

LAND RECLAMATION AND REHABILITATION

Specific Objectives

By the end of the topic the learner should be able to:

- (a) Define land reclamation and rehabilitation;
- (b) Discuss the factors that influenced the location of selected irrigation schemes in Kenya, the significance of the schemes and the problems that are experienced in carrying out irrigation farming in Kenya;
- (c) Describe the methods that are used in land reclamation and rehabilitation in Kenya;
- (d) Compare the methods of land reclamation in Kenya and the Netherlands,

Content

- a.) Meaning of the terms land reclamation and rehabilitation.
- b.) A study of Mwea-Tebere and Perkerra irrigation schemes.
- c.) Importance of irrigation farming in Kenya.
- d.) Problems experienced in irrigation farming in Kenya.
- e.) Methods of land reclamation and rehabilitation in Kenya.
- f.) Comparative study of land reclamation in Kenya and the Netherlands.

Definitions

Land reclamation

Land reclamation is the process of converting less productive land into a more productive state for agricultural or settlement purposes.

Land rehabilitation.

Land rehabilitation is the process of restoring degraded / improvised / damaged land back to useful state.

Methods which are used in reclaiming land in Kenya.

- i. Irrigation
- ii. Draining of swamps
- iii. Control of floods
- iv. Introduction of drought resistant crops.
- v. Control of soil erosion.
- vi. Afforestation (Agroforestry / Re-afforestation)
- vii. Improvement of soil through the use of manures/ fertilizers
- viii. Control of pests (Tsetse fly)

Methods that are used to control tse tse flies in Kenya.

- Bush clearing of tsetse fly habitat.
- Spraying using insecticide.
- Using of traps.
- Construction of buffer zones.

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Factors which should be considered when selecting a wasteland to be reclaimed for agricultural use.

- The size of the area- i.e. big enough to justify reclamation.
- Soils should be fertile to minimize the cost in improving them. (Fertilizers)
- Minimal incidence of pests and diseases/controllable.
- The climate should be suitable / favorable for the intended agricultural use.
- Availability of capital to initiate the project i.e. cost effectiveness.
- Availability of skilled manpower.
- The land should be undulating for mechanization or irrigation.
- Accessibility of the area.

Benefits that have resulted from the reclamation of Yala swamp.

- Has led to control of floods in the area.
- Has created employment opportunities and raised living standards.
- Has stimulated development of infrastructure.
- Has increased the amount of agricultural land.
- Mosquitoes were controlled.
- Better farming methods were introduced.
- Increased agricultural output due to introduction of new crops.

Rivers which cause large scale flooding in Kenya.

- i. Nyando,
- ii. Nzoia,
- iii. Tana,
- iv. Kuja,
- v. Yala,
- vi. Ewaso Nyiro

Ways in which floods affect people.

- People are displaced.
- Disrupts transport and communication system.
- Causes soil water logging which lowers crop production.
- Leads to loss of property and lives.
- Creates stagnant water in which disease causing micro-organisms breed e.g.

Mosquitoes, Bilharzia snails.

- Floods disrupt farmers calendar/wash away crops/leads to food shortages.

Methods through which floods can be controlled.

- Construction of dams to check the velocity and volume of rivers downstream.
- Construction of dykes which restrict the outflow of rivers / raised river

Embankments.

- Construct diversion channels to realign meanders and restrict flow of river / drain flooded areas.
- Planting of vegetation / forests in the river catchment areas to

Reduce the surface run-off and increase seepage.

- Clearing of drainage systems / dredging / deepening and widening to facilitate Easy flow of water.

Aims of the Lambwe valley project.

- i. To develop 13,000 ha of land for both livestock and agricultural production,
- ii. To suppress the tsetse fly population through the use of insecticides and bush clearing.
- iii. To treat domestic animals so as to reduce the risk of infection.
- iv. To treat human cases of sleeping sickness.
- v. To treat wild animals e.g. Bush buck, warthog, buffalo, impala which act as tsetse fly hosts.

Ways in which tsetse fly was controlled in Lambwe valley.

- Clearing the bushes.
- Sterilizing the male tsetse fly.
- Spraying the bushes with insecticides.

Problems faced in the control of tsetse fly in Kenya.

- Clearing bushes leads to total destruction of bushes therefore exposing the soil to agents of erosion.
- The tsetse fly became resistant to insecticides.
- Some insecticides sprayed are harmful to man, animals and the environment, cause pollution.
- The method of sterilizing the male tsetse fly is quite sophisticated.
- The areas infested are extensive therefore costly to spray.

Types of irrigation.

- Overhead / sprinkler
- Drip irrigation.
- Basin irrigation.
- Canal/Surface irrigation

Advantages of irrigation over natural water supplies.

- Ensures steady and reliable water supply.
- Cultivation can be done all year.
- River water brings in silt (fertile)
- Enables cultivation of marginal areas.
- Controls floods.

- The dam can be used to generate H.E.P., improve navigation on rivers, lead to development of fishing industry and modify local weather.

Conditions necessary for irrigation scheme.

- The land should be gently sloping to allow water to flow by gravity.
- The area should be drained by permanent rivers to supply enough water all year.
- The area should be sparsely populated to reduce cost of relocation.
- The area should have clay soil which allows only limited water seepage.
- The area should be dry and receiving inadequate rainfall to support crops.

Irrigation schemes in Kenya.

- Mwea Tabere - Rice - Perkerra - Water melons, onions, chilies
- Bura - Cotton - Bunyale - Rice
- West Kano - Sugar cane - Kibwezi - Fruits / vegetables
- Katilu (Turkwell) - Maize (Turkana)- Ishiara - Tobacco
- Kibirigwi - Vegetables

Factors that influenced the location of Mwea Irrigation Scheme.

- Presence of perennial rivers Thiba and Nyarnindi provided adequate water all year.
- The Mwea plains have black cotton soil suitable for rice farming as it retains water.
- The area receives inadequate (poorly distributed) rainfall, hence unsuitable for rainfed agriculture.
- The land is gently sloping hence gravity flow of water in the channels.
- The area has high temperatures hence low pest and disease incidence.
- The undulating relief is suitable for mechanization.
- Need to engage political detainees 1950's.
- To create land to settle those whose lands were taken by white settlers.

- The plains were sparsely populated.

Ways through which tenants in Mwea have benefited from the scheme.

- Has created job opportunities/source of income/improved living standards.
- Has provided land to many people who did not have farms before.
- The reservoirs created for irrigation have controlled flooding in plains.
- Has led to economical use of otherwise idle/barren land.
- Has enhanced food security, through rice production.
- The scheme has stimulated development of infrastructure to transport rice to market.
- Horticultural and food crops have been introduced e.g. maize and beans.
- Provision of social amenities - schools, hospitals.

Main rivers which supply water to Mwea Tebere irrigation scheme.

- i. *R. Thiba*
- ii. *R. Nyamindi*

Environmental problems faced by farmers in Mwea-Tebere irrigation scheme.

- i. Incidences of water borne diseases e.g. bilharzias/Malaria.
- ii. Pest infestation which lowers production e.g. Quelea birds.
- iii. Water weeds which compete with rice for nutrients e.g. Rhizome weeds.
- iv. Silting in the canals reduces the amount of water.
- v. Low water table in the rivers during the dry season.

Methods used to rehabilitate land in Kenya

- i. Afforestation and Re-afforestation
- ii. Bush fallowing
- iii. Planting cover crops
- iv. Mulching
- v. Manuring
- vi. Construction of gabions
- vii. Drainage trenches on flooded areas.

Benefits of Perkera Irrigation Scheme

- i. Made use of unproductive semi-arid land into productive land.
- ii. Supplied agricultural produce to the local market
- iii. Created employment opportunities for local population.
- iv. Raised the standards of living of many farmers.

Experienced by farmers in the Mwea scheme.

- The stagnant water encourages breeding of snails, mosquitoes which spread diseases.
- Disease and pests lower yields e.g. birds.
- Siltation of canals and weeds interfere with the flow of water and dredging is expensive.
- Shortage or high costs of labour, especially during planting and harvesting.
- Delayed payments discourage farmers forcing them to sell rice individually at low prices.
- Shortage of extension officers makes it difficult for farmers to get technical advice.
- Overpopulation has created pressure on the existing facilities such as water.
- Unplanned irrigation developments have overstretched the water supply.
- High prices lead to marginal returns.

Factors which influenced the establishment of Perkerra Irrigation Scheme.

- Presence of R. Perkerra to supply abundant water all year.
- Gently sloping land allows water to flow by gravity, easy mechanization.
- Availability of fertile soils in the Njemps plains.
- Availability of extensive land.
- Semi-arid conditions of the area.
- Area was sparsely populated due to the pastoral lifestyle of the inhabitants.
- The large population of ex-detainees needed to be occupied in a productive way.

Crops grown - Onions, water melons, pawpaw, chilies, and cotton.

Others - seed maize, beans, kale, tomatoes.

Problems faced by farmers in Perkerra scheme.

- Obstruction upstream and drought leads to fluctuation in water supply, thus affects the acreage under cultivation and crop failure. The solution is the construction of a dam upstream.
- Land tenure issue - farmers are yet to be issued with title deeds.
- National Irrigation Board policy that farmers prepare their land is constrained by financial inadequacy.
- Inter-ethnic Conflict - between Tugen and Njemps.
- Diversification - especially growing of maize has led to abandonment of other crops such as onions, cotton, pawpaw etc.
- Livestock - human conflict.

Problems facing irrigation farming in Kenya.

- Silting and occasional flooding
- Unreliable rainfall
- Pests and diseases
- Soil erosion
- Soil exhaustion - Mismanagement of irrigation boards

Significance of irrigation farming

- Settlement of people (landless)
- Infrastructure
- Social amenities
- Industrialization
- Food security
- Foreign exchange
- Source of income

- Employment creation

Factors which favored land reclamation in the Netherlands.

- Availability of capital
- Incentives by the Dutch government to get ways of ending the flood disasters
- Advanced technology especially the invention of the rotating turret for windmills.

Define the term Polder

- It is an area of low lying reclaimed from sea which is enclosed by dykes □

Benefits of land reclaimed in the Netherlands

- The barrier dam created fresh water lake of Ijssel , to provide water for industrial and domestic use.
- The lake has shortened the coastline by 320 km hence save fuel and time spent in movement ; the saving earned is used to develop other sectors of the economy.
- The polder have improved the drainage system thus reduces the work of flooding in the area the use of dykes ,canals , ditches.
- The reclaimed land has increased arable land which are fertile and are used for crop cultivation and dairy farming.
- The road connecting the province of North Holland and Friesland has been significantly shortened hence saving of fuel.
- The degree of soil salinity in the polders has been lowered by the fresh water lake (Ijssel) thus promoting rearing of livestock.
- Basin during winter thus prevent natural drainage

Process of polderization in the Netherlands.

- Construction of ring dykes separating the polders from the rest of water body/sea.
- Construction of ring canals used for draining water pumped out of the polders.
- Erection of a water pump/windmill for pumping water out of the polder
- Water is pumped out into the canals
- Land is allowed to dry
- Soil is desalinized by flushing with fresh water or planting hardy plants
- Deep ploughing to mix the soil with leached nutrients, addition of fertilizers
- Dividing the land into economic units
- Infrastructure (roads, electricity, and piped water) is laid out
- Establishment of social amenities
- People are settled
- Introduction of crops starting with the hardy crops (barey, oat)

Factors that favor farming activities in polder land.

- Relatively high rainfall
- Fertile, well-drained clay soil
- Cool temperatures/low rate of evaporation
- Flat land easy to mechanize
- Good infrastructural facilities
- Large market for agricultural produce
- Scientific farming hence high yields

Main crops grown in polders.

- potatoes, sugar beet, flowers, barley, oat, fruits, wheat, fodder crops, rye.

Main reclamation projects in Netherlands.

- The Zuider Zee project - 5 polders
- The Delta Plan Project - 5 polders (2 x

Reasons for reclaiming swamps in Kenya.

- To free area from pest / water borne diseases.
- To reduce flooding and associated effects.
- To acquire agricultural land with profitable farming / settlements.
- To develop the remote areas with infrastructure and social amenities.

Benefits which Kenya gets from irrigation farming

- It has raised standards of living of people because of sale of crops bring dried income.
- Has helped to settle the landless people in some schemes like Mwea - Tabere.
- Has saved the country foreign exchange because Kenya can rely on domestic rice than importing.
- Leads to rehabilitation and development of the surrounding area by reclaiming dry land, and also putting infractural like schools and hospitals.
- Has helped in the control of environmental hazards like flooding through correction of dykes or dams
- Has created employment in the scheme hence raising of living standard
- Has led to the growth of urban centers thus solving the problem of rural - urban migration

End of topic

Did you understand everything?
If not ask a teacher, friends or anybody and make sure you understand before going to sleep!

Past KCSE Questions on the topic

1. (a) Give two methods used to reclaim land in Kenya. (2mks)
(b) Outline the stages through which land is reclaimed from the sea in the Netherlands. (5mks)
2. (a) Difference between land reclamation and rehabilitation. (4mks)
(b) Five ways through which land is being reclaimed. (5mks)
(c) Describe of polderization process in Netherlands. (4mks)
(d) State three benefits that resulted from the reclamation of the Yala Swamp. (3mks)
3. (a) State the objectives of Mwea irrigation scheme. (4mks)
(b) State the conditions that favoured establishment of Mwea irrigation scheme. (4mks)
(c) Explain problems faced by rice farmers in Mwea irrigation scheme. (5mks)
(d) State benefits of Perkerra irrigation scheme. (5mks)
(e) Explain factors that limits Perkerra irrigation scheme. (8mks)
4. Differentiate between horticulture and market gardening. 4 mks
5. Outline three problems facing horticulture farming in Kenya. 3 mks

6. Name five irrigation schemes in Kenya. 5 mks
7. State two factors that favour the occurrence of tsetse flies in Olambwe Valley.
8. State measures that were taken by Kenyan government to control Tsetse flies in Olumbwe Valley. 5 mks
9. Give three conditions that made Mwea suitable for establishment of irrigation scheme. 3 mks
10. Explain two effects of tsetse flies on humans and livestock. 4 mks
11. (a) Differentiate between land reclamation and land rehabilitation. 4 mks
- (b) State the reasons for the establishment of Mwea-Tebere irrigation project.
- (c) Explain five problems facings Mwea -Tebere irragation scheme. 5 mks
12. State the problems facing Perkerra irrigation sceme. 5 mks
13. (a) Outline the benefits which Kenya derives from irrigation farming. 5 mks
- (b) What are the problems experienced in irrigation farming in Kenya. 5 mks
14. (a) Apart from irrigation, list other methods of land reclamation in Kenya.
- (b) Briefly describe the methods listed in 12 (a). 5 mks
15. State the benefits of Yala-Bunyala project. 5 mks
16. (a) What is a polder. 5 mks
- (b) Describe the stages involved in ^{1f} reclamation of a polder. 5 mks
- (c) State five benefits of land reclamation in Netherlands.
17. State the main differences between the methods of land reclamation in Kenya and Netherlands. 6 mk

CHAPTER SEVEN

FISHING

Specific Objectives

By the end of the topic the learner should be able to:

- (a) Define the terms fishing and fisheries;
- (b) Explain the factors that influence fishing;
- (c) Account for the location of the major fishing grounds of the world;
- (d) Identify types and names of fish and describe methods of fishing;
- (e) Discuss fresh water and marine fisheries in East Africa;
- (f) Assess the significance of the fishing industry in Kenya;
- (g) Discuss the problems that face the fishing industry in Kenya and their possible solutions;
- (h) Compare and contrast fishing activities in Kenya and Japan;
- (i) Explain ways and means of managing and conserving fresh water and marine fisheries.

Content

- a.) Definition of fishing and fisheries
- b.) Factors that influence fishing.
- c.) Distribution of the major fishing grounds of the world.
- d.) Types and names of fish.
- e.) Methods of fishing.
- f.) Fresh water and marine fisheries in East Africa.
- g.) Significance of the fishing industry in Kenya,
- h.) Problems facing fishing in Kenya and their possible solutions.
- i.) Comparative study of fishing in Kenya and Japan.
- j.) Management and conservation of fresh water and marine fisheries

Definition

Definition of terms

- ✓ Fishing is the exploitation/harvesting of fish and other aquatic/water resources e.g. whales, seals, crabs, lobsters, prawns, oysters, etc. for economic purposes.
- ✓ Fisheries are water bodies or areas where fish and other aquatic resources are reared or caught in large numbers. They include rivers, lakes, oceans, seas, dams, ponds, etc. they are also referred to as fishing grounds.

Factors influencing fishing

- ✓ These include the factors that affect the survival of fish in the fisheries as well as those allowing fishing to take place.
- ✓ They include: -
 - i. **Presence of fishing grounds:** - these depend on the supply of fish food/planktons in the water bodies. This requires the oceans and other fishing grounds to be: -
 - Shallow to allow sunlight to penetrate for phytoplankton.
 - Land derived minerals nutrients from along the coasts with several river mouths.
 - Upwelling/well oxygenated waters where warm and cold currents converge.
 - Cool waters of temperate latitudes
 - ii. **Cool climate:** - cool temperatures (about 20°C) are ideal for plankton growth and survival. Hence most commercially important fish species are found in temperate latitudes. Cool temperatures also reduce perishability of fish.
 - iii. **Occurrence of ocean currents:** - areas washed by warm ocean currents have fewer fish species and population compared to those washed by cold ocean currents. Also large shoals of fish are found in areas of convergence of warm and cold ocean currents - waters mix and spread out/distributes water temperature; bringing to surface some fish nutrients, helps in supplying more oxygen in the water necessary for plankton growth.
 - iv. **Nature/configuration/orientation of the coastline:** - indented/irregular coastlines encourage deep sea fishing because they allow breeding of fish - they are sheltered from strong winds and ocean currents, anchorage of ships and

development of ports. Deep coastline with wide continental shelves encourage growth of plankton hence have large population of fish.

- v. **Capital:** - a large capital base is needed to conduct large scale commercial fishing i.e. for purchasing fishing gear, vessels and refrigeration facilities.
- vi. **Technology:** - modern fishing gears enable fishermen to conduct fishing deep in seas/lakes/oceans.
- vii. **Market:** - areas with large populations offer good market for the fish especially if the population is a fish eating one.
- viii. **Labour:** - fishing is highly labour intensive hence fishing thrives in areas of high population e.g. Asia, Europe, North America, etc.
- ix. **Transport and refrigeration facilities:** - large scale commercial fishing requires that the fishing grounds be served with efficient network of roads to enable delivery of caught fish to the market when still fresh (fish is highly perishable). In areas that are far away from the market, refrigeration facilities are required during transit.

Types of Fish

- ✓ Fish can be classified according to habitat into fresh water fish and saline/salty/marine water fish.

- ✓ Fresh water fish are those fish species that live in fresh inland waters - lakes, rivers & ponds/dams.
 - ✓ They include tilapia, trout, Nile perch, pike, eel, carp, sturgeon, dagaa, etc.
- Marine/salty water fish are those that live their entire lives in saline fisheries such as ocean and seas.
- ✓ Fish can also be classified according to the communities they live into

Type of fish Description Examples

Types of fish	Description	Examples
Pelagic	Live near the water surface or at shallow waters, Live in large groups and move in shoals, they are small in size.	Herring, Tuna , Sardines, Mackerel, Brisling.
Anadromous	Fish species that are migratory in Nature, their movement is necessitated by safer and suitable breeding grounds.	Salmon Pilchard
Demersal	Live closer to the bottom of water bodies, They are larger in size, They feed on other small fish/sea animals	Cod Cat fish Haddock Halibut Flounder Dog fish Scate Hake

Fishing Methods

- ✓ These are the techniques that are used to catch/exploit fish.
- ✓ They depend on the type of fish to be caught, fishing environment and the level of technology.

- ✓ They can be traditional or modern.
- ✓ Traditional fishing methods include

(a) Harpooning: - involves the use of spears, arrows, sticks, stones, etc. to strike the fish in shallow water. It is commonly used in shallow waters where the fish is visible. The catch is limited hence employed for subsistence fishing. It is dangerous in areas infested with crocodiles and hippos

(b) Use of baskets: - this involves use of woven baskets with narrow cone shaped opening used in shallow waters and ponds. A bait (food put on a hook to catch fish) is placed inside the basket which is then laid at the bottom of the shallow pond. Fish are attracted by the bait and get into the basket but are unable to get out. The basket is then removed with the fish inside.

(c) Use of barriers/traps: - in areas characterized by frequent flooding, barriers made of reeds & sticks are constructed along the river course during the floods to catch fish. The barriers hold up water containing the fish, when the water level drops below the height of the barriers as the floods subside, the fishermen scoop the fish out of the barriers.

(d) Use of herbs: - in calm waters, some fishermen may crush some herbs and sprinkle them in water containing fish. These herbs make the fish unconscious as they take it in; the fishermen then collect the fish using their hands.

(e) Hook and line: - this involves use of baited hooks attached to a line that attracts fish. Once the fish is trapped onto the hook, the hook is pulled out together with the fish.

(f) Use of gill nets: - these are nets with meshes that only let the head of the fish through; trapping the fish by the gills. Once the net has trapped enough fish, the fish are then taken out by hand.

Limitations of traditional fishing methods

- i. The catch is very limited.
- ii. The methods are restricted only to shallow waters/the methods are not applicable in deep waters.

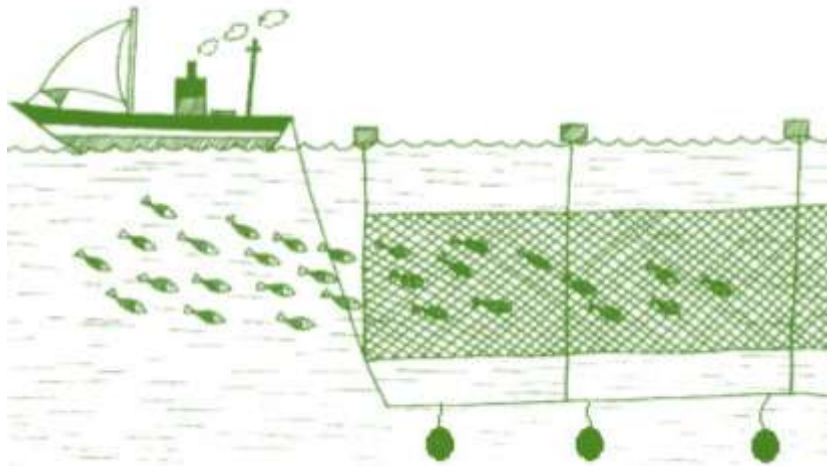
- iii. In case the fishing ground is infested with hippos and crocodiles, the fishermen risk attack that can lead to loss of life.

Modern fishing methods are used for large scale commercial fishing. They include:

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1. Drifting

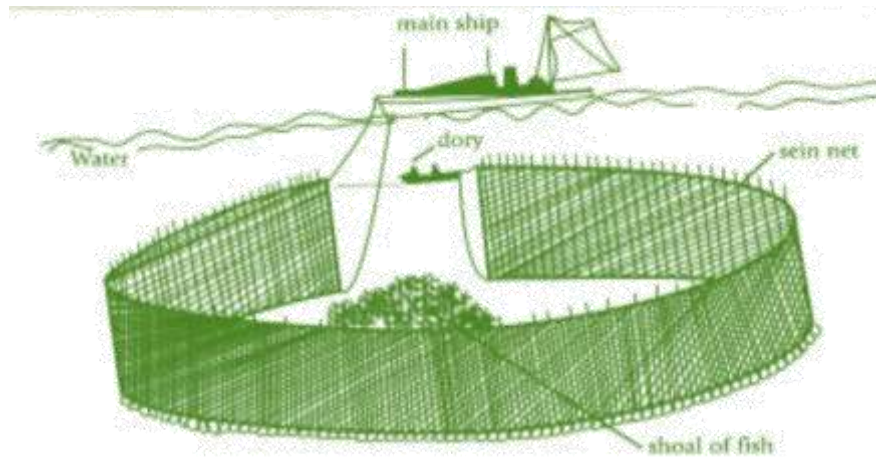
- ✓ This is used to catch pelagic fish.
- ✓ Drift nets that are held vertically in the water by fitting floats on the upper side and weights at the bottom end of the net.
- ✓ The net is held closer to the surface where the fish swim in large shoals.
- ✓ As they (fish) try to go past the drift net, they get trapped by their gills.
- ✓ Once the net has caught enough fish, drifters/powerful boats haul it and the catch to the shore.



2. Seining

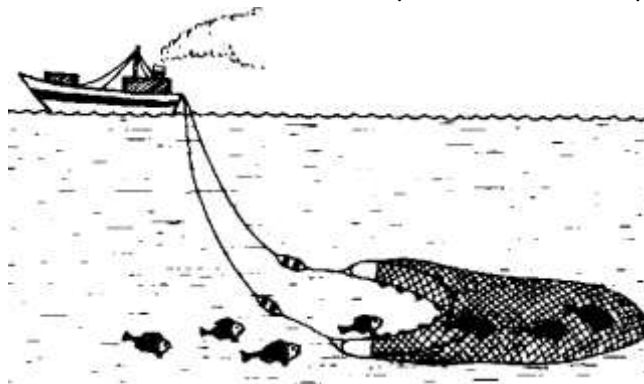
- ✓ Catches both pelagic and demersal fish.
- ✓ Fishing boats assisted by smaller boats/dories spread out the seine nets with small meshes into the lake/sea/ocean.

- ✓ The boats remain stationary and the nets held into position using floaters on top and weights at the bottom.
- ✓ Fish is then allowed time to get trapped into the net.
- ✓ Once the net is full, it is hauled over and the fish emptied onto the ship



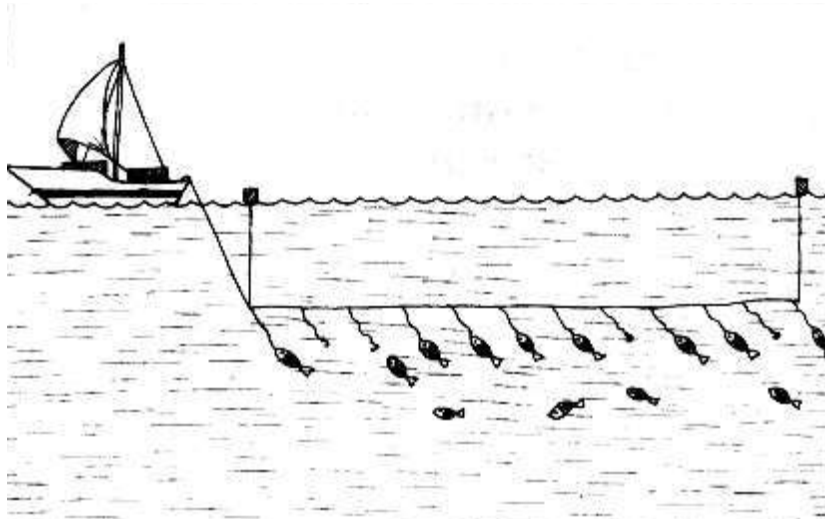
3. Trawling

- ✓ This is used to catch demersal fish that live in deep sea.
- ✓ It uses a trawl net that is pulled along by ships/trawlers along the sea bed, affecting all the fish along its path.
- ✓ Once the net is full, it is hauled into the ship and the fish emptied on board.



4. Line Fishing

- ✓ This is commonly used to catch certain type of demersal fish in shallow waters with rugged terrain where trawl/seine nets cannot be used.
- ✓ Long lines that are baited are sunk into depths of about 100m into the sea. The lines are suspended by floats on the upper ends and dragged along by small boats.
- ✓ The baited hooks in the lines attract fish hence they get caught.
- ✓ The hooks are then drawn up and the fish removed on board

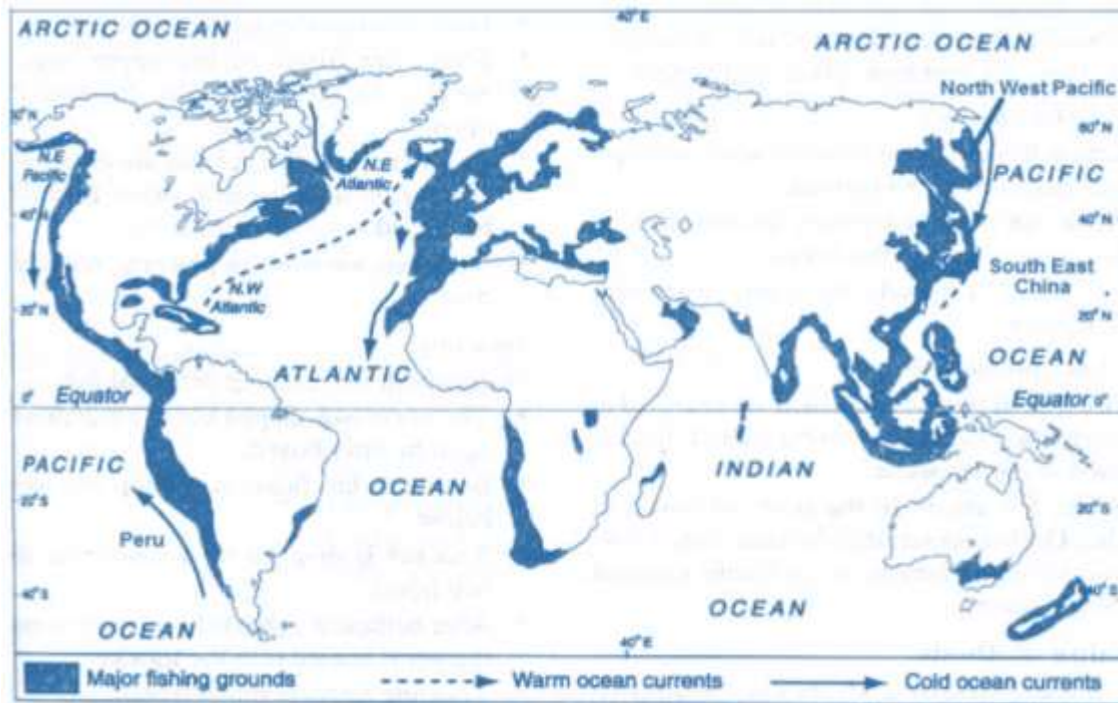


Distribution of major fishing grounds of the world

- ✓ This depends on the nature and type of the ocean currents flowing along a given coast.
- ✓ Coasts washed by cold ocean currents have a lot of fish because the resulting cool temperatures favour plankton growth. Also temperate coasts where cold and warm currents converge form major fishing grounds as the warm current moderates the temperatures making such coasts ice free.

They include: -

- (a) Atlantic fishing ground
- (b) Pacific fishing ground
- (c) African fishing ground



(a) Atlantic Fishing Grounds

- ✓ These are found in the Atlantic ocean
- ✓ This is further divided into
 - i. **North West Atlantic Fishing Ground**
- ✓ This is located in the north eastern coasts of North America from the eastern coasts of Canada to New England in the USA through the provinces of Quebec, New Brunswick and Nova Scotia.
- ✓ The main fish species caught here include cod, herring, haddock, mackerel and lobster.
- ✓ The fishing methods used here include seining, trawling and drifting

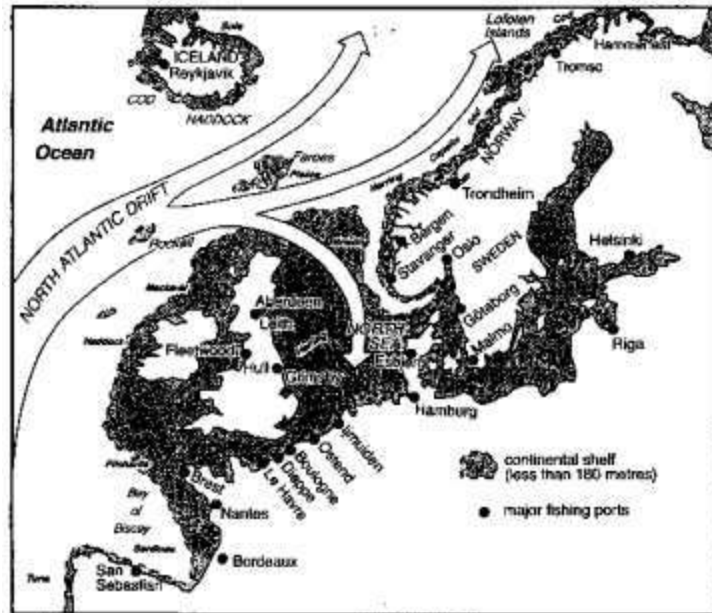


Factors that have favored the development of North West Atlantic Fishing Ground

- i. Broad and shallow continental shelf leading to flourishing of fish as it provides ideal conditions for plankton growth.
- ii. Convergence of the cold Labrador and the warm Gulf Stream currents at these grounds leads to cool temperatures for plankton growth and making it free from ice; allowing fishing to be conducted throughout the year.
- iii. Dense population especially in the USA provides ready market for the fish.
- iv. Rugged landscape and cold climate in the immediate hinterland discourage agriculture leaving fishing as an alternative economic activity.
- v. Advanced technology e.g. highly developed ship building and fishing industries equipped with modern preservation and processing facilities that allow fishing to be conducted all year round.

ii. North East Atlantic Fishing Ground

- ✓ This is located in the north western part of Europe.
- ✓ It passes through France, Germany, Denmark, Norway, Finland, Spain and Portugal.
- ✓ It is the leading fish exporting region in the world.
- ✓ The main fish species caught here are cod, herring and mackerel.
- ✓ The main fishing methods employed along these grounds are trawling, drifting and line fishing



North-East Atlantic fishing grounds

Factors that favours fishing in the North East Atlantic fishing ground

- i. High latitude ranging from temperate to polar regions; experiencing cold temperatures that encourage growth of plankton, survival and preservation of fish.
- ii. Broad and shallow continental shelf that favours the growth of planktons.
- iii. Indented coastline in Britain, Norway and Ireland with narrow fiords that provide sheltered waters for development of fishing ports and breeding of fish.
- iv. Mountainous landscape especially in Norway does not favour agriculture making fishing the most appropriate alternative economic activity.
- v. The ground is washed by the warm Atlantic Drift Current that raises the temperatures and making it ice free thus fishing all year round.
- vi. Dense population in the Western Europe provide ready market for the fish.
- vii. Advanced/high technology has enabled development of modern fishing equipment and preservation/processing facilities

(ii) Fishing grounds in South Atlantic Ocean

- ✓ There are minor fishing grounds along the Atlantic coast that are found in the southern hemisphere. They include: -
 - South West African/Namibian Coast: - covers the coast of Namibia and Cape Province of the Republic of South Africa. It is rich in fish because it is washed by the cold Benguela current; results into upwelling of water hence rich in planktons.
 - Mauritanian Coast: - this is found in the North West African Coast. It is rich in fish since it has a wide and shallow continental shelf and presence of the cold Canary current that allows plankton growth.
 - West Coast of South America: - this covers the coast of Peru in South America. It is rich in fish because of the cold Peruvian current and the wide and shallow continental shelf.

(b) Pacific Fishing Grounds

✓ This is further divided into

i. North West Pacific Fishing Ground

- This is the largest fishing ground in the world.

- It is located off the coast of North East Asia extending from Bering Sea through the sea of Okhotsk, Sea of Japan, Yellow Sea up to East China Sea through the following countries; Japan, China, Malaysia, Indonesia, North & South Korea and Eastern Coasts of Russia.

North West pacific fishing grounds



- The major fish species caught in these grounds are salmon, tuna, bonito, mackerel, sardine, cod, Pollack.

- Fishing is highly developed along this ground because of the following reasons:-

1. Broad, shallow and extensive continental shelf that favours the growth of planktons
2. Convergence of the cold Oyasiwo and warm Kurosiwo currents that makes the coast ice free allowing fishing all year round (warm Kurosiwo), provides ideal conditions for plankton growth (cold Oyasiwo)

3. Dense population in the Asian countries that lie astride the fishing ground e.g. Japan and China provide labour and ready market for the fish.
4. Indented North East Asian coastline with numerous islands, bays and sheltered inlets that favour fish breeding and development of fishing ports.
5. Advanced technology especially in Japan has encouraged the development of fishing and facilitated transport of fish e.g. through ship building and refrigeration of ships.
6. Limited agricultural potential especially in Japan and Eastern Russia with rugged landscape that discourages agricultural development; leaving fishing as alternative source of food.

ii. North East Pacific Fishing Ground

- This is located along the western shores of North America, stretching about 1200km from the Alaskan coast (USA) southwards through British Columbia (Canada) to the Californian Coast (USA) through Washington DC and Oregon states.



- Fishing is also done along the major rivers in this region (mention some)
- The main fish species caught in this ground are salmon, tuna, sardines, herring, Pollack and allaska.
- Others include crabs, shrimps, oysters and prawns

Factors favouring fishing in this ground include:

1. Indented coastlines with many fiords, rias and river estuaries that offer good sites for fish breeding and development of fish ports.
2. Cool waters as a result of high latitudinal location that favour plankton growth.
3. Convergence of the cold Californian and the warm Labrador currents along the seagrounds lead to cool temperatures that favour plankton growth
4. These grounds are free from ice all year round since the cold temperatures are moderated by the warm Labrador Current flowing into the area. This ensures fishing throughout the year.
5. Advanced fishing technology that has provided modern fishing equipment and preservation facilities.

(c) African Fishing Grounds

- Africa is not a major exporter and producer of fish and fish products despite having numerous rivers, lakes and being surrounded by seas and oceans. This is because: -
 - a. Ocean waters are warm/coasts washed by warm ocean currents that limit plankton growth (give example)
 - b. The coastlines are straight/regular thus discourages fish breeding and development of fishing ports. (expose with an example - Indian Ocean coastline).
 - c. Ocean waters are shallow due to growth of corals/coral reefs
 - d. The continental shelves are narrow.

- Fishing grounds in Africa are both marine and inland

i. Marine Fishing Grounds

- This is done in the seas and oceans that surround the continent along the coasts of Republic of South Africa, Sierra Leone, Namibia, Ivory Coast, Angola, Kenya, Nigeria, Ghana, Morocco, Mauritania and Guinea. (Find which seas and oceans support these countries).

- **The Republic of South Africa is the largest marine fish producer in Africa. due to: -**

- ✓ Convergence of cold Benguela and warm Mozambique current leads to mixing of waters.
- ✓ Provide nutrients and adequate conditions for planktons' growth.
- ✓ The main fish species caught in Africa are sardines, crabs, tuna, stock fish, whales, lobsters, herring and mackerel.

ii. Inland Fishing Grounds

- This is conducted in the interior of the African continent in lakes, rivers, ponds and dams.

- It is done on small scale and for subsistence but commercial fishing is done on some lakes e.g. Victoria but also for subsistence.

- In lakes, it is done in Victoria, Chad, Tanganyika, Kyoga, Bangweulu, Malawi, Albert and Mweru. (Use Moran Atlas to locate these lakes)

- Human made lakes/dams for HEP production also support fishing e.g. Volta, Caborra Bassa, Kariba, Orange, Nasser and Kainji

- The main fish species caught in lakes include herring, shell fish, cat fish, Nile perch, trout, dagaa, tilapia and eel.

- Fishing is also done along the courses of some rivers in Africa on a small scale. These rivers include Niger, Tana, Zambezi, Limpopo, Senegal, Congo, Nile, Pangani, Orange and Ruvuma.

- The main fish caught in the rivers are salmon and pilchard

- Fishermen in inland fishing in Africa use traditional methods where the catch is limited.

Fishing in East Africa

Fresh Water/Inland Fishing Grounds in East Africa

- In East Africa, fresh water fisheries are more developed compared to marine fishing grounds (accounts for over 50% of the total tonnage of fish catch in East Africa)

This is due to the following reasons: -

1. There are more inland fishing grounds compared to marine fishing grounds
2. Small and narrow continental shelf of about 6km limiting plankton growth
3. Inadequate capital for buying modern marine fishing equipment.
4. Regular coastlines with few indentions/inlets for fish breeding and development of fishing ports.
5. Warm coastal waters that limit fish varieties.
6. Low demand for marine fish species compared to fresh water fish.

(a) Kenya

- The major inland fishing grounds in Kenya are Lakes Victoria, Turkana, Naivasha, and Baringo. (expose on Lakes Nakuru, Elementaita and Magadi)
- Limited fishing is also done on ox bow lakes e.g. Kanyaboli, Shala, Bilisa, Jipe and Sare
- Some reservoirs also sustain fish e.g. Masinga, Kamburu and Kiambere
- Small scale fishing is also done along the lower course of rivers Tana, Nzoia, Athi, Sondu and Nyando.
- Lake Victoria is the main inland fishing ground in Kenya. The dense population in the surrounding areas offer ready market and labour for the fishing industry.
- In Lake Victoria - the fish species are many but the most popular ones are tilapia, Nile perch, dagaa/omena and herring.
- Tilapia and Nile perch are also popular in Lake Turkana while in the remaining lakes, tilapia is the most popular.

- In Lake Turkana, fishing is less developed due to sparse population to offer labour and market.

(b) Uganda

- Fresh water fishing is the only type of fishing as Uganda is landlocked and is more developed compared to compared to Kenya.
- Lake Victoria is the main fishing ground. Others include Lakes Kyoga, Edward, George, Albert and Katwe.
- Inland fishing is also done in rivers such as Kagera, Semliki, Katonga, Kafu and Nkusi among others.
- Tilapia is the main fish caught in all the lakes in Uganda. Nile perch is found in lakes Victoria, Kyoga and Albert.
- Fishermen use motorized boats to enable them travel far into the lake where the catch is large.
- The lakes have numerous islands that provide anchoring and resting grounds for the fishermen.
- There is dense population along/around the lakes providing labour and market for the fish.
- The Ugandan Fish Marketing Cooperation has set up processing and preservation plants next to the fishing grounds. (Fort Portal for Lake Albert (freezing plant and Jinja a processing plant where fish is filleted)

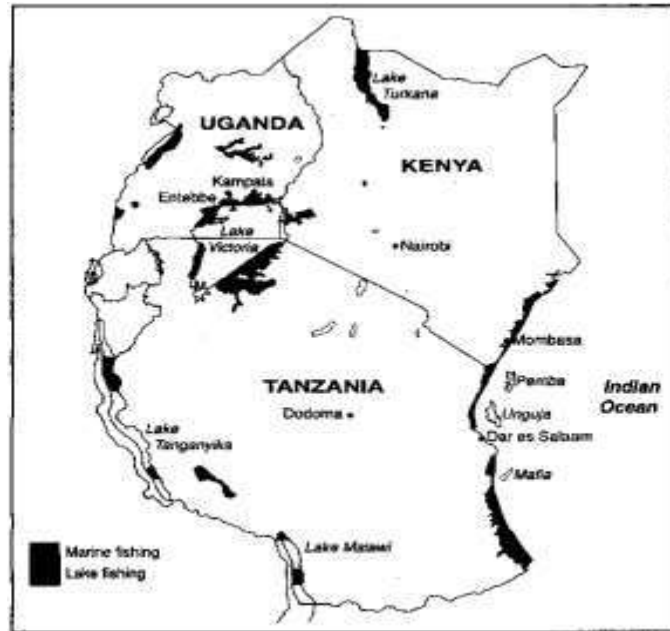
(c) Tanzania

- This is the leading fishing country in East Africa.
- Lake Victoria is the main inland fishing ground in Tanzania with popular species of tilapia, Nile perch and dagaa.
- Other fishing grounds in Tanzania are lakes Rukwa and Malawi as well as rivers such as Malagarasi, Ruaha - Rufiji, Ruvuma, Mara, Kagera, Wami and Nkululu.
- Fishermen use modern fishing equipment for their fishing expeditions.
- Trawling is the main method employed in catching fish

- Large population around the lakes especially towns of Bukoba, Mwanza, Musoma provide markets.
- A processing plant at Kigoma preserve and process fish for sale to other parts of the country.

Marine fishing in East Africa

- This is carried off the coasts of Kenya and Tanzania in the Indian Ocean.
- Tanzania accounts for more tonnage of fish caught compared to Kenya although marine fishing in Tanzania and Kenya are similar in characteristics.
- It is less developed in both the countries due to the following factors : -
 1. Warm waters due to tropical location and the warm Mozambique current limits plankton growth and a number of fish.
 2. Narrow continental shelf and deep offshore waters.
 3. Low technology and limited capital that limits marine fishing to the inshore waters.
 4. Stiff competition from highly developed and industrialized nations e.g. Japan, Korea and Norway with advanced technology.
 5. Limited market due to sparse population in many coastal towns (apart from the Tanzanian islands of Pemba, Mafia, Zanzibar)
 6. Low fish eating culture among the local communities
- Fishing in both the countries is done on a small scale (Kenya - 10%, Tanzania - 13%)
- It is mainly done for subsistence.
- Fishermen use small boats/dhows - few are motorized while majority use wind
- The fish species caught are similar since the fishing grounds are linked e.g sardines, tuna, mullet, bonito, kingfish, queen fish, barracuda (pelagic), cod, streaker, black skin, catfish (demersal) and lobsters, crabs and prawns (crustaceans).



Fish Farming in Kenya

- Fish farming is the keeping/rearing of fish in ponds for commercial purposes.
- Reasons for its development include:-
 - i. Fish farming occupies less space compared to other especially agricultural activities.
 - ii. It is free from territorial disputes and conflicts.
 - iii. It leads to the development of related industries e.g. fish processing, canning, fertilizer making and boat construction.
- 4. Creation of job/employment opportunities - building and management of the fish ponds/farms
- 5. Fish is a source of food/supplement animal protein.
- 6. Some fish in the ponds e.g. trout are exported hence earn foreign exchange.
- 7. Allows better and maximum utilization of land and water resources especially swamps/dams with no agricultural use.
- 8. It is less exposed to dangers of deep sea or lake fishing-storms, drowning.

9. It assists in the conservation of rare species, which might face the danger of depletion or extinction.

Ways through which the government is encouraging fish farming in Kenya

- i. Provision of technical and financial assistance to fish farmers by the Ministry of Livestock.
- ii. Setting up demonstration farms/hatcheries to sensitize on proper management of fish farms through the Lake Basin Development Authority.
- iii. Government's food policy encourages communities fish to set up fish farms/embrace fish eating culture..

Significance of fishing

1. Fishing creates employment opportunities directly as fishermen or indirectly through fish related industries.
2. Source of medicine & cooking fat e.g. cod liver oil, Scotts emulsion.
3. It has led to economic diversification by providing alternative source of food & income hence reducing overdependence on agriculture.
4. Fishing has led to the development of fishing ports and fishing villages and towns e.g. the ones along the shores of Lake Victoria.
5. Source of food - relatively cheaper source of proteins and vitamins compared to meat/beef.
6. Industrialization: - fish related resources and activities provide raw materials for related industries e.g. fertilizer and animal feeds making, lubricants, medicines, cosmetics, fish processing, net and boat making, canning, etc.
7. Infrastructural development - promotes development of feeder roads that link the fishing grounds to the main roads, provision of electricity, etc.
8. Source of foreign revenue:- some of the fish may be exported to earn foreign income

Problems facing Fishing in Kenya and their possible solutions

1. Environmental limitations: - tropical location hence warm waters which limit the number and variety of fish in marine fisheries.

Solution: - *increasing research to get varieties of fish species that can survive under these tropical conditions and introduce them in our fishing grounds. These research centres include Fresh Water*

Research Station - Nairobi, Sagana Fish Farming Centre - Kirinyaga and Marine Fisheries

Research Station - Mombasa

2. Over fishing/overexploitation of fish resources - this is caused by indiscriminate

fishing/overharvesting of fisheries, use of small meshed nets, seining and trawling. It endangers the natural replacement of certain species since with time the fish species reduce because young fish are not allowed time to mature.

Solution: - *More vigilant surveillance of the fisheries, licensing of fishermen to control their numbers and activities, restocking overfished areas, prohibiting small meshed gill nets, introduction of fish farming to reduce overdependence on natural fisheries, banning/prohibiting fishing for some time to let the fish regenerate.*

3. Pollution: - of fisheries by industrial and agricultural wastes, sewage disposal and oil spillage make the water less habitable for plankton growth and thriving of fish. This reduces the amount of fish.

Solution: - *strict legislation should be put in place to check disposal of industrial wastes into fishing grounds, industries are encouraged to treat their wastes before releasing them into lakes and rivers*

4. Poaching & competition from well-developed fishing nations: - fishermen from Asia and Europe using advanced equipment and fishing methods reduce the amount of fish. Also the fish and sales proceeds land back in their countries.

Solution: - *the KWS patrols the Indian Ocean to monitor and restrict stray fishermen from Kenyan waters - arrest and confiscate their fishing equipment.*

5. Presence of water weeds: - some fishing grounds e.g. Lake Victoria is infested with water hyacinth along the lake shores. This chokes the fishing boats and hinders the fishermen from reaching far areas with a lot of fish.

Solution: - *local community, NGOs and the government to make attempts in removing the weeds from the lake*

6. Inadequate capital: - most fishermen in Kenya use traditional methods of fishing that limits their catch due to lack of adequate capital for purchasing advanced fishing equipment and refrigeration facilities. This limited marine fishing in deep seas with a variety of fish and a lot of catch.

Solution: - *provision of loans to the fishermen through financial institutions and government agencies, encouraging fishermen to form cooperatives so as to assist them in raising the required capital.*

7. Poorly developed transport network: - some roads leading to the fishing grounds area poorly maintained and impassable during the rainy season. This leads to delay in delivery of caught fish to the processing plants/factories hence go bad since fish is highly perishable.

Solution: - *government is making efforts to improve/develop the roads leading to such grounds, local fishermen through their Saccos to purchase refrigerated vehicles to facilitate transport, fishermen to use other methods of preserving fish e.g. salting, smoking, and drying to preserve fish*

8. Limited market: - the demand for fish in the country is small because; fish eating is less popular with most communities, some fishing grounds e.g. Lake Turkana are located in sparsely populated areas and fish is more expensive compared to other sources of protein.

Solution: - *the government should encourage the local communities to embrace fish eating as an alternative to red meat - through establishment of fish farms.*

9. Accidents within the lakes & ocean: - sometimes during the year, fishing boats and canoes capsize to the lakes and in Indian Ocean due to strong winds and prevailing storms. This leads to loss of fishing equipment and even life. The fishermen are therefore prohibited from venturing into far waters with a lot of catch and variety.

Solution: - *fishermen are encouraged to use bigger boats that are motorized; these can withstand storms and strong winds*

10. Inter boundary conflicts: - sometimes, Kenyan fishermen are arrested by Uganda and Tanzania authorities for straying into their waters along the boundary of Lake Victoria. They often lose their catch and fishing equipment.

Solution: - *Kenyan policemen to patrol the boundaries to ensure the fishermen remain within the Kenyan waters.*

11. Lack of fish cooperatives: - most fishermen do not belong to fish cooperatives through which they can market their catch. They therefore sell their catch through middlemen hence realize marginal profits.

Solution: - *fishermen should be encouraged to form and join fish cooperatives to assist them market their catch, get funds/acquire loans to improve their fishing practices.*

Fishing in Japan

- Japan is the leading fish producer and exporter in the world (it accounts for 15% of the world's total catch)

- It is located in the North West Pacific Fishing ground.

- Fishing is done around all port cities of Japan but the major fishing ports are Nagoya, Nagasaki, Kushiro, Osaka, Yokohama,

Factors favoring fishing in Japan

1. Japan has many naturally indented coastlines provides well-sheltered grounds for breeding of fish as well as suitable sites for port construction.

2. The rugged and mountainous terrain limits agricultural activities hence fishing is a viable economic activity.

3. The shallow and extensive continental shelf allows sunlight to penetrate thus encourages growth of planktons.

4. The convergence of warm Kuroshio and the cold Oyashio ocean currents helps produce ideal breeding grounds for fish/upwelling of ocean water bring planktons to the surface.

5. Ready market from the densely populated neighboring Asian countries e.g China and Korea.

6. Presence of advanced technology has led to use of powered trawlers, refrigerated vessels fitted with processing plants.

7. Long history of fishing and sea going culture of the Japanese people.

- In Japan, fishing is highly developed and mechanized. The fishermen use radars that locate specific areas with large shoals of fish.

- Japanese fishermen use long lines, trawling and seining methods to catch fish.
- The fish caught is sold as fresh, canned, dried and frozen.
- The fish is consumed locally. The large Japanese population (above 130million) provides ready market for the fish.
- Others are exported.
- Popular fish species caught: -
 - i. In the cooler northern seas - cod, salmon, herring, halibut, allaskan and Pollack.
 - ii. In the warmer southern waters - sardines, mackerel and tuna
 - iii. Others include crabs, oysters, lobsters and octopuses
- Fishing and marketing of fish is done by cooperatives formed by the fishermen. These cooperatives advance loans to the fishermen to improve and expand their fishing activities.
- Fish farming is also practiced in fresh water ponds and dams.

The factors that favoring fish farming in Japan include

1. Over fished natural fisheries leading to depletion of certain species hence need for fish farms where such species are reared.
2. Need to supplement natural supplies to meet increased demand locally and externally.
3. Industrial pollution of the sea has rendered seawater unsuitable for fish breeding.
4. Availability of capital to establish fish farms.
5. Extensive research has enabled fish farmers to successfully rear appropriate fish species.

Comparison between fishing in Kenya and Japan

Similarities

- i. Fish farming is done in both the countries.
- ii. Cooperative societies for fishermen is practiced in both countries.
- iii. Marine fishing done in both countries; similar species e.g. sardines, tuna, etc.

Differences

- i. In Kenya both marine and inland fishing is done while in Japan only marine fishing is carried out.
- ii. Marine fishing is confined to Kenyan territorial waters only while in Japan marine fishing extends beyond the territorial waters up to high seas.
- iii. The marine fisheries in Kenya have few/limited fish and species whereas in Japan, the fishing ground is richer with a variety of species.
- iv. In Kenya, marine fishing is done on a small scale based on simple technology and use of traditional methods whereas in Japan fishing is done on a large scale based on advanced technology and use of modern fishing methods.

Problems facing fishing industry in Japan

- i. Depletion of some fish species due to overexploitation as a result of high demand for them locally and abroad.
- ii. Overfishing due to use of highly advanced technology.
- iii. Water pollution through oil spillages from fishing vessels lead to reduction of fish species.

Management & Conservation of Fish and Fisheries

Management: - refers to the effective planning and control of fish resources and their habitats. It is done through: -

- a. Licensing of fishermen to control their fishing activities and to regulate their numbers.
- b. Banning of fishing especially when overexploitation is detected on a particular fishing ground so as to give the young fish time to mature and breed/restricting fishing to specific seasons to allow for breeding and maturing of fish. This ensures mature regeneration of fish.
- c. Standardizing the size of nets used in fishing to ensure only the mature fish are caught
- d. Intensifying research to know more about fish species, their habitats, breeding habits, food requirements, migratory behavior and life span.

Conservation: - refers to the careful use and exploitation of fish resources to avoid overexploitation. It includes:-

- a. Encouraging fish farming to supplement the fish caught in natural fishing grounds/reduce overdependence on natural fisheries.
- b. Control of foreign fishermen by monitoring their expeditions through KWS patrols and licensing their entry into the Kenyan waters especially Indian Ocean.
- c. Restricting the disposal of untreated waste into the water bodies to ensure the water remains clean for survival of fish/industries to treat their wastes before disposing to water bodies.
- d. Improving transport system through construction of roads connecting the major fishing grounds and the markets to reduce overexploitation.
- e. Restocking the over fished areas using hatcheries and fingerlings obtained from Lake Basin Development Authority or overstocked grounds.
- f. The law of the sea that restricts fishing in the exclusive zones ensures the protection of marine fisheries from external exploitation.

Significance of the international law that limits territorial waters of each country to a distance of 320km

- ✓ The zone is useful for security/ military purposes.
- ✓ The law ensures that countries have an extensive sea frontage from which they can exploit marine resources.
- ✓ It reduces competition for marine resources especially from the developed countries with advanced technology to exploit the resources over wide areas.
- ✓ It makes countries with large expanses of the sea but fewer industries to be free from international pollution.

End of topic

Did you understand everything?
If not ask a teacher, friends or anybody and make sure you understand before going to sleep!

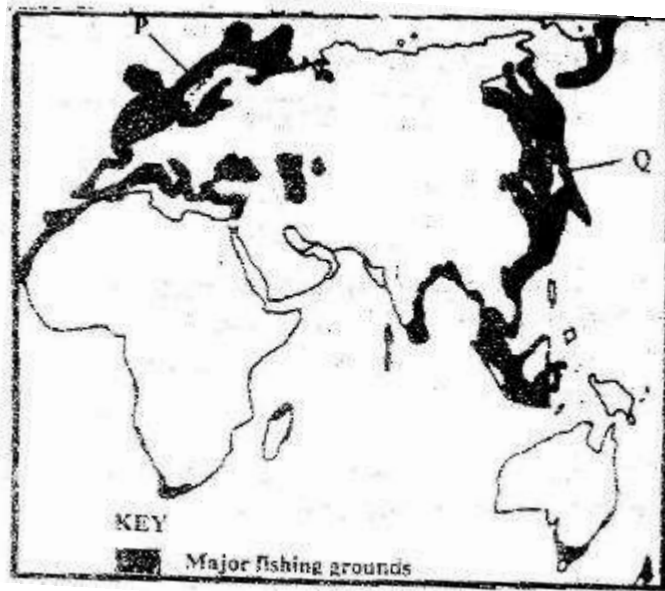
Past KCSE Questions on the topic

- 1 (a) State three measures that have been taken to conserve fisheries in Kenya. 3 mks
- (b) Give four reasons why Norway is a great fishing nation. 4 mks
- (c) Two traditional/ subsistence methods of fishing. 2 mks
- (d) Three measures the government of Kenya is undertaking to encourage fish culture. 3 mks
2. Use the map of North America to answer question (a).

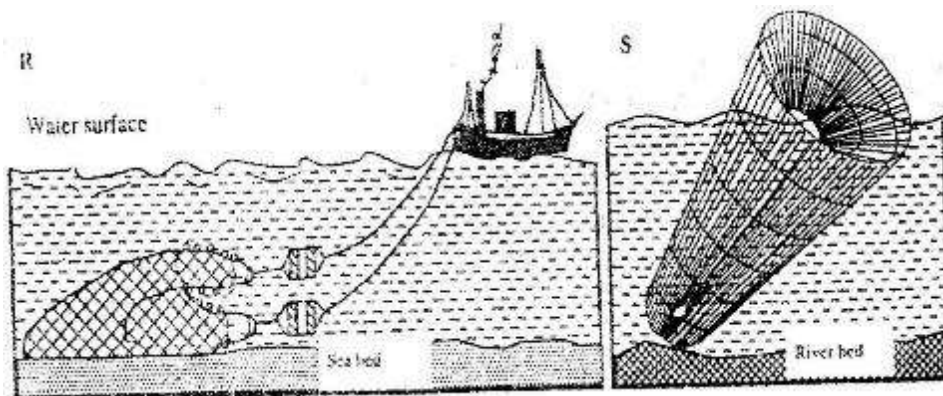


- (a) Name two methods of fishing used in the shaded areas. 2 mks
- (b) Name two types of fish caught along the West Coast of Canada. 2 mks
- (c) Explain how the following factors favour fishing in the shaded areas,

- (i) Indented coastline
- (ii) Ocean currents 4 mks
- (d) Give three methods used to preserve fish. 3 mks
- (e) Explain three problems experienced by fishermen while fishing in Lake Victoria 3 mks
3. The map below shows some major fishing grounds in the world. Use it to Answer the questions below



- (a) Name the countries marked P and Q. 2 mks
- (b) Explain four conditions that favour fishing in the shaded coastal waters 8 mks
4. (a) The diagrams below represents some fishing methods.



- (i) Name R and S. 2 mks
- (ii) Describe how the above methods are used in fishing. 4 mks
5. (a) Differentiate between fishing and fisheries. 4 mks
- (b) Identify the physical and human factors influencing fishing. 5mks
6. (a) Draw an outline map of the world and locate the major fishing grounds. 2 mks
- (b) Account for the location of fishing grounds located in 6(a). 4 mks
7. (a) Discuss the main types of fishing. 3 mks
- (b) List the traditional methods of fishing. 3 mks
- (c) Describe how the following methods of fishing are carried out:
- (i) Drifting
- (ii) Trawling 4 mks
8. (a) (i) Apart from Lake Victoria, name other fresh water fisheries in Uganda and Tanzania. 4 mks
- (ii) Explain the factors favouring fishing on Lake Victoria. 6 mks
- (b) Explain why marine fisheries are underdeveloped in East Africa. 5 mks
9. (a) State the significance of fishing to the economy of Kenya. 5 mks
- (b) (i) Describe the problems facing fishing in Kenya. 5 mks
- (ii) Identify the solutions in b(i) above. 5 mks
10. Draw a table showing the similarities and differences between fishing in Kenya and Japan. 6 mks
11. (a) Define:
- (i) Management of fisheries.
- (ii) Conservation of fisheries. 4 mks

(b) State the measures which can be undertaken to manage and conserve fisheries. 4
mks

CHAPTER EIGHT

WILDLIFE AND TOURISM

Specific Objectives

By the end of the topic the learner should be able to:

By the end of the topic, the learner should be able to:

- (a) Define the terms wildlife, tourism and eco-tourism;
- (b) Distinguish between game reserves, national parks and sanctuaries domestic tourism and international tourism;
- (c) Explain the factors that influence the distribution of wildlife in East Africa and factors that influence tourism in Kenya;
- (d) Locate national parks, major game reserves and sanctuaries on a map of East Africa;
- (e) Identify and discuss tourism attractions in Kenya;
- (f) Discuss the significance of wildlife and tourism in Kenya,
- (g) Discuss the problems facing wildlife in East Africa and those facing and associated with tourism in Kenya;
- (h) Discuss the management and conservation of wildlife in East Africa:
- (i) Discuss the future of tourism in Kenya;
- (j) Compare and contrast tourism in Kenya and Switzerland.

Content

- a.) Definition of the term wildlife,
- b.) Factors influencing the distribution of wildlife in East Africa.
- c.) Distinction between game reserves, national parks and sanctuaries and their distribution in East Africa.
- d.) Location of National Parks, major game reserves and sanctuaries in East Africa.
- e.) Significance of wildlife in East Africa.
- f.) Problems facing wildlife in East Africa.
- g.) Management and conservation of wildlife in East Africa.
- h.) Definition of the terms tourism and eco-tourism,
- i.) Distinction between domestic and international tourism.
- j.) Factors influencing tourism in Kenya.
- k.) Significance of tourism.
- l.) Problems facing and associated with tourism in Kenya.
- m.) Comparative study of tourism in Kenya and Switzerland.
- n.) The future of tourism in Kenya.

Definition

- ✓ **Wildlife** refers to undomesticated plants and animals in their natural habitats.
- ✓ It includes natural vegetation, insects, birds and animals living in bushes and forests, fish and other aquatic organisms in rivers, oceans, lakes and seas.

Factors influencing wildlife distribution in East Africa

i. **Climate**

- Areas that experience high rainfall that is reliable and evenly distributed all year round lead to growth and development of big/large forests. These forests are themselves part of wildlife and are homes to several herbivores e.g. impalas, waterbucks, antelopes, etc. as well as carnivores e.g. lions and leopards. Examples Mt. Kenya and Kakamega forests.
- Areas receiving low rainfall lead to extensive grasslands that are homes for herbivores and carnivores. E.g. Serengeti national parks and Maasai Mara game reserve
- Arid areas have limited vegetation/plant growth hence have few animals.

ii. **Relief/terrain**

- Rugged terrains are unsuitable for hunting animals - they are instead found in extensive and relatively level grounds.
- Certain plants grow at given altitudes.

iii. **Soil type**

- Termites and rodents live in red volcanic soils because they are warmer.
- Forests thrive in deep soils while papyrus plants do well in waterlogged soils.

iv. Vegetation cover

- Natural forests are habitats to elephants, buffaloes, gorillas, baboons and monkeys among others.
- Savanna grasslands are homes to herbivores (the grasses provide food to them) e.g. antelopes, gazelles, wildebeests, zebras, buffaloes, that attract carnivores e.g. lions and leopards that in turn feed on them.
- Areas with shrubs and bushes are habitat to animals e.g. dik dik, hyrax, warthogs, that also attract carnivores.

v. Drainage & presence of water bodies

- Well drained areas support many plants and animals compared to waterlogged areas.
- Fish are found in open water lakes such as Victoria, Kyoga, Malawi, Tanganyika, Baringo and Turkana. Others are found in the Indian Ocean
- Crocodiles and hippos are found in fresh water lakes and large rivers e.g. Nile, Tana, Nzoia, Ruvuma and Mara.

iv. Human activities

- These may interfere with the habitats for animals and the animals themselves in the following ways.
 - Fishing methods that lead to overexploitation or overfishing may make certain types of fish extinct.
 - Encroaching into wildlife habitat to get space for settlement and agriculture due to increasing population. This is done through clearance of vegetation and deforestation.
 - Mining and quarrying activities destroy plant cover and animal habitat and even the animals themselves.
 - Pollution of water and land with time kills the wildlife and reduce their numbers e.g. through use of fertilizers and chemicals in agriculture to kill weeds and control pests are washed into lakes and rivers eventually killing the fish.

National parks

- These are areas set aside for the preservation of scenery, wildlife and historical sites to protect them from destruction.
- They are controlled by the central government authority.
- They are established by an act of parliament and gazetted.
- They are fenced and land use is not permitted.
- Examples in East Africa are Serengeti (Tanzania), Ruwenzori Mountains National Park (Uganda) and Hell's Gate National Park (Kenya)
- They also include marine national parks e.g. Watamu (Kenya) and Saadani and Tanga (Tanzania)

Game Reserves

- These are areas set aside for the preservation of wild game.
- They are managed by the local/county government authorities
- Land use is limited to grazing only.
- They may be fenced or not.
- Examples are Maasai Mara (Kenya), Selous (Tanzania) and Kigezi (Uganda)

Wildlife/Game Sanctuaries

- These are areas set aside for the protection of specific animals and/or birds that may face extinction.
- Hunting is prohibited and predators are controlled
- They may be set within the national parks
- Examples include Rhino Sanctuary in Lake Nakuru National Park.



National Parks in East Africa

NO	Kenya	Uganda	Tanzania
A	Tsavo East	Serengeti	Kipendo Valley
B	Tsavo West	Kilimanjoro	Murchison Falls
C	Chyulu Hills	Arusha	Semiliki
D	Amboseli	Lake Manyara	Ruwenzori
E	Nairobi	Tarngire	Queen Elizabeth
F	Hell's Gate	Mikumi	Bwindi
G	Lake Nakuru	Udzungwa	Lake Mburo
H	Rumi	Ruaha	Mgahinga
J	Aberdare	Katavi	Mount Elgon
K	Mount Kenya	Mahale Mountains	
L	Meru	Gombe Stream	
M	Samburu	Rubondo Island	
N	Marsabit		
P	Sibiloi		
Q	Mount Elgon		
R	Central Island		
S	Malindi & Watamu Marine		

T	Mombasa Marine		
U	Kisite Marine		
V	South Island		
W	Malika Mari		

Tanzania

Kenya

Uganda

Kigosi

Buffalo springs

Bokora

Burigi

Maralal

Pian - Upe

Biharamulo Losai

Ibanda Marsabit

Rumanyika South Turkana

Maswa Arawale

Kijereshi Boni

Grumeti Dodori

Ikorongo Kiunga Marine

Ngorongoro

Mkomazi Mombasa Marine

Umba Mpunguti Marine

Sidani

Pande

Significance of wildlife

- i. Various forms of wildlife especially wild animals in the parks and reserves attract tourists thus earning foreign exchange.
- ii. Wildlife creates job/employment opportunities through people employed in wildlife management and conservation centres e.g. tour guides, game wardens,

- anti-poaching police units as well as in tourists' hotels as waiters, chefs, etc. they earn income hence improve their living standards.
- iii. Wildlife has encouraged and promoted tourism leading to economic diversification and reducing overdependence on agriculture as a major source of revenue for the country.
 - iv. Through management and conservation, wildlife has ensured continued survival and existence of endangered plant and animal species to be available for future tourism and future generations.
 - v. It has led to the improvement of infrastructure through the construction of roads leading to the wildlife conservation centres (parks & reserves); opening up remote areas to the rest of the country.
 - vi. Wildlife provides for field study and a place for conducting research by students as well as for familiarization of the environment and the need for its appreciation.

Problems facing wildlife in East Africa

a.) Poaching

- This is the illegal hunting for wildlife in the parks and reserves for their trophies e.g. skins, tusks, horns, meat, etc. it reduces the number of some animal species e.g. rhino and elephant to the extent of even becoming extinct.

Solution: - *employing anti-poaching police units to patrol the parks, arrest and charge the poachers.*

Also imposing a ban on importation of game trophies. Also establishment of wildlife sanctuaries and introduction of game ranching.

b.) Prolonged drought/adverse weather conditions

- Severe and extended drought occurring in the savanna grasslands and in the arid and semiarid lands may dry up the pasture and shrubs, forcing the birds and animals to migrate in search of the same.
- Also, the rivers and watering points may dry up leading to lack of water for drinking to many animals.
- Many animals may fail to adapt to these conditions and die thus reducing their numbers within the parks.

Solution: - *brainstorm with the learners*

c.) Human activities

- Increasing human population has led to pressure on the existing land. This has led to encroaching on the land reserved for wildlife. In the process the habitat is destroyed; forcing the wild animals to migrate, face extinction and disrupting their natural ecosystem.
- Pollution of aquatic habitats from sewage disposal and industrial wastes threatens the existence of birds and other aquatic wildlife; careless disposal of solid wastes in the parks e.g. plastic bottles, polythene bags threaten the existence of animals that may feed on them.
- Tourist vehicles driven over vegetation in parks destroy them hence reduce the amount of vegetation for grazers and browsers, noise from tour vehicles and presence of people disrupts the animals
- Pastoral animals compete with the wildlife for pasture.

Solution: - *creation of parks where land use is prohibited/fenced to ward off encroachment. Treating of wastes before releasing into aquatic habitat, strict legislation over wastes' disposal, driving with tour guides and along marked trails/embracing ecotourism*

d.) Insecurity

- Some game parks e.g. Kidepo Valley and Kora are located in areas affected by banditry and civil strifes. During gunfire exchanges, wild animals may be killed or forced to migrate to safer areas.
- Also, lawlessness of the bandits as they may kill the animals for their trophies.
- It also discourages tourists from visiting such affected areas to watch wildlife.

Solution: - *creation of tourists' police unit to improve the security, deploying security personnel to the affected areas.*

e.) Bush fires

- Fires may be started in the forests by arsonists, hunters and gatherers. These fires burn down vegetation especially during dry season; interfering with the habitat, killing some of the animals or even force others to migrate

Solution: - *creating awareness to the local communities that live next to parks and reserves on the importance of wildlife management and conservation/domestic tourism*

f.) Human - animal conflicts

- Some wild animals e.g. hippos, rhino, leopards, elephants, etc. may stray from the gameparks into the people's farms; destroying their crops and killing their domestic animals.

- Compensation awarded by KWS is often little and paid late, forcing the local community to revenge by killing the wild animals

Solution: - *free game rides to the community to improve their attitude towards livestock conservation, KWS to compensate the victims in time and attractively, creation of awareness on the need for wildlife conservation.*

g.) Pests and diseases

- Animals in the parks and reserves are occasionally attacked by pests and diseases that weaken and kill the animals thus reducing their population.

Solution: - *brain storm*

h.) Overpopulation of wild animals in the parks/reserves

- Some parks and reserves may be overpopulated with certain species of wild animals beyond the park's/reserve's carrying capacity. These animals overgraze on the pasture and shrubs leading to scarcity or absence of the same and development of arid conditions.

Solution: - *translocation of such animals to other parks where they are less in number to reduce their population in such parks.*

Game Ranching

- This refers to the domestication of large wild animals i.e. rearing/keeping of wild animals for meat and other products in large areas/farms
- The types of animals kept in game ranches in Kenya are impala, buffalo, oryx, ostrich, eland and Thomson's gazelles among others.
- Such animals are always overpopulated in the parks hence kept in ranches where they can be carefully exploited for their meat.
- The areas where game ranching is practiced in Kenya include the Galana Game Ranch and the Kikopei Ranch next to Nakuru.

Advantages of game ranching over domestic livestock ranching include: -

- i. Wild animals are more resistant to diseases e.g. Nagana, East Coast Fever, rinderpest compared to domestic livestock.
- ii. Wild animals can survive without water for longer periods compared to domestic livestock.
- iii. Under normal conditions, game animals produce more meat per unit area of land compared to domestic livestock.
- iv. Game animals are adapted to use a wider range of vegetation thus can alleviate overgrazing, soil erosion and desertification in the range lands.
- v. The utilization of game animals under predator proof fences would reduce theft which is common in domestic livestock ranching.

Management and conservation of wildlife in East Africa

Management

- This refers to the effective planning and control of wildlife.
- In East Africa, wildlife management practices include: -
 - Formation of wildlife management bodies e.g. KWS, TAZANA and UWA that are mandated to manage and conserve wildlife. They involve the local communities in wildlife management thus limiting human - animal conflict.
 - Creating awareness on the importance of wildlife management through mass and electronic media and creation of wildlife clubs in schools.

Conservation

- This refers to the protection of wildlife against interference and destruction by human activities.

It is important because of the following reasons:

- ✓ To protect the endangered animal/ plant species.
- ✓ To promote tourism.
- ✓ To generate foreign exchange To sustain the raw materials for supply of drugs
- ✓ For education/ Research purposes
- ✓ For aesthetic value/ natural beauty.
- ✓ To keep them for posterity/ future generations

Failure to conserve wildlife in a country may lead to the following consequences: -

- i. Increased soil erosion due to exposed surface.
- ii. Landslides and floods.
- iii. Loss of biodiversity.
- iv. Extinction of some species of plants and animals
- v. Lead to increased aridity and desertification.
- vi. Shortage/ Lack of forest products e.g. Timber.
- vii. Decreased vegetation cover reduces transpiration and leads to reduced rainfall

The following are measures of wildlife conservation in East Africa

- i. Tagging endangered animals with radio signal to monitor their movements.
- ii. Banning of game hunting and trade in game/wildlife products unless export permits are availed.
- iii. Establishing the Kenya Range Lands Ecological Monitoring Units (KREMU) for reasons of establishing game parks and reserves.
- iv. Establishing game reserves and national parks for protection and preservation of wild animals as well as game sanctuaries and animal orphanages to protect special species that may face extinction.
- v. Establishing of game ranches to exploit wild animals for their meat and other products and at the same time conserving them e.g. the Galana Game Ranching Research Project in Tsavo East that raise eland, oryx and buffaloes.
- vi. Establishment of anti-poaching police units to guard against poachers.
- vii. Employing game rangers and guards to monitor animal movement and other strange activities in the park.
- viii. Creation forest reserves that contain rare species of wildlife to protect them since land uses are restricted in such areas.

Tourism

This is the practice of travelling to places of interest for leisure or enjoyment. The people who participate in tourism are called tourists and they are charged some fee. Reasons for touring include spending holidays, honeymoon, business trip, study tours and attending family functions e.g. weddings, graduations, etc.

Types of tourism

1. Domestic Tourism

- This refers to the visiting of places of interest for recreation purposes by the nationals/citizens of a country.

The government promotes domestic tourism through the following ways: -

- i. Domestic tourists are offered favourable rates on accommodation especially during offpeak season.
- ii. Charging lower entrance fees to parks to locals.
- iii. Tourist agencies sponsor their airing of and publicity of documentaries on Kenya's tourist sites.
- iv. Improving security in the parks by deploying tourist police personnel, forest guards,rangers.
- v. Improving the state of roads through continuous maintenance

Problems facing domestic tourists in Kenya

- i. Low public awareness due to inadequate advertisement locally.
- ii. Local people are familiar with the tourist attractions and hence they don't appreciate their beauty and value.
- iii. Majority are low income earners thus cannot afford the cost of traveling and accommodation.
- iv. Negative attitude towards local tourists.
- v. Poachers and gangsters pose security problem

Reasons why the government of Kenya encourages domestic tourism

- i. It results into increased consumption of local wildlife products.
- ii. Money circulation is increased within the country.
- iii. Facilitates interaction between different communities and thus enhances national unity.
- iv. It increases employment opportunities.
- v. Makes people aware of their environment.
- vi. People are able to appreciate their cultural heritage.
- vii. Makes use of the hotel facilities which are underutilized during the low tourist season.
- viii. May enhance need for conservation and preservation of the environment

2. International tourism

- This is the movement of people from one country to another for holiday or leisure.

3. Ecotourism

- This is derived from ecology and tourism

- It is an environmentally friendly form of tourism where tourists enjoy watching nature and at the same time protecting the wildlife.
- It involves management and conservation of wildlife during tours in the parks and reserves.
- This is done through the following: -
 - a. Use of tour guides to lead the tour vehicles along marked trails or paths to avoid destruction of vegetation.
 - b. Encouraging telescopic viewing of wild animals
 - c. Using camping sites instead of building large tourists' hotels and lodges.
 - d. Creating awareness among local communities to understand and appreciate nature by visiting game parks and offering them free game rides within the parks.
 - e. Visiting wildlife conservation areas in smaller groups
 - f. Encouraging soft/green tourism in areas where the natural environment has been previously interfered with by planting trees and introducing animals in the areas e.g. Bamburi Nature Trail.
 - g. Use of litter bins in tourist vehicles/vans for disposal of wastes during the game rides.

Factors influencing tourism in Kenya

- i. **Variety of tourists' attractions:** - these include wild animals in their natural habitats, scenic beauty such as snowcapped top of Mount Kenya, rift valleys, historical sites and others.
- ii. **Wildlife conservation measures:** - through establishing game parks and reserves and a ban on game hunting has earned the country international recognition. Many lobby groups interested in wildlife conservation therefore promote Kenya as a tourist destination rich with wildlife.
- iii. **Existence of Wildlife:** - Kenya has a variety of tropical plants due to warm climate and abundant rainfall favouring the growth of many plants ranging from equatorial rain forests to savannah grasslands and drought resistant plants. Kenya also has a wide range of tropical animals and birds that attract tourists.
- iv. **Climate:** - Kenya is located within the tropics with the equator cutting through it from East to West. Temperatures range from moderate to high making the general climate to be warm and sunny hence pleasant all year round. This makes

Kenya a major tourist destination especially for tourists from the temperate regions.

- v. **Promoting local/domestic tourism:** - this is done by reducing the charges to major tourists' attractions for the locals.
- vi. **Presence of several tourist hotels:** - there are several tourists' hotels in major towns/urban centres and game lodges in the parks that offer excellent catering and accommodation services to the tourists e.g. Voi & Kilaguni Safari Lodges in Tsavo National Parks, Laico, Windsor, Ambassador and Intercontinental Hotels in Nairobi amongst others.
- vii. **Relative peace & political stability:** - Kenya has been relatively peaceful compared to her neighbours and this ensures security thus encouraging tourists to come to Kenya and enjoy the various tourists' attraction.
- viii. **Training in tourism:** - training of personnel at the Kenya Utalii College and degree courses in tourism management and hospitality produces competent staff for the provision of services in the tourism industry.
- ix. **Package tours:** - group bookings for travel and accommodation are done in tourists' resource countries to make them cheaper for tourists thus encouraging more.
- x. **Publicity on tourism:** - the Kenya government through the Ministry of Tourism and other stakeholders in the tourism industry create public campaigns abroad to create awareness on Kenya's tourist potential and popularize Kenya as a tourist destination. These promotions are done through exhibitions, trade fares at international level, mass media and major tourist source countries. Also through creation of Kenya Tourism Board and Kenya Tourism Development Cooperation that market Kenya as a major tourist hub.
- xi. **Research programmes:** - have been increased in wildlife management and conservation; also provision of veterinary services to sick animals has been done to sustain the tourism industry.

Tourists' attractions in Kenya

a. Wildlife

- This is the main tourist attraction in Kenya. It has many game parks and reserves that contain several plants and animals in their natural setting as well in museums. There are also marine parks along the coast.

b. Beautiful scenery

- Kenya comprises of a variety of scenery ranging from mountains in the interior to the coast inclusive of snowcapped mount Kenya - for watching and mountaineering; the Rift Valley with associated escarpments and lakes with hot springs (Bogoria).

- There are also waterfalls along the courses of some rivers e.g. Nyahururu, fourteen falls, etc. as well as granitic tors such as *Kit Mikae* (Kisumu) and *The Crying Stone* (Kakamega)

c. Warm climate

- Kenya experiences warm climate all year round due to its tropical location. Many tourists visit Kenya during the winter season (October to March) to escape the severe cold seasons.

d. Sandy beaches along the Indian ocean coast

- These are found in Mombasa, Kilifi and Malindi.

- They have warm clear waters and refreshing breezes.

- They allow sun and sand bathing, swimming, sailing, water sports, fishing and playing beach games.

e. Historic/pre-historic sites

- These are sites where archeological discoveries of human fossils have been preserved. Such sites are popular with tourists and they include Kariandusi and Olorgesailie at the shores of Lake Turkana.

- Human fossils and artifacts are also preserved in museums found in major urban centres e.g. Nairobi, Kisumu and Mombasa.

- Other historical sites include Fort Jesus, Gede Ruins and Vasco da Gama Pillar in the Coast.

f. Cultural activities

- Tourists come to Kenya to learn ways of life of some communities.

- They watch traditional dances, Kenyan communities' ways of dressing, and other cultural activities.

- The Bomas of Kenya (Nairobi) is popular with tourists to learn cultures of different ethnic groups.

g. Conferences

- Nairobi being an international centre hosts many visitors coming to attend international conferences. It also the headquarters of international organisations e.g. UN, UNEP and HABITAT and people who visit Nairobi for the international meeting/conferences take time off to tour the potential sites.

h. Agricultural shows/trade fairs

- Tourists visit Kenya each year to attend the annual agricultural shows and the Nairobi International Trade Fair to exhibit their wares.

Significance of Tourism

1. Foreign exchange earnings: - international tourists make payments in foreign currencies for the services rendered to them in the parks and hotels. This can then be used in international trade and in the improvement of other sectors.

2. Source of employment: - many people are employed in the tourist industry as chefs, waiters/waitresses in tourist hotels/lodges, tour guides, game wardens, etc. They earn income thus improving their living standards.

3. Source of government revenue: - this is earned through the fee charged at tourist sites (e.g. game parks) and license fees charged on tourist hotels, tour companies and guides.

4. Improvement of infrastructure: - the roads connecting areas of tourist attractions have been improved and even new ones built to fasten the movement of tourists to and from such sites. Also game lodges and tourist hotels have been supplied with piped water and electricity. All these stimulate development around such areas.

5. Promotion of agriculture: - tourism enhances agricultural development through supplying the tourist hotels with food i.e. there is a high demand for fruits and vegetables in these hotels and this encourages their production.

6. Wildlife conservation/protection of historical sites: - through domestic tourism, the local are able to appreciate wildlife thus reducing human-wildlife conflict. Wildlife, being the major tourist attraction in Kenya has made the government to protect designated areas through establishment of game parks/reserves.

7. Promotion of international relations: - international understanding and relations is improved as tourists visit various countries. This reduces prejudices and discrimination thus promoting trade and cultural exchange.

Problems facing tourism

- i. **Pollution** of the parks by tourists - makes the parks less attractive hence reduce the numbers
- ii. **Terrorism/terrorist attacks:** - Kenya has been a victim of terrorist attacks in the recent past. These have made some tourist resource countries to issue travel bans/advisories to their citizens against Kenya, reducing the number of tourists.
- iii. **High travel costs:** - travel costs between countries are becoming increasingly unaffordable to many potential tourists. This has forced some tourists to charter planes or travel as a group to reduce the cost of air fares. These group travels restrict the numbers of tourists coming to Kenya and the numbers of days to spend.
- iv. **High tariffs:** - high taxes levied on the tourists discourage many from visiting the attraction sites or to spend fewer days hence reducing the effect on tourism.
- v. **Adverse publicity abroad:** - the international media may at times portray Kenya as not safe as a tourist destination. Some political issues are also exaggerated and portray Kenya as politically unstable. Such remarks discourage potential tourists.
- vi. **Civil strife in the region:** - civil wars within the neighbouring countries have a negative impact on tourism in Kenya. Tourist who hear of such keep of Kenya thinking that it is also politically unstable.
- vii. **Kenyans' attitude s towards tourism :** - several Kenyans perceive tourism as belonging for international tourists. Domestic tourists are also discriminated

upon in favour of foreign tourists. This discourages locals from patronising the hotels and parks.

Problems associated with tourism

- i. Erosion/changes in social values.
- ii. School drop outs.
- iii. Effect on wildlife and environment.
- iv. Overreliance on tourism.
- v. Increase in drug abuse.
- vi. Copying of foreign culture.

The future of tourism in Kenya

- This depends on: -

- a.) Aggressive promotion and opening of new markets in Middle East and Asia to increase the number of tourists.
- b.) Lowering of the tariffs/charges so as to encourage more tourists/spend more days.
- c.) Strength of the Kenya Shilling against foreign currency - if stronger against other major foreign currencies - it becomes expensive for tourists to pay for the services. (It should depreciate to make it cheaper for the tourists)
- d.) Improved security by setting up anti-terrorism laws and fighting the war against terrorists to make Kenya a safe tourist destination.

Case Study: Tourism in Switzerland

Introduction

Switzerland is a landlocked country in Central Europe. It lies astride the Alps Mountain Ranges. It has been a great tourist nation since the 18th Century.

Major Tourist Attractions in the Switzerland

1. Mountains

- The Swiss landscape comprises of many mountains with smooth slopes and valleys e.g. the Alps. These attract tourists interested in mountain climbing, sight-seeing and in winter sports e.g. skiing.

- Other features that are related to the mountains include the hanging valleys and waterfalls that are of scenic beauty to tourists.

2. Swiss National Park

- Switzerland has a big national park with varied plant and animal species that attract tourists.

3. Lakes

- There are several glaciated lakes with clear blue waters that are beautiful to see and popular for sport fishing, sailing and swimming.

4. Variety of climate

- Switzerland experiences both winter and summer climates that facilitate various activities that the tourists can participate in e.g. mountain climbing, sport fishing and swimming during summer and skating & skiing in winter.

5. Health spas

- These are mineral springs that people consider to cure certain ailments. Also, the varied climate is conducive for people suffering from certain diseases hence popular for tourists.

6. Hike & Bike facilities

- Swiss has a unique network of hiking trails covering the whole country with paths that are well marked and maintained. These are found in the lowlands and within the mountains also.
- There are also trails for mountain biking, golfing and river rafting.

7. Advanced technology

- Switzerland has well developed industries and with well-developed infrastructure
- some people visit the country to witness the industrial development that has taken place.

Factors Favoring Tourism in Switzerland

a.) General scenery

- The Switzerland has varied scenery that include rivers, climate, glaciated, lakes, mountain scenery, etc. that attract tourists who involve themselves in sight-seeing and sports.

b.) Suitable location

- Switzerland is centrally located in Europe making it relatively accessible to the neighbouring industrialised European countries that are major sources of tourists e.g. Germany, Spain, Italy and England.
- It is linked to the neighbouring countries by excellent road, railway and air networks making travelling to and from easier and cheaper.

c.) Hospitality & culture

- The personnel handling tourists are highly trained and offer quality service and management to the tourists. They are also very hospitable (generous and friendly to visitors).
- There is also easy communication with neighbours from other countries since there are four major languages spoken in the Swiss i.e. French, German, English and Latin

d.) Political stability & policy of neutrality

- During the cold war between the East and West Europe, Switzerland was never aligned to any bloc. Visitors from either sides of the political divide can visit it without any discrimination.
- It has also enjoyed relative peace and political stability making it a favourite destination for people on holiday.

e.) Accommodation

- Switzerland has numerous hotels and camp sites in tourist's sites that offer excellent accommodation facilities to the visitors.
- The hotels are fairly priced and offer good rates to groups through organisations of group travels and bookings - thus lowering the rates.

f.) Centre for International meetings

- Switzerland is the headquarter of many international organisations such as International Labour Organisation, UN, and Red Cross thus hosts many international conferences, meetings and seminars.

- People visiting the country for such meetings take time off to tour the attraction sites.

g.) Transport

- Switzerland has a well-developed transport system - in terms of means and network i.e. road network connecting various parts, there are also electric trains and cable cars and aerial lifts to carry the tourists up and down the mountains

Effects of Tourism in Switzerland

Positive Effects

1. Foreign Exchange earning
2. Local revenue
3. Source of employment
4. Training
5. Promotion of diplomacy/international relations
6. Environmental conservation

Negative Effects

1. Mountain landscape limit expansion
2. Environmental pollution

Comparison between tourism in Kenya and Switzerland

Similarities

1. Both have many hotels and lodges in major urban centres and cities within the tourists' attractions for accommodation of tourists.
2. Both have snow capped mountain peaks with permanent glaciers that are popular with tourists.
3. Both experience political stability and relative peace that promote tourism.

4. Both have many waterfalls (Switzerland - associated with hanging valleys, In Kenya along the major river courses) that attract tourists.
5. Package tours are encouraged and organised in both the countries to make travel and accommodation fairly cheaper for the tourists.
6. Both have national parks with a variety of plants and animals in their natural settings.
7. Both countries embrace domestic, international and ecotourism.

Differences

1. The Switzerland receives more tourists thus earn more revenue compared to Kenya.
2. Kenya has a variety of scenery and landscape with physical features e.g. the Rift Valley, lakes, mountains, lakes, plains and rivers while in Switzerland, the Alps is the main physical feature that attracts tourists.
3. Kenya's only snow-capped mountain (Mt. Kenya) is too high and steep thus less suitable for mountain sports while the Swiss has large and smooth slopes covered with snow during winter for such sports.
4. Kenya has a sea front with warm waters for sun/sand bathing, swimming, surfing and yachting whereas Switzerland is landlocked - lacks a sea front/has no access to beaches and associated sports.

End of topic

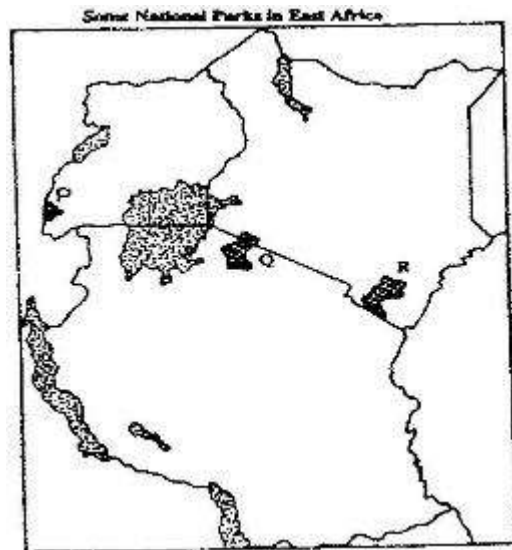
Did you understand everything?

If not ask a teacher, friends or anybody and make sure you understand before going to sleep!

Past KCSE Questions on the topic

Wildlife

1. Use the map of East Africa below to answer question (a) (i)



Name the national parks marked P, Q and R.

3 mks

2. Give FOUR reasons why wildlife conservation is encouraged in Kenya. 4 mks

3. State three reasons why National Parks have been established in Kenya. 3 mks

4. (a) Differentiate between game reserves and game parks. 4 mks

(b) State four steps taken by Kenyan government to promote wildlife resources.

4 mks

5. Explain three ways in which human activities are a threat to wildlife. 6 mks

6. What is wildlife? 2 mks

7. State five reasons for the need to conserve wildlife? 5 mks

8. State three types of wildlife one may find at I, Nakuru. 3 mks

9. Explain four problems the government of Kenya faces in efforts to conserve wildlife?
8 mks
10. State human factors that affect existence of wildlife. 5 mks
11. State ways in which government of Kenya can strengthen anti poaching unit.
12. (a) Define:
- (i) Wildlife
- (ii) Tourism 4 mks
- (b) Distinguish between Game Reserves, National Parks and Sanctuaries.
- (c) State five significance of wildlife in East Africa. 5 mks
13. (a) Discuss the problems facing wildlife in East Africa. 5 mks
- (b) Explain the measures taken to manage and conserve wildlife in East Africa
6 mks

Tourism

1. (a) Explain the differences between the tourist attractions in East Africa and in Switzerland under the following subheadings:
- (i) Climate.
- (ii) Culture 4 mks
- (b) Explain five benefits that Kenya derives from tourism. 10 mks
- (c) Explain four measures that Kenya should take in order to attract more tourists.
8 mks
2. (a) Apart from historic sites, name two tourist attractions along the Coastal strip of Kenya. 2 mks
- (b) Give -three reasons why it is necessary to preserve historical sites. 3 mks

3. (a) Name two game reserves in Kenya. 2 mks
- (b) Define of domestic tourism 2 mks
- (c) How has the recent negative travel advisories affected Kenya's economy?
4 mks
4. (a) Explain four measures the Kenyan government has taken to attract more
tourists. 8 mks
- (b) Explain three factors that have led to development of tourism in Switzerland.
5. (a) Differentiate between the following
- (i) Ecotourism
- (ii) Domestic tourism 4 mks
- (b) Explain similarities between tourism in Kenya and in Switzerland. 8 mks
6. Explain why tourism is 'invisible export'. 2 mks
7. Explain four positive effects of tourism. 8 mks
8. Explain four ways in which tourism in Kenya differ from that Switzerland. 8 mks
9. Why are some parts of Kenya not developed for tourism? 3 mks
10. What are the problems facing tourism in Kenya? 5 mks
11. State five efforts being made to improve tourism industry in Kenya. 5 mks
12. What is domestic tourism? 2 mks
13. Name tourist attractions found in Rift Valley province of Kenya. 5 mks
14. What factors hinder development of domestic tourism in Kenya? 5 mks
15. Name two historical attractions along Kenyan coast. 2 mks
16. (a) Define:
- (i) Eco-tourism

- (ii) Domestic tourism
- (iii) International tourism 6 mks
- (b) (i) State five tourist attractions in Kenya. 5 mks
- (ii) Explain five factors influencing tourism in Kenya. 10 mks
17. (a) State six factors influencing tourism in Switzerland. 6 mks
- (b) Explain five problems facing tourism in Kenya. 10 mks
18. Compare and contrast tourism in Kenya and Switzerland. 8 mks
19. The table below shows the number of tourists who visited Kenya.

Year	1999	2000	2001	2002	2003
No. Of Tourists	1.53 m	1.64 m	1.65 m	1.77 m	1.54 m

- (a) Using a radius of 3cm draw a pie-chart to represent the above data.
- (b) List three advantages of using pie-charts to represent statistical data.

CHAPTER NINE

ENERGY

Specific Objectives

By the end of the topic the learner should be able to:

- (a) Define energy;
- (b) Discuss sources and types of energy;
- (c) Discuss the development of electric power projects in Kenya and Uganda;
- (d) Identify and locate other hydroelectric power projects in Africa;
- (e) Explain the significance of energy;
- (f) Explain the impact of the energy crisis in the world;
- (g) Discuss ways and means of managing and conserving energy;
- (h) Identify sources and uses of energy within the local environment.

Content

- a.) Definition of energy.
- b.) Sources and types of energy.
- c.) Hydroelectric power projects in Kenya and Uganda.
- d.) Geothermal power projects in Kenya.
- e.) Location of other hydroelectric power projects in Africa.
- f.) Management and conservation of energy.
- g.) Significance of energy.
- h.) The energy crises.
- i.) Fieldwork on identification of sources and uses of energy within the local environment.

Definition

Energy

- Energy is the power needed to run a machine/do some work

Sources/Types of Energy

- Energy emitted from different sources are grouped into:

(a) Renewable sources

(b) Non renewable sources

Renewable Energy Sources

- Can be regenerated and used over a long period of time/has the natural ability to reappear after being in use

- Include the following:

i) Solar Energy

- It is energy from the sun.
- Can be converted into heat/chemical/electrical energies

Advantages

- ✓ Cheap because absolutely free.
- ✓ Available in most parts of the world.
- ✓ Can be stored in batteries and used later.
- ✓ Clean/environmentally friendly/free of pollution

Disadvantages

- ✓ Has limited use/cannot be used to run heavy machinery.
- ✓ Expensive to install because large number of solar panels are required to produce useful energy amounts.

ii) Wind Energy

- Is harnessed and used to drive windmills and sea vessels
- Wind mills pump water, grind grains and generate electricity

Advantages

- ✓ Cheap
- ✓ Clean
- ✓ Land between the windmills can be used for other purposes e.g. agriculture

Disadvantages

- ✓ Expensive to maintain.
- ✓ Low energy production/many windmills needed to produce significant energy.
- ✓ Not very reliable as the wind may change direction

iii.) Wave and Tidal Energy

- Wave energy results from strong sea waves set in motion by wind
- Are common in high pressure belts/mid latitude regions
- Are used to produce electricity
- In places with high sea tides mills with turbines are set up to be driven by the tides to produce energy/electricity

Advantages

- ✓ Cheap as tides and waves are free of charge

Disadvantages

- ✓ Available only in countries with sea/coasts
- ✓ Production limited to strong waves/tides.
- ✓ Generating plants may be destroyed by hurricanes/tsunamis.
- ✓ Inadequate technology for their development.
- ✓ Initial development costs are prohibitive

iv.) Geothermal Steam/Energy

- Is the power generated by the flow of heat from the crust/core of the earth through geysers where superheated steam is continuously being emitted from enclosed cavities

- The highest heat flows are found in areas characteristic of volcanic activity
- The power is harnessed through drilling and can be tapped to generate electricity

Advantages

- ✓ Cheaper compared to other sources of energy.
- ✓ Its generation is continuous because it is naturally occurring.
- ✓ Cost of operating a geothermal plant is relatively low compared to a HEP station

Disadvantages

- ✓ Pollution through noise.
- ✓ Not available in many areas/available in areas with geysers/hot springs.
- ✓ Exploration of geothermal energy requires advanced technology especially in areas without visible signs e.g. hot springs/geysers.
- ✓ Energy production from hot springs is low to meet the energy needs.
- ✓ Gases released together with the steam may be harmful to the environment and lead to global warming

v. Hydro power

- Is the energy derived from flowing water
- Used to drive turbines that generate electricity - HEP
- Is the most widely used renewable energy source

Advantages

- ✓ Is the cleanest/most environmentally friendly energy source
- ✓ Can be transmitted over long distances using cables/doesn't have to be consumed at the source.
- ✓ Can be put into many uses e.g. cooking, heating, cooling, transport, lighting and running machinery.
- ✓ Relatively easy to use by just switching on/off when required.
- ✓ Construction of dams for HEP generation leads to creation of lakes that can be used for other purposes e.g. irrigation, control of floods, recreation

Disadvantages

- ✓ Fluctuation of water levels in the reservoirs may lead to shortage of power.
- ✓ Cannot be stored once generated.
- ✓ Initial costs of establishing HEP projects are prohibitive.

- ✓ Construction of dams may have some negative impacts e.g. resettlement of persons.
- ✓ Construction of HEP plants may lead to obstruction of river courses upstream
hence interfere with fish habitat

vi. Biomass

- Refers to the total organic matter found on the earth's surface in terms of plants and animals
- These plant/animal matter can be converted into energy by biological and thermochemical processes
- The main sources of biomass energy are agricultural wastes
- Animal waste such as cow dung and human waste is used to produce biogas
- a combustible gas generated by the fermentation of organic matter e.g. cow dung
- Biogas can be used as cooking gas and in refrigerators

Advantages

- ✓ Inexhaustible as long as there is organic matter.
- ✓ Available throughout the world.
- ✓ Cheap because uses waste products.
- ✓ Production doesn't require advanced technology

Disadvantages

- ✓ Cannot be transported over longer distances.
- ✓ Contributes to global warming (pollution) if burnt directly.
- ✓ Requires large spaces for construction of the bio-digesters

vii. Wood

- Refers to firewood and charcoal
- Most common type of energy in developing countries
- Used domestically for cooking and heating

Advantages

- ✓ Available everywhere in the world.

- ✓ Cheap because no maintenance costs required

Disadvantages

- ✓ Indiscriminate cutting down of trees lead to deforestation /soil erosion/disruption of rainfall patterns etc.
- ✓ Dirty due to soot and smoke.
- ✓ A lot of wood is required because of less energy outputs.
- ✓ Pollution as the wood is burnt.
- ✓ Requires big storage area

(viii) Draught animals

- Most commonly used animals are oxen/bulls, others are horses, donkeys, camel etc
- They are used to in plough/prepare farms, transport goods etc

Advantages

- ✓ Readily available all over the world.
- ✓ Maintenance of animals is cheap - require only food and water.
- ✓ Animals are flexible i.e. can go through areas that are inaccessible by other transport means e.g. roads/railway.
- ✓ Some animals can be used in ASALs

Disadvantages

- ✓ Prone to diseases and fatigue.
- ✓ Work that can be done by animals is restricted to rural areas.
- ✓ Work that can be done by the animals is limited - they tire quickly

Non-renewable sources of energy

- Lack natural ability of regenerating/recycling
- Are likely to be exhausted if not carefully used/managed
- Include the following: -

i) Petroleum

- Is a fossil fuel that consists of gaseous and liquid hydrocarbons from animal and vegetation matter laid down in sedimentary rocks
- Used in agriculture, cooking, lighting and heating

- When refined several by products are realised e.g. petrol, diesel, paraffin, bitumen, liquified gas and lubricants
- Petrol and diesel are used to fuel vehicle and machinery

Advantages

- ✓ Occurs in great abundance as new oil deposits are being discovered daily.
- ✓ Has wide range of domestic and industrial uses.
- ✓ Can be used to generate other sources of energy e.g. thermal electricity.
- ✓ Can be transported by tankers/pipelines and stores for future use

Disadvantages

- ✓ Crude oil is bulky.
- ✓ Dangerous because highly inflammable.
- ✓ Burning of petroleum pollutes the environment/leads to global warming.
- ✓ Petroleum is relatively expensive/not affordable to many.
- ✓ Prospecting of petroleum is expensive

ii) Coal

- Comprises of vegetative matter laid down in water bodies/swampy areas
- Once mined cannot be recreated/restored
- Used to provide heat for cooking/heating/lighting

Advantages

- ✓ More efficient in generating thermal electricity compared to oil/petroleum.
- ✓ Suitable in smelting of iron and steel

Disadvantages

- ✓ Bulky - costly/difficult to transport.
- ✓ Its mining leads to environmental pollution.
- ✓ Dirty/pollutes the environment

iii) Natural gas

- Occurs in association with petroleum i.e. normally found on top of upper layers of crude Oil.

- Composed of mixture of hydrocarbons with methane making the highest percentage
- Mainly used for domestic purposes, generating thermal electricity and for industrial activities

Advantages

- ✓ Clean.
- ✓ Cheap to transport in pipelines.
- ✓ Free from weather changes

Disadvantages

- ✓ Accidental fires may occur due to gas leakage/damaged pipes.
- ✓ Pollution of environment through gas leaks.
- ✓ Expensive for low income earners

iv) Thermal electricity

- Is generated by burning fuels e.g. coal, petroleum and natural gas in thermal generators/specially designed surfaces
- Water is heated to produce steam or oil/diesel may also burn in combustion chambers generating heat\steam that drive turbines connected to generators that produce electricity

v) Uranium\Nuclear Energy\atomic energy

- Derived from the alteration of atomic structures
- Involves release of heat that produces steam used to generate electricity through fission where uranium are split in nuclear reactors/power stations
- Nuclear power stations are mainly found in developed countries e.g. Britain, USA, France, Germany and Japan

Advantages

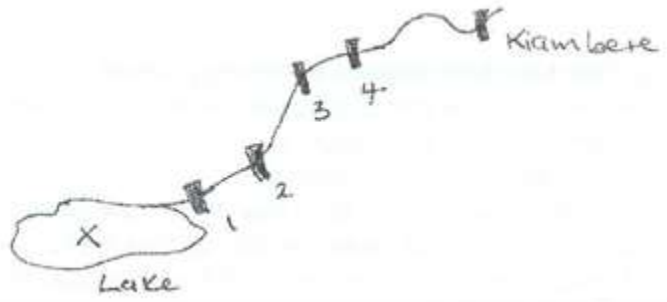
- ✓ Environmentally friendly.
- ✓ Produces large amount of energy in nuclear reactors.
- ✓ Reliable due to long lasting supply of uranium deposits

Disadvantages

- ✓ Requires heavy capital investment/expertise.
- ✓ Radioactive materials are harmful to human (causes cancer) and the environment.
- ✓ Nuclear leakages can cause environmental pollution.
- ✓ Can result into disastrous accidents if not well planned/controlled

Hydro - electric power (HEP) stations in Kenya

- Hydro power is the main source of electricity in Kenya
- Most electricity produced in Kenya is generated from various hydro power stations found in different parts of the country
- Stations are maintained by KenGen then sold to Kenya Power that distributes it to consumers at a fee
- The major HEP station in Kenya is the Seven Forks Scheme which is located on River Tana
- The projects on Seven Forks include
 - ✓ Kindaruma - 40MW
 - ✓ Kamburu - 88MW
 - ✓ Gitaru - 225MW
 - ✓ Masinga - 40 MW
 - ✓ Kiambere - 144MW
 - ✓ Mutonga - 60MW
 - ✓ Grand Falls - 180MW



Name the dams marked 1, 2, 3 and 4 and the lake marked X

- 1: Masinga
- 2: Kamburu

- 3: Gitaru

- 4: Kindaruma

-X: L. Masinga

Other HEP projects in Kenya include

- Turkwell - 106MW
- Sondu - Miriu - 60MW

Hydro - electric power (HEP) stations in Uganda

- The major power source and HEP project in Uganda is the Owen Falls Dam
- On the site where River Nile flows out of Lake Victoria provided a natural waterfall from where the power generation was possible
- Produces 162MW that supplies most of Uganda's electricity and about 30MW exported to Kenya
- Was developed to an upsurge of industries in Uganda, creating a high demand for electricity and also high costs of petroleum since it is landlocked

HEP projects in Africa

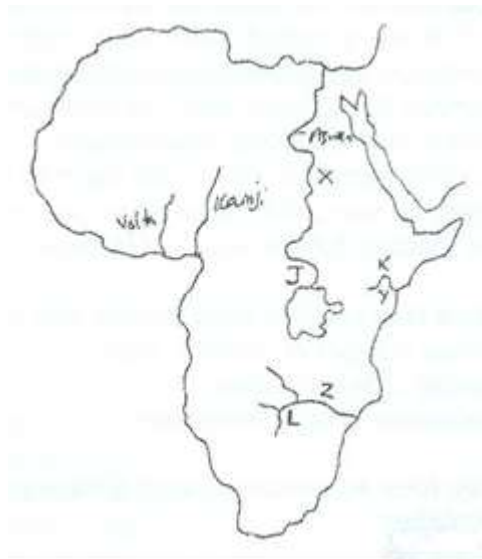
- Africa has the largest concentrations and potential areas HEP generation but the potential has not been fully exploited due to

- i. Inadequate financial resources to set up the project.

- ii. Potential sites located in remote areas with sparse population - little market.
- iii. Seasonal fluctuations in the river water due to prolonged drought

HEP projects in Africa include

- ✓ Akosombo - Ghana
- ✓ Kainji - Nigeria
- ✓ Inga - DRC
- ✓ Aswan - Egypt
- ✓ Kafue - Zambia
- ✓ Kariba - Zambia/Zimbabwe
- ✓ Cabora Bassa - Mozambique



Name the rivers marked X Y and Z

- X: River Nile

- Y: River Tana

- Z: River Zambezi

Hydroelectric power generation projects found along the rivers at positions J, K and L.

- J: Owen Falls

- K: Seven Forks

- L: Kariba Dam



	HEP	RIVER	COUNTRY
1	Akosombo	volta	Ghana

2	Kainji	Niger	Nigeria
3	Inga and Le Marinel	Congo	DRC
4	Aswan	Nile	Egypt
5	Owen falls	Nile	Uganda
6	Seven Forks	Tana	Kenya
7	Kafue	Zambezi	Zambia
8	Kariba	Zambezi	Zambia/Zimbabwe
9	Caborra Bassa	Zambezi	Mozambique
10	P.K. Le Roux	Orange	S.Africa
11	Garried Dam	Orange	S.Africa

Factors favouring development of HEP project

- Hard basement rocks to provide a firm foundation for dam construction
- Presence of waterfalls to provide a massive hydraulic force head for power generation
- Regular/large volume of water to ensure continuous power generation
- Non porous rocks to prevent water loss/seepage underground
- Presence of a deep narrow valley/gorge to provide a large reservoir behind the dam/reduce cost of bulding embankments
- Government policy - availaability of land/space for setting up the plant
- Market to buy the produced HEP
- Adequate capital to set up the project since it involves high capital outlay

Role of HEP in the economy

- Creation of employment opportunities
- Development of the communication sector
- Agricultural development
- Source of government revenue

Problems facing HEP projects

- Fluctuating river regime/waters due to prolonged drought and deforestation upstream leads to production of little/less power
- Inadequate capital for HEP development and maintenance
- Siltation
- Displacement of people

Geothermal power projects in Kenya

- Generated in areas with seismic/volcanic activities with numerous hot springs and geysers and fumaroles that can be used to generate electricity
- In Kenya, it is found in the following areas
 - ✓ Eburru - North of Lake Naivasha.
 - ✓ Lake Bogoria - has the highest potential.
 - ✓ Ol Karia

Geothermal plants are not well developed in Kenya because of the following: -

- ✓ Limited number of potential sites.
- ✓ Scarcity of skilled labour.
- ✓ Inadequate capital investment

Significance of Energy

- For domestic uses e.g. cooking, lighting, heating
- Used in industrial sector e.g. to run the machines

- Transport sector
- Research in alternative energy to reduce overreliance on existing energy sources
- In agricultural sector for drying of cereals
- Pumping water

Energy Crisis

- This is a situation whereby the demand for oil is higher than the amount being supplied, leading to high oil prices

Causes of Energy Crisis

- Escalation in oil prices triggered by sharp rise in demand
- Uncertainties in oil supply/rapid depletion of oil reserves
- Control of oil reserves by a few oil producing countries
- Unequal pattern of crude oil distribution in the world
- Artificial shortages created by USA and Russia decide to conserve their resources and depend on world market for their requirements
- Economic and political embargoes (wars)
- Misuse of energy sources

Effects/Impacts of Energy Crisis

- Increased petroleum prices lead to escalation in transport costs/affects tourism
- Low rate of economic growth because of over-expenditure on oil importation
- The price of commodities rises leading to inflation
- High costs of transportation
- Foreign exchange resources are almost entirely spent on oil imports creating a deficit in balance of trade
- The demand for charcoal and wood fuel increases leading to deforestation

- Oil resources are getting depleted

Management and Conservation of Energy

- Management of energy resources refers to the effective planning and control of energy sources
- Conservation of energy involves using the available resources in the most appropriate manner to ensure minimal wastage
- The following measures are used to manage and conserve energy
 - i. Search and development of alternative sources of energy other than petroleum e.g. geothermal, wind, solar, gasohol, tidal, H.E.P. etc.
 - ii. Increased prospecting for oil.
 - iii. Improving public transport to encourage more people to use it (reduce vehicles on the road).
 - iv. Control of the importation of vehicles with high engine capacity (high tax on high capacity luxury cars).
 - v. Proper planning of the road network to reduce traffic jams.
 - vi. Creating awareness by educating the public through mass media.
 - vii. Development of energy saving techniques or technology e.g. energy saving jikos.
 - viii. Development of wood fuel programmes through afforestation, re-afforestation and planting of fast maturing trees (eucalyptus).

End of topic

Did you understand everything?

If not ask a teacher, friends or anybody and make sure you understand before going to sleep!

Past KCSE Questions on the topic

ENERGY.

1. (a) Apart from providing power, state three other benefits of the dams along River Tana.

3 mks

(b) State two problems that affect hydroelectric power production along river Tana.
2 mks

(c) State two factors that hinder the expansion of geothermal power. 2 mks

2. (a) Name two non-renewable sources of energy. 2 mks

(b) Explain four physical factors that influence the location of a hydroelectric power station.
8 mks

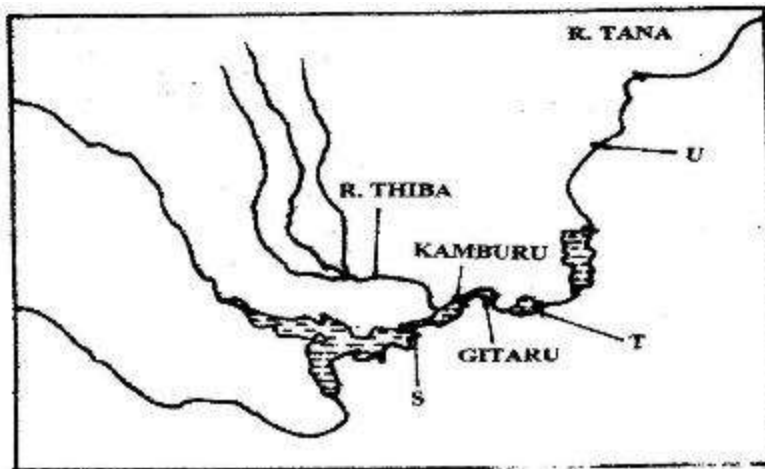
3. (a) Explain three benefits that would result from rural electrification in Kenya.
6 mks

(b) In what three ways did the power shortage resulting from the drought of the years 1999 and 2000 affect this industrial sector in Kenya?
5 mks

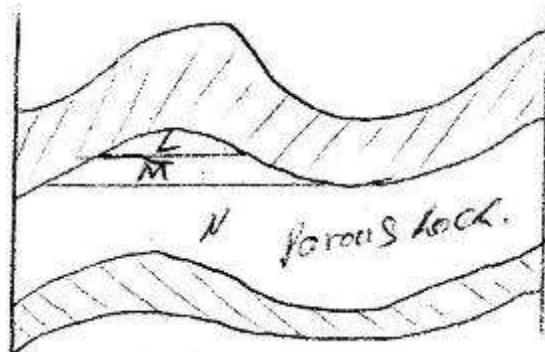
4. (a) Give three reasons that make tropical countries to have the potential to develop HEP.
3 mks

(b) Give two reasons why tropical countries are not sufficient in HEP production.
2 mks

5. Use the diagram to answer questions below.



- (a) Name
- (i) The HEP stations marked S & T 2 mks
- (ii) Name the proposed HEP station marked U. 1 mk
- (b) Name renewable sources of industrial energy other than water 2 mks
6. The diagram below shows the occurrence of petroleum in the earth's crust. Use it to answer question (a).



- (a) Name the substances labeled I, M and N. 3 mks
- (b) Give two by-products obtained when crude oil is refined. 2 mks
- (c) Explain efforts by Kenyan government to reduce cost on importation of petroleum. 6 mks
7. Name two main disadvantages of using coal as a source of energy. 2 mks
8. Suggest four solutions to Kenya's energy deficit. 4 mks

9. What are the causes of energy crises? 4 mks
10. List uses of nuclear energy. 4 mks
11. Name uses of wind energy. 2 mks
12. Name two non- renewable sources of energy. 2 mks
13. Why has usage of coal as a source of energy declined? 4 mks
14. Give four reasons why Kenya has been unable to exploit high geothermal power potential. 4 mks
15. Name the various methods that can be used to conserve energy. 4 mks
16. Define biomass. 2 mks
17. (a) Define energy. 2 mks
- (b) List three renewable; sources of energy. 3 mks
- (c) State the disadvantages of coal as a source of energy. 4 mks
18. (a) What is the name of power projects along river Tana.
- (b) Apart from hydroelectric power production, state the other benefits of the dams along the Tana. 4 mks
- (c) Identify the problems facing hydroelectric power production along the Tana. 4 mks
19. (a) Apart from the Tana, name three other hydroelectric power projects in Kenya. 3 mks
- (b) State the benefits of the Owen Falls Dam in Uganda. 4 mks
- (c) State the factors limiting the expansion of geothermal power production in Kenya. 4 mks
20. Apart from hydro-electric power production; state the other benefits of the dams. 4 mks
21. State the significance of energy. 5 mks

22. (a) What is energy crisis? 2 mks
- (b) State the causes of energy crisis. 2 mks
23. Explain the problems Kenya faces due to overdependence on petroleum. 4 mks
24. (a) Differentiate between management and conservation of energy. 2 mks
- (b) Describe the measures of management and conservation of energy. 10 mks

CHAPTER TEN

INDUSTRY

Specific Objectives

By the end of the topic the learner should be able to:

- (a) Define industry and industrialization;
- (b) Explain the factors that influence the location and development of industries;
- (c) Describe types of industries;
- (d) Account for the distribution of industries in Kenya;
- (e) Explain the significance of industrialization to Kenya,
- (f) Discuss the problems of industrialization and suggest possible solutions;
- (g) Compare and contrast aspects of industrialization in selected countries;
- (h) Carry out fieldwork on an industry in the local area.

Content

- a.) Definition of industry and industrialization.
- b.) Factors influencing the location and development of industries.
- c.) Types of industries.
- d.) Distribution of industries in Kenya.
- e.) Significance of industrialization to Kenya.
- f.) Problems of industrialization and their possible solutions
- g.) A study of the cottage industry in India, iron and steel industry in the Ruhr region in Germany and car manufacture and electronic industry in Japan.
- h.) Field work on identification of industries within the local area and a detailed study of one of them.

Definition of terms

Industry: - is an organized economic activity concerned with the processing and manufacturing of raw materials into useful products/production of goods and services for sale/consumption

Industrialization: - process of establishing manufacturing industries

Reasons for industrialization

- Economic diversification thus reducing overreliance on agriculture as a source of income/revenue
- Self-sufficiency reducing the need to import goods thus saving foreign exchange
- Creation of employment opportunities thus improving living standards
- Use/utilization of natural resources

Factors influencing location and development of industries

i.) Capital

- Establishing an industry requires a large capital outlay/base for the following purposes: -
 - ✓ Purchase of land/equipment/raw materials
 - ✓ Putting up buildings/infrastructure
 - ✓ Paying wages/salaries/taxes
- Countries with plenty of capital are therefore able to industrialise faster/with greater ease compared to developing countries that lack enough/adequate capital

ii.) Raw materials

- These include mineral ores/agricultural produce/forest products
- Most are always heavy/bulky thus industries are located near them to minimise/reduce transport costs
- Some especially agricultural produce are very perishable hence need to be close to processing plants/industries

iii.) Labor

- Various industries require different types and amounts of labour
- Can be in terms of skilled and unskilled/semi skilled
- Supply of labour is certain in densely populated areas hence location of many industries in urban centres

iv.) Ready market

- All industries are commercially oriented hence their products must find outlets/market (must be sold to make operations viable economically)
- Large urban areas usually provide ready market for finished products because the people's purchasing power is very high - large industries are therefore located near them
- Examples of commodities whose manufacturing industries must be near markets include foodstuffs, fragile equipment e.g. glass, cigarettes etc

v.) Transport and communication

- All industries require good roads/transport network for their operations e.g. to transport raw materials to the industries and finished products to the markets
- Industries are established within/near urban centres with well developed transport systems.
- Industries depend on communication networks to link with the market and suppliers of raw materials. These includes e-mail/internet, courier services, postal services, telephone/facsimile services etc
- Areas with well developed communication systems experience low transport costs

vi.) Electricity/power

- Power is very essential for the operations of any industry. The most common and affordable type of power is electricity
- Most industries are therefore located near reliable power/electricity source - urban centres where power is cheap to supply

vii) Regular water supply

- Most processing industries use considerable amounts of water hence best located near permanent water sources e.g. rivers/lakes
- Examples of such industries include coffee pulping, sugar cane processing, paper mills, brewing/soft drink making
- Water may be used in cooling/cleaning and as a raw material in some of the processes

viii) Government policy

- The government may discourage/encourage establishment of industries in one particular place for political and economical reasons
- In developing countries, the governments are decentralising industries away from the urban centres to develop the rural areas/reduce rural-urban migration

Industrial inertia

- Is a situation in which an industry continues to operate in an area even after the factors that attracted it to the area are no longer existing/present

May be caused by the following factors: -

- ✓ Presence of experienced/skilled workers.
- ✓ It may be expensive to move to a new site.
- ✓ Established industrialised area usually has well developed transport/infrastructural system.

Types of industries in Kenya

- The main types of industries found in Kenya include: -

(a) Primary/processing

- Are also known as extractive industries
- Are involved in the first stage of changing raw materials from one form to another that is more useful/valuable
- Produce goods used to make final products
- Provide raw materials for secondary industries

- Examples in Kenya include

- i. Mining of limestone at Bamburi and Athi River.
- ii. Fishing in Lake Victoria and Indian Ocean.
- iii. Extraction of forest products from various forests/lumbering.
- iv. Growing of agricultural crops e.g. sisal, cotton, sugar cane, tea, maize, tobacco, pyrethrum, fruits, vegetables.
- v. Keeping of animals for milk, beef, skins

(b) Secondary/manufacturing

- Use raw materials derived from the primary industries

- Change the raw materials into semi processed or finished products

- Examples include

Coffee factories, Cotton ginneries, Steel rolling mills, Food processing, Cigarette making, Glass making, Oil refineries, Textiles, Pharmaceuticals, Paper and pulp, Fertilizer making, Cement making, Insecticide making

- Secondary industries are further classified into **heavy** and **light** industry

- Heavy industries manufacture heavy and bulky products

- Involve heavy capital investment

- Their production is large scale

- Examples include, ship building, car manufacturing and assembly, iron and steel rolling mills, paper and pulp among others

- Light industries manufacture/process finished products that are less bulky/heavy

- Use light raw materials e.g. textile, cosmetics, toiletries, food processing, printing, electronics

(c) Assembly industries

- Involves fixing together of different products made in different industries to make valuable articles/items
- Use imported raw materials to make articles that are not locally manufactured
- In Kenya, they assemble motor vehicles, electronics, bicycles
- Majorly located in urban areas

(d) Service/tertiary

- Distribute commodities that have been produced in primary and secondary industries to consumers
- Render supply services to finished products
- Found in both rural and urban areas
- Require little capital and space
- Require specialised skills/skilled labour
- Include medical, education, finance, trade, communication, banking, insurance, transport etc

(e) Cottage Industries

- Involves making products using hands and simple tools especially in the homes
- Items are made using locally available materials
- Done on a small scale
- Examples include pottery, wood carving, soapstone carving, weaving of baskets/mats, boat making and scrap metal fabrication
- In Kenya, Jua Kali is most common and popular cottage industry Jua Kali industries
- Relies on locally available materials and tools
- Requires little capital
- Products target local market

- Are found in almost all urban centres
- Main activity involves reprocessing of old materials to produce useful items

Importance of the Jua Kali sector

- Creates employment opportunities
- Successfully uses materials that would otherwise be disposed
- Saves the country foreign revenue as they reduce the imports
- Earns the country foreign exchange as some are exported to COMESA countries
- Produces cheaper goods compared to those produced in formal industries

Distribution of industries in Kenya

(a) Agricultural Food processing industries

- Tea processing - Kericho, Kirinyaga, Embu, Kisii, Nyamira, Kiambu, Murang'a, Nandi, Meru.
- Coffee hulleries - coffee growing areas, Nairobi, Sagana
- Milk Creameries - Naivasha, Nakuru, Nyahururu, Sotik, Nairobi, Eldoret, Kitale
- Sugar refinery - Mumias, Nzoia, Chemelil, Muhoroni, Awendo, Kabras, Busia
- Fruit canning - Thika, Nairobi
- Grains Milling - Eldoret, Nakuru, Nairobi, Kisumu, Mombasa
- Soft drinks making - Nairobi, Mombasa, Nakuru, Eldoret, Nyeri, Kisumu
- Brewing/Blending of alcoholic beverages: - Nairobi and Mombasa

(b) Agricultural non food processing industries

- Cotton ginneries - Kisumu, Homa Bay, Siaya, Busia, Meru, Baringo, Tana River, Kitui
- Sisal - Kilifi, Voi, Mogotio, Uasin Gishu
- Tobacco - Teso, Thika, Nairobi, Nakuru
- Pyrethrum - Nakuru
- Paper and pulp - Webuye, Eldoret, Thika, Nairobi

(c) Non agricultural manufacturing industries

- Cement production - Athi River and Bamburi
- Oil refining - Kilindini, Kipevu, Changanwe (all in Mombasa)
- Metal box - Thika
- Glass making - Mombasa and Nairobi
- Steel rolling - Nairobi and Mombasa

Significance of industrialization in Kenya

- Employment opportunities/source of income/improvement of living standards
- Development of infrastructure e.g. roads, power and water supplies for transport of raw materials to the industries and finished products from the industries to the markets
- Source of foreign revenue/exchange through exportation of finished products
- Improvement of balance of trade by increasing the value of exports
- Urbanisation: - creation of urban centres/settlements with improved provision of social amenities
- Utilisation of natural resources e.g. minerals/forest products thus reducing overdependence on imported raw materials
- International relations: - allows interaction between various nations as they trade in raw materials and finished industrial products thus fostering good relations among the trading partners
- Enhancement of agricultural production: - since most industries rely on agricultural produce as raw materials, this will ensure their continuous supply
- Trade unions and cooperatives: - establishment of industries has led to formation of trade unions/cooperatives to protect the workers' welfare/demand for better salaries/work conditions
- Presence of goods: - industrial development makes it possible to produce goods that are on demand in the country thus reducing importation/overdependence on imported goods

- Economic diversification reduces overdependence on agriculture as an economic activity/major source of income

Problems of industrialization and their possible solutions

1. Establishment of more industries requires more land to be set aside for industrial activities. This reduces the land for agriculture, human settlement

Solution: - decentralization of industries

2. Production of industrial waste has led to the pollution of land, air and water as the industries release/dispose their wastes into the environment/air/water bodies/land dereliction

Solution: - strict legislation/enacting laws against dumping industrial wastes through agencies such as NEMA

3. Rural-urban migration: - increase in number of industries encourages many youth to move to urban centres in search of employment opportunities. This leads to congestion of urban areas and a strain on available social amenities/increase in criminal activities, development of slum dwelling etc

Solution: - establishing industries in rural areas/improving provision of social amenities in the rural areas

4. Concentration of infrastructure and services in the industrial centre has caused an imbalance in economic development.

Solution: - Decentralization of industries

5. Depletion of natural resources: - as more industries are established the demand for raw materials also increases thus increasing the use of natural resources e.g. minerals, forests, water etc

Solution: - encouraging sustainable use of natural resources

6. Neglect of agriculture: - industrialization attracts youth to move into urban areas in search of employment away from the rural areas. This affects food production as old people

are left to work on the farms. People may also neglect food crop production at the expense of cash crops that fetch more

Solution: - making agriculture more attractive through offering better prices for the agricultural produce

- Farmers encouraged to diversify their economies

7. Causes unemployment: - industrialization leads to new innovations/technologies leading to replacement of human power. Examples include computers, robots, electric trains, fork lifts, conveyors have replaced physical manpower. This reduces employment opportunities

Solution: - people are being encouraged to become self employed

- Industries are encouraged to stop staff lay offs

8. Displacement of people: - an industrial plant being established in a densely populated area may force the inhabitants of such an area to move and resettle elsewhere, this changes their social lifestyles.

Solution: - industries should be located in sparsely populated areas

9. Extradition of profits: - most industries established in Kenya are foreign owned and these send back profits to their origin countries leaving little money for local use

Solution: - increasing local share holding in multinational industries

- Locals should be encouraged to establish in the country

Problems facing industries in Kenya

a.) Competition from cheap imports

- Imported industrial products from other countries are less taxed by their parent countries making them cheaper compared to the same that are locally produced.

- This makes the running of industries dealing in such products very expensive to run due to limited market and may force closure of some

Solution involves: - imposing very heavy duty on imported products that are also locally produced/improving quality of locally manufactured goods so that they can compete favourably with the imported ones

b.) High cost of energy/electricity

- Most developing countries lack deposits of fossil fuels/petroleum/natural gas leading to high costs of importing the same. This increases the production costs as they have to be imported
- The costs of alternative and available energy sources e.g. electricity are very high and these limit/marginalises the profits received by the industries

Solution: - alternative sources of energy should be developed e.g. solar/wind/biogas etc

c.) Inadequate/limited market

- Some products have a limited market as they are not highly on demand/low purchasing power of the people. This slows down production of the concerned industries

Solution: - exploring external markets especially within COMESA region

d.) Shortage of raw materials

- Some industries relying on imported raw may interrupt their operations when there is a delay in the arrival of the raw materials.
- Industries that rely on agricultural raw materials are also affected due to prolonged drought

Solution: - local raw materials could be supplemented with imported raw materials/agricultural sector should be improved to increase production of raw materials

e.) Inadequate/shortage of capital

- Most developing countries are faced with shortage of capital forcing them to borrow from international financial institutions.
- These charge very high interest rates and conditions e.g. retrenchment/some industries may close down if unable to get funding

Solutions: - governments to give loans to local investors/foreign investors should be encouraged to invest in the country.

f.) Industrial unrests

- Often workers may go on strike demanding better working conditions from their employers. This disrupt the operations of the industries leading to low production of commodities

g.) Mismanagement

h.) Shortage of skilled labour

i.) Poor infrastructure

j.) Lack of adequate technical knowledge

Case Studies

Cottage Industry in India

- A cottage industry involves people working from their homes using their own hands and simple tools/machinery
- Involves individual skill/talent
- Highly developed in India and virtually practised in every village

Activities of Cottage Industry in India

- Spinning and weaving
- Making clothes and carpets
- Silverware and brassware
- Pottery
- Making textiles
- Dyeing clothes

- Ornamental ivory
- Jewellery and trinklets
- Embroidery
- Handicrafts

Characteristics of Cottage Industry in India

- Small capital is invested
- Simple tools and machinery are used
- Uses locally available raw materials
- Most products are sold in the local market/few are exported
- Labour provided by family members
- Labour intensive

Factors that have contributed to the growth of Cottage Industry in India

- Presence of labour provided by the family members
- Urge of earning income to improve the living standards
- A long history/culture of weaving mainly done by women in homesteads.
- High demand for the products in the Asian countries.
- Highly skilled and talented workers i.e. weavers and ornamental ware makers.
- Presence of locally available raw materials such as cotton jute.
- It involves individual talent/skill passed through generations.

Benefits of Cottage Industry in India

- Created employment opportunities/source of income leading to improved living standards
- Provision of market for local products
- Foreign exchange earner through exports of brassware and ornaments/jewellery

- Diversification of economy from agriculture.

Iron and Steel Industry in the Ruhr Region of Germany

- Ruhr region in Germany is one of the leading and largest industrial complex in Europe
- Derives its name from River Ruhr; a tributary of River Rhine
- The Ruhr industrial region is located between River Lippe to the north, Rhine to the west and Wupper to the south
- One of the leading industries in the Ruhr region is the iron and steel industry
- The basic raw materials for iron and steel industry in the Ruhr region are coal, iron ore and limestone
- These are mixed in a blast furnace to produce iron. Heated iron is strengthened by adding carbon and other metals to produce steel
- Steel is used in building, making tools and machinery
- Other industries within the Ruhr region include
 - ✓ Engineering.
 - ✓ Textile industries.
 - ✓ Oil refining.
 - ✓ Electronics.
 - ✓ Food processing.
 - ✓ Cutlery and surgical instruments.
 - ✓ Chemical/petro-chemical industries.

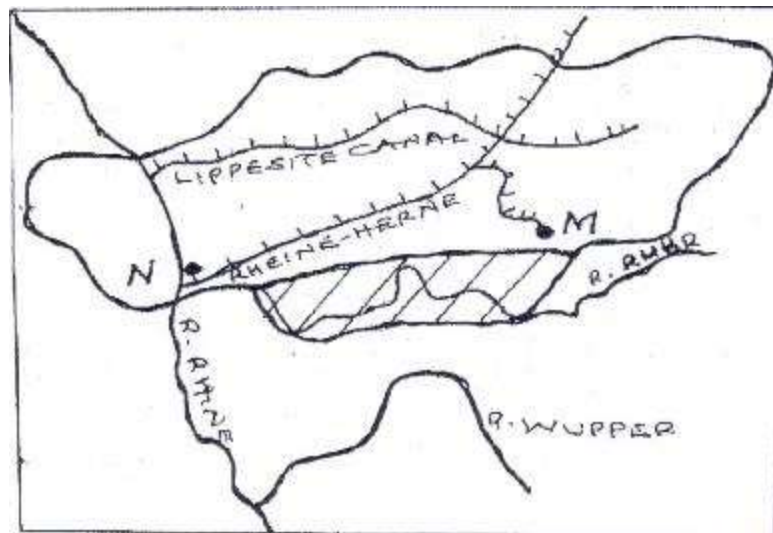
Factors for the development of iron and steel industry in the Ruhr region Germany

- The region is centrally located in Europe. This offers easy access to all parts of Europe as it has direct access to all parts of Europe through water, railway, air and road.

- The region is served by navigable rivers and canals, which provide cheaper transport for raw materials and finished products.
- The region has abundant sources of energy/power such as coal, oil, H.E.P, which is a necessity in iron and steel industries.
- Availability of raw materials (iron ore, coal and limestone). It is economical to set up iron and steel industries near the source of raw materials because they are bulky.
- The dense and affluent population in central and Western Europe provides ready market for iron and steel.
- Government policy. The post war national desire to rebuild the country gave the industries an impetus to succeed.
- Presence of rich industries, which are ready to provide capital for industrial development.

Example

Below is a sketch map of the Ruhr Industrial Region. Use it to answer question (i)



(i) Name:

- The canal marked U
(1 mark)
- The river marked V
(1 mark)
- The town marked W
(1 mark)

Solution

(i) Name;

The canal marked U (1 mark)

- *Lippesite canal*

The river marked V (1 mark)

- *River Ruhr*

The town marked W (1 mark)

- *Dortmund*

Car and Electronics Industry in Japan

- Japan comprises of many islands and is majorly mountainous. It therefore doesn't favour agriculture. Japan has hence concentrated in the development of manufacturing industries
- The major industries in Japan include car and electronics manufacture.

The others include:

- Ship building
 - Iron and steel
 - Chemicals
 - Textiles
 - Machinery
- Examples of automobile industries in Japan include Toyota and Mitsubishi motor corporations. Electronic companies include Sony and Toshiba and they manufacture radios, televisions, computers and related accessories, cellular phones, fridges, microwaves etc

Factors for the development of car and electronics industry in Japan

- i. **Power:** - Japan lacks petroleum/coal/natural gas but being mountainous with many rivers that has led to the development of HEP projects that provide energy for industrial use. Nuclear energy is also available
- ii. **Advanced technology/automation/all plants are computerized** has led to high/efficient and increased car/electronics production.
- iii. **Geographical location:** - Japan is accessible to all parts of the world via the sea which makes the importation of raw materials and exportation of cars/electronics possible.
- iv. **Capital:** - profits realised from other industries e.g. ship building, fishing and tourism are invested in the development of car/electronics industries through purchase/importation of raw materials.
- v. **Abundant water supply:** - Japan is surrounded by the Pacific Ocean and many rivers/lakes within the islands that provide water for use in the iron and steel industry whose products are in turn used in car and electronics manufacture.
- vi. **Rugged landscape:** - in Japan does not favour development of agriculture and has therefore concentrated on the development of manufacturing industries to enable earn capital for importation of food.
- vii. **Skilled man power:** - Japanese labour is skilled and highly dedicated to the development ventures leading to quantitative and qualitative production of automobiles and electronics
- viii. **Affordable products:** - most of the Japanese automobiles and electronics are relatively **cheap and of better quality**. They are sold cheaper compared to the same from Europe. They are also durable, cheaper to maintain and readily available. They are therefore on very high demand all over the world.

Major car manufacturing zones in Japan

- Tokyo - Yokohama Industrial zone
- Osaka - Kobe Industrial zone
- Nagoya industrial zone

Environmental problems which have resulted from the development of car manufacturing industry in Japan.

- ✓ *It has led to air, noise and water pollution which is dangerous to human health and wildlife/visibility.*
- ✓ *Dumping of industrial waste leads to environmental degradation/water or soil pollution.*
- ✓ *Increased production of cars and the high local purchasing power has led to traffic congestion in the cities.*
- ✓ *High demand for limited raw materials like coal has resulted to over exploitation.*
- ✓ *Emergence of many factories has attracted large manpower which has resulted in housing problems/inadequate housing.*

Application questions on Industry.

Obstacles Kenya faces as it strives to become industrialized.

- ✓ Shortage of capital.
- ✓ Shortage of skilled manpower.
- ✓ Lack of market due to low purchasing power.
- ✓ Poor infrastructure.
- ✓ Poor resource endowment-the country is sparsely endowed with industrial resources. (iron, steel).
- ✓ Shortage of power leading to rationing/outages, which affect industrial operations.
- ✓ Most industries are owned by foreigners who repatriate much of their profit leaving less to be invested in industries.

Three problems that are experienced in Kenya as a result of industrial development.

- ✓ Industries have taken over land; this has led to high unaffordable land rates.
- ✓ Production of industrial waste has led to the degradation of land, air and water.
- ✓ It has led to rural-urban migration depriving the rural areas of the able-bodied persons.

- ✓ Concentration of infrastructure and services in the industrial centre has caused an imbalance in economic development.
- ✓ Emergence of slums due to lack of housing facilities/overstretching social facilities.
- ✓ Depletion of natural resources to satisfy demand.
- ✓ There is erosion of social values, which has resulted from the mixing u of people of different culture/ loss of cultural values.

Four main products exported by the cottage industry in Kenya.

- ✓ Wood carvings.
- ✓ Stone carvings.
- ✓ Mats.
- ✓ Baskets.
- ✓ Pots.

Ways in which Kenya is encouraging the establishment of cottage industries.

- i. Creation of Kenya Industrial estate, which provides loans to cottage industries.
- ii. Jua kali artisans/dealers in cottage industry have been encouraged to form cooperatives to assist in marketing their products.
- iii. KIE has put permanent structures where industries can operate at low cost.
- iv. Local authorities have set aside land for use by jua kali artisans.

Reasons why jua kali is more suitable to African countries. (Why is jua kali more suitable to African countries?)

- i. It depends on traditional skills hence no need for costly expatriates.
- ii. It helps reduce unemployment, as it is labour intensive.
- iii. Light industries need small capital to start and operate.
- iv. They depend on agricultural raw materials, which are plenty in Africa.
- v. Can be started with low level of technology.
- vi. Light industries consume little power.
- vii. Items made suit low income people, this guarantees market.

Reasons why the development of jua kali industry is encouraged in Kenya.

- i. It offers job opportunities to school leavers.
- ii. Helps raise living standards owing to income earned.
- iii. Makes good use of available local resources i.e. recycles materials thus reduce cost of imports.
- iv. Exported items earn foreign exchange.

- v. Provides cheaper items to the relatively poor population.
- vi. For diversification of export goods.
- vii. To reduce rural-urban migration.
- viii. It requires less capital to establish since it is small scale.
- ix. It produces mainly for the local market thus the country saves foreign exchange.
- x. It does not require expensive machinery since production is manual.
- xi. It facilitates decentralization of industries since it spreads easily thus checking on rural-urban migration.
- xii. It imitates the products that are already in the market thus spreading technological skills/innovation.
- xiii. It operates at grass root level thus uses locally available skills.
- xiv. It empowers the people to initiate projects thus reducing reliance/dependence on the government/donors.

Problems facing Jua kali artisans in Kenya.

- i. Limited market.
- ii. Preference to white-collar jobs.
- iii. Stiff competition from imported products.
- iv. Foreign biased consumption habits of citizens.
- v. Limited access to capital.

Factors that may influence the location of industries.

- i. Availability of raw materials. The nature of raw materials (bulky, perishables) influence industrial location e.g. weight reducing industries are located near raw materials to reduce the cost of transporting the bulky inputs.
- ii. Availability of power/energy. Coal sites and hydroelectric power stations influence location of industries especially power-oriental industries such as copper, iron and steel smelting etc.
- iii. Availability of labour. Labour intensive industries are usually sited where cheap labour is available.
- iv. Availability of market. Industrial location may also be determined by the nature of the final product e.g., weight increasing, perishable and fragile goods are produced near the market.

- v. Government policy of rural development may encourage decentralization of industries. Government also puts aside land for industries.
- vi. Presence/ absence of a well-developed infrastructural network (transport and communication).
- vii. External economies. Concentration of industries in a place may attract more industries to the area (industrial inertia).
- viii. Availability of land for expansion.

Why some industries are located near sources of water.

- ✓ Water is used for cooling machines to avoid damage by heat.
- ✓ Some industries require water as a medium through which they dispose off their waste materials.
- ✓ Water is used for grading of coffee beans.
- ✓ Water provides cheap means of transport.
- ✓ Some industries use water as a raw material e.g. breweries.
- ✓ Water is used for industrial cleaning.
- ✓ Water may be used to generate hydroelectric power to turn the machines.

Differentiate between localization and delocalization of industry.

Localization of industry refers to the concentration of industries within a limited area. Delocalization is an attempt to spread industries from urban to the rural areas.

Ways through which the government of Kenya may decentralize industries.

- i. Availing cheap land for industrial sites.
- ii. Offer tax rebates.
- iii. Giving subsidies.
- iv. Protecting such industries from foreign competition.
- v. Encourage rural electrification.
- vi. Improving infrastructural network and social amenities.

Benefits of decentralizing industries in Kenya.

- i. It would reduce rural-urban migration.
- ii. It would create employment in the rural areas.
- iii. It would encourage regional equality in development.
- iv. Helps open up remote parts of the country.
- v. It would allow greater exploitation of local resources.
- vi. It would raise the standard of living of people in rural areas.
- vii. It would reduce congestion in urban centres.

- viii. To check on environmental pollution.

Problems hindering decentralization of industries in Kenya.

- i. Some industries depend on each other for raw materials/market/services hence it is difficult to separate/relocate them.
- ii. Insecurity in some areas discourages investment in such areas.
- iii. Some private investors are discouraged by poor transport facilities in the rural areas.
- iv. Inadequate market in the rural areas discourages investors from locating industries away from urban centres.
- v. Some areas lack energy resources.

Ways in which Kenya has benefited by assembling motor vehicles locally.

- i. It has stimulated development of other related industries e.g. tyres, paints, service etc.
- ii. The industry has created employment opportunities for Kenyans thereby reducing unemployment problems.
- iii. Kenya saves foreign exchange by importing parts of motor vehicles instead of complete units.
- iv. It has enabled Kenya to establish trade links with her neighbors.
- v. It has allowed transfer and development of technical skills among Kenyans.
- vi. Assembled vehicles are exported to other countries earning foreign exchange.
- vii. It has led to investment of capital within the economy.

Causes of the decline in the textile industry in Kenya.

- i. Large- scale importation of cheap second hand clothes has reduced demand for locally produced textile products, which are relatively expensive.
- ii. There has been a decline in the production of cloth, which has led to the limited supply of raw materials for the textile industry.
- iii. Mismanagement of textile factories has led to closure of such operations.
- iv. Liberalization of the economy has encouraged business people to import textiles from other countries instead of selling locally produced ones.

- v. Belief that imported garments are superior to locally produced ones has reduced demand for local garments.
- vi. Decline in the economy has discouraged investors who would set up textile industries in Kenya.

Industries located in the Ruhr region of Germany other than iron and steel.

- i. Engineering.
- ii. Textile industries.
- iii. Oil refining.
- iv. Electronics.
- v. Food processing.
- vi. Cutlery and surgical instruments.
- vii. Chemical/petro-chemical industries.
- viii. Service industry-banking, insurance, tourism.

Factors, which led to growth of iron and steel in the Ruhr region of Germany.

- i. The region is centrally located in Europe. This offers easy access to all parts of Europe.
- ii. The region is served by navigable rivers and canals, which provide cheaper transport for raw materials and finished products.
- iii. The region has abundant sources of power such as coal, oil, H.E.P, which is a necessity in iron and steel industries.
- iv. Availability of raw materials (iron ore, coal and limestone). It is economical to set up iron and steel industries near the source of raw materials because they are bulky.
- v. The dense and affluent population in central and Western Europe provides ready market for iron and steel.
- vi. Existence of traditional industries, which led to the development of the necessary skills.
- vii. Government policy. The post war national desire to rebuild the country gave the industries an impetus to succeed.
- viii. Presence of rich industries, which are ready to provide capital for industrial development.

Factors that have led to the rapid development of car manufacturing in Japan.

- i. Presence of advanced technology/automation has led to efficient and increased car production.
- ii. Japan produces fuel saving vehicles with a high world demand.
- iii. Japan has many natural harbours favouring development of large ports, which makes the importation of raw materials and exportation of cars possible.
- iv. Japan's a high population with a high purchasing power provides a large local market for the cars.
- v. Japan's change of policy of military aggression led to their economic revolution.
- vi. Japan's terrain is unsuitable for agriculture therefore industries provide an alternative source of employment and income.
- vii. The country has highly developed sources of power, which has encouraged growth of manufacturing industries.
- viii. Technical oriented education policy encouraged acquisition of technical skills/innovation.
- ix. Japan has a strategic location in relation to other continents. This encourages trade thus stimulates the production of vehicles.
- x. Availability of capital to invest in industries (aid from U.S.A assisted in post war recovery).
- xi. Stability of the currency has helped boost international trade.

Factors, which have favored the development of the electronics industry in Japan.

- i. Presence of a large local market owing to the large population with high purchasing power.
- ii. Availability of large external market.
- iii. Availability of adequate financial resources, which have helped in the setting up and expansion of the industry.
- iv. Government policy on industrialization has led to rapid development of electronics industries.
- v. Presence of skilled manpower.
- vi. Advanced technology/research has promoted efficient methods of production and high quality precision goods competitive in the world market.

Major problems facing industrialization.

- (i). Shortage of capital especially the developing countries. This compels them to loan capital of high interest rates and conditionalities such as economic liberalization and staff rationalization.
- (ii) Shortage of raw materials both locally produced agricultural inputs as well as imported.
- (iii) Inadequate market owing to the low purchasing power of the local population and preference to imported goods limit local market.
- (iv) Shortage of skilled labor more so at managerial levels due to brain drain.
- (v) Stiff competition with high quality imported goods.
- (vi) High costs of energy inflate overall production costs.
- (vii) Poor infrastructural network.
- (ix) Lack of adequate technical knowledge vital in the maintenance and repair of the imported machines. This leads to costly delays and interruption of manufacturing processes.

End of topic

Past KCSE Questions on the topic

1. (a) State two reasons why some industries are located near the sources of raw. 2 mks
- (b) Give three characteristics of the cottage industry in India. 3 mks
2. (a) State characteristics of jua kali industries in Kenya. 5 mks
- (b) State problems facing Jua kali industries in Kenya. 5 mks
- (c) Differentiate between manufacturing and j tertiary industries. 4 mks (d)
State three factors that led to the growth of iron and steel industry in the:
Ruhr region of Germany. 3 mks
3. (a) Name three agricultural non-food manufacturing industries in Kenya. 3 mks

- (b) Explain three causes of the decline in the textile industry in Kenya. 3 mks
- (c) Describe the measures that should be taken to control the following.
- (i) Water pollution
 - (ii) Rural urban migration. 2mks
- (d) Explain four factors which have favoured the development of the electronics industry in Japan. 8 mks
4. (a) What is industrialization? 2 mks
- (b) Name a town in Kenya where each one of the following industries is located,
- (i) Oil refinery
 - (ii) Paper manufacturing
 - (iii) Motor vehicle assembly. 3 mks
- (c) Give five factors why the development of the Jua kali industry is encouraged In Kenya. 5 mks
- (d) Name two non-food agricultural industries in Thika. 2 mks
5. State benefits of exploiting soda ash in Kenya. 5 mks
6. State two major steps currently -undertaken by the government to promote industrial growth and development. 2 mks
7. What is industrialization? 2mks
8. State three reasons why the jua kali industry is encouraged in Kenya. 3 mks
9. (a) What is an industry. (2mks)
- (b) State two ways in which each of the factors affect the location and development of industries.
- (i) Raw materials
 - (ii) Transport

- (iii) Markets 6 mks
- (c) Explain why power is not considered as a major industrial locational factor in the modern world. 2 mks
10. (a) Define:
- (i) Primary industry
 - (ii) Secondary industry
 - (iii) Quaternary industry 6 mks
- (b) (i) What is meant by Jua Kali industry in Kenya? 2 mks
- (ii) State five economic benefits of the Jua Kali industry in Kenya. 5 mks
- (c) Explain the significance of industrialization to Kenya. 6 mks
11. (a) State two main industries found in the towns below:
- (i) Thika
 - (ii) Athi River
 - (iii) Kisumu
 - (iv) Nanyuki
 - (v) Nakuru 10 mks
- (b) Explain the problems associated with industrialization. 6 mks
12. State five reasons why the Ruhr region in Germany is the leading industrial centre in Europe. 5 mks
13. (a) (i) Mention four industrial regions in Japan. 4 mks
- (ii) List five factors that have aided car manufacture and electronic industries in Japan. 5 mks
- (b) Explain the reasons which contributed to the growth and development of the cottage industry in India. 8 mks

Transport and communication

Specific Objectives

By the end of the topic the learner should be able to:

- (a) Define transport and communication;
- (b) Identify modes of transport and types of communication;
- (c) Locate the major lines of transport in Africa;
- (d) Outline the role of transport and communication in the economic development of Africa;
- (e) Discuss the problems facing transport and communication in Africa and the efforts being made to solve them;
- (f) Explain the role of the Great lakes and the St. Lawrence Seaway in the economies of the USA and Canada.

Content

- a.) Definition of, and distinction between transport and communications.
- b.) Modes of transport and types of communication.
- c.) Distribution of major lines of transport in Africa.
- d.) The role of transport and communication in the economic development of Africa.
- e.) Problems facing transport and communications in Africa and the efforts being made to solve them.
- f.) A study of the Great Lakes and the St. Lawrence Seaway.

Definition

- ✓ **Transport** is defined as the physical carriage and movement of goods and people from one place to another while **communication** is the process of transmitting/ exchanging information between persons.

Modes of transport

Mode refers to the manner in which transport is carried out. There are three modes of transport namely;

- Land transport
- Water transport
- Air transport

Land transport

This mode of transport involves movement of goods and people using units of carriage that move on dry land. The various means here include:

a.) Human porter age

This involves human being carrying goods on their shoulders, heads or backs

Advantages of Human Porterage

- ✓ Compliments other means of transport
- ✓ Flexible as it has no fixed time table or routes.
- ✓ May be a cheap means compared to other means of transport.
- ✓ Readily available when required
- ✓ Convenient over short distances.

Disadvantages of human porterage

- ✓ Not suitable for long distances.
- ✓ Add on congestions on the roads.
- ✓ It is relatively slow.
- ✓ Relies on human energy which is exhaustible.

b.) Carts

Carts are opened vessels usually on two or four wheels that are pushed or pulled by either human beings or animals such as donkeys and oxen.

Advantages of Carts

- ✓ Compliments other means of transport.
- ✓ Relatively cheap to hire.
- ✓ Initial buying and maintenance cost is low.

- ✓ Appropriate in remote areas where other means are not available.
- ✓ Readily available for hire.
- ✓ Can carry fairly heavier and bulky goods.
- ✓ Convenient for transporting goods over short distances.

Disadvantages of carts

- ✓ May not be suitable for transporting heavy and bulky goods.
- ✓ Cause traffic jams on roads leading to congestion and accidents.
- ✓ Not suitable for transporting goods over long distances.

c.) Vehicle

These are means of transport that ferry goods and people on roads. Matatus are the most commonly used in transportation.

Advantages of matatus

- ✓ They supplement regular bus companies.
- ✓ They fill up faster than buses hence save time.
- ✓ They are more flexible since they can change routes easily depending on demand.
- ✓ They reach out into the interior of rural areas where big buses cannot access.
- ✓ They are more flexible with the fares they charge.
- ✓ They are easier to hire as most of them are readily available.
- ✓ They are cheaper to acquire as compared to buses.

Disadvantages of Matatus

- ✓ Some matatus are poorly maintained to the extent of being unroad worthy.
- ✓ Most drivers are reckless as they rush to compete for customers.
- ✓ In some cases, touts use impolite language when dealing with passengers.
- ✓ They may cause noise pollution such as unnecessary hooting and loud music.
- ✓ They may cause congestion in towns unnecessarily because of careless driving and parking.
- ✓ Uncalled for sudden increase in fares at peak hours, during the night and on public holidays.
- ✓ Their operation is concentrated on peak hours, rarely operating at night.
- ✓ They at times unexpectedly change their route hence causing breach of contract.

Advantages of Vehicles

- ✓ Most readily available means of transport.
- ✓ Relatively fast compared to carts and human portage.
- ✓ Relatively cheaper over short distances.
- ✓ Flexible as it can offer door to door service.

- ✓ Vehicles may be available for transporting special goods.
- ✓ Roads are widely spread thereby making many areas accessible.

Transnational highways in Africa.

- The great North road - Cape Town, Zimbabwe, Zambia, Kenya (Nairobi), Tanzania, Uganda (Tororo), Sudan (Juba, Khartoum), Egypt (Atbara, Cairo).
- The Trans-Africa Highway - Mombasa, Uganda, Zaire, Cameroon, Central African Republic, Nigeria (Lagos)

Reasons for Establishment.

- To stimulate local, regional, international trade.
- Reduce remoteness.
- Reduce problems for land locked countries.
- Assist in transporting bulky goods.
- Stimulate contracts among African countries. 5

Benefits

- Have led to the growth of towns, ports.
- Enhanced International cooperation.
- Opened up remote areas.
- Provide employment of people.
- Facilitate international trade.
- Sources of revenue to governments (Toll fees).

d.) Trains

Trains are vessels that transport goods and people on rails.

Advantages of Trains

- ✓ Relatively secure as cases of theft and accidents are rare.
- ✓ Enables a transporter to plan for the transport of his/her goods as trains follow a fixed time table.
- ✓ Economical for transporting heavy and bulky goods over a long distance.

- ✓ Trains may have facilities for carrying special type of goods. e.g. gas, petrol and vehicles.
- ✓ Where shunting facilities are available trains may deliver goods up to or from the owners' premises.

Disadvantages of Trains

- ✓ Not flexible as trains follow a strict time table.
- ✓ Railway lines are expensive to construct and maintain.
- ✓ Not all areas are served by railway lines.
- ✓ Not suitable for transporting urgently required or perishable goods as it is slow.
- ✓ Unsuitable for transporting goods over short distances.
- ✓ Trains are expensive to acquire and maintain.

e.) Pipeline Transport

Pipeline transport is the movement of liquids and gases from one place to another through a pipe. Products transported through pipes included:

- ✓ Water
- ✓ Gases
- ✓ Petrol
- ✓ Diesel

Advantages of pipeline transport/advantages of transporting oil through pipeline.

- ✓ Road accidents have reduced due to reduced congestion of tankers on the road.
- ✓ Environmental pollution have been reduced as smoke from tankers has reduced/pipes do not emit smoke Polluters.
- ✓ Road damage has reduced due to reduced heavy tankers on roads.
- ✓ Reduced cost of handling oil due to few workers/employed /pipeline use machine mainly.
- ✓ Pilferage of oil has reduced as it's difficult to steal oil from the hard pipes that area underground.
- ✓ Large volume of oil will be transported within a short time.
- ✓ Ensure regular supply of oil hence reducing oil shortages.
- ✓ Not easily affected by poor weather as pipes can be underground/permanently fixed.

Disadvantages of pipeline transport.

- ✓ Not economical for small quantities.
- ✓ Solid products are not transported through pipeline.
- ✓ Can be easily targeted for sabotage.
- ✓ A variety of product cannot be transported the same time.
- ✓ Very expensive to put up.
- ✓ Providing security has high costs
- ✓ Monitoring pipeline is expensive
- ✓ Heavy losses may be incurred if damaged is not discovered within a short time
- ✓ May result in environmental degradation in case of damage

Reasons for a few railway links among African countries.

- Differences in rail gauges complicate connectivity.
- The countries were colonized by different European powers who constructed railway lines to transport raw materials from the interior to ports in their own colonies
- Political difference/political instability in some African countries hinder efforts to construct rail links.
- Lack of adequate capital for rail construction.
- Stiff competition from other means of transport which are cheaper, faster, flexible and have a wide coverage.
- They produce similar goods, this limits inter community trade.
- Parts of Africa are unproductive hence uneconomical to construct rail.
- Most of Africa is covered by a high plateau/mountainous which it expensive to construct rail.

Reasons why Road Transport in Africa is better developed than Railway transport.

- Roads are more flexible- door-to-door delivery.
- Cheaper to construct.
- Roads can be of different grades -loose surface, tarmac. Railways are built on specific gauges
- Road transport is faster.
- Roads carry small quantity of load, thus ideal for small-scale business. Railway requires bulky goods.

Water transport

This is a mode of transport where the units of carriage, transport goods and people on water. The vessels using this mode include:

- ✓ Ships
- ✓ Dhows
- ✓ Boats
- ✓ Steamers
- ✓ Ferries.

Water transport is divided into two

- Inland water ways
- Sea transport.

Inland waterways

This is a transport carried out on lakes, rivers and inland canals. Most rivers in Kenya are not navigable due to the following reasons:

- ✓ Too small
- ✓ Presence of rapids and waterfalls
- ✓ Too shallow
- ✓ Most are seasonal
- ✓ High gradient.

Navigable rivers in Africa.

- ✓ River Nile.
- ✓ River Zambezi.
- ✓ River Congo.
- ✓ River Tana.
- ✓ River Niger.

Reasons why river transport is less developed in Africa.

- i. Most rivers are seasonal and therefore the water levels fluctuate making it difficult to sail.
- ii. Some of the rivers contain huge rocks/boulders/rock outcrops on their courses that reduce the navigable distance.
- iii. High siltation in the lower courses of some rivers makes their channels shallow to suffice river transportation.
- iv. Most rivers have short and shallow navigable stretches thus discouraging development of transport in them.
- v. Some rivers flow in areas of low economic value/sparsely populated areas that have limited human activities.
- vi. Presence of waterfalls and rapids along the courses of some of the rivers hinder development of river transport as they have increased velocity of river water/very steep.

Reasons why inland water transport is not well developed in Africa.

- i. Some rivers are interrupted by waterfalls and rapids so are not navigable throughout.
- ii. Some rivers are seasonal and fluctuate in volume during the dry season.
- iii. Some rivers flow through climatically hostile areas for example river Congo.
- iv. Most of the rivers flow through shallow or too short therefore unsuitable for navigation.
- v. Some of the rivers flow through climatically hostile areas which are eg little economic significance.
- vi. Many rivers tend to meander especially on the flood plain making distances longer than on land.

Season Transport

This is where goods and people are transported in seas and oceans.

Types of water vessels

a.) Ships

Ships may be classified as either liners or tramps.

Liners

These are ships that are owned and operated by shipping companies called conferences.

Characteristics of liners

- ✓ Have fixed routes.
- ✓ Follow a fixed time table.
- ✓ Charges are fixed.
- ✓ Call at specified ports along the route at specified intervals.
- ✓ Travel at regular intervals.

Tramps

These are ships that do not follow a regular route or time table.

Characteristics of tramps

- ✓ Do not have a fixed rate.
- ✓ Have no set time tables.
- ✓ Their fares change according to demand.
- ✓ Their travelling patterns are irregular and therefore cannot be relied upon.

b.) Boats and ferries

These are water vessels used in transporting goods and people over short distance.

Advantages of water transport.

- ✓ Sea transport is economical to the owner as the number of employees to carriage volume ratio is less compared to road transport.
- ✓ Best for transporting heavy and bulky goods.
- ✓ It is cheap as the way is natural and free.
- ✓ Connects countries of the world which border the sea.
- ✓ Special types of ships are available for transporting goods.
- ✓ Large volumes can be carried thereby reducing cost per unit.

Disadvantages of water Transport

- ✓ Sea-sickness, sea-pirates and storms may occur.
- ✓ Not suitable for transporting perishable and urgently required goods.
- ✓ It is expensive to construct and maintain artificial harbors.
- ✓ Unfavourable weather conditions may affect water transportation.
- ✓ Sea -transport is not accessible to land locked countries.
- ✓ Lack of loading and off loading facilities may lead to delay.

- ✓ Cost of acquiring and maintaining chips is high.

Distinguish between a Hinterland and an Entreport.

- Hinterland is an area served by a port or a ports sphere of influence i.e. where it draws its exports and distributes its imports.
- Entreport is a port where goods on transit are brought for temporary storage before being re-exported to another country.

Factors that led to growth of Rotterdam as a major sea port in Europe.

- Hinterland rich in minerals and heavy industries.
- Extensive hinterland such as France Germany, Switzerland, Australia, Czechoslovakia.
- Its location on the river mouths of Rhine & Meuse/deep harbours.
- The warm North Atlantic drift keeps the port ice free all year.
- It's a major industrial town- engineering, oil refining, petrol-chemicals, food processing.
- Strategic location connects sea routes to and from America, Africa and other parts of Europe.
- Provision of modern port facilities i.e. container terminal, berths, canals, coal & oil terminals.

Differences between Rotterdam & Mombasa ports.

Mombasa

Is on an island

Serves a developing & agricultural

hinterland

Export cargo mainly agricultural & minerals.

Rotterdam

-At the mouth of river Rhine, biggest in Europe.

-Serves a developed, highly industrialized
hinterland

-Often manufactured, chemicals.

Imports manufactured goods, chemicals commodities.

Served by roads & railways.

Limited volume of cargo.

-Fuel, mineral raw materials, agricultural

-Served by rivers. .

-Handles large volumes of cargo.

Factors that have favoured the growth of Kisumu as a port town.

-Being a terminus of Kenya-Uganda railway.

-Converging point of all roads of Western Kenya e.g. Kisumu-Busia; Kisumu-Homabay; Kisumu Kakamega.

-High population density of surrounding districts.

-Rich agricultural hinterland.

-As an administrative centre.

-Location on Lake Victoria easily connects E.African countries.

-Development of industries -Wicomico breweries, fishing attracts trade, employment.

Economic uses of rivers in Africa.

-Fishing ground.

- Transportation

-Provide water for irrigation, domestic use and industrial purposes.

-H.E.P. generation.

-Source of sand for construction.

-Source of minerals.

-Source of alluvial soils for Agriculture.

-Tourist attraction.

Factors that have hindered the development of river transport in Africa.

-Seasonality.

-Presence of rapids and waterfalls.

-Many are too short, shallow, and too swift/narrow.

-Silt at the river mouths hinders port development.

-Most rivers pass through unproductive areas hence it is uneconomical to develop river transport.

- Inadequate technology.

-Presence of floating vegetation and dense vegetation along the riverbanks.

-Inadequate capital.

-Differences in political ideologies of countries through which rivers pass calls for negotiation.

Air transport

This is a mode of transport in which aeroplanes are used.

Advantages of Air Transport

- ✓ There is less handling of goods on the way since aeroplanes may move direct to the final destination.
- ✓ The way does not require construction or maintain as it is natural and free.
- ✓ Planes can move through places where other means cannot.

- ✓ Have efficient interconnections between airlines all over the world which makes it convenient.
- ✓ Suitable for long distance travelers especially from one continent to another.
- ✓ Suitable for transporting perishable and urgently required goods.

Disadvantages of Air Transport

- ✓ Causes noise pollution.
- ✓ Air fields are not available in all places.
- ✓ Cannot be conveniently used to carry heavy and bulky goods.
- ✓ Expensive to acquire and maintain aircrafts.
- ✓ Requires highly trained manpower.
- ✓ Unfavorable weather conditions may cause delay.
- ✓ In case of accidents results are catastrophic.
- ✓ It is expensive to construct and maintain airfields
- ✓ It is an expensive means of transport in terms of freight charges.

Ways through which Kenya has benefited from her international air links.

- Promoted tourism.
- Promoted international trade.
- Creation of employment opportunities.
- Helps to generate revenue through taxation of goods & passengers at airports.
- Facilitates relief & emergency assistance (drugs, medical staff).
- Promoted international understanding by enabling Kenyans interact with people from other parts of the world.
- Promotes horticultural industry.
- Enables cultural exchange.

Containerization

It involves transporting goods packed in standard box like containers.

Advantages of containerization

- ✓ Can carry large quantities of goods if properly arranged.
- ✓ Minimal damage to goods as they are protected against weather conditions by the metallic container.
- ✓ Goods are safe from theft and pilferage as containers remain sealed up to the point of destination.
- ✓ Low insurance premiums due to reduced risks of theft and damage.
- ✓ Easy of loading and off-loading due to use of handling equipment such as cranes.
- ✓ Handling cost may be minimized due to use of modern technology.
- ✓ Containers can be easily moved as they are fitted with appropriate handling devices.
- ✓ it is possible to transport specialized goods using specialized designed containers

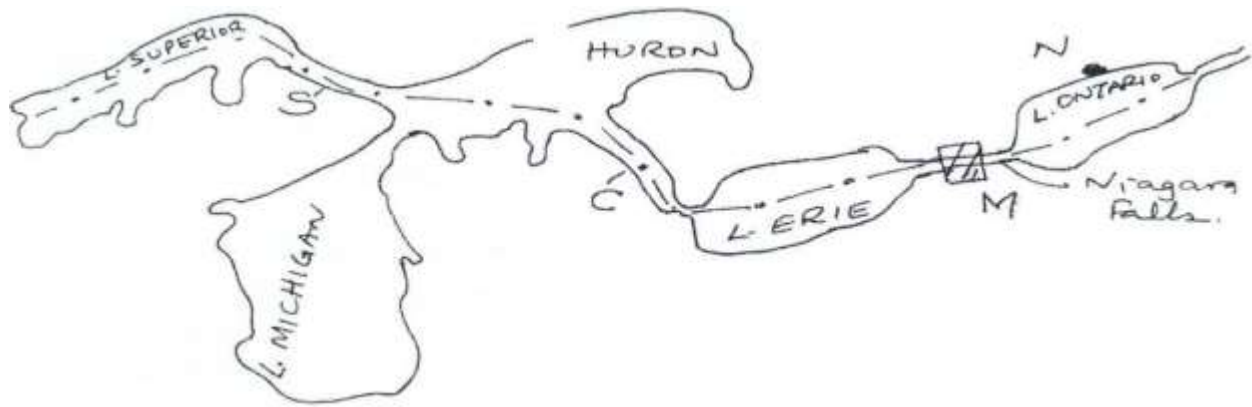
Disadvantages of containerization

- ✓ Containers are expensive and this increases the cost of transporting goods.
- ✓ Contributes to unemployment since it is capital intensive.
- ✓ Not suitable for transporting small quantities.
- ✓ Requires special handling equipment which may be expensive.
- ✓ May not be suitable for goods with irregular shapes.

Problems faced by African states in trying to improve the transport system in the continent.

- Lack of adequate funds.
- Lack of adequate skilled man power and technical know how.
- Political differences.
- Civil wars destroy existing transport networks.
- Seasonality of rivers.
- Poor terrain (plateau, Rift Valley and thick vegetation.)
- Limited interstate trade.
- Mismanagement of funds for transport project

Use the diagram below to answer the questions that follow.



Name the canals marked S&M

S- Soo canal.

M- Weiland canal

C- River St. Clair

N- Quebec (port)

Lakes that make up St. Lawrence Seaway.

Superior

Michigan

Huron

Erie

Ontario

List four obstacles that faced the navigation at the St. Lawrence Seaway.

- Existence of rapids and waterfalls.
- Existence of both shallow and narrow sections.
- Existence of different water levels.
- Existence of rocky Island with river channel.
- Freezing of the waterway in winter
- Frequent fog/ mist at the mouth of St. Lawrence were a great hindrance to shipping.

Describe four ways in which navigation was improved at the sea way.

- Constructions of canals to avoid rapids and waterfalls.
- Deepening/ dredging of the canals and channels to accommodate larger ships.
- Blasting of the rocky Islands.
- Use of ice breakers during winter when water is frozen.
- Locks were constructed along the seaway to regulate the flow of water as well as the movement of vessels.
- Installation of radars and fog lights on ships.

Explain three ways in which the Great Lakes - St. Lawrence Sea way has Contributed to the economy of Canada and U.S.A.

- It provides cheap means of transport for both imports and exports, thus encouraging internal/ international trade.

- Industrialization of the area such as pulp and paper, steel manufacturing, agricultural processing, engineering. (Due to accessibility of raw materials.)
- Increased trade between U.S.A. & Canada and the rest of the world.
- Niagara Tourist attraction -The Niagara Falls is the world's spectacular waterfall.
- Source of employment in the transport industry.
- Has led to development of sea ports and towns which have become focal points for various economic activities. (Toronto, Montreal, Detroit.)
- The dams along the route provide H.E.P.
- Tariffs charged earn the countries income.

Canals found along St. Lawrence seaway.

- Soo canal
- Welland canal.
- Newyork State berge canal
- Sault St. Marle canal.
- Nipssing canal.
- Rudan canal

Reasons why the St. Lawrence seaway project was set up

- i. To remove rock shoals, rapids and several islands in the river channel that hindered navigation.
- ii. To deepen the river channel and regulate the difference in the lake level.
- iii. To construct dams to generate H.E.P and regulate the flow of the river.
- iv. To construct locks among the route to regulate the flow water as well as movement of the vessels.
- v. To construct canals by-passing the sections with rapids and waterfalls along river St. Lawrence.

Principal products\ cargo handled at the sea way.

- Grain, Petroleum, Iron Ore, timber, Coal; Iron and Steel; Textile

Recent developments that have taken place in Kenya to improve communication of information.

- Liberalization of air waves\ licensing of more private radio\ TV stations.
- Introduction of E-mail\ Internet, Telefax.
- Introduction of cell phones\ pagers\ wireless phones.
- Liberalization of the press.
- Expansion of telephone facilities\VSAT.
- Liberalization of postal services.
- Cable network connections.

Communication

Means of communication used in Kenya.

- Cell phone / mobile phone / telephone.
- Fax
- Telex
- Telegram
- Email
- Internet.

(2 x 1

Explain three problems facing telephone as a means of communication in Kenya.

- Development of other faster and more efficient means of communication e.g. E-mail has led to reduced use of telephones.
- High cost of installation and maintenance of telephone lines limits the number of subscribers.
- Vandalism of telephone equipment renders most of telephone services unavailable to would be users.

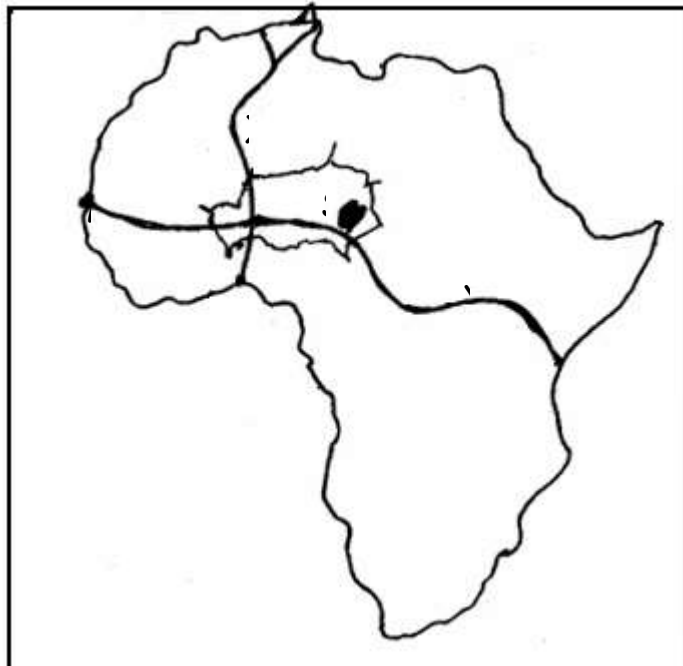
- Lack of modernization of telephones/ obsolete telecommunication equipment.
- Poor reception/ network congestion.

Problems facing communication in Kenya.

- Inadequate capital to install communication equipment.
- Language barriers due to diverse ethnic backgrounds / low levels of education.
- Inadequate communication facilities.
- Vandalism of communication equipment / wars.
- Inefficient communication systems /Networks failure.

Examples

Use the map of Africa below to answer the following questions.



- i. Name the highways marked **X** and **Y**.
- ii. Name the port marked **M**.
- iii. Name the country marked **S**.

Solution

- i. Highways
X - Trans-Saharan highway
Y - Trans Africa highway
- ii. M - Dakar
- iii. S - Chad

Reason for difficulties in transporting goods from Mombasa to Lagos.

- Traffic charged at border points increase transportation costs.
- There is long distance between the two parts which would take a long time.
- Some parts of the highway are impassable during wet seasons.
- There are civil wars / banditry along the way e.g. DRC
- There are political differences and hostilities between some countries through which the highway passes. (2 × 1 = (2mks)

Four ways in which road transport has been improved in Kenya.

- Construction of highways to accommodate more traffic and improve traffic flow
e.g. Nairobi - Mombasa highway, Thika Superhighway.

- Construction of by-passes, flyovers in Nairobi and along Thika Super Highways to reduce congestion and improve traffic flow.

- Rehabilitation and maintenance of major roads to reduce road accidents and improve traffic flow.

- Control of loads carried by trailers and large lorries by traffic police to reduce damage on road surface.

- Educating road users on road safety precautions and discipline on roads to ease traffic and to reduce road/accidents.

- Enforcing traffic rules to reduce road accidents and regular traffic flow.

Four reasons why motorcycle transport has become common in most parts in Kenya.

- Motorcycle offer services into areas than the inaccessible by motor cycle.

- Motorcycles are more affordable than vehicles.

- Motorcycle are cheaper to maintain than vehicles.

- Most roads to the interior of some parts of the country are narrow making motorcycles the most suitable means of transport.

- Motorcycle require minimal skills to ride so many people are able to use them

A Road By-pass is a road / highway which avoid a town or residential areas to avoid traffic jam.

Roles of transport and communication in Africa.

- i. Opens up large areas creating large markets for goods and services.

- ii. Creates employment opportunities.

- iii. Promotes tourism.

- iv. Helps in exploitation of natural resources.

- v. Promotes regional cooperation and specialization.
- vi. Promotes urbanization.
- vii. Adds value to goods and services.
- viii. Earns the country revenue through taxes

End of topic

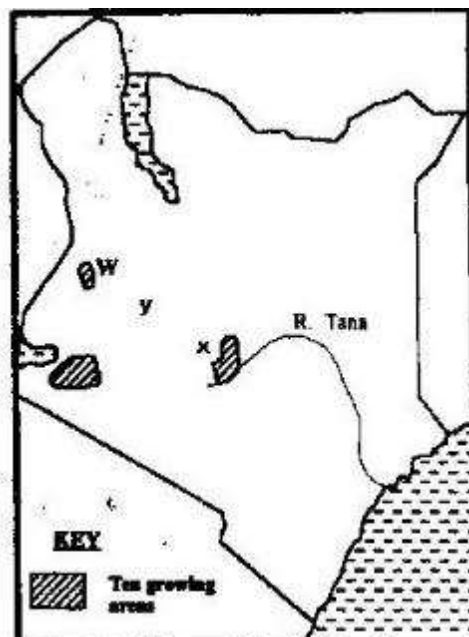
Did you understand everything?

If not ask a teacher, friends or anybody and make sure you understand before going to sleep!

Past KCSE Questions on the topic

TRANSPORT AND COMMUNICATION.

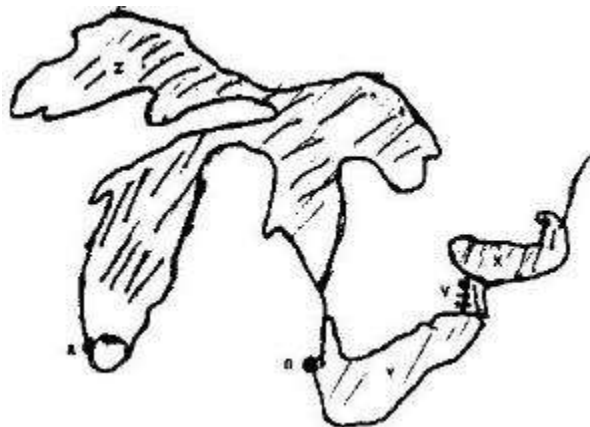
1. State the causes of the decline in the use of letter writing as a means of communication in Kenya. 5 mks
2. (a) Give three advantages of railway over road transport. 3 mks
- (b) The map below shows the extent of the oil pipeline in Kenya. Use it to answer question (b).



Name the towns marked X and Y which are served by the pipeline. 2 mks

(c) State two disadvantages of using pipelines as means of transporting oil.

(d) Use the map drawn below of St. Lawrence sea way to answer the questions that follow.

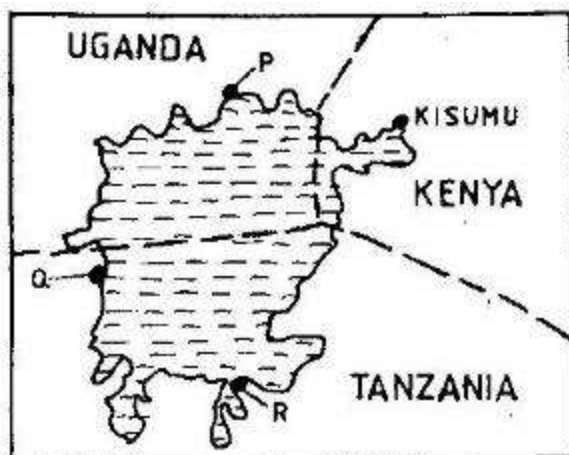


(i) Name the towns A and B

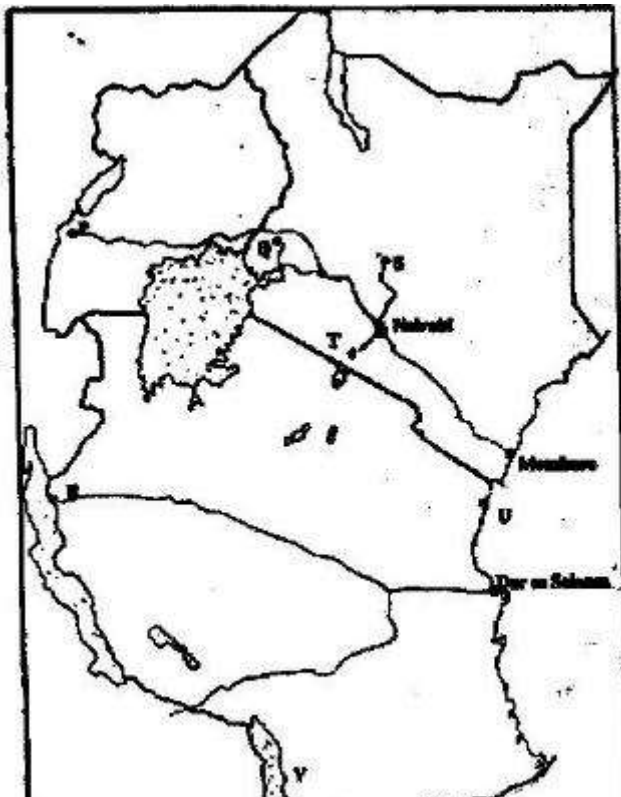
(ii) Name lakes X, Y, Z

(iii) Name canal marked V 3.

3. Use the sketch map of Lake Victoria below to answer question (a).



- (a) Name the lake ports marked P, Q, and R 3 mks
- (b) Outline two advantages of using containers while handling goods at the port of Kisumu. 2 mks
4. (a) Give three reasons why road transport is used more than air transport in East Africa. 3 mks
- (b) In what three ways does Kenya benefit from air links with the rest of the world? 3 mks
5. Use the map of East Africa below to answer question (a).



- (a) Name the railway terminuses marked P, Q and R. 3 mks
- (b) Give the main commodities transported by the railway lines marked S and T. 2 mks
- (c) Name the port marked U and the lake marked V. 2 mks
- (d) State four reasons why road network is more widespread than railway network in East Africa. 4 mks
- (e) One of the problems facing road transport is the high frequency of accidents. Explain four conditions of roads in Kenya that may lead to accident. 8 mks
6. Give four benefits of the efforts the government is data in streamlining public transport sector. 4 mks
7. Outline two major problems affecting the development of trans- African highway in Africa. 2 mks
8. State two major problems hindering river transport in Kenya. 2 mks
9. Suggest three benefits of the proposed Southern bypasses to be constructed in Kenya. 3 mks
10. (a) Define containerization.
- (b) Outline three merits of using containerization as a method of transportation. 3mks
11. (a) State three problems facing railway transport in Kenya. 3 mks
- (b) Identify importance of railway transport in a country. 4 mks
12. Differentiate between 'transport' and communication. 4 mks

13. Apart from cell phones, mention other two modern methods of communication.

2 mks

14. State advantages of using cell phones communication. 3 mks

15. State reasons why St. Lawrence sea way was set up by the government of USA.

4 mks

16. (a) Define:

(i) Transport

(ii) Communication 4 mks

(b) Apart from water transport, list the other modes of transport. 2 mks

(c) Name the two types of waterways used in transportation. 2 mks

17. (a) Give three reasons why river transportation in Africa is poorly developed.

3 mks

(b) Name the major ocean routes of the world. 3 mks

(c) State the advantages of water transport. 6 mks

18. (a) Account for the poor rail linkages j, between the African countries. 2 mks

(b) Name three trans-continental rail lines in Africa. 3 mks

(c) What are the advantages and disadvantages of transporting goods by rail?

6 mks

19. (a) Why is railway transport less used in Africa? 4 mks

(b) Name two railway systems in Africa. 2 mks

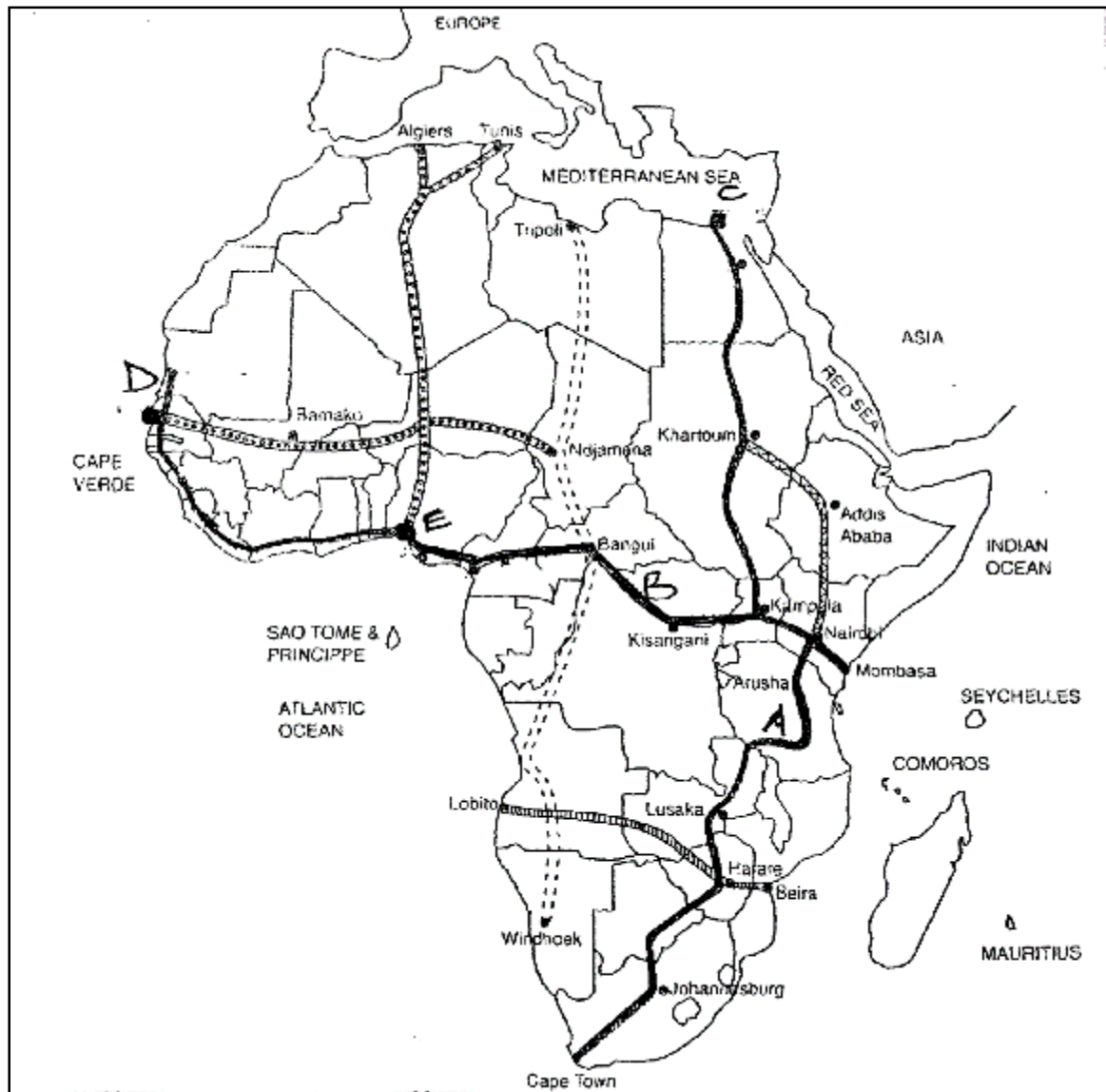
(c) Discuss the advantages and disadvantages of railway transport. 4 mks

20. State the advantages of road transport. 4 mks

21. (a) What is containerization? 2 mks

- (b) Discuss advantages and disadvantages of containerization. 6 mks
- (c) State advantages and disadvantages of air transport. 6 mks
22. Identify the main types of communication. 4 mks
23. (a) Name two trans-African highways 2 mks
- (b) What are the benefits of trans-African highways? 2 mks
- (c) Explain the problems facing the trans-African highways. 4 mks
24. Discuss the role of transport and communication in economic development of Africa. 4 mks
25. (a) State the problems facing transport and communication in Africa. 4 mks
- (b) Outline the efforts being made to solve these problems. 4 mks
26. (a) (i) Identify the obstacles that face navigation along the St Lawrence seaways. 3 mks
- (ii) State ways in which navigation on the seaway was improved. 4 mks
- (b) Explain the benefits of the St. Lawrence seaway on the economies of the United States of America and Canada. 6 mks

26. Below is a map of Africa showing major trans-continental highways in Africa.



(a) (i) Name the highway marked A and B
(2mk)

(ii) Name the towns marked C, D and E
(3mks)

CHAPTER ELEVEN

TRADE

Specific Objectives

By the end of the topic the learner should be able to:

- (a) Define trade;
- (b) Identify types of trade;
- (c) Discuss the factors that influence trade;
- (d) Identify the major exports and imports of Kenya;
- (e) Assess the significance of trade to Kenya;
- (f) Discuss the problems facing trade in Kenya;
- (g) Assess the future of international trade in Kenya;
- (h) Outline the role played by selected trading blocs in the economies of their respective regions.

Content

- a.) Definition of trade.
- b.) Types of trade.
- c.) Factors that influence trade.
- d.) Major exports and imports of Kenya.
- e.) Significance of trade to Kenya.
- f.) Problems facing trade in Kenya.
- g.) The future of international trade in Kenya.
- h.) The role played by the Common Market for Eastern and Southern Africa (COMESA), Southern African Development Cooperation (SADC),
- i.) Economic Community of West African States (ECOWAS) and European Union (EU) in the economies of their respective regions.

Definition

- ✓ Trade is the exchange of goods and services at a certain agreeable fee with the aim of making a profit.

Types of trade

- Historically trade has been classified into barter (exchange of goods for goods) and monetary trade
- Monetary trade operates at three levels.

(a) Domestic/internal trade

- Involves buying and selling of goods and services within a country
- The goods are either imported or locally produced
- In Kenya, internal trade involve the following forms: -

i. Wholesalers/wholesale trade

- Purchase goods in bulk from producers and sell them to retailers
- Specialise in sale of particular goods
- Mainly found in the urban centres

ii. Retail trade

- Involve buying goods from wholesalers and selling to individual consumers
- Stock a variety of goods
- Small scale/sale goods in small quantities
- Include shopkeepers, hawkers, open air markets, departmental stores, multiple stores and supermarkets

(b) Regional trade

- Between countries that are found in the same geographical region.
- Such countries may form economic/trading blocs such as EAC COMESA, ECOWAS, EU, SADC etc

(c) International/external/foreign trade

- Involves trade between two or more countries
- Can be bilateral or multilateral
- Involves exports (goods sold to other countries) and imports (goods bought from other countries)
- Can also be classified as visible and invisible

Visible trade refers to import and export of tangible goods

Invisible trade involves the exchange of services, which can earn foreign exchange without the transfer of goods from one country to another. Such services include tourism, insurance, revenue from foreign investments, government transactions, medical and educational services, loan interest, banking services, transport services, consultancy services,

- International trade also involves balance of trade and balance of payment
- Balance of Trade- refers to the difference in value between a country's visible exports and imports. This could be favorable or adverse depending on the value of exports relative to imports.
- Balance of payment - in the balance of all transactions involving both visible and invisible trade of a country with foreign countries.

Factors influencing Trade

- i. Differences in resource endowment such that no country is self-sufficient. This creates the need for external sourcing of goods and services that a country doesn't produce.
- ii. Presence of capital for stocking various goods needed by consumers by traders and to enable buyers purchase.
- iii. Demand for goods and services that push the buyers to purchase the same.
- iv. Security: - places with relative peace enjoy greater trading opportunities since traders are sure of their security and of their goods, they thence invest more
- v. Stage of economic development - There are differences in technological capabilities among countries which result in regional differences based on industrial productivity. Level of industrialization dictates the type of goods to be imported and those to be exported.

- vi. Transport and communication links - efficient links are essential for successful trade.
- vii. Government policies determine the trading partners and also the trading blocs to join. Political hostilities limit trade. Protectionist policies substantially influence volume of trade.
- viii. International market agreements such as quotas also affect trade
- ix. Use of different currencies and language.
- x. Extent of foreign investment especially in developing countries can significantly affect the volume, type and pattern of world trade.

Major Exports and Imports of Kenya

Exports

- Exports are goods and services sold to other countries
- Most exports from Kenya are agricultural products
- Some are exported while raw e.g. coffee/tobacco while others such as pyrethrum undergo some processing before exportation
- Includes the following tea, horticultural produce, soda ash, cigarettes/tobacco, fish, livestock products, tourism, sisal products, footwear, pyrethrum extract, textiles, petroleum products, scrap metal, fluorspar, insecticides, timber/timber products, etc

Imports

- Are goods and services that are bought/brought into a country from other countries
- The major imports include petroleum, machinery, electronics, motor vehicle, pharmaceuticals, skilled labour and foodstuffs

Why countries institute measures to limit imports

- ✓ To encourage and stimulate the growth of domestic industries.
- ✓ To protect local industries from competition posed by foreign firms
- ✓ To create more job opportunities locally.
- ✓ To encourage self-sufficiency.
- ✓ Imports restriction prevents cases of dumping by foreign manufacturers.
- ✓ Protection helps check on quality of incoming goods.

Ways in which the government may restrict external trade

- ✓ By imposing import duties/tariffs.
- ✓ Fixing import quotas.
- ✓ Imposing total ban.
- ✓ Price control.
- ✓ Issue license or permits for importation/exportation.
- ✓ Offer subsidies.
- ✓ Enter into economic

Significance of Trade

- i. Trade encourages specialization based on a country's comparative advantage which in turn leads to higher production.
- ii. Development of settlement centres/urbanization as major trading towns attract settlements.
- iii. Trade stimulates industrial growth through a high demand for goods locally and abroad.
- iv. Availability of imported raw materials also stimulates the establishment of import substitution industries for local market.
- v. Expansion of agriculture as most of the trade items are agro based.
- vi. Earning of foreign exchange - exports earn foreign currency which is used to buy imports.
- vii. Creation of employment opportunities as wholesale/retail traders, customs official etc.
- viii. Leads to development of infrastructure in abide to create transport and communication links for more trade.
- ix. Trading blocs create a competitive environment for business. This helps in eliminating wasteful monopolies as well as leads to production of high quality products at reasonable prices.
- x. Source of revenue through licence fees and taxation of goods and services rendered.
- xi. Regional cooperation enhances international peace and understanding

Problems facing Trade in Kenya

(a) Nature of imports and exports

- Kenya mainly exports agricultural and mineral commodities of low value. It also imports machinery and finished products of higher values resulting to an adverse balance of trade hence trade deficit

(b) Scarcity of goods

- Some goods required by consumers in given places may be lacking may be due to adverse weather conditions e.g. prolonged drought or exhaustion of mines. This makes them to be expensive and unavailable

(c) Poor infrastructure

- Most parts of the country have poor transport network making it difficult to transport goods to various markets.

- This makes the transport expensive leading to marginal profits

(d) High charges/tariffs

- The charges levied by the government in terms of taxes and councils inform of levies to conduct businesses are very high making the traders to earn little profits and discourages importation

(e) Inadequate Capital

- Most traders operate in small scale and have to rely on banks and micro-finance institutions to expand their trading activities.

- The interests charged by the banks are very high limiting the profits.

(f) Insecurity

- In some areas traders may be attacked by thugs and lose their goods/proceeds. They therefore have to invest in heavy and expensive security system that eats into their profits.

(g) Trade restrictions/barriers

- The government may impose restrictions on goods to be imported or exported. Other countries/trading blocs may also impose bans on importation of some commodities from Kenya

(h) Smuggling

- Some unscrupulous traders may import goods into the country without following the correct procedures. Such goods evade taxes thus denying the country revenue and also impose unfair competition from traders who have imported correctly

(i) Dumping of goods

- This refers to the selling of goods in an external market at a price cheaper than that charged in the exporting country. It may lead to a decline in market for local goods due to the cheap imports.

Future of International Trade in Kenya

- International trade in Kenya is likely to improve because of the following reasons
 - i. Improvement of balance of trade through the following
 - ✓ Establishment of import substitution industries to reduce importation of commodities.
 - ✓ Development of alternative sources of energy (H.E.P, solar, biogas) to reduce expenditure on oil importation.
 - ✓ Encouraging local assembling of machines since importation of parts is cheaper.
 - ✓ Finding new markets for exports to avoid dependence on a few trading partners.
 - ✓ Diversification of exports.
 - ✓ Encouraging use of appropriate/local technology that does not require heavy machinery.
 - ✓ Encouraging exportation of locally manufacturing goods.
 - ✓ Increasing invisible trade e.g. shipping, tourism, insurance.
 - ✓ Restricting the importation of luxury items through higher taxation.
 - ✓ Encouraging the production of high quality/manufactured goods for export in order to earn higher income.
 - ii. Setting up industries in the neighbouring countries/within COMESA/EAC regions
 - iii. Improvement of infrastructure connecting/linking neighbouring countries to facilitate easy movement of goods and people along the borders.
 - iv. Expansion of other markets e.g. in Europe and Middle East.

- v. Holding trade exhibitions/fares in partner countries to enlighten Kenya's trade potential thus increasing trade.
- vi. Use of conditions of AGOA e.g. various countries are allocated quotas to export textile to overseas especially USA.
- vii. Reduction of import duties through EAC agreeing on a common customs unions

Economic integration

Refers to the agreement between two/more countries to cooperate with each other in order to promote mutual trade. Such cooperating countries are collectively referred to as an Economic/Trading bloc.

Regional trading blocs

- These are trade and economic organizations formed by countries in different continents
- The regional trading blocs in Africa include COMESA, SADC, ECOWAS and EAC.

(a) COMESA

- Common market for Eastern and Southern Africa
- Has headquarters in Lusaka, Zambia
- Membership include Kenya, Burundi, Uganda, Ethiopia, Eritrea, Sudan, Djibouti, Angola, Namibia, Zimbabwe, Lesotho, DRC, Madagascar, Mauritius, Swaziland, Zambia, Comoros, Seychelles, Egypt, Malawi, and Rwanda.

Objectives of COMESA

- ✓ To eliminate taxes on goods produced within the member states.
- ✓ To create a common market for goods produced in the member countries.
- ✓ To enable member states to increase the use of their raw materials.

- ✓ To promote transport and communication between the member countries.
 - ✓ To promote joint development in all fields of economic activity through establishment of a common bank to aid in economic and social development.
 - ✓ To raise the standards of living of its people.
 - ✓ To foster closer relations among its members states.
 - ✓ To cooperate in the promotion of peace, security and stability among the member states.
 - ✓ To strengthen the relationship between member states and the rest of the world.
- COMESA has established a bank, COMESA bank in Bujumbura, Burundi to promote trade among the member states
 - This enables the traders to pay for the goods and services from member countries
 - Other established institutions other than COMESA bank include Reinsurance Company, Clearing House and Court of Justice

(b) ECOWAS

- Economic Community of West African States
- Found in West Africa
- Member countries include Benin, Burkina Faso, Ivory Coast, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo and Cape Verde
- It has its headquarters at Lagos, Nigeria

Objectives of ECOWAS

- i. To encourage trade among the member states.
- ii. To eliminate trade barriers on locally produced goods in the region.
- iii. To encourage industrial and agricultural development among the member states.
- iv. To promote free movement of goods and people in the region.

- v. To encourage the improvement of transport and communication in member states so as to facilitate trade

(c) SADC

- Southern African Development Cooperation - Established in 1992
- Members - Angola, Botswana, Dr. Congo, Lesotho, Malawi, Mozambique, Namibia, Mauritius, Tanzania, Swaziland, South Africa, Zambia, Zimbabwe.
- Has its headquarters at Gaborone - Botswana

Aims of SADC

- To promote and co-ordinate regional integration
- To foster international cooperation
- To facilitate trade and economic liberalization.

Benefits of regional trading blocs

- Create a large market for goods and services to be bought and/or sold
- They have helped to create harmony and cooperation among the member states
- Reduction of tariffs making the goods cheaper in the region
- Expanded markets

General Factors that favour regional trade

- i. Political willingness.
- ii. Common language e.g Kiswahili for EAC.
- iii. Diversified resources.
- iv. Specialization in production according to resource endowments.

- v. Similarly in economic system/ideology i.e. common currency or easy currency convertibility.
- vi. Common cultural, religious characteristics.
- vii. Accessibility to one another e.g. sharing of common transport system - railway of same gangs.

Benefits of Economic Integration

- i. It creates a wider market for goods and services from member countries.
- ii. It encourages specialization in production in line with a country's comparative advantages. This enhances efficiency in production and better resources allocation.
- iii. Infrastructural facilities may be jointly financed. This significantly spreads out to cost born by each country.
- iv. Increased employment opportunities owing to increased demand for raw materials in line with the expanded market as well as labour mobility.
- v. Expanded market will attract foreign and domestic investment in industries hence lead to industrialization.
- vi. It enhances exchange of technology as well as jointly funded research findings.
- vii. It promotes peace and international understanding as countries are likely to pursue policies that are mutually beneficial in an atmosphere free of friction.
- viii. It avails better quality goods and services to the citizen at fair prices due to the removal of restrictive trade practices that distort prices.

Factors/ problems that limit trade among East African countries

- i. The East African countries product similar agricultural/primary goods this limits exchange.
- ii. Differences in political ideology and economic systems e.g. socialism in Tanzania, while Kenya pursues a capitalization economic system.
- iii. Different currencies i.e. different value of the shilling discourages the flow of trade.
- iv. Un-equal levels of economic and industrial development. Argument that Kenya takes a bigger share of the inter community trade.
- v. Different taxation policies i.e. Tanzania still insists on charging tariffs on Kenya's exports.
- vi. Poor transport and communication linkages.
- vii. Lack of adequate information of what's available in other countries.

- viii. Language barrier particularly the ban on use of Swahili in Uganda.
- ix. Restriction on movement of labour/people has limited the degree of movement of people and goods.

Note

Candidates can also be asked to suggest ways in which trade between the East African countries may be improved. Such a question seeks an understanding of how the above problem can be overcome. Diversification of goods Creation of East African Federation - Uniform currency introduction -synchronization of taxation - harmonization of economic policies - mobilization of domestic savings for capital formation

Reasons why Kenya imports some goods that she is also producing e.g maize, sugar, wheat

- i. Kenya is not self-sufficient in these commodities because of high population.
- ii. Cane sugar produced in Kenya is sold at higher price than beet sugar hence Kenya makes a profit by importing beet sugar.
- iii. Crop failure (Unreliable rainfall) leads to shortages hence imports supplement the locally produced food crops.
- iv. Pressure on land has led to reduction in production thus necessitating importation.
- v. Increased cost of farm inputs leads to low production, hence need to import the commodities.
- vi. Liberalization of trade encourages trade especially in sugar from COMESA member states.
- vii. Delayed payments and low prices of sugarcane have discouraged small scale farmers thus lowering production hence need to import.

- viii. Mismanagement of the sugar factories leads to their collapse hence need to supplement local supplies.
- ix. Pests and diseases reduce amount of wheat hence need to

Discuss five problems associated with international trade

- i. **Smuggling** - involves importation and exportation of goods through black market, this denies the country the much need foreign tax earnings.
- ii. **Dumping** - this refers to the selling of goods in an external market at a price cheaper than that charged in the exporting country. It may lead to a decline in market for local goods due to the cheap imports.
- iii. **Liberalization** has led to the collapse of many local industries e.g Textile
- iv. Kenya's exports are mainly **agricultural and primary products** which face quota restrictions.
- v. **The semi processed**/raw material exported fetch low prices and are prone to acute price fluctuation as they face inelastic demand.
- vi. **Unfavourable balance of trade** due to high import values against low export values.

Favorable and Unfavorable balance of Trade

- ✓ Balance of trade refers to the difference in the value of a country's visible exports relative to her visible import values.
- ✓ Unfavourable balance to trade occurs when a country earns low export returns relative to high expenditure on expensive imports.

Measures to correct unfavourable balance of trade

- i. Establishment of import substitution industries to reduce importation of commodities.
- ii. Development of alternative sources of energy (H.E.P, solar, biogas) to reduce expenditure on oil importation.
- iii. Encouraging local assembling of machines since importation of parts is cheaper.
- iv. Finding new markets for exports to avoid dependence on a few trading partners.
- v. Diversification of exports.
- vi. Encouraging use of appropriate/local technology that does not require heavy machinery.
- vii. Encouraging exportation of locally manufacturing goods.
- viii. Increasing invisible trade e.g. shipping, tourism, insurance.

- ix. Restricting the importation of luxury items through higher taxation.
- x. Encouraging the production of high quality/manufactured goods for export in order to earn higher income.

Ways in which the Kenya government is promoting export trade

- i. The government encourages the production of high quality export goods and controls the quality of export goods.
- ii. The government offers customs draw-backs.
- iii. The government has established export processing zone.
- iv. The government has reduced import duty/tariffs on raw materials meant for export products.
- v. Improved communication and transport network has enabled accessibility to export markets.
- vi. The government conducts overseas trade fair promotion to create awareness about Kenyan goods.
- vii. Removal of trade barriers and issuing of export license.
- viii. The government has introduced export compensation on export of traditional goods.
- ix. The government is allowing the exporters to retain foreign exchange earned through exportation of goods/export retentions account.
- x. The government is encouraging foreign investors to establish industries in the country for production of export goods.
- xi. Signing of international trade agreements with COMESA, EAC with the aim of boosting export trade.

Ways in which Kenya can control dumping of goods.

- i. Banning importation of substandard goods and counterfeit products.
- ii. Strict supervision on all imported goods.
- iii. Raising the import duties on all second hand or reconditioned goods.
- iv. Heavy penalties for those found floating the importation rules.

State four reasons why Kenya's agricultural export earnings are generally low

- i. Agricultural production depends more on the climatic conditions as well as incidences of pests and diseases. This leads to crop failures hence low export earnings.

- ii. Kenya's agricultural exports face quota restriction as well as strict health standards.
- iii. The exports are mainly in raw or semi processed hence of low value.
- iv. The exports also face stiff competition from those produced in other countries. This may further lower the prices due to overproduction.
- v. Much of our exports face inelastic demand hence less in demand by the high income earners of the developed countries.
- vi. The agricultural exports are also bulky and attract high transport and overhead costs. This further reduced the export earnings.
- vii. The fluctuation in the world commodity prices is further worsened by Kenya's inability to influence the prices in the world market.

Outline three negative effects of liberalization of trade in Kenya

- i. Dumping of cheap, low quality goods in the local market.
- ii. It has limited the market for locally produced goods.
- iii. It has led to unfair competition that has resulted in closure of home industries
- iv. It has encouraged smuggling of goods as well as black market trade in counterfeit goods.

Describe four ways in which Kenya benefits from the African Growth and Opportunity Act (AGOA).

- ✓ This is an initiative by the US government to promote the export business of the developing countries.
- ✓ Offers employment opportunities to Kenyans who are engaged in the production of goods for export under the Act.
- ✓ The increased volume of export trade generated foreign exchange.
- ✓ The increased access to the US market has improved Kenya's Balance of Trade
- ✓ It has stimulated cotton growing in the country.

- ✓ It offers guaranteed markets for Kenya textiles products
- ✓ It has improved the standards of living through the income earnings

End of topic

Did you understand everything?

If not ask a teacher, friends or anybody and make sure you understand before going to sleep!

Past KCSE Questions on the topic

1. (a) State five reasons why the common market for Eastern and Southern Africa was formed. 5mks
2. (a) What is international trade? 5mks
- (b) Name major imports from Europe to Kenya 2 mks
- (c) List factors that influence the import and export of goods in Kenya. 4 mks
- (d) Explain ways through which Kenya will benefit from the renewed East African co-operation. 6 mks
- (e) Explain negative effects of international trade. 6 mks
3. (a) Explain four measures which Kenya may take to reduce the unfavourable Balance of trade. 8 mks
- (b) Explain four benefits that Kenya derives from international trade. 8 mks
4. (a) What is Trade? 2 mks
- (b) Identify the two types of internal trade. 2 mks

5. State the factors influencing trade. 4 mks
6. (a) Differentiate between visible and invisible exports. 4 mks
- (b) Draw a table showing the major visible export and imports of Kenya. 8 mks
7. Explain the significance of trade to Kenya. 5 mks
8. State the future on international trade in Kenya. 3mks
9. (a) What is a regional trading bloc? 2 mks
- (b) Apart from the European Union, name three other regional trading blocs. 3 mks
- (c) Outline the role played by the European Union in the economy of Europe. 4 mks
10. Explain why the Kenya's exports are more to the outside world than her neighbors. 6 mks

CHAPTER THIRTEEN

Specific Objectives

By the end of the topic the learner should be able to:

- (a) Define population;
- (b) Explain the factors influencing the distribution of population in East Africa;
- (c) Explain the factors influencing population growth;
- (d) Describe population structure;
- (e) Analyse the consequences of population growth and structure;
- (f) Compare and contrast population trends between Kenya and Sweden;
- (g) Present population data using relevant statistical graphs.

Content

- a.) Definition of population
- b.) Factors influencing the distribution of population in East Africa.
- c.) Factors influencing population growth with specific reference to the fertility, mortality and migration.
- d.) Population structure.
- e.) Consequences of population growth and structure.
- f.) Comparative studies of the populations of Kenya and Sweden.

Definition:

Human population refers to the total number of people living in a given area e.g. district, province or a country.

- This number is determined by taking population census.
- The study of population is termed **Demography**.

Sources of population data

- Data on population can be obtained both from primary as well as secondary sources.

Primary sources of population data

- ✓ Registration of persons (births, deaths, marriages) helps determine birth and death rates, infant mortality, refugees.
- ✓ Sample surveys - are based on representative samples of the total population to secure desired information such as fertility rates, people attitudes towards family planning, breast feeding etc.
- ✓ Censuses - Refers to the total process of collecting, compiling and publishing demographic data at a particular time. It involves physical enumeration of the entire population in an area. Census gathers wide variety of information relating to the;
 - Physical characteristics in terms of sex, race, birthplace and tribe.

- Social characteristics such as marital status, religion, education, housing, language.
- Economic characteristics- occupation and income.

Secondary sources of population data

- Secondary sources include Statistical abstracts, Published/ unpublished reports and tally tapes.

Factors influencing population distribution in East Africa

i. Climate

- Areas with extremely low and extremely high temperatures discourage settlement and influence population pattern since they cannot support the growth and development of various agricultural activities
- High rainfall areas (of above 1000mm) have high population density/densely populated because the high rainfall favours the growth of a variety of food crops. Plenty of food grown support a large population while cash crops attract a large labour force

ii. Relief

- High altitude areas of above 2500m above the sea level have low population due to the extremely low temperatures that do not favour settlement and growth of crops
- Very steep areas e.g. around escarpments have low population density due to the difficulty in putting up buildings. Farming is also difficult due to impacts of soil erosion and landslides
- Flat areas and depressions are less attractive for settlement because they exhibit poor drainage leading to swampy conditions and flooding - prone to water borne diseases that attack human beings

iii. Soils

- Areas with fertile, well drained volcanic soils that allow arable farming e.g. the Kenya highlands are densely populated because the soils encourage the growing of a variety of crops that attract large populations
- Areas with fertile alluvial soils have attracted dense settlement e.g. around Lake Victoria

iv. Drainage

- Well drained areas attract settlements hence have high population density because they are free from water borne diseases
- Swampy and waterlogged areas are uninhabited since they cannot support farming and settlement
- Areas prone to flooding are less settled/have low population densities since floods displace people and destroy property and life

v. Incidences of pests and diseases

- Areas prone to pests such as mosquitoes and tse tse flies that cause diseases e.g. malaria and sleeping sickness respectively have few people settled there because such diseases may weaken and kill human beings and livestock.

vi. Government policy

- A government can influence the distribution of its population by creating settlement schemes to settle the landless or resettling people from areas of dense population concentration.

Vii. Land ownership

- Places where people own large tracts/parcels of land area sparsely populated compared to places where land is owned communally that has dense population

viii. Urbanization

- Urban areas are densely populated due to presence of employment opportunities and improved social amenities compared to the rural areas.

Population growth

- This refers to the change that occurs in the number of people in a population over a given period of time.
- It can be negative by having a decrease in the population or positive by having an increase
- It is detected after comparing successive census reports

- Census refers to the enumeration or physical counting of the whole population of an area taking care of demographic, social and economic factors at a given time and place.
- Census may be conducted after 5 to 10 years; in Kenya it is conducted after 10 years

Importance of conducting a population census

- It gives the characteristic features of a population in terms of age, sex, ethnicity, education and occupation
- Provides information on trends and levels of fertility and mortality thus helping the government in the provision of basic amenities
- Helps the government in division of administrative units

Problems of population census

- Expensive to conduct
- May be inaccurate/unreliable especially when informants give false information to the enumerators
- Some people may be counted more than once or omitted during the exercise
- Population growth can be calculated in two ways namely

(a) Natural population growth

(b) Numerical population growth

(a) Natural population growth

i. CBR

- This refers to the number of births per 1000 persons in a population

$$CBR = \frac{\text{Total Number of Births in a year}}{\text{Total Population recorded in the year}} \times 100$$

ii. CDR

- This refers to the number of deaths in an year against 1000 by the total population

$$CDR = \frac{\text{Total Number of Deaths in a year}}{\text{Total Population recorded in the year}} \times 100$$

- CBR and CDR are referred to as crude because all other characteristics of the population e.g. age and sex are not considered

- Natural population growth is given by

$$\text{Natural Population Growth} = \frac{CBR - CDR}{1000} \times 100$$

(b) Numerical Population Growth

- This is the absolute or actual increase in the number

- This is the absolute or actual increase in the number of people in an area within a given period of time

- It is calculated every 10 years by getting the difference between two census/can also be expressed as a percentage

Factors influencing population growth

i. Fertility

- Refers to the number of live births a woman has during her reproductive period

- The ability to conceive and give birth to a child whether or not live birth or still born is called fecundity. Inability of the same is infecundity/sterility

- Infertility is the inability of a woman to bear a child. (can be primary or secondary)

- Fertility is influenced by factors such as

- ✓ Level of education of women.
- ✓ Urbanization
- ✓ Career prospects.
- ✓ Birth control/family planning measures

- Fertility rate is the ratio of live births in an area to the population of that area expressed per 1000 population in a given year/total number of births/children a woman would have during her reproductive period (15 - 49years)

- Kenya experiences a high fertility rate because of

- ✓ Improved health and nutrition services.
- ✓ Weakening of some traditional values.

- ✓ Cultural factors e.g. sex preference, polygamy, early marriages, naming of relatives, need for more children for prestige, leads to high child bearing period.
- ✓ Economic factors e.g. need for a large pool of family labour and security in old age.
- ✓ Lack of effective family planning practices due to ignorance/inaccessibility/use of traditional ineffective birth control methods.
- ✓ High mortality rates therefore need to reproduce for replacement

Causes of decline in Kenya's fertility rate due to

- ✓ More girls are attending school leading to reduced early marriages.
- ✓ Urbanization has led to high cost of living; people thus prefer smaller families.
- ✓ Modern career opportunities.
- ✓ Increased use of birth control measures.
- ✓ Increase in the number of women opting to remain single

ii. Mortality

- Refers to the death among members of a population
- It reduces the population and affects its structure and composition in terms of age and sex
- May be caused by
 - ✓ Outbreak of war/warfare.
 - ✓ Famine.
 - ✓ Floods.
 - ✓ Diseases/epidemics
- Death rate is the average number of deaths per 1000 persons in a population
- Death rate in many countries, Kenya's inclusive is declining because
 - ✓ Improved health care provision.

- ✓ Improved diet

iii. Migration

- Definition: - this is the movement of people from one place/region to another resulting in a change of residence temporarily or permanently
- Can be voluntary or forced
- Can be within a country - internal migration or across countries - external/international
- International migration may involve emigration (from your country to another) or immigration (from other countries into a country).

General reasons/causes of migration

- i. Pressure on land - has pushed people to other areas in search of land.
- ii. Availability of employment opportunities has led to rural - urban influx.
- iii. Religious conflicts/ persecution of specific religions / sect groups force the members to migrate to safe place where they can practice their religion without interference.
- iv. Political unrest, persecution, wars etc. This accounts for influx of refugees and increasing numbers of internally displaced people.
- v. Natural calamities - floods, disease, earthquakes, famine, drought, lightning etc.
- vi. Government Policy - relocation of people to create room for projects such as schools, irrigation schemes, forest/ games reserves.

Types of migration

(a) Internal migration

- Refers to the movement of people within a country
- Include

i. Rural to urban

- Involves the movement of people from rural areas to urban areas/centres
- Mainly involves the youth
- Reasons for rural to urban Can be push or pull factors.

Pull factors Push factors

- ✓ Transfers Insecurity
- ✓ Better living standards High incidences of disease.
- ✓ Opportunities for better education and health.
- ✓ Lack of adequate land.
- ✓ Recreation Unemployment.
- ✓ Attractions of Urban life Diminishing returns on land.
- ✓ Better paying white collar jobs Rural hard living conditions.
- ✓ Industrial centralization in towns Low wages/ low prices of farm produce force some people to abandon farm work and seek alternative sources of income in the towns

Push factors

- ✓ Insecurity.
- ✓ High incidences of diseases.
- ✓ Lack of adequate land.
- ✓ Unemployment.
- ✓ Diminishing returns on land.
- ✓ Rural hard living conditions.
- ✓ Low wages/ low prices of farm produce force some people to abandon farm work and seek alternative sources of income in the towns.
- ✓ Inadequate social services - hospitals, schools, sporting facilities

ii. Urban to rural

- Involves movement of people from urban areas to settle in rural areas due to
- Involves movement of people from urban areas to settle in rural areas due to
 - ✓ Transfer from urban places of work to rural areas.
 - ✓ Search of employment if industries are established in rural areas.
 - ✓ After retiring/retrenchment from service.
 - ✓ To avoid unbearable life in the urban areas/unemployment.

iii. Urban to urban

- Involves movement of people between towns/urban centres - from one town to another due to the following

- ✓ Change of profession
- ✓ Job transfers.
- ✓ Leisure.
- ✓ Investment in a new town.
- ✓ Search of higher education and better healthcare.

iv. Rural to rural

- Involves movements within people from one part of a country to another within the rural - side.

Reasons: -

- i. Population pressure which leads to land fragmentation has led to migration of people to settlement schemes and less populated rural areas in search of land.
- ii. Insecurity in areas such as North Eastern, Mt. Elgon has forced people to move to safer areas.
- iii. Establishment of large plantations (Mwea, Ahero) attracts people from the neighborhood as they search for employment.
- iv. Pastoral communities (Maasai, Borana, Samburu) migrate from one rural area to another in search of pasture and water for their livestock.
- v. Inheritance of land /land disputes cause people to move and settle elsewhere..
- vi. Natural catastrophes - floods, disease, famine in Kano and lower Tana cause people to move to more secure higher grounds.
- vii. Government policy of moving people from one rural area to another to create room for government projects

(b) External migration

- Also known international migration involves the movement of people across international borders so as:

- ✓ Pursuit of higher education.
- ✓ International job offers.
- ✓ Warfare/Refugees/political unrest.
- ✓ Tourism.
- ✓ Visiting relatives overseas/attending international conferences.
- ✓ Political persecution/political asylum

Effects of migration

(a) On the origin

- ✓ Shortage of labour on the farms leading to reduced food production hence food shortage.
- ✓ Imbalance in the male to female ratio as most migrants are males. This may result to family break ups.
- ✓ Under development in the rural areas.
- ✓ Depopulation especially if the migration is forced

(b) On the destination

- ✓ Increase in population.
- ✓ Economic development in an area especially if the migrants are engaged in meaningful income generating activities.
- ✓ Increased cases of crime from migrants who fail to secure employment.
- ✓ Pressure on existing social amenities.
- ✓ Presence of refugees would drain the resources of a country/insecurity as some refugees may engage in unlawful practices

Problems which result from the high population growth rates in East Africa

- i. High dependency ratios as the youth outnumber the working population. This slow down economic growth due to greater consumption expenditure.
- ii. Unemployment since population growth surpasses the rate of employment creation.
- iii. High population exerts pressure on land this leads to environmental degradation such as soil erosion, cultivating wetlands/ water catchments, land fragmentation and landlessness.
- iv. High population growth leads to pressure on basic facilities/social amenities e.g. schools, health facilities, recreational facilities, power rationing and perennial water shortages.
- v. High population growth creates market for goods and services.
- vi. Leads to importation of food stuffs due to food shortage thus draining foreign exchange earnings.
- vii. High population growth may lead to unemployment forcing many people to turn to crime and other social delinquent behaviors (immoral practices).

- viii. High rates of migration.
- ix. Congestion in towns and cities leading to traffic congestion and mushrooming of slums.

Discuss six measures that the government may use to control high rate of population increase.

- i. The family planning association of Kenya (FPAK) had been established to coordinate family planning programmes.
- ii. Effective family planning campaign. To this end family planning programmes and clinics have been set up to provide information to families.
- iii. Use of mass media to create public awareness about the demerits of a large family.
- iv. Advocating for late marriage particularly in some communities which practice early marriages.
- v. Effective birth control measures and facilities have been introduced e.g. provision of free contraceptives.
- vi. Incorporation of family life education in the formal school curriculum to sensitize youth on dangers of premarital sex.
- vii. Seminars Barazas are held to disseminate information on the need to plan families.
- viii. Establishment of National Council for population Development to co-ordinate population studies activities..

Causes of high death rates in Kenya.

- i. Poor diets mean there is less immunity to disease.
- ii. Inadequate medical facilities reduce the ability to treat sick patients.
- iii. Congestion and poor living conditions cause the spread of disease.
- iv. High prevalence of malaria and HIV and Aids.
- v. Tribal clashes, road carnage etc

Describe the measures that have been taken in Kenya to reduce infant mortality rate

- ✓ Infant mortality refers to the number of deaths of children below age one year per 1000 of the population.

Measures

- i. Improving medical facilities and immunization of children to control diseases. This has enhanced child survival rates.
- ii. Providing free malaria control drugs and distribution of free treated mosquito nets to expectant mothers and children below 5 years of age.
- iii. Intensified research on infant related diseases to come up with ways of controlling them ensures higher chances of survival.
- iv. Providing education for parents on better child care practices.
- v. Introduction of family planning programmes has led to emergence of manageable sizes of families which promote higher chances of children survival.
- vi. Improved diet to children through the Malezi Bora campaigns.
- vii. Effective control of mother to child transmission of HIV /Aids virus has enhanced child survival.
- viii. Free pre-natal clinic has led to more births attended to by trained health care providers.

Population trend

- Refers to the various changes that take place in a population of a given country and their impact on socio - economic environment
- These changes go through demographic transition i.e. historical changes in birth rate and death rate from high to low

- There are four phases of demographic transition face i.e.

a.) Stage 1 - involves little or no increase in population

b.) Stage 2 - characterized by high birth rate, decline in death rate and high population growth rate - Kenya is at this stage

c.) Stage 3 - decline in birth rate, low death rate and moderate population growth

d.) Stage 4 - low birth rate and low death rate, population growth rate is low leading to population replacement. The population becomes static and can only produce to replace dying one.

Factors leading to slow population growth

- Warfare that leads to death among members of a population/migration

- Epidemics/outbreak of diseases

- Famine as a result of prolonged drought

- Family planning practices/late marriages

- Emigration

- Natural calamities

- Socio - cultural factors.

Under population is a situation where the population is too small for the full utilization of the available resources. In this circumstance, a higher population could be supported without a fall in living standards.

Causes of under populations

- Strict birth control measures.

- legalized abortion

- Late marriages

- High cost of living

- Preference for a smaller family size
- Government policy
- Proper family planning programmed/ fully embraced
- High levels of female literacy
- People are busy pursuing education and careers
- There is a high rate of emancipated women
- There is low rate death and infant mortality.

Problems resulting from under population

- Small labour force may lead to importation of foreign expatriates.
- Underutilization of existing resources such as schools, hospitals
- Slow growth of industries due to the small market and shortage of labour force.
- Un-even distribution of population causes regional imbalance in a country.
- Rural depopulation caused by high influx to urban areas lead to abandonment of same areas of farms. This creates remoteness as it becomes uneconomical to lay infrastructure in such sparsely populated areas.
- Urbanization - Urban sprawl has engulfed land which would otherwise be suitable for agriculture.

Optimum population

- ✓ Refers to the size of population which is considered to be the most desirable for the full utilization of its natural resources and which yields the highest standard of living.

Over population - refers to a situation where an area has a higher population than its available resources can support.

Problems of over - population in developing countries

- Mass unemployment

- Poor housing hence emergence of slum and gather settlements
- Poor health care, malnutrition spread of diseases
- Slow growth of industries consequent upon prevalence of unskilled labor, poverty.
- High dependency ratio
- Erosion of social/moral fabric and values.
- Strain on infrastructural facilities/existing social amenities (perennial water and power rationing).

Population Density

Refers to the ratio between the size of an area of land and the number of people living there usually expressed as the average number of people per square kilometer.

$$\text{Average population density} = \frac{\text{Total population}}{\text{Total area}}$$

Factors influencing population distribution

These factors can be grouped as climatic, soil, historical, economic and strategy/ government policy.

- i. High rainfall areas have high population density while areas of extreme temperatures area are avoided.
- ii. Vegetation.
- iii. Topography and relief. Gentle slopes are preferred for ease of movement.
- iv. Drainage- availability of surface water..
- v. Areas prone to diseases are avoided.
- vi. Development of industries attracts more people due to the employment opportunities.
- vii. Area prone to insecurity are largely avoided.
- viii. Transport and communication.
- ix. Mining areas and towns attract more settlements.
- x. Historical factors e.g. early settlements encouraged growth of towns which became focus for migration.

Factors influencing population growth

- ✓ Population growth is largely a factor of Fertility, Mortality and Migration.
- ✓ **Fertility** refers to the ability a woman to give birth to a live child.
- ✓ **Fecundity** - is the physiological capacity of a woman to conceive and give birth to a child regardless of whether it's a live or still birth.
- ✓ **Fertility rate** - is the total number of births that a woman would have during her productive age (15- 49 years)

Causes of high fertility rates and birthrates

a.) Cultural factors.

- Sex preference
- Polygamy
- Early marriages give longer child bearing span of life
- Need for more children for prestige
- Naming of relatives.
- Religions encourage natural procreation and oppose family planning.

b.) Economic factors

- need for a large pool of family labour
- Security in old age and defense

c.) Lack of effective family planning practices due to ignorance/inaccessibility/Use of traditional ineffective birth control methods.

d.) High mortality rates therefore need to reproduce for replacement

f.) Increased longevity i.e. the average age to which people of a country expects to live

g.) Improved medical facilities / health care reduce mortality rates.

h.) Improved nutrition/ diet.

Population Structure

- This refers to the characteristics and composition of a given population in terms of age and sex at a given time
- It is graphically represented using an age sex pyramid
- Population pyramids have different shapes depending on the population structure and the demographic stage of the country.

The importance of Age - Sex pyramid

- i. It reveals the composition of the population by age .This information is useful in planning for provision of amenities for different age groups.
- ii. Reveals the dependency ratio .This is vital in determining tax relief.
- iii. May reveal population growth rate which could help determine future population trends for policy planning.
- iv. Can also be used in the attempt to understand historical events that may have affected the country in the past.
- v. It reveals sex ratio i.e. number of males per 1000 females which could help to understand the social and cultural behavior of people e.g. polygamy.

The following information can be obtained from a population pyramid.

- Different age - group
- Proportion of male to female
- Proportion of depending ratio = Children + old people / working population.
- Size of the population.
- Composition of the sex.
- Proportion of the young
- Ageing population.

Characteristics of the Age-Sex pyramid for a developing country.

- i. The Age -sex pyramid has a broad base which tapers off with increasing age. The broad base implies a large number of young populations. Partly due to the high birth rate.

- ii. The tapering off the population pyramid towards the top shows a relatively high death rate throughout the age groups with a much higher one at the early age of below 15yrs.

Characteristics of population in a developing country

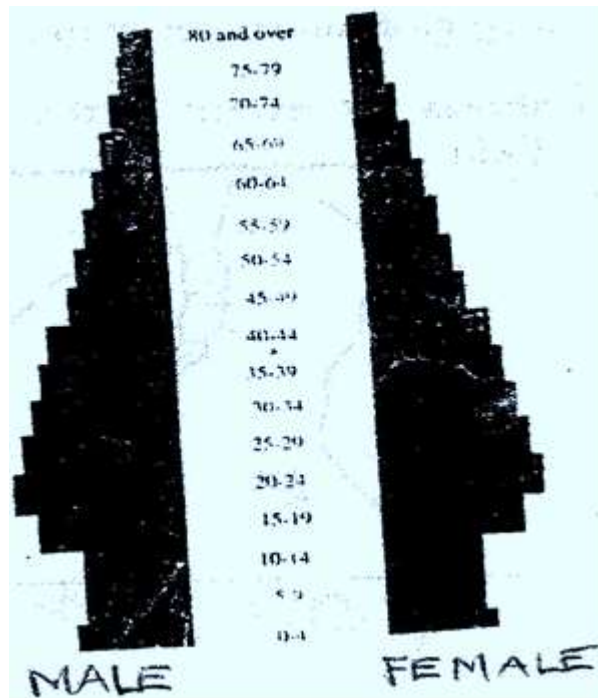
- i. High birth rate and high mortality rate.
- ii. Low life expectancy (51 yrs).
- iii. The population of old people is very low 0.75% - 80 yrs).
- iv. A high percentage of population comprise of young people below 15 yrs.
- v. High dependency ratio 47.3 % depends on 52.7%.
- vi. High infant mortality rate

Characteristics of Age sex pyramid for a developed country.

- i. The pyramid has a narrow bottom bulges out in the middle and a bit wide at the top.
- ii. The narrow base implies low birth rate.
- iii. A broad bulge in the older age group reflects a high life expectancy - over 80 yrs.
- iv. A large percentage comprises older age group over 64 yrs 17%, over 80 yrs 5.3%.
- v. Characterized by a low mortality rate.
- vi. There is a low population growth rate.
- vii. There is low dependency ratio 37% depending on 63% working population

Example

The pyramid below represents the population structure of country X.



Describe the characteristic of the population represented by the pyramid.

- i. The number of male and female population is almost equal at all levels.
- ii. From 0-14 years, the population is low.
- iii. From 15-44 years the population is high.
- iv. The ageing population is low i.e. 60 years and above.
- v. The population has a high longevity above 80 years.
- vi. The dependency ratio is low.
- vii. The population has a low birth and death rates.
- viii. 45-59 middle age is low.

Kenya's population pyramid

- Over 60% of the population comprises of youth below 20 years old - this depicts a high birth rate.

- About 5% comprises of older people over 65 years old this depicts high death rate/low life expectancy/High infant mortality rate.

- The population has high dependency ratio i.e. proportion of unproductive population (below 20 years and above 65 years) in relation to productive age

$$Dr = \frac{C + OP}{WP}$$

Dr = Dependency Ratio

C = Children

Op = Old Population

Wp = Working Population

- Females comprises of 60% while males about 40%

Implications of a young population

1. High demands for unproductive goods e.g. Toys, Sweets.
2. Increases demands for social amenities e.g. maternity facilities.
3. High dependency ratio because of the unproductive group being very high.
4. High causes of juvenile delinquency - street children pick pocketing.
5. Increase in large numbers of unemployed people.

Population of Sweden

- Sweden has a low population density of 20 people per square km.
- Swedish population mainly lives in the urban areas

Factors influencing population distribution in Sweden

- i. **Relief** - a large proportion of the country is mountainous, steep slopes with thin soils, the subsoil is permafrost. Population in the highlands is low and scattered.
- ii. **Climate** - 60% of the population is found in the warmer southern part with fertile soils the north is avoided due to chilly climate cold winters and snow covering most of the areas.
- iii. **Forests** account from 55% of the land especially steep slopes.
- iv. **Drainage**- Sweden has a dense drainage e.g. small numerous lakes/rivers such areas are avoided.
- v. **Mining centre** - have high densities due to immigrants who provide labour.
- vi. **Urbanization** - Urban centers form nucleated settlement e.g. Stockholm, Gutenberg and Norrköping and most of population live in urban areas

Population growth of Sweden

- Sweden is in the final/fourth stage of demographic transition i.e. the birth rates equal the death rates

- It experiences a slow population growth rate because

- ✓ Move towards smaller families due to high costs of living.
- ✓ Introduction of birth control measures.
- ✓ Improved health/medical care facilities.
- ✓ Urbanized population thus the need for fewer children to maintain a high living standard

Population Structure of Sweden

- Draw the age sex pyramid for Sweden on Certificate Geography Bk 4 pp 214

- It is a developing country and its population is characteristic of the following

- i. The pyramid has a narrow bottom bulges out in the middle and a bit wide at the top.
- ii. The narrow base implies low birth rate.
- iii. A broad bulge in the older age group reflects a high life expectancy - over 80 yrs.
- iv. Characterized by a low mortality rate.
- v. There is a low population growth rate.
- vi. There is low dependency ratio 37% depending on 63% working population

Comparison between population in Kenya and Sweden

Kenya

Consists of young people below 20yrs of age

Has low life expectancy

A high percentage population lives in rural areas

Experiences a high population growth rate

High fertility/birth rate

High dependency ratio

High death/mortality rate

Sweden

has an ageing population.

has high life expectancy

most people live in urban centers

Experiences a slow population growth rate

Low fertility/birth rate

Low dependency ratio

Low death/mortality rate

Effects of ageing population

- ✓ Ageing population has a large number of old people aged 65 years and over which may have the following effects.
 - i. Increased dependency ratio.
 - ii. Increased cost of health care for the aged who are prone to ill health..
 - iii. Shortages of man power/ labour in some professions.
 - iv. Underutilization of already set up social facilities for the young people
 - v. Provision of pension poses financial problems.
 - vi. High degree of occupational and geographical immobility amongst the aged.
 - vii. Older people many resist social - economic and scientific changes.
 - viii. There is a heavy burden on the community i.e. they demand more sick leaves.
 - ix. Production will be turned towards goods used by the old.
 - x. Lack of natural regeneration of population

Problems rendering population census data unreliable

- Shortages of funds make it difficult to employ enough personnel and acquire other necessary equipment.
- Insufficient and inaccurate census area maps and questionnaires.
- Fear/ Suspicion/ Superstition etc all of which may lead to falsification of information regarding the number of children
- Illiteracy may lead to wrong information being given relating to age of children.
- Problem of double counting.
- Lack of documents on vital data like birth and death certificates which could enable enumerators to verify the information given.
- Problems of language barrier / accessibility that may lead to omission.
- Political maneuverings.
- Inadequacies of enumerators - poor training

End of topic

Did you understand everything?

If not ask a teacher, friends or anybody and make sure you understand before going to sleep!

Past KCSE Questions on the topic

1. (a) State four reasons why the northern parts of Kenya are sparsely populated.

4 mks
- (b) Give two primary sources of population data

2 mks
- (c) What information can be derived from a population pyramid? 4 mks

(d) Describe three ways in which the population of Kenya differ from those of Sweden.
6 mks

(e) Explain four causes of rural-urban migration in Kenya. 8 mks

2. Explain three problems which result from the high population growth rate in the East African countries. 6 mks

2005:

3. List three factors that have contributed to a decline in infant mortality in Kenya. 3 mks

4. Explain two reasons why Thika District has a higher population than Murang'a district. 4 mks

5. (a) State the reasons for carrying out population census. 5 mks

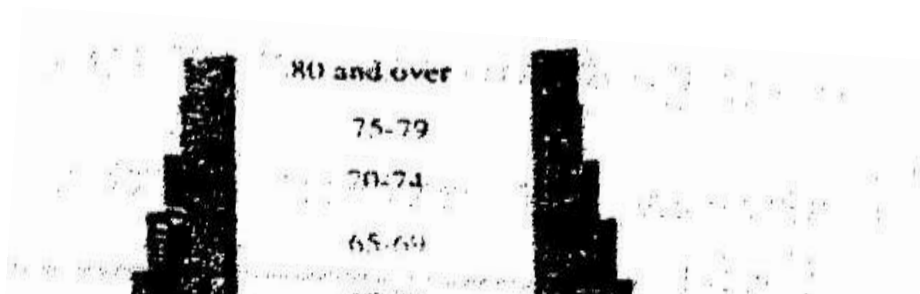
(b) How the following factors lead to population increase in Kenya.

(i) Early marriages

(ii) Improved medical facilities

(iii) Cultural beliefs. 6 mks

6. The pyramid below represents the population of country X. Use it to answer question (a).



(a) Describe the characteristics of the population represented by the pyramid.

4 mks

(b) Explain three problems which may result from a high population growth rate.

6 mks

(c) Describe THREE measures that have been taken in Kenya to reduce infant mortality.

6 mks

(d) Explain four factors that have led to a high population density in Lake Victoria basin.

8 mks

7. a) Define the term population.

2 mks

(b) Explain factors influencing population distribution.

6 mks

8. (a) Explain factors influencing population growth. 8 mks
- (b) Describe the main features of population structure of a developing country. 4 mks
9. Explain the factors leading to high fertility levels in a population. 6 mks
10. Compare and contrast population trends between Kenya and Sweden. 8 mks
11. The table below shows population distribution in Kenya by province in 1999. Use it to answer the questions below.

Province	Population	Area in Sq Kms
Nairobi	2,143,254	696
Central	3,724,159	13,220
Rift Valley	6,987,036	182,539
Western	3,358,776	8,264
Nyanza	4,392,264	12,547
Coast	2,487,264	82,816
Eastern	4,634,779	153,473
N. Eastern	962,143	128,124

Table 9.3 *Population of Kenya by Provinces*

- (a) Calculate the population density of each province. 2 mks
- (b) Give reasons why there is a high population density in Central Province of Kenya. 3 mks

CHAPTER FOURTEEN

SETTLEMENT

Specific Objectives

By the end of the topic the learner should be able to:

- (a) Define settlement and urbanization;
- (b) Explain the factors that influence settlements and settlement patterns;
- (c) Account for the distribution of major urban centers in East Africa;
- (d) Explain the growth and functions of selected towns in Kenya;
- (e) compare and contrast selected urban centres in Kenya with those of other parts of the world;
- (f) Discuss the effects of urbanization.

Content

- a.) Definition settlement and urbanization.
- b.) Factors that influence settlement and settlement patterns.
- c.) Distribution of major urban centres in East Africa.
- d.) Factors influencing the growth of major urban centres in East Africa.
- e.) A study of an industrial town in Kenya (Thika), a lake port (Kisumu) and an agricultural collection centre (Eldoret).
- f.) Comparative studies of (a) Nairobi and New York and (b) Mombasa and Rotterdam ports.
- g.) Effects of urbanization.

Definition;

Settlement refers to a place housing units where a group of people live.

- Involves villages and towns/urban centres and the infrastructure and the human activities that take place in them
- Can be rural or urban

(a) Rural Settlements

- Are built in the countryside.
- Include farmsteads, villages and all the activities in them
- Are occupied with primary production activities e.g. mining, lumbering, fishing, livestock keeping, crop production, etc
- Their main function is to house agricultural & fishing population (in case sited along fishing grounds e.g. rivers, lakes, oceans)

(b) Urban Settlements

- Urbanization is the growth and spread of towns and town life
- Are occupied with industrial and commercial activities
- Have dense population
- Trading is the main activity

Factors influencing location and pattern of settlements

- Are physical and human

(a) Physical Factors

i. Climate

- Rainfall and temperature are the major climatic elements that influence the distribution and patterns of settlement because they determine people's economic activities
- Areas with high, reliable and well distributed rainfall e.g. the Kenya Highlands/Central province have high concentrations of settlements because they support the production of a variety of food and cash crops
- Hot and dry areas e.g. northern/north eastern Kenya have low densities of settlement as they receive low and unreliable rainfall and high average temperatures that cannot support production of cash/food crops

ii. Relief/topography

- Areas with rugged terrain i.e. steep slopes/mountain tops have low densities of settlement because they have thin soils to support growth of crops. It is also difficult and expensive to put up housing units. They are also cold/experience low temperature
- Gentle slopes e.g. plateaus and lowlands are heavily settled because they are suitable for farming and construction of housing/infrastructure
- Landforms such as mountains create a rain shadow effect. Windward sides receive high rainfall thus have more settlement compared to the leeward sides

iii. Soil fertility

- Areas with fertile, well drained alluvial/volcanic soils attract high densities of settlement because they allow production of a variety of food and cash crops

iv. Environmental diseases

- Regions infested with environmental diseases e.g. sleeping sickness have low concentration of settlements as they are avoided by people due to fear of contracting diseases

v. Vegetation

- Thick vegetation e.g. forest may discourage establishment of settlements as they may not be easily accessible and can be habitats to disease causing organisms and dangerous animals

vi. Drainage/presence of water bodies

- Rivers and springs with clean water may attract settlement as they provide water for domestic uses
- Swampy and marshy areas discourage settlement as they are hosts to disease causing organism and it's also difficult/expensive to put up housing units

(b) Human Factors

i. Political factors

- Tribal wars/civil strife may displace people from their original homes/places of residence and be settled in other areas e.g. refugee/IDP camps

ii. Historical factors

- In the historical times, many communities settled in areas that were safe/secure from hostile communities.

- They also lived in groups

iii. Economic factors

- Settlement of nomadic pastoralists are temporary, scattered and at times moveable
- Permanent settlements are found in areas where people are engaged in arable farming and formspecific pattern
- Concentrated settlements are found in mining and fishing areas as people settle around to provide labour
- Establishment of manufacturing/processing industries lead to growth of settlement to provide labour to the industries

iv. Government policy

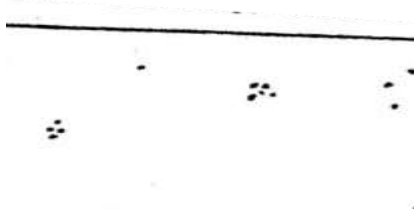
- A government of a country may create new schemes of settlements to its population for reasons such as giving land to establish a plant/scheme, ease pressure on existing social amenities, etc

Settlement Patterns

- These are layout/arrangement of dwellings/housing units in a particular place.
- Major settlement patterns include; nucleated, dispersed and linear

(a) Nucleated settlement pattern

- This consists of a cluster of dwellings, shops and other buildings in one place
- The buildings are close to one another forming a cluster/nucleus that can either be a mining centre, oasis, water pan or a water reservoir
- The buildings may be permanent or semi permanent.

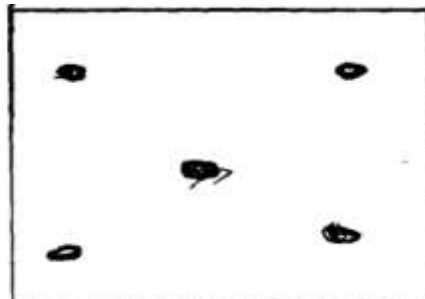


Reasons for development of a nucleated settlement pattern

- i. Security especially in banditry/cattle rustling prone areas.
- ii. Presence of social amenities e.g. schools, health care facilities, etc.
- iii. Inadequate/insufficient land for expansion leading to clustering.
- iv. Existence of an industrial plant and/or natural resources e.g. mineral works, rich agricultural soils, etc

(b) Dispersed settlement pattern

- Consists of scattered, widely set and randomly distributed housing units especially in the countryside/rural areas
- The housing units are separated by physical features e.g. rivers, valleys and ridges
- They occur in areas with large land parcels and even or rolling landscape
- They can also be permanent or semi permanent

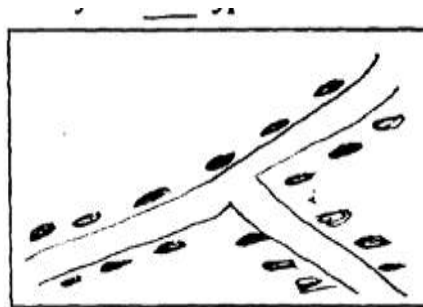


Reasons for the development of a dispersed settlement pattern

- i. Presence of adequate land for expansion and settlement.
- ii. Good/improved security over a wide area.
- iii. Presence of evenly distributed water points/resources.
- iv. Areas with even/rolling landscape e.g. plains/plateaus experience a uniform soil fertility across the region, people will settle anywhere without being limited to relief features

(c) Linear Settlement Pattern

- Formed when people build housing units along communication lines such as roads, railway lines, water pipeline or along specific physical features e.g. a river, a canal or along a coastline
- The housing units appear to be arranged in a line along the communication infrastructure



Reasons for the development of a linear settlement pattern

- i. Ease of means of transport.
- ii. Coastline/lake shore provide favourable fishing ground.
- iii. Water body provides water for domestic uses

Urbanization.

- ✓ The process by which a population is transformed from rural based agricultural lifestyle to urban based non-agricultural lifestyle.
- ✓ Process whereby an increasing population of the total population in a country settles in towns.
- ✓ Process through which towns and cities grow in number and size.

Distribution of major urban centers in East Africa

Nature/Functions of Urban centres	Description	Examples
Capital Towns/Cities	- Main seat of the governments - Houses the national assemblies - Administrative headquarters	- Nairobi - Kenya - Kampala - Uganda - Dodoma - Tanzania
Administrative Towns	- Headquarters of government ministries, organizations and agencies	- All provincial and district headquarters in Kenya - Dodoma, Morogoro - Tanzania - Fort Portal - Uganda
Cities	Have city council status - Houses diplomatic missions and international organizations, referral hospitals - Offer specific services	- Nairobi - Dar es Salaam - Kampala

Nature or function of urban centres.	Description	Examples
Sea ports	- Located along the Indian Ocean shores of East Africa - Assists in sea/water transport	- Mombasa and Malindi - Kenya - Dar es Salaam, Tanga, Lindi, -Tanzania - Non in Uganda - landlocked
Lake Ports	Located along the shores of Lake Victoria - Assist in water transport	- Kisumu - Kenya - Mwanza, Kigoma, Musoma - Tanzania - Bukoba, Jinja, Masindi -Uganda
Industrial Towns	- Processes raw materials into finished products.	-Thika, Athi River - Kenya - Tororo, Jinja - Uganda - Tanga - Tanzania
Mining Towns	-Involved with mining activities/mineral extraction	- Magadi, Kakamega - Kenya - Shinyanga - Tanzania - Kilembe, Tororo - Uganda

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Factors favouring the growth of major urban centres in East Africa

- i. **Rural - urban migration:** - many youth upon completion of secondary and tertiary education migrate to the major towns of East Africa in search of employment opportunities. This leads to the expansion of the facilities in the urban areas to cater for the increased population
- ii. **Industrialization:** - establishment of industries in the urban centres attract people as they offer employment opportunities. As industries expand, people move closer and settle near them to provide labour.
- iii. **Natural population growth:** - this is due to high birth rates and relatively low death rates in most of the East African countries. This because most of the migrants are in their reproductive age.
- iv. **Infrastructural development:** - most urban centres in East Africa tend to grow due to development and improvement of transport and communication network i.e. most are accessible by good roads, railway lines, airports and waterways. This enables import/export trade, accelerates migration and avail social amenities and recreational facilities.
- v. **Administration:** - regional, district and provincial headquarters lead to the development of urban centres as government employees are posted to provide services. Also administration offices and workers' houses are built leading to expansion of the towns.
- vi. **Agriculture:** - makes a town to grow in the following ways:
 - Provide market for the industrial products from the urban centres.
 - Provide food for the urban residents.
 - Provide the raw materials for the industries established in urban areas
 As such urban centres located in rich agricultural lands grow faster
- vii. **Mining:** - attracts workers who move and settle near the mineral works. The mining company takes up the responsibility of providing the workers with social facilities leading to expansion of towns e.g. Magadi Town (soda ash mining).

- viii. **Tourism:** - the influx of tourists in a town may lead to its growth/expansion because of high demand for hotels, social and recreational facilities

Ways in which a country benefits from urbanization.

- It encourages national unity as people of various nationalities/ethnic backgrounds come together.
- Creates employment opportunities through the establishment of commercial and industrial activities.
- Leads to development of infrastructure both within and the surrounding rural areas.
- Encourages the provision of social amenities (recreational, water, power).
- Provides market for agricultural and industrial goods produced within a country.

Urban Morphology

- It refers to the internal structure and arrangement of towns. It is concerned with the physical shape of towns, their history of development, variations in land uses and functions within towns.

Internal Structure of an ideal urban centre/urban zoning

- This is based on functions of the urban centre, governing urban policies, physical conditions of the site and historical background of the urban centre.
- Involves zoning i.e. classifying urban centres on the basis of land use within them.
- Urban centres are zoned into

(a) Central Business District

- Also known as the town centre/downtown
- It is centrally located in the urban centre
- Has the highest concentrations of the tallest buildings/vertically extended buildings
- Has high rental values

- House are mainly income generating

(b) Transition Zone

- Surround the CBD
- Has older buildings - may be replaced by expansion of the CBD
- Suitable for activities requiring proximity to the CBD
- Land values are slightly low
- Include shopping malls, government offices and wholesale outlets

(c) Industrial Zone

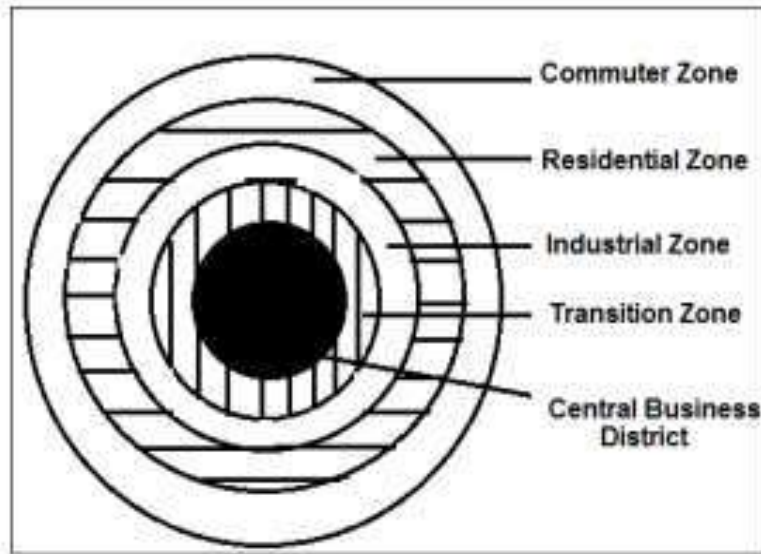
- Border transition zone
- Forms the industrial centre
- Located next to railways/ports to ease transport of raw materials and finished products

(d) Residential Zone

- Houses workers hence located close to industrial zones
- Starts with low class residential estates to middle and high class

(e) Commuter Zone

- Emerges into the surrounding rural areas



Case Studies of Sample Towns in Kenya

A. Thika

- This is an industrial town
- Has many industries e.g. processing & canning of pineapples, Fabrication of metal containers, Motor Vehicle Assembly, cooking fat making and coffee processing amongst others

Factors favouring the growth and development of Thika as an industrial town

- **Excellent road network** that connects Thika to Nairobi, Mombasa, Mwingi, Garissa, Murang'a, Nyeri and Nanyuki enables the movement of raw materials and finished products to and out of the industries. Thika is also linked to Nairobi by railway
- **Strategic location:** - Thika enjoys proximity to the capital city - Nairobi. Many investors from Nairobi find it cheaper and more convenient to invest in Thika because the land rates are low and it is also surrounded by economically rich hinterland of Kiambu, Murang'a and Maragua.
- Thika is surrounded by agriculturally productive districts that supply the residents food and raw materials for some industries
- The town is sited near rivers Chania and Thika that readily supply water for irrigation, industrial and domestic uses

- Existence of expansive land for industrial growth - Thika is located in an open place that is sparsely settled giving room for expansion of industries
- Nairobi's industrial area is already congested and many investors therefore prefer to establish industries in Thika as an alternative to Nairobi
- Existence of cheap local labour as Thika is surrounded by regions of high population densities that provide a large pool of cheap local labour to the industries
- Hydro electric power from the Seven Forks Dam on River Tana provide electricity for industrial and domestic uses
- Adequate social amenities e.g. hospitals, schools, colleges etc attract people to settle there

Other functions of Thika are administrative, educational, tourism, religion, recreational and residential

B. Kisumu

- This is third largest town in Kenya
- The largest lake port in East Africa

Factors favoring the growth and development of Kisumu as a lake port

- Strategic location at the shores of Lake Victoria making it the main commercial and industrial focus of western Kenya and gateway to Uganda
- Location at the shores of Lake Victoria ensures adequate water supply for domestic and industrial uses
- Presence of many industries e.g. fish processing, textiles, breweries, soft drink making, boat making and repair etc have made people to settle around the industries to provide labour
- It is the terminus of the railroad from Indian Ocean to Lake Victoria thus supporting large volumes of trade in western Kenya and the landlocked Uganda etc
- The port is surrounded by densely populated areas providing ready labour for the industries
- It is surrounded by a rich agricultural hinterland that provide raw materials for the development of industries

Other functions of Kisumu include: - education, administration, tourism, recreation, religion, residential, and industrial

C. Eldoret

- This is an agricultural collection centre
- Located in the highlands on the western side of the rift valley
- Originally it was a centre for collecting agricultural produce from the surrounding farms in Trans Nzoia and Uasin Gishu

Factors for the development of Eldoret Town as an agricultural collection centre

- Strategic location along the Nairobi Kampala international trunk road through Malaba border and proximity to Southern Sudan & Uganda has made it a major export town
- It is located in a rich agricultural hinterland that is well served with road, railway and airport making transportation of agricultural produce faster
- Key collection and export facilities e.g. inland container depot has enhanced the capacity of Eldoret as key agricultural collection centre
- Availability of H.E.P encouraged establishment of industries-tanning, textile, milk processing, soft drinks, plywood making.
- The high population in surrounding areas provides a pool of labour and ready market.
- The presence of river Sosiani provides reliable water supply.
- Presence of educational institutions-Moi university, Eldoret polytechnic, Baraton University.
- There was plenty of land for expansion of the town and industries.
- Some industries were established as art of government's decentralization policy.
- The establishment of service industries (banks, insurance)

Other functions of Eldoret include education, recreation, tourism and industrial

Related Studies of Nairobi and New York Cities

Nairobi

- This is the capital city of Kenya and the largest urban centre in East Africa
- It grew from a railway camp established in 1899 during construction of the Mombasa Railway
- It gained city status in 1962 and today it is one of the most metropolitan cities with international reputation
- It is the headquarters of many international organizations e.g. UNEP, ILRI, ICIPE, ICRAF, HABITAT, etc

Factors that influenced the growth of Nairobi City

- Nairobi is the leading industrial city in Eastern Africa. It has many industries that attract many people for employment opportunities
 - Nairobi is linked to East Africa by efficient transport and communication network e.g. JKIA that connects it to the rest of the world; Wilson Airport for domestic and regional flight. Also roads, railway lines, inland container depot and a pipeline terminus
 - Administration centre: - Nairobi is the capital city and the main seat of the government of the Republic of Kenya, houses the parliament and headquarters of Nairobi County (Province)
 - Internationally recognized centre: - has conference centre KICC that hosts international meetings and headquarters of many international organizations e.g. UN, ICRAF, ICIPE
 - Education Centre: - hosts many educational institutions e.g. schools, universities, tertiary educational institutions and draws students from Eastern Africa and beyond
 - Immigration: - Nairobi is a major destination for local and international immigrants who come into Nairobi to seek employment and invest/trade
 - Tourism: - Nairobi is attractive to tourists because of its central position within East African air transport network and also has good tourist facilities e.g. hotels and recreational centres
- Problems facing Nairobi City

- Traffic congestion leading to traffic jam during rush hours leading to loss of time
- Unemployment due to large number of employees against few job opportunities
- Inadequate housing due to rapid population growth results to increased rents/development of slums
- Uncontrolled disposal of liquid/solid wastes lead to water and land pollution
- Lack of/few public utilities/social amenities e.g. acute water shortage; their provision doesn't match population increase
- Criminal activities e.g. mugging, prostitution, drug trafficking, etc due to high rates of unemployment and slow economic growth

New York City

- This is the largest and most cosmopolitan (contains people of different types from different countries, and influenced by their culture) urban centre in North America
- Situated at the estuary of Hudson River on the islands in Atlantic Ocean
- Has a population of over 10million people

Factors favouring the growth of New York City

- *Great Sea Port:* - New York is the world's most known sea port handling about 30% of all trade in North America
- *Transport & Communication:* - New York is connected to all parts of the world by sea routes, canals, international airports and railways. It also handle the greatest import-export trade in North America
- *International Centre:* - New York is the headquarters of several international organizations e.g. UN, IMF and World Bank
- *Well planned internal city structure:* - New York City has a unique street pattern i.e. shorter distances between any two places in a series of right angled segments that enables fast movement of traffic and pedestrian into, out of and within the city. There are also subways and electric trains that are popular and cheapest transport means
- *Industrial centre:* - New York is the leading industrial centre in North America

Functions of New York City

- Finance and Trade - New York Stock Exchange
- Cultural and recreational - clubs, pubs, national park
- Transport and communication
- International centre
- Industrial centre - ship building, oil refinery, publishing, etc

Problems facing New York City

- Inadequate space for expansion because the city is mostly located on islands
- Unemployment and underemployment since most immigrants are unskilled/employment opportunities less than the available labour force
- Pollution due to heavy industrial wastes and exhumers from several motor vehicles
- Development of slums/ghettos due to inadequate housing
- Traffic congestions
- Terrorist attacks
- High crime rates especially drug trafficking/abuse due to higher rates of unemployment

Similarities between Nairobi and New York Cities

- Both are international centres
- Both are industrial centres
- Both are transport and communication centres
- Both are financial/commercial centres
- Both experience similar problems

Differences between Nairobi and New York Cities

Nairobi City	New York
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It is an inland/dry port	It is a seaport
It is a national capital.	It is a state capital.
Leading industrial town in Eastern Africa	Leading industrial centre in North America

Related Studies of the ports of Mombasa and Rotterdam

Mombasa

- This is the largest sea port in the coast of East Africa and the second largest town in Kenya.
- It is partially situated on the mainland and partially on Mombasa Island.
- It started as a small settlement during the slave trade era - as a resting place and a calling port for the long distance traders
- The growth and development of modern Mombasa was influenced by the beginning and eventual construction of the Kenya - Uganda Railway in 1896
- Today, Mombasa is one of the best ports in East Africa with modern port facilities for handling import - export trade

Factors influencing the growth of Mombasa Port

(a) Deep and well sheltered harbour: - The deep water on Mombasa and Kilindini creeks provides a good, well-sheltered natural harbour with large berths for docking and anchoring large vessels. The berth area is also free from coral reefs

(b) Strategic location: - Mombasa is centrally located in the Eastern Africa and connected to the major sea routes of the world. This has made it an important port of call - ships serviced/service crew rest

(c) Large hinterland: - a hinterland is an area served by a port; from which it derives its exports and within which it distributes its imports. Mombasa's hinterland is large and rich covering Kenya, Eastern and Central Africa. The hinterland is rich in agricultural produce and mineral wealth exported through it and crude oil/finished products for imports making it an entreport

(d) Establishment of oil refinery and other industries: - port of Mombasa handles more crude oil from Middle East due to the establishment of oil refineries at Changanwe and Kilindini

(e) Modern Port Handling Equipment: - Kilindini Harbor and the port of Mombasa are well equipped with modern facilities for handling bulk cargo

(f) Tourist and cultural centre: - Mombasa boasts of many features of tourist attraction ranging from historical sites, sunny and sandy beaches, warm weather, scenic beauty and rich cultural and architectural origin

Rotterdam

- Rotterdam, city in the south-west Netherlands, a port on the Maas River near The Hague, 30 km (19 mi) from the North Sea.

- Rotterdam is one of the major seaports of the world. It is directly linked to River Rhine and to the Waal and Meuse rivers, which extend inland into Belgium and Germany.

- Rotterdam is the principal centre of overseas trade for the Netherlands and for the industrial Ruhr district of Germany.

- This is the largest port in the world and the most important entreport in Europe

Factors for the growth and development of Rotterdam as an international entreport

(a) Large and rich hinterland: - the port of Rotterdam covers a large hinterland from Luxembourg, Netherlands, Germany, Belgium, Switzerland, France and Austria. It is also connected to many parts of interior Europe through navigable rivers e.g. Rhine, Rhone. It therefore handles to and from the wide hinterland

(b) Suitable location: - Rotterdam is centrally located at the point of sea routes to and from Europe, Asia and the Americas. This has made it an important port of call

(c) Warm weather: - the coast of Rotterdam is washed by the warm North Atlantic Drift Current making it free from ice TOTY thus allowing port operations even during the winter

(d) Modern port handling facilities: - new and modern port handling facilities have been put at the port of Rotterdam. These include container terminals, loading off equipment. These make it handle large cargo volumes and serve many ships at a time

(e) Deep harbor and canals: - several canals have been constructed as early as 1872 that are deep and free from silt. Over the years, the canals have been dredged and widened to accommodate larger/wider vessels. Also a new out port - Euro port that is deep and large has been established at the Rotterdam. This improved its capacity to handle larger volumes of trade.

Comparison between ports of Mombasa and Rotterdam

Mombasa	Rotterdam
Exists on an island	Exists on mainland
Port operations are less mechanized	Port operations are highly mechanized
Relies on road, railway, air and pipeline transport	Relies on road, railway, air and pipeline transport in addition to canals of Rhine River
Mombasa	Rotterdam

Exports mainly agricultural/unprocessed goods.	Exports mainly manufactured products.
Imports manufactured/finished products	Imports fuels, minerals and agricultural commodities.
Has limited space for expansion	Still expanding - has a Euro port.
Serves a developing agricultural hinterland	Serves a developing and highly industrial hinterland

Effects of Urbanization

i. Environmental degradation

- Urban centres have many industries, motor vehicles and other activities that lead to pollution e.g.

a.) Land pollution: - garbage from institutions, households and open markets deposited on land

b.) Air pollution: - smoke emitted from motor vehicles and industries

c.) Water pollution: - dumping of solid/liquid wastes into water bodies

Solution: Recycle, treat, proper waste disposal, creation of public awareness, develop national environmental standards

ii. Unemployment

- Rural - urban migration leads to the influx of job seeking youths to urban centre against fewer job opportunities leading to unemployment and increase in dependency ratio.

Solution: - decentralization of industries, develop rural areas, encourage self employment, jua kali industries.

iii. Increased crime

- Many of the unemployed youth end up engaging in criminal activities e.g. prostitution, thuggery, drug abuse/trafficking, impersonation to earn a living

Solution: Increased police surveillance, encourage use of security devices e.g. CCTV camera, stiff penalty for the offenders

iv. Traffic congestion

- Most urban centres in developing countries have poorly planned roads and traffic control systems. They also have many motor vehicles that lead to congestion in most of the roads especially during rains and state of emergency

Solution: - encourage use of public transport, installation of traffic lights, control of tunnels, bypasses, flyovers, use of electric trains

v. Breakdown of family units

- Most urban centres have larger concentration of males compared to females as many males migrate to the urban centres in search of job opportunities leading to separation of family units

vi. Strain/pressure on social amenities

- Due to the high population growth rate in many urban centres in developing countries, there has been a strain on the existing social amenities e.g. health care facilities, schools due to overusing.

vii. Inadequate housing facilities

- Rural - urban migration has caused a shortage in housing. This has led to a sharp increase in house rents and the development and establishment of slums and squatter settlements that lack basic facilities, they are congested and prone to diseases

Solution: - funding for high-rise, multi storey flats, building of low cost housing for the urban poor, expansion of urban boundaries into suburbs, establishment of housing finance institutions

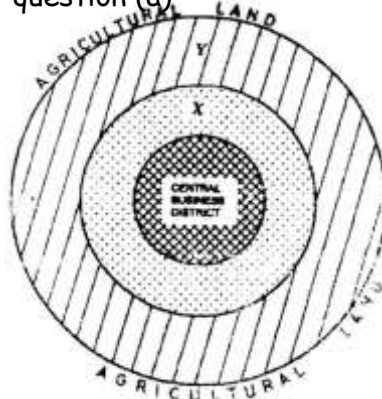
End of topic

Did you understand everything?

If not ask a teacher, friends or anybody and make sure you understand before going to sleep!

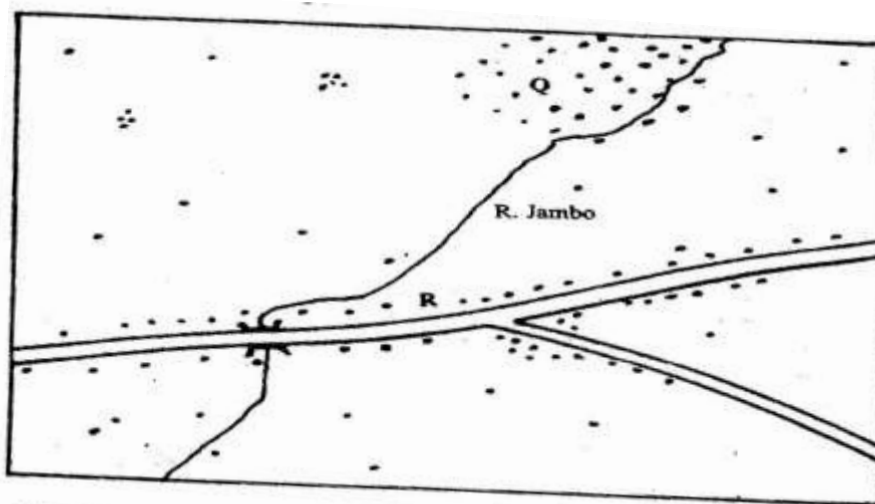
Past KCSE Questions on the topic

1. The diagram below represents the functional zones of urban centre. Use it to answer question (a)



- (a) (i) Name the zones marked X and Y. 2 mks
- (ii) List three functions of the Central Business District. 3 mks
2. (a) Name two types of human settlements. 2 mks

Use the sketch below to answer question (b)



- (b) Settlement patterns marked Q A R. 2 mks
3. (a) Name two types of rural settlement patterns. 2 mks
- (b) Apart from urban-rural migration, name two other types of migration.
2 mks
- (c) State three factors that may lead to urban-rural migration. 3 mks
4. State three factors which led to the development of Mombasa into a major sea port in the region. 3 mks
5. (a) What is urbanization? 2 mks
- (b) Give two differences in the functions of New York and Nairobi cities.
4 mks
6. Apart from pollution, explain four problems experienced in urban centres. 8 mks
7. Explain similarities and differences between Nairobi and New York cities. 8 mks
8. State two main functions of rural settlements. 2 mks
9. Explain four problems that are experienced in Nairobi as one of the major urban centres in Kenya. 4 mks
10. List three factors that have led to rapid growth of Mombasa town. 3 mks
11. State ways through which the Kenyan government is using to solve problems of Nairobi city. 5 mks

12. (a) Differentiate between the terms settlement and urbanization. 4 mks
- (b) Identify factors influencing settlement. 4 mks
- (c) State the factors influencing patterns of settlement. 5 mks
13. (a) By use of relevant examples, explain the distribution of urban centres in East Africa. 5 mks
- (b) Explain 4 human factors which may lead to development of towns.
14. (a) Explain factors leading to the growth of Kisumu as a Lake Port. 8 mks
- (b) What are the functions of Thika town? 5 mks
15. Explain the problems facing New York City. 6 mks
16. (a) Outline the main differences between the cities of New York and Nairobi. 4 mks
- (b) Compare the port of Mombasa to the port of Rotterdam. 8 mks
17. Discuss the effects of urbanization. 4 mks

CHAPTER FIFTEEN

MANAGEMENT AND CONSERVATION OF THE ENVIRONMENT

Specific Objectives

By the end of the topic the learner should be able to:

- (a) Define management and conservation;
- (b) Explain the importance managing and conserving the environment;
- (c) Name environmental hazards;
- (d) Assess the impact of selected environmental hazards and suggest measures of combating them;
- (e) Discuss measures taken in managing and conserving the environment.

Content

- a.) Definition of management and conservation.
- b.) The need for environmental management and conservation.
- c.) Environmental hazards.
- d.) Problems associated with, and measures of combating floods, lightning, windstorms, pests and diseases and environmental pollution.
- e.) Environmental management and conservation measures in Kenya.
- f.) Field work on any aspect of environmental pollution.

Definition of Environment

- Environment means the surrounding conditions that influence the behaviour and survival of living things
- It is divided into physical and human environments. The physical environment which includes the natural physical conditions of weather, climate, vegetation, animals, soil, landforms and drainage
- Human activities if not controlled may destroy the physical environment

Management

- Environmental management refers to the effective planning and control of the activities that could cause deterioration of the environment.
- It involves the wise and skillful utilization, maintenance and improvement of natural resources for the present and future generations

Conservation

- Environmental conservation refers to the protection, preservation and proper utilization of natural resources in the environment, guarding them from destruction, wastage or loss by careful use of the environment

Need for Environmental Management and Conservation

- To sustain human life;** - depend on environment for food, water, shelter, air and clothing.
- To preserve genetic resources**/protection of endangered species to ensure their sustainable utilization.
- For future generation:** - the resources will be able to regenerate and serve future populations.
- For economic value:** - a lot of natural resources in the environment are of economic importance e.g. minerals, soils, forests, etc. They should be exploited carefully so as to be preserved for future use.

- v. **For aesthetic value:** - components of physical environment e.g. rivers, lakes, mountains, valleys, wildlife amongst others are beautiful to see. They should hence be managed and conserved so that they attract tourists hence a source of revenue to the governments

Environmental Hazards

- These are occurrences in the environment that cause disturbance in the equilibrium of the ecosystem
- They can be human induced or naturally occurring
- They may disrupt life in the environment, cause damage/loss to property and life
- They include the following

a.) Floods

- A flood is a covering with or an overflow of large amount of water over dry land.

Causes of floods include: -

- When a river's discharge exceeds the maximum capacity of its channel/when a river contains excess water which it cannot hold within its channel, the excess water and sediments spill over the river bank onto surrounding areas.
 - Rise in sea or lake levels due to increased rainfall, resulting in the water spilling and covering nearby lowlands.
 - Exceptionally heavy rainfall e.g. the El Niño results in excess water on land that collects in shallow basins/flat areas .
 - When a massive earthquake occurs at the sea bed, causing a tsunami that results into the flooding of coastal lands
- During floods people, animals, homes and the general infrastructure are drowned or killed. Many people get displaced in the process, the water resources are polluted through contamination by dirty flood waters. In some cases, floods may lead to landslides burying people and their property
 - In Kenya, the following rivers are characteristic of floods Nyando, Nzoia, Tana, Kuja and Sondu - Miriu, Ewaso Nyiro, etc

Controlling/combating floods

- i. Avoiding flood areas: - people living in flood prone areas are being encouraged to relocate to safer/higher grounds to prevent loss of life and property.
- ii. Diverting river channels: - some river channels have been diverted and meander loops cut off to control the flow of the rivers.
- iii. Land use zoning:- the government may evict people in flood prone areas leaving them for other developments e.g. setting up irrigation schemes, making bird sanctuaries, etc.
- iv. Afforestation: - planting more trees to increase vegetation growth especially in water catchment areas to reduce surface run offs and increase infiltration .
- v. Building of artificial levees: - these consist of soil fill ups along the banks of some rivers to contain flood flow within the river channel.
- vi. Construction of dams: - these are built to create large water reservoirs that hold large amounts of water upstream preventing it from flooding. The dams can be multipurpose e.g. used for HEP generation, irrigation, fish farming, etc.
- vii. Building of dykes: - these are high walls made of concrete and built far from the river channel to protect the low lying areas from flooding by stopping the invasion of river water inland.
- viii. Dredging: - involves the removal of the deposited silt at the river bed and also widening the river channel artificially so as to increase its capacity

b.) Pollution:

- This is a state where foreign harmful substances interfere with the quality and composition of the environment hence endangering the survival and existence of humans, plants and animals

- the added impurities onto the environment are called impurities/pollutants and may be gaseous, liquid and solid

- The main types of pollution are air, water, land and sound

- ✓ **Air Pollution:** - is the pollution of air in the atmosphere. This may involve industrial and natural activities. Examples include emission of toxic gases, dust and ash particles during volcanic eruption. Industrial activities result in emission of harmful gases e.g. sulphur dioxide, carbon monoxide, nitrogen and hydrocarbons into the atmosphere through quarries, cement and paper factories. Motor vehicles also emit poisonous gases into the atmosphere

✓ **Water Pollution:** - water in the rivers, lakes, oceans and seas may be contaminated through the following processes

- Disposal of wastes from homes e.g. sewage/kitchen/solid wastes into the water bodies.
- discharge of industrial effluents into water bodies.
- Emission of hot water from industrial/HEP plants into the waters of a river or lake.
- Oil spillage from motor vehicles/automobiles left to flow over land into water bodies or from water moving vessels e.g. ships

All these interfere with the aquatic life in the water bodies as well as making the water unfit for human consumption

The other sources of water pollution are; bathing/washing in rivers/lakes, agricultural fertilizers and sprays, acid rain, washing vehicles in lakes, abattoirs, etc

✓ **Land Pollution:** - is the deterioration of the state of land by addition of harmful and poisonous wastes. It occurs when solid wastes e.g. polythenes, paper, glass, metal, plastics, vegetation and food remains are disposed carelessly on the ground. It also occurs through derelict land left after mining. These materials make the environment ugly, dirty and stinking

✓ **Sound/Noise Pollution:** - occurs when some human activities results in the production of excessive and unwanted sound of disturbing nature. Sound pollution is caused by the following

- Motor vehicles through hooting and roaring sounds of engines
- Sound from steel rolling mills and metal fabrication e.g. welding.
- High pitched music from discotheques, vehicles, dance halls, etc.
- Blasts from mines and fireworks from celebrations e.g. Diwali Aircrafts landing and taking off in the airports

Measures of combating pollution

- i. Creating public awareness among the people through mass media on the consequences of environmental pollution.
- ii. Encouraging people to use non motorized transport e.g. walking over short distances, use of bicycles, etc.

- iii. Imposing high import charges of high capacity vehicles to discourage the same.
- iv. Campaign on the use of unleaded fuel to promote cleaner environment.
- v. Wearing of protective gears in areas prone to air and sound pollution.
- vi. Industries to conduct environmental impact assessment to establish the effects of their activities on the environment.
- vii. Encouraging recycling of wastes e.g. paper, cans, water and glass.
- viii. Prohibiting public smoking/setting up smoking areas in public places.
- ix. Encouraging use of alternative energy sources e.g. biogas, solar energy, etc that cause less pollution compared to petroleum.
- x. Encouraging safe and hygienic disposal of solid wastes e.g. compost pits, man holes and incinerators.
- xi. Encouraging use of compost and organic manure in farming

c.) **Lightning:** - a flash, or several flashes, of very bright light in the sky caused by electricity. It can lead to loss of life and property and even cause fire if it strikes. It can be controlled by installing lightning arresters in buildings found in lightning prone areas

d.) **Pests & Diseases:** - pests are animals, birds or insects that are harmful to other plants and animals. Diseases affect plants, animals as well as people. Pests and diseases are environmental hazards because they destroy crops resulting to food shortage/famine. Pests include locusts, army worms, rodents, birds, weevils, mites, ticks, tse tse flies, mosquitoes and fleas. The major disease that is an environmental hazard is the HIV/AIDS scourge

e.) **Seismic disturbances/earthquakes:** - include the trembling of the crustal rocks due to seismic waves. When they occur, they interfere with drainage, transport, communication and settlement. They may be associated with landslides that may bury people/property. They are also associated with tsunamis.

f.) **Tropical Cyclones/Windstorms:** - are very strong winds that develop due to great differences in atmospheric pressure on the ground. They travel very fast/at very high speeds hence very dangerous. They include hurricanes (Caribbeans), Typhoons (Far East), Willy Willies (Australia) and Tornadoes (North America). They develop into storms which cause great destruction of property and even life.

g.) **Volcanic Eruptions:** - volcanic activities are usually violent resulting to damage of property and loss of life especially if the volcanoes are active or dormant. The lava

flow usually spread fast to nearby settlements burning and burying people. Some volcanoes emit poisonous gases into the environment that may lead to global warming.

- h.) **Drought and Desertification:** - drought is a situation whereby an area gets a rainfall deficient period followed by prolonged drought. Desertification is slow and steady encroachment of desert conditions on land that was once agriculturally productive. They lead to hunger and famine as a result of food shortage as the national food reserves are depleted.
- i.) **Civil Strife/Ethnic Clashes:** - ethnic conflicts e.g. cattle rustling and ethnic conflicts. These cause great damage to natural resources such as wildlife and biodiversity

Environmental Management and Conservation Measures in Kenya

- i. Public awareness and education on the need for environmental management and conservation through school system and media.
- ii. Setting up laws/legislation against pollution e.g. the water act that ensures certain water catchment areas are protected by declaring them as reserves, factories act that requires factories to ensure wastes from them are free of dust and other emissions, effluents treated before being released into water bodies.
- iii. Setting up bodies e.g. NEMA through the Ministry of Environment to ensure environmental impact assessment is conducted by various factories and to control measure that may lead to pollution.
- iv. Afforestation and re-afforestation programme.
- v. Protection of water catchment areas through gazetted forest reserves.
- vi. Agro- forestry is being encouraged.
- vii. Introducing environmental education component in the school curriculum to educate future generations.
- viii. Use of filters in the chimney to filter carbon soot.

End of topic

Did you understand everything?

If not ask a teacher, friends or anybody and make sure you understand before going to sleep!

Past KCSE Questions on the topic

1. (a) Why is it necessary to conserve water? 3 mks
- (b) How does terracing help in water conservation? 2 mks
2. (a) Apart from desertification, name two other environmental hazards experienced in Kenya. 2 mks
3. (a) Name three physical regions through which river Tana passes. 3 mks
- (b) Name two rivers in Kenya to the West of the Rift Valley which causes large scale flooding. 2 mks
- (c) Explain four problems caused by floods. 8 mks
4. (a) Define the term pollution. 2 mks
- (b) Explain three effects of land pollution on the environment. 6 mks
- (c) State four ways through which Sand pollution can be controlled. 8 mks
5. (a) State ways in which drought affects the agricultural sector in Kenya. 4 mks
- (b) What is soil conservation? 2 mks
- (c) State three farming methods that assist in soil conservation. 3 mks
6. State three factors contributing to occurrence of floods 3 mks
7. State five negative effects of floods. 5 mks
8. State measures currently undertaken by Kenyan government to control natural disasters. 5 mks
9. Explain five economic importance of controlling floods. 10 mks

10. Name five natural hazards. 5 mks
11. Name three human induced hazards. 3 mks
12. Define desertification. 2 mks
13. Name causes of desertification. 4 mks
14. List effects of desertification. 4 mks
15. Explain five types of environment. 10 mks
16. (a) Define:
 - (i) Environment
 - (ii) Management of the environment
 - (iii) Conservation of the environment 6 mks
- (b) Why is it necessary to manage and conserve the environment? 4 mks
17. (a) Mention six environmental hazards. 6 mks
- (b) Explain:
 - (i) The causes of floods.
 - (ii) The effects of floods. 4 mks
18. (a) (i) What is lightning? 2 mks
- (ii) What causes lightning? 2 mks
- (b) (i) What are the effects of lightning? 2 mks
- (ii) How can lightning be controlled? 4 mks
19. (a) (i) Define pollution. 2 mks
- (ii) Name the four types of pollution.
- (b) (i) What is air pollution? 2 mks
- (ii) State five causes of air pollution. 5 mks

(iii) How can pollution be controlled?

5 mks

20. (a) (i) Name four non-governmental organizations involved in the management and conservation of environment in Kenya. 4 mks

(b) Explain how legislation in Kenya is used to manage and conserve the environment.

8 mks