among other liquids

ADVANTAGES OF PIPE LINE TRANSPORT

1. They are economical in the sense that once installed they provide commodity regularly
2. Can be laid anywhere i.e. over land, sea and mountain
3. They are ideal for transporting large volume of liquid or gas

DISADVANTAGES OF PIPE LINE TRANSPORT

1. They are expensive to construct and monitor
2. They are not flexible in terms of changing direction of movement
3. They specialize in transportation of a specific commodity i.e. petroleum oil etc.

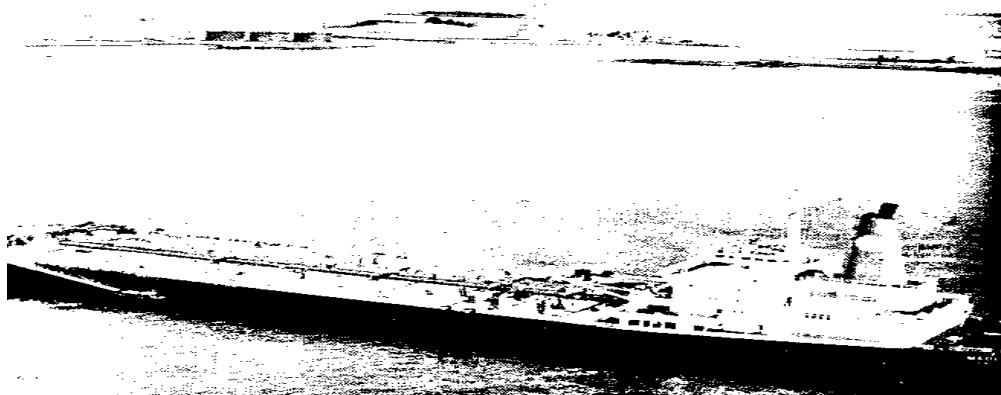
EXAMPLES OF MAJOR LAND TRANSPORTING INCLUDE

1. High ways of USA, motor ways of UK
2. The Trans-Siberian railway in Russia
3. Canadian National railway
-Canadian pacific railway
4. Trans-continental railway lines in USA
5. trans-Arabian pipe lines

WATER TRANSPORT (SEA WAYS)

Example of Water Transport

1. Cargo liner / Bulk carrier e.g. oil tanker, Bananas boats, grain boats
2. Passengers liner (follow definite route)



3. Coastal vessels
4. Tramps (no definite route and time)

ADVANTAGES OF WATER TRANSPORT

1. Transport bulky goods e.g. petroleum machinery etc.
2. It is the cheapest form of transport with no road maintenance
3. It is highly efficient considering specialized facilities for carrying perishable, non-perishable as well as liquid products
4. They use natural or existing route i.e. water river, lakes, ocean, sea
5. It generates inland (canals) as well as main water bodies (sea)
6. Offers a lot of employment opportunities to people working on the ship and in ship building industry

DISADVANTAGES OF SEA TRANSPORT

1. It's too slow
2. Inland waterways hampered by relief e.g. waterfalls
3. Fogs and stormy weather conditions may affect ship movement
4. Delays at port during loading and unloading cargo
5. Requires deep ports for a ship to navigate easily

EXAMPLE OF SEA ROUTE

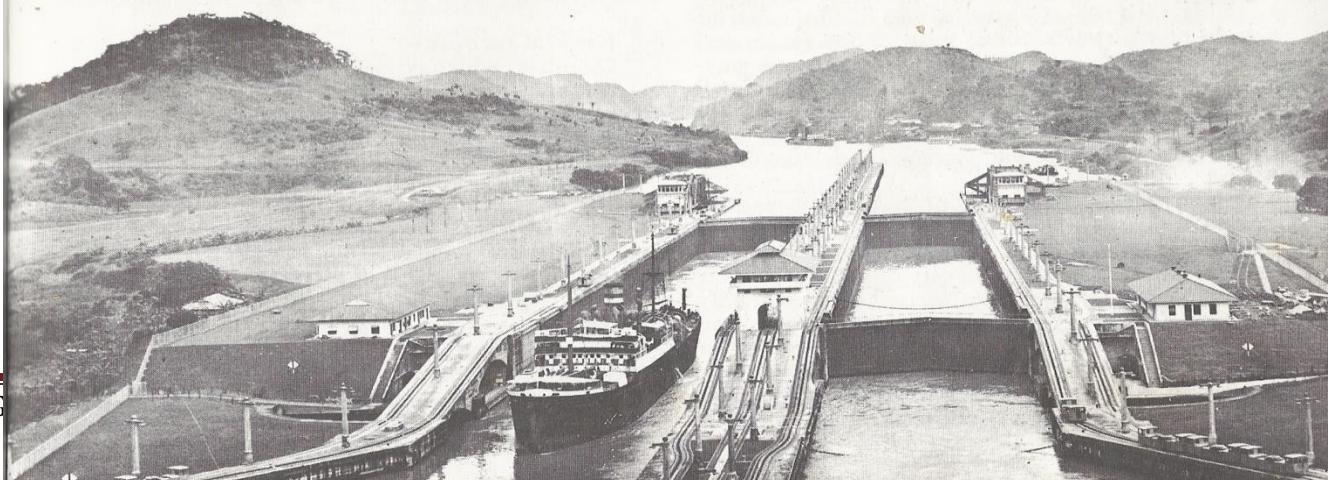
North Atlantic Sea Route

➤ connect North America and Western Europe

<u>Europe</u>	<u>North America</u>
Textiles	Minerals
Chemicals	Agriculture
Fertilizer	Wheat
Wines	forex

1. Panama Canal Route

A ship passing through the locks of the Panama Canal on its way to the Pacific.



- Connects pacific and Atlantic ocean
- It has locks at every stage
- Shortened distance to Japan as well as eastern America
- Goods transported from the west include timber, wheat, canned fish, petroleum, nitrate, and copper (see below)

2. The South America to North America and Europe Route

South America

Meat

Coffee

Cocoa

Banana

Timber

Hides

Maize

Wheat



Europe

machinery

Textile

Chemicals

Motor vehicle

3. The Suez Canal-Mediterranean Route

- Connect Red sea and Mediterranean sea
- Shorten distance between Europe and Persian Gulf countries

Far East

Europe

- Petroleum
- Timber
- Spice
- Silk
- Cotton
- Tea
- Rice
- Cars
- Rubber

Machinery
wine
fertilizer
chemicals



4. Cape Route

- Connect western Europe, South America and North America with East and Australia
- Mineral from Africa to Europe

5. Trans-Pacific Route

- Links North America with Asian countries e.g. Japan

North America

Far East

- Wheat
- Timber
- Copper
- Pulp

Rubber
Palm oil
Tea
Fertilizer



Electrical equipment

6. Other important shipping route

Great lakes and St Lawrence sea (North America) Welland, Soo canals Kiel canal in Germany connects Baltic sea and North sea

AIR TRANSPORT

ADVANTAGES OF AIR TRANSPORT

1. Faster and more convenient and comfortable
2. Not hindered by physical obstruction e.g. mountain
3. It is best used for emergencies e.g. floods, earthquake, wars, radical aid rescue team
4. It is relatively safe
5. Best for transporting perishable goods

DISADVANTAGES OF AIR TRANSPORT

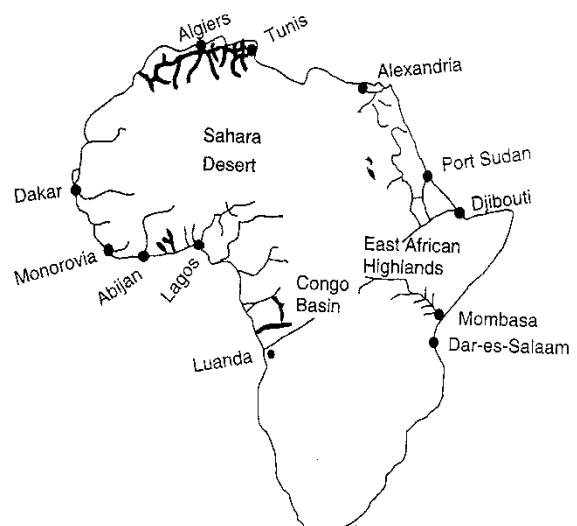
1. Too expensive
2. Carry limited goods
3. Cause noise and air pollution
4. Airport construction too costly
5. Affected by weather condition e.g. storm
6. Fee for foreign landing flights too high
7. Capacity for some landing airports too small

AIR TRANSPORT ROUTE

1. Great Circle navigation for long distance travel
2. Major air transport route-North America and Europe as well as far east Asia

RAILWAY NETWORK IN AFRICA

1. Mombasa-Nairobi-Kampala Railway line
 - Sena land locked countries of Uganda, Rwanda, and Burundi to Kenya Mombasa port
2. Tanzania-Zambia Railway line (TAZARA)
 - Transport fertilizer, cars, copper through Zambia and DRC
3. Nacala and Beira Railway line serve land locked Malawi
4. Beira-Harare-Bulawayo-Lusaka-Copper belt railway route



- Oil pipe line from Beira to Mutale in Zimbabwe
- 5. South Africa sea ports of Durban
- Have a connection of railway in mineral rich common wealth countries
- Northern corridor is yet an important route for Malawi

FACTORS INFLUENCING DISTRIBUTION OF RAILWAY LINE

1. North East Africa has few railway network due to high relief of Ethiopia high lands
2. Southern part of Africa has high degree of railway network due to economic development e.g. mining in Zambia, Zimbabwe, Botswana, South Africa and Agriculture in Malawi
3. Central Africa has low network of railway due to storm, floods, heavy rainfall, mountain and deep rift valley, Kilimanjaro mountain
4. North Africa has very low railway network due to Sahara desert and frequent sand storm

OTHER FACTORS AFFECTING RAILWAY

1. Landslides, thunderstorm, sandstorm
2. High relief of land
3. Low industrial production
4. Level of economic development
5. Presence of fuel for locomotive

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