AGRICULTURE IN EAST AFRICA

Agriculture involves growing of crops, (arable farming) and raising of animals (Livestock farming). There are two forms of agriculture in East Africa.

1. Subsistence farming
2. Commercial Farming

Factors/Conditions favouring Agriculture.

Physical conditions (Arable)

1. **Heavy rain fall/wet conditions** (in many areas) evenly distributed throughout the year which favours the growth of crops.
2. **Hot/high temperatures** (in some cases evenly distributed throughout the year) for proper growth and maturity of crops.
3. **High humidity** throughout the year for proper growth and maturity of crops.
4. **Adequate sun shine/sunny period** which helps in ripening and harvesting of crops.
5. **Deep, well drained fertile** soils for proper growth and ensuring high yields of crops.
6. **Gentle/flat/undulating relief** which eases mechanization and or drainage.
7. **Adequate/Extensive/Abundant** land for the growing of crops.
8. Presence of **adequate pastures** foe grazing of livestock.
9. **Ready supply of water** for livestock from rivers, valley dams, boreholes e.t.c.

Human conditions:

1. **Adequate capital** to invest in farming activities like buying farming inputs e.g fertilizers, insecticides and machinery.
2. **Efficient transport systems** to transport farming inputs and products to markets.
3. **Reliable supply of skilled and semi-skilled** labour to be employed eg researchers and farmers.
4. Employment of **advanced technology/High level of technology** in farming activities.

5. Use of **modern scientific research** to produce better high quality varieties and breeds.
6. **Supportive government policy** which encourages the farming activity.
7. **Large/ready Market** for the products, i.e, domestic, foreign or both.

Subsistence Farming:

This is the growing of crops or rearing of animals for home consumption. However with the coming of the cash economy, now subsistence farmers grow some cash crops or grow much food crops to get a surplus for sale.

There are four main forms of subsistence agriculture:

1. **Shifting cultivation.**

Where a farmer clears the land, grows crops but when the soils get exhausted, he abandons that land and shifts to open up a fresh /new piece of land for farming.

2. **Rotational Bush Fallowing:**

In rotational bush fallowing the fields are cleared, cultivated briefly and then abandoned and left to fallow/grow bush again to allow the soils to regain fertility so that it can be used or cultivated again. However the homes of the cultivators are permanent and each village has its own land which is cultivated according to a fixed rotation.

3. **Sedentary Agriculture:**

This is a more advanced form of subsistence agriculture. Here groups of cultivators or individual farm families cultivate the same fields year after year and have permanent settlement on their land.

4. Nomadic Pastoralism:

This is livestock farming. It involves people who move from place to place with their livestock in search of fresh pastures and water for their animals. A practice known as transhumance. They tend to keep many animals for prestige and these animals are of poor quality.

- The nomadic pastoralists include the Masai Turkana, Suk, Samburu. Boran and Somali in Kenya. The Maasai of Tanzania, the Karamojong and Bahima of Uganda.

Shifting cultivation:
Shifting cultivation in East Africa was mostly practiced in the period when the population was still low.

Characteristics:

1. Bush is **properly cleared, burnt, land is tilled and seeds are sawn.**
2. **Simple/rudimentary tools are used** such as matchets/pangas, digging sticks, rough axes and hand hoes.
3. **Subsistence crops are grown** e.g maize, beans, potatoes.
4. **Annual crops are grown** e.g maize, beans, grandnuts.
5. **Often different kinds of crops are grown on the same piece of land**/mixed cropping.
6. **Normally the patches/plots cleared are small** rarely bigger than 0.5 hectares.
7. **Little attention is given to the crops** until they are ready.
8. They **normally use family labour.**
9. It **is normally practiced in areas with low population**.
10. Normally after 2-3 years yields decline due to soil exhaustion. The **cultivator then abandons the site and a fresh area is opened.** The cultivator may or may not return to the original site.

Problems faced by subsistence Agriculture:

1. **Natural hazards** like excessive drought and flash floods which destroy the crops leading to poor/low yields or no yields at all.
2. **Frequent Pests and diseases** which attack and destroy the crops like locusts and diseases for man which weakens the man's ability to work. E.g malaria.
3. **Shortage of/limited relevant food** leading to frequent famine and hunger.
4. **Increased population pressure on land** subsistence agriculture cannot be practiced in areas with high population and so likewise cannot support high population.
5. **Wide spread ignorance** about modern methods of farming.
6. **Low productivity** i.e the yields continually decline.

7. **Resultant destruction** of the soil structure due to burning.
8. **Serious soil erosion** due to burning and the poor attention given to the soils.
9. **Continuous decline in soil fertility** or resultant soil exhaustion, due to over cropping.

Arable Farming

- The main subsistence crops include: millet, maize, bananas, sweet potatoes, groundnuts, beans, sim sim etc.

The main commercial crops include: cotton, coffee, tea, sugar cane, tobacco, pyrethrum, wattle, cloves, sisal etc,

In East Africa cash crops are grown in three different categories:

(i) By peasant farmers on small holdings, like coffee in Buganda.

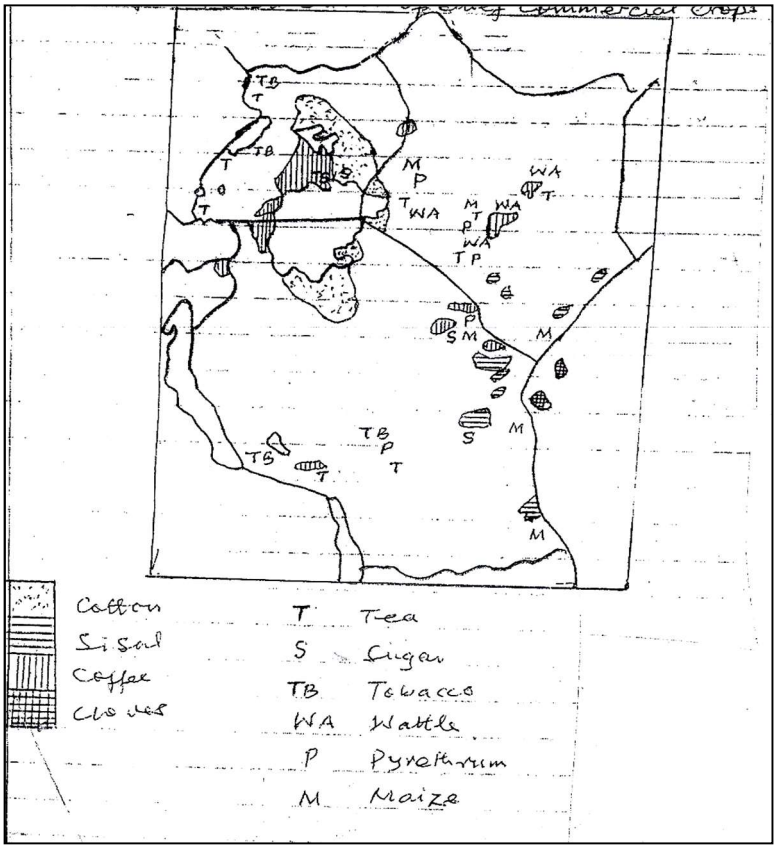
(ii) By the government parastatal bodies, like, sugar cane growing in the Kilombero valley in Tanzania.

(iii) By private companies or progressive farmers like, Kakira Sugar Estate in Uganda.

Livestock Farming:

It ranges from nomadic pastoralism to commercial ranches and dairy farms. In between are people who practice livestock farming and cultivation, i.e, the cultivator pastoralists. Such as, the Wasukuma and Gogo of Tanzania, the Iteso Banyakole and Langi of Uganda

DISTRIBUTION OF CHIEF COMMERIAL CROPS IN EAST AFRICA



Important crops in East Africa:

Coffee:

Coffee is an indigenous crop in Africa. It is said to have originated from Ethiopia.

Commercial production started in the early 20th Century. In East Africa coffee is one of the principal commercial crops. Uganda is one of the Worlds' largest producers.

Conditions Necessary for coffee Production:

1. **Heavy rainfall/wet conditions** 1000 – 1500 mm per annum, evenly distributed throughout the year for the proper growth of the crop.
2. **A dry season** of not more than 2 months during which th crop flowers for it is a long – day crop.
3. **High/hot temperatures** 15^{o}c-30^{o}c throughout the year for growth and maturity of the crop.
4. **High humidity** throughout the year particularly for robusta coffee for proper growth.
5. High altitude for Arabica coffee 1500-2300 m above sea level (for it is a low temperature crop) for growth of the crop.
6. **Deep well-drained fertile soils** for the growth and ensuring high yields of the crops.
7. **Shade trees** to protect the crop against strong winds and sunshine.
8. **Adequate capital** to invest in the farming activities e.g to purchase the farming inputs like pesticides.
9. **Reliable supply of skilled and semi-skilled labour** to be employed in farming activities, like researchers and picking during harvest period.
10. **Efficient transport systems** for transportation of farming inputs and products to markets.
11. **Ready market** for the crop for it is basically a commercial crop.
12. **Supportive Government Policy** to encourage the farming activities.

There are **two** varieties of coffee grown in East Africa

1. Robusta Coffee
2. Arabica Coffee

Robusta coffee

Robusta coffee is a plateau crop.

The main producing areas include; the north and north western shores of L. Victoria particularly in Buganda and Bukoba. It is mostly grown on small holdings.

Arabica coffee is a high altitude crop 1500m – 2300M above sea level. It yields fine quality.
brings better prices and is less reliable to diseases. However, the yields of Arabica coffee are lower per bush/tree.

- Arabica coffee thrives best on volcanic soils which are less acidic. Hence, the main producing areas include:

(a) The lower slopes of Mt. Kilimanjaro, Mt. Maru and Usambara mountains e.g around Moshi and Arusha in Tanzania, mainly grown by the Chagga.
(b) Kenya Highlands especially between Nairobi and Mt. Kenya.
(c) The slopes of Mt Elgon both in Uganda and Kenya.

After pi king Arabica coffee is fermented, the pulp is removed, the beans dried graded and marketed.
Robusta coffee is dried before the pulp is removed at a processing factory/hullery then graded and marketed.

Cotton:
Cotton **is** an annual crop. It has been one of the chief exports of East African Countries. At one time it was the chief export for Uganda until it was over taken by coffee.
Conditions necessary for cotton production.

1. **Moderate annual rainfall 500-1250 mm** for proper growth and maturity.
2. **A hot dry season** in which the crop ripens and is harvested.
3. **High/hot temperatures** throughout the growing period of about 200 days for proper growth.
4. **Well-drained fertile soils** for growth and ensuring high **yields.**
5. **Abundant skilled laboour** like researchers **and semi-skilled** labour especially during the harvesting period.
6. **Reliable supply of adequate capital** to invest in the farming activities, like, buying farming inputs e.g pesticides.
7. **Efficient transport systems** to transport farming inputs and products to markets.
8. **Ready market** for the product for it is basically a commercial crop.

9. **Supportive government** policy of encouraging its production e.g through giving credit facilities to the farmers to improve production.

The main producing areas include;

(a) South East of Mwanza and along the coast especially in the Rufiji delta in Tanzania.
(b) Kisumu and along the lower Tana river where it is grown under irrigation in Kenya.
(c) Mukono/Kayunga, Busoga, Lango, Acholi and West Nile in Uganda.

Note: Cotton growing in East Africa spread gradually with the development of the railway and feeder roads particulary after 1901.

Tea

Tea is a shrub which for convenience of picking is kept to about 1 m high.

Conditions Necessary for Tea Production.

1. **Heavy rainfall evenly distributed throughout the year** for proper growth.
2. **Hot/high temperatures throughout the year** for growth and maturity of the crop.
3. **High humidity** throughout the year for the growth of the crop.
4. **Deep well-drained fertile soils** for proper growth and high yields.
5. **Constant supply of skilled and semi-skilled labour** to be employed the researchers and for harvesting.
6. **Reliable supply of adequate capital** to be invested in the production activities like, to set up engineering workshops, water supply facilities and machinery.
7. **Efficient transport systems** to transport the farming inputs, the leaf to the factories and products to markets.
8. **A ready market** for the products.
9. **High/advanced technology** to be employed like machinery for drying and processing the leaf.

10. **Positive government policy** of encouraging and supporting the production activities.

Tea producing areas include:

a) Kericho and Limuru in Kenya
b) Southern highlands of Tanznaia in Iringa and Mbeya, In Tanga and on the slopes of mountains: Kilimanjaro and Usam bara in Tanzania.
c) Western highlands of Uganda e.g in Toro and Bunyoro and on the shores of L. Victoria e.g in Mukono.

In the past, tea was grown by wealthy private companies on large plantations. However, today government controlled tea production schemes have been established e.g the Kericho Tea Estates and Outgrowers are now producing tea near the big plantations.

Tea Processing Involves:

- Withering (drying out moisture), crushing(the leaf) fermentation/souring, drying, grading, packing.

Note:

- When tea has reached a mature stage/plucking/picking/harvesting is carried out at intervals, varying between 1-2 weeks throughout the year.
- When plucking two leaves and a bud are picked.
- After every 4 years in production the bush is pruned down to a new level for fresh shoots to come up.
- Small holders/outgrowers have boosted tea production in East Africa greatly.
- The Kericho Tea Estate has a unique problem of seasonal Hailstorms which are very destructive.

Sugar Cane

Conditions Necessary for sugar cane growing;

1. **Heavy rainfall/wet conditions** above 1500mm per annum **evenly distributed throughout the year** for the growth of the crop.
2. **Hot/High temperature** of over 20^{o}C throughout the year for the growth and maturity of the crop.

3. **High humidity throughout the year** for the growth and maturity of the crop.
4. **Fertile soils** for proper growth and ensuring high yields of the crop.
5. **Reliable supply of skilled and semi-skilled labour** to be employed, like researchers and during harvesting,
6. **Adequate capital** to invest in the farming activities, like, buying machinery and establishing transport systems.
7. **A large market** for the products, like sugar.
8. **High level of /advanced** technology to be employed like machinery to work the fields and process the crop.
9. **Positive government policy** of supporting the farming activities.

Sugar cane producing areas include:

1. The central coast plains.
2. The marshy Kilombero valley of Southern Tanzania, Arusha, Bukoba and Mwanza in Tanzania.
3. Kisumu and Mumias in Kenya
4. Jinja-Kakira, Lugazi and Kinyala in Uganda.

Most sugar cane in East Africa is grown on large-scale plantations. However outgrowers have been encouraged alongside the plantations.

Sugar cane processing involves

Chopping, crushing/squeezing, boiling, crystallization,refining, drying, grading, and packing.

Mollases a by-product of sugar is used in the manufacture of rum and industrial alcohol and in the preparation of tobacco .

It is also mixed with crushed cane and processed into cattle cakes.

Tobacco

.Tobacco is an annual crop which is normally grown in rotation with other crops Tobacco exhausts soil fertility very fast.

That is why it is grown in rotation with other crops.

Tobacco producing areas include:

1. North west Uganda, ie, Arua in Uganda.
2. Iringa and Songea in Tanzania
3. Kisii and Kitui in Kenya.

Wattle

The Wattle tree is grown on commercial forests in Kenya.
The Wattle is grown on commercial forests in Kenya
The tree produces a bark from which a juice
-tannin is extracted and used in leather tanning. The tree itself is important as a building material and for making fences Wattle forests are found in the Uasin Gishu plateau near Eldoret and in Kitale. In East Africa, Kenya is the main producer of Wattle and most of it is exported to India.

Pyrethrum:

This is a white flowering plant whose flowers contain a chemical substance pyrethrum used in the manufacture of insecticides harmless to humans and animals. In East Africa it grows best at an altitude of 1800-2300 M above sea level.

Pyrethrum Main producing areas include;

1. Kenya Highlands, Both on large plantations and by small holders e.g; on the Lari settlement scheme Kenya produces $\frac{1}{2}$ of the world's supply.
2. Southern highlands of Tanzania around Mbeya and on the slopes of Mt. Meru at Arusha.

Much of the crop is exported to USA and Britain. But suffers serious competition from synthetic chemical insecticides especially from petroleum.

Sisal:

- It is grown for its leaves which when crushed produce a coarse fibre for making rope, string and sack cloth.
- Sisal has been a very important crop in Tanzania. Before 1903 it was the most valuable export and of recent has been the third most important export after coffee and cotton.

Producing areas include:

(a) On the coastal belt around Tanga and Kilosa, Morogoro and Usambara Mountains in Tanzania.
(b) In Muranga, Kitale, Lindi and north of Mombasa in Kenya

Sisal Processing include:
Stripping, washing, drying, crushing , grading and packing.

Sisal production is facing stiff completion from synthetic fibres, like, Nylon. However other uses of sisal are being sought e.g

(a) Production of paper and pulp,.
(b) Production of a pain killing drug-Cortisone from sisal juice. Meanwhile some sisal estates have been turned into livestock and arable farms.

Cloves:

Cloves are the immature buds which grow in clusters on the end of the branches of an evergreen tree.

Cloves growth is favoured by a hot and wet climate.

Cloves producing areas are Zanzibar and Pemba Islands

Cloves are used in the manufacture of oil of cloves. The oil of cloves is used in the preparation of vanilla flavourings, cakes, chocolates etc.

Different forms of oil of cloves is used in soap, medicines, tooth paste and perfumes.

Other important crops:

-Wheat:

-Produced in the Kenya Highlands and Arusha.

-Maize

-Millet

Grown all over East Africa for subsistence and for sale.

Rice-Grown on the shore lands of L. Victoria, on Mwea-Tebere scheme, Tana and Rufiji rivers, Kilosa in Tanzania Kibimba, Doho and Olweny schemes in Uganda.

Coconut-Grown on the equatorial coasts particularly in Zanzibar and Pemba.

The nuts are used to produce a valuable oil and their husk fibre is made into mats and ropes.

Bananas:- Grown in areas with rainfall over 1000 mm per annum evenly distributed throughout the year all over East Africa, e.g on the shores of L. Victoria, Slopes of Mt. Elgon e.t.c.

Oil Seeds: Like groundnuts, sun flower, sim sim, cashew nuts, Grown for subsistence and for sale in many parts of East Africa, like, Southern and Western Tanzania and Northern Uganda.

Pineapples:_ Grown for export and local consumption mainly in Uganda.

Potatoes
Cassava } Grown mainly for subsistence in many part of E. Africa

Importance of farming (especially Arable farming):

1. **An assured source of employmen**t to the population like farmers and researchers.
2. **A sure source of foreign exchange** when the products are for a foreign market (exported).
3. **A ready sour of revenue** through taxation of farming activities like processing and transportation of the products.
4. **An assured source of income** to people involved like the famers, transporters and processers which improves their standards of living.
5. **A great source of raw materials** to industries such as hulleries, ginneries etc.
6. **The main source of food** to the population where the products are for consumption.
7. Leads to **increased development of infrastructure** like, roads and railways used to transport farming inputs and products to markets .
8. Leads to **increased development of industries** where the products work as raw materials e.g cotton, coffee, sugar cane.
9. Leads to **increased development of urban centres** /urbanization especially where agricultural products processing industries are established.
10. Leads to development of **improved cordial international relationships** between the producing countries and importing countries.
11. Provides **ready market for industrial products** such as tractors, ploughs, fertilizers, insecticides.
12. Leads to **judicious diversification of the economy** as an alternative economic activity.
13. **Effectively saves the foreign exchange** that would have been used to import the product in question.

Problems faced by the Agricultural Sector:

1. **Frequent pests and d diseases** which attack and destroy the crops leading to Low, poor or no products.
   Solution: Regular spraying with pesticides to control the diseases.
2. **Serious soil erosion** leading to declined yields.
   Solution: Constant mulching, **Judicious contour ploughing, Terracing, strip propping** e.t.c to control soil erosion.
3. **Excessive/ continuous soil exhaustion leading** to declined production.
   Solution: Judicious application of fertilizers to improve soil fertility.
4. **Limited/inadequate market** for the products.
   Solution: Improve the quality of the products or **judicious diversification of the economy**.
5. **Inefficient/inadequate transport systems** to transport farming inputs and products to markets.
   Solution: Regular effective improvement of the transport systems.
6. **High competition for market** especially external world market which discourages the farmers.
   Solution: Judicious diversification of crops/the economy to avoid the completion.
7. **Stiff competition** with substitutes i.e other crops or synthetic products e.g coffee, cocoa and the artificial fibres like nylon with sisal.
   Solution: Judicious diversification of crops/the economy to avoid the competition.
8. **Shortage of/Inadequate capital** to invest in farming activities like to buy inputs.
   Solution: **Constant acquisition of credit facilities** from financial institutions.
9. **Inadequate/limited/Shortage of skilled and or semi skilled labour** to be employed in the farming activities.
   Solution: Effective employment of machinery/mechanization.

10, **Occasional natural hazards** like, seasonal drought, flash floods, violent wind storms which destroy the crops.
Solution: Effective irrigation farming.

The Mwea-Tebere Irrigation Settlement Scheme (Rice)

The Mwea Irrigation Scheme covers an area of 800 hectares and is located about 96 Km north East of Nairobi near the South East foothills of Mt Kenya about 1150 M above sea level.

The irrigated areas are in two parts, i.e Mwea and Tebere, hence, Mwea-Tebere Irrigation Scheme. However a **third** part, i.e, Thiba has been established.

The irrigation water is drawn from rivers Thiba and Nyamindi which rise from the slopes of Mt. Kenya.

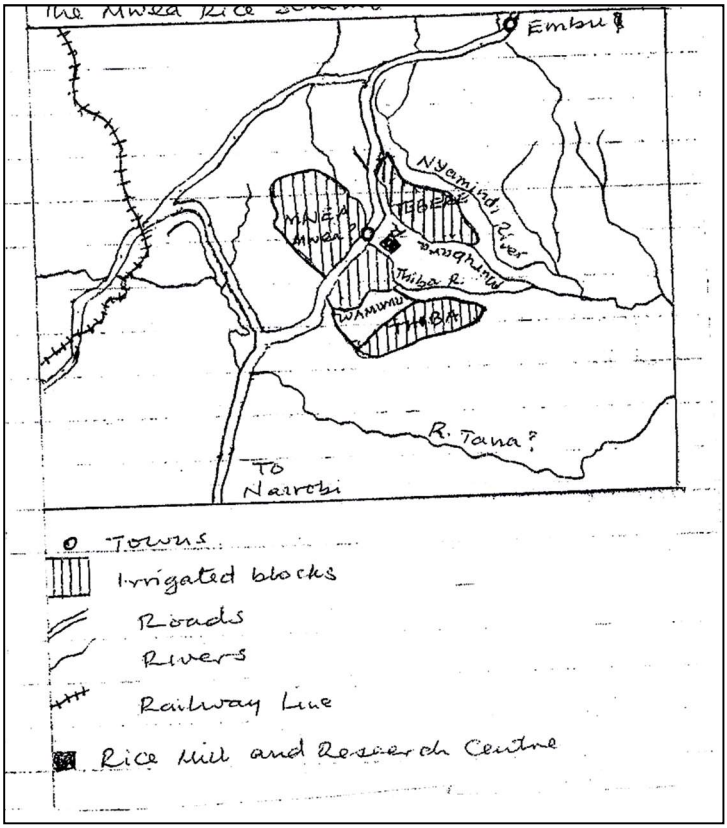
On the slopes above the rice fields other cash and food crops are grown.

The area was unsuitable for traditional African farming and was sparsely settled partly because the rainfall is unreliable less than 1000mm and at times below 750 mm per annum.

Aims of Establishing the Mwea IrrigationSscheme:

1. To **effectively settle** the landless people in the region.
2. To **effectively increase food production**, i.e,, rice production.
3. To **effectively improve on the methods of farming** for the people.
4. To **effectively bring to production formerly unproductive land.**

THE MWEA RICE SCHEME



The main part of the scheme started in 1954. By 1975 about 3000 tenant farmers and their families were settled.

Operation:

1. They grow paddy rice
2. Tractors do the ploughing.
3. Each tenants is allocated four 0.4 hectare fields with complete water distribution systems with a permanent nursery cultivated by hand.
4. The tenants do the production and the settlement handles the drying, processing and marketing of the rice.
5. In 1969 a rice mill was established at Mwea to process the rice.

Factors/conditions that have led to the Success of the Mwea Scheme;

1. The **gentle relief** of the Mwea plains which has enabled over 4000 hectares to be irrigated from the waters of the Thiba river.
2. The **fertile soils** which ensure proper growth and high yields of the crop/rice.
3. The **impervious** (Black Cotton) **clay soils** which ensures continuous water retention in the soils suitable for paddy rice growing.
4. **Constant supply of abundant water** for irrigation by the Thiba and Nymindi rivers.
5. **The Low population** which left **plenty of land** to establish the scheme.
6. **Reliable provision of adequate capital** to invest in the project provided by overseas agencies.
7. Presence of both **skilled and semi-skilled labour employed**, like, researchers from abroad and farmers from the area.
8. **Advanced tech**nology employed such as modern machinery when speed is essential e.g in ploughing.
9. **The readiness of the farmers to learn and apply entirely new and unfarmiliar methods** of farming.
10. The **efficient management** offered by the skilled man power.
11. The **positive government policy** of encouraging and supporting the project.

Benefits of the Mwea scheme:

1. It has **effectively put to production land that was agriculturally unproductive.**
2. A **large number of people** about 8000, i.e, 3000 tenants and their families have been **comfortably settled.**
3. The scheme provides **full time services to the tenants** like mechanical cultivation, fertilizers, seeds, drying of the crop and bags.
4. **It is an assured source of food** to the population. Kenya now supplies most of the domestic market with rice.

5. It is a **sure source of income** to the tenants which has improved their standards of living.
6. It has **improved on the production of other food and cash crops e.g**
7. It is a **ready source of employment opportunities** to the population especially the tenants and their families particularly during harvesting.
8. It has led to **increased development** of industries in the area e.g the rice mill on the scheme
9. It is **a major source of revenue** to the government through taxation of the schemes activities like; processing and transportation..
10. It has led to **improved/increased development of infrastructure** in the area, like, roads used to transport inputs and products to markets.
11. It provides **a variety of social services** to the people like schools and health facilities.

Problems faced by the Mwea Scheme:

1. **Frequent pests and diseases** which attack the crop leading to poor or low yields.
   Solution: Regular spraying with pesticides to kill the pests and control the disease.
2. **Excessive soil exhaustion** due to monoculture leading to declined productivity:
   Solution: Constant application of fertilizers to restore soil fertility.
3. **Limited and unreliable rainfall** which leads to a decline the water volume in the rivers hence limited irrigation water.
   Solution: Improve the water control facilities i.e the dams being used.
4. **Shortage of labour/inadequate labor s**upply to work in the fields.
   Solution: Increased mechanization to solve the problem of labour supply
5. **Constant price fluctuations** which discourage farmers/tenants.
   Solution: **Rational diversification of crops to crops** with

stable prices.

6. **Shortage of/inadequate capita**l to run the scheme.
   Solution: Increased procurement of credit from financial institutions.

Sugar cane Growing in the Kilombero Valley-Tanzania.

The area of the Kilombero Valley was very remote and had a recurrent problem of seasonal floods (Dec – Mar). The people there had little hope of improving their living, standards, Traditionally they subsisted on rice, maize, beans and some fishing.

However the Kilomb valley has a potential for irrigation agriculture. So the first main commercial scheme developed in the area is production of sugar by the Kilombero Sugar company, a parastatal body.

The sugar Estate was established in the valley of Musolwa a tributary of Kilombero.

The water is pumped from the Great Ruaha river in the neighbourhood.

Operation:

The estate is an irrigation scheme covering an area of about 2800 hectares.

Overhead sprinklers are used for irrigation.

There is a research centre which helps in finding the best cane for the area.

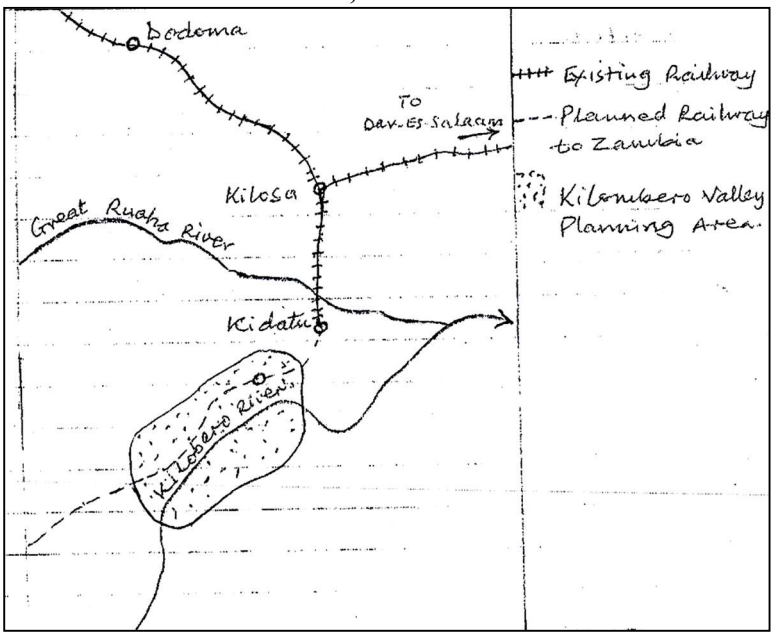
Their workers are trained in sugar production skills at the scheme.

They have established efficient communication links by road, railway and air.

Outgrowers have been encouraged around the scheme who produce about 25% of the factory's cane.

A sugar processing factory labour camp and workshops have been **established to ease the projects activities.**

KIROMBERO VALLEY, TANZANIA



Factors/conditions that Favoured the Development of the Kilombero irrigation Scheme:

1. Presence of **abundant water** used for irrigation provided by rivers Ruaha and Kilombero.
2. Presence of **Vast relatively empty land** to establish the Estate.
3. The **fertile alluvial soils** brought by rivers suitable for sugar cane growing and ensures high yields.
4. The **gentle sloping land** which favours irrigation and mechanization.
5. The **positive government policy** of encouraging and supporting reclamation activities and the need to stop the river floods.
6. Presence of **adequate capital** to invest in the project e.g to buy the necessary machinery and establish the required infrastructure, like, roads.
7. Presence of both **skilled labour**, i.e, expatriates **and semi-skilled labour**/unskilled labour from the local population employed in the project.

8. **Modern and effective scientific research** which helps finding the best cane for the area.
9. Availability of **efficient transport systems** for the transportation of farming inputs and products to markets.
10. Use of **advanced technology** in the project activities, like, tractors and processing machinery.
11. Presence of **ready market for the products**.

Benefits of the Kilombero Sugar Estate:

1. It is a **sure source of refined sugar**. Supplying over ½ of Tanzania's sugar requirements.
2. It has **tremendously saved the foreign exchange** which would have been used to import sugar.
3. It has created **a variety of employment opportunities** (over 3500 people)like, farmers, engineers, researchers, transporters e.t.c.
4. It has **effectively promoted out-grower schemes** which are benefiting from the project as a source of income after selling their cane to the project.
5. It is **ready source of revenue** to the government through taxation of the projects activities, like processing and transportation.
6. It has led to **increased urbanization**, i.e, development of towns like Kidatu.
7. It provides a **variety of social services** e.g schools, a hospital, a community hall, a Church, a Mosque e.t.c.
8. It has led to **improvement of the peoples standard** of living through the establishment of settlement schemes and farmers associations.
9. It has led to **improved infrastructures** like roads and railways used to transport farming inputs and products to markets.
10. It has led to **increased development of industries** like the sugar processing industry.
11. It has led to **increased local food supply** especially through the provision of extension services to the farmers.
12. It has **effectively enabled the opening up of land that was originally flooded most of the time..**

13. It led to **improved drainage of the area** through flood control steps taken.
14. It has led to **effective diversification** of the economic activities in the area as an alternative lucrative economic activity.
15. It has **effectively demonstrated and encouraged the utilisation of marginal areas with seasonal rainfall.**

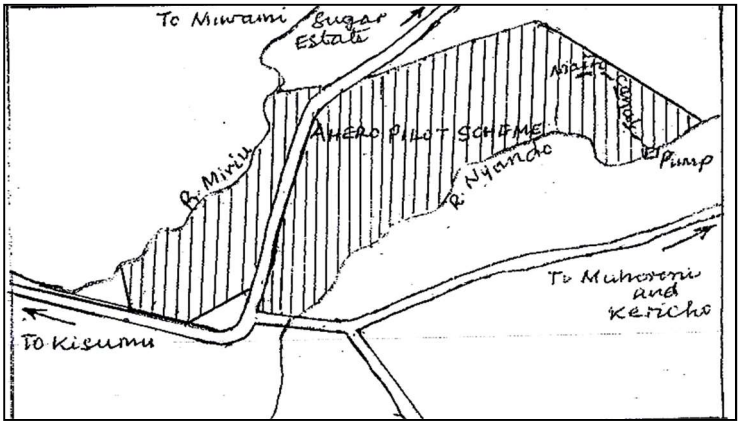
Problems faced by the Kilombero Scheme:

1. **Frequent pests and diseases** which attack the crop leading to declined productivity, like yellow wilt.
   Solution: Regular spraying with pesticides to kill the pests and control diseases.
2. **Constant soil exhaustion** due to monoculture leading to declined productivity.
   Solution: Constant application of fertilizers to restore soil fertility.
3. **Shortage of labour/inadequate labour** to be employed especially during harvesting period.
   Solution: Increased mechanization wherever possible to solve labour shortage..
4. **Occasional fire outbreaks** leading to massive damage of the crop.
   Solution: Constantly engaging fire guards to look for and alert any fire outbreak.
5. **Constant price fluctuations** which discourage the producers.
   Solution: Improving quality of the products or rational **diversification of crops**
6. **High competition for market** with other producers which discourages the producers.
   Solution: improve on quality of products to get a reliable market.

THE AHERO PILOT SCHEME – KENYA (RICE)

The Ahero Pilot scheme is an experimental irrigation scheme established on the low areas of the Kano plains near Kisumu. It uses water from the higher areas of the Nyanza.
The scheme is an attempt to see how successful large-scale irrigation might be.
It consist of 842 hectares of irrigated land with about 520 tenants. They grow rice. The scheme is likely to become a future demonstration project.

THE AHERO PILOT SCHEME – KENYA.



Factors/Conditions which Favoured the Ahero Irrigation Scheme:

1. Presence of **abundant water** used for irrigation provided by rivers Nyando and Miriu:
2. Presence of **vast empty land** used due to the sparse population in the region.
3. The **fertile alluvial soils** which ensure proper growth and high yield of crops.
4. The **gentle sloping land** which favours irrigation and mechanization.
5. The **positive government policy** of encouraging and supporting the project.

6. Presence of **adequate capital** to invest in the project e.g to buy the necessary farming inputs.
7. Presence of both **skilled and semi-skilled labour** employed, like researchers.
8. The **modern and efficient scientific** research employed which helps in getting good varieties that have enabled the growing of two crops in a year.
9. Presence of **efficient transport systems** used to transport farming inputs and products to markets.
10. Use of **advanced technology** in the project activities which has eased work
11. Presence of **ready market** for the products.

Benefits of the A hero irrigation scheme:

1. The scheme has provided **reasonably large land** for the growing of food crops like, rice, maize and beans to the tenants which was impossible before.
2. It provides **an assured source of employment opportunities** to the population, i.e, the tenants and their families.
3. It has led to **increased food production** to the population, i.e, rice, maize, e.t.c.
4. It has **effectively controlled the seasonal flooding** of the rivers in the area.
5. It has **effectively controlled the serious soil erosion** that used to affect the area.
6. It provides a high potential of earning foreign exchange when it produces surplus rice for export.

Problems faced by the A hero Irrigation Scheme:

1. **Frequent Pests and diseases.**
2. **Continuous soil exhaustion.**
3. **Constant price fluctuations..**
4. **Shortage of capital/inadequate capital.**
5. **Shortage of/inadequate labour**.

Students attach the relevant explanations

The Galole Irrigation Scheme – Kenya (cotton):

1. It is one of the irrigation schemes established in the very dry plateaus. Areas very thinly populated mainly by pastoralists.

2. It is located at Galole on river Tana 130 Km South of Garissa due east of Nairobi. It was started as a Pilot cotton Irrigation Scheme intended to help to determine the agricultural future of very large areas of Kenya's arid lands.

Factors that favoured the establishment of the Galole:

1. **Ready supply of irrigation water** from R. Tana though it was far.
2. Presence of **extensive areas of unoccupied land** were the project was initiated.
3. The **gentle gradient** which eased irrigation and mechanization.
4. The **positive government policy** of supporting the project so as to serve as a demonstration unit to similar areas of Kenya.
5. Presence of **adequate capital** to invest in the project provided by the government and the World Food and Agricultural organisation (FAO).
6. Presence of **skilled and semi-skilled labour employed**, like, researchers and farmers.
7. Presence of **efficient transport systems** to transport farming inputs and products to marketing centres.
8. The **modern scientific research** employed that produced very good crop varieties.
9. The **advanced technology employed** like tractors.
10. Presence of **a ready market** for the crop.

Benefits of the Galole Irrigation Scheme:

1. It has led **to increased production** of cotton hence, increased income and improved standards of living for the people involved.
2. It promoted **increased growth** of other crops like groundnuts, sugar cane and kenaf (a fibre crop).
3. It promoted **meaningful settlement** of people. Now about 3000 people have been settled on the scheme.
4. It is now a **high quality pilot demonstration** scheme for people with identical environments in the R. Tana basin.
5. It now serves as an **effective training ground** for the various staff that are required in the project.

6. It is **a sure source of revenue to government** through taxation of the project activities like processing and transportation.

Problems faced by the Galole Irrigation scheme.

1. **Distant source of irrigation water** i.e, the Tana river which increases costs of production.
2. **Remarkable remoteness** of the area making accessibility difficult.
3. **A relatively small area being employed**, hence limiting output.
4. **Frequent pests and diseases** which attack and destroy crops leading to declined productivity.
5. **Excessive weed growth** which increases the cost of production by buying herbicides or increasing the labour force.
6. **Constant price fluctuations** which discourage the producers.
7. **Continuous soil exhaustion** due to monoculture leading to declined productivity.

Mobuku Irrigation Schemes:

The scheme is situated on the foothills of Mt. Rwenzori on Kasese-Fortportal road.

The scheme was founded by the Uganda Development Corporation (UDC) in conjunction with the Food and Agricultural Organisation (FAO) and the Ministry of Agriculture (Uganda Government)

Aims of Establishing the Mobuku Irrigation Scheme:

1. To **effectively settle the Bamba** and Bakonjo farmers from the previously crowded parts of Bwamba.
2. To **effectively bring to production formerly unproductive land** in the region.
3. To ensure **increased food supply** through crop diversification.
4. To **effectively assist the farmers in the region with provision of various farm inputs**, like seeds and Machines.
5. To **effectively teach farmers modern methods of farming**.

Factors/Conditions that Favoured the Mobuku Irrigation Scheme:

1. Presence of **abundant land** to be used due to the sparse population in the area.
2. The **inadequate and unreliable rainfall** in the area due to the area lying in the rain shadow of Mt. Rwenzori, hence, the need for constant irrigation farming.
3. The **gentle/flat relief** which facilitated easy irrigation and mechanization.
4. Presence of abundant water for irrigation provided by rivers Mobuku, Sewe and Nkohko??
5. The **efficient transport systems** of roads and railways used to transport farming inputs and products to markets.
6. The **reliable supply of adequate** capital to invest in the scheme, like to buy farming inputs e.g machines.
7. Presence of **reliable supply of skilled and semi-skilled labour** employed like, researchers and farmers.
8. **Positive government policy** of supporting the project.

The major crop grown on the scheme is cotton Other crops include, groundnuts, maize, onions, bananas, vegetables, tomatoes, fodder and Lucern.
The scheme also owns a herd of cattle mainly for dairy products.

Benefits of the Mobuku Irrigation Scheme:

1. It has led to **increased incomes** for the farmers, hence, improving their standards of living.
2. **It has effectively encouraged resettlement of a variety of people,** like, Bamba, Bakonjo, Banyankole and some Baganda.
3. It has **effectively brought to production** formerly unproductive land in the region.
4. It has led to **increased food production** and growing of cash crops, like, cotton and onions.

5. It has led to **rational crop diversification** e.g new crops have been introduced on the scheme e,g groundnuts, vegetables and tomatoes.
6. It has **effectively assisted farmers to learn modern methods of farming,** like application of fertilizers.
7. It is a **ready source** of revenue to governments through taxation of the project activities e.g processing and transportation of products.
8. It is a **sure source of employment opportunities** to the population e.g researchers and farmers.

LIVESTOCK FARMING:

Livestock farming involves rearing or raising of animals for subsistence or for commercial purposes.

In East Africa Livestock farming ranges from nomadic pastoralism to commercial ranches and dairy farms. However in between are people who practice both cultivation and livestock farming, the cultivator pastoralists.

The cultivator pastoralists include the Wasukuma and Gogo of Tanzania, the Iteso, Banyankole and Langi of Uganda and the Kisii, Kipsigis and Luo of Kenya. These are in most cases Sedentary farmers.

Nomadic Pastoralism:

Here people/farmers move with their animals from place to place in search for fresh pastures and water for their animals. A practice known as **Transhumance.** Nomadic pastoralists in East Africa include, the Maasai of Kenya and Tanzania, the Turkana, Suk, Samburu, Boran and Somali of Kenya and the Karamojong and Hima of Uganda.

Commercial Livestock Farming:

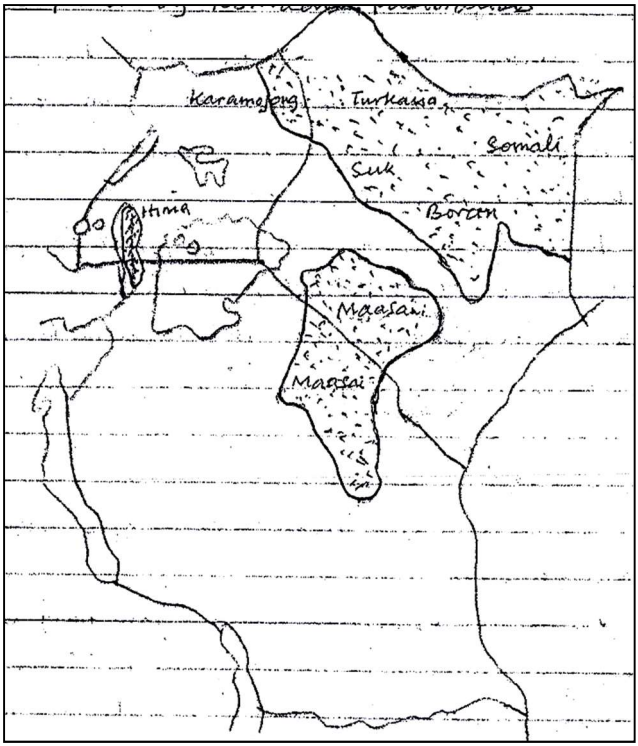
In some areas animals are reared for commercial purposes by progressive farmers on ranches and dairy farms. These have been established mainly in areas of nomadic pastoralists sometimes known as the Rangelands after the eradication of tsetse flies.

Nomadic Pastoralism:

Characteristics:

1. **Traditionally cattle are the basis of nomadic pastoralism** and are **highly regarded**.
2. Because **cattle are highly regarded** nomadic pastoralists are **normally not willing to sell cattle**.
3. They also **keep a variety of other animals** such as goats, sheep, camels (among the Turkana) and donkeys among the Maasai).
4. They keep **large herds of cattle** because of their high regard for them.
5. Due to large numbers of animals **there is over stocking**.
6. **Overstocking** leads to **overgrazing** which in turn leaves the land bare hence serious soil erosion.
7. The **main/dominant breeds of cattle are the short horned Zebu type and the long horned Sanga** type among the Hima of South Western Uganda.
8. They **constantly move from place to place** in search of pasture and water for their animals.
9. They **constantly move long distances** in search of water and pasture for their animals.
10. **Usually during rain season they disperse** and **during the dry season the concentrate near rivers, wells and water holes.**
11. The **traditional pastoral diet is milk, blood and meat** accompanied with hunting and collecting fruits.
12. **Some crops are grown** in small quantities in favourable sites or bought with money from the sell of cattle products.
13. They **normally burn the grass or bush as they move** to bring fresh grass when the rain comes and to eliminate some pests and bush.

Areas occupied by Nomadic pastralists.



Ranching:

A small portion of the nomadic Pastoral areas or the rangelands is formed by commercial ranches by private progressive farmers and government farms. This is however a recent practice.

Ranches have been established following the clearing of tsetse infected bush and eradication of the vector. This was done by the governments with the aid of organisation like, UNDP and FAO, for instance in Ankole in Uganda. Particularly the Ankole-Masaka Ranching Scheme.

Ranches also include those of European settlers in Kenya, ranches of former settlers that have been taken over by government or cooperatives and those established on the failed Groundnuts Scheme in the Kongwa District in Tanzania.

On Ranches:

a. **Better and modern methods of animal husbandry are employed,** like, regular dipping.

b. **There is effective disease control** e.g through **constant inoculation, Medication** and **regular dipping**.
c. **There is assured water supply** by provision of valley dams, wells, boreholes and piped water.
d. **Exotic breeds are introduced** and are **rationally cross-breed** with local disease resistant breeds to produce desirable breeds.
e. There is **effective education of farmers about modern methods of animal husbandry.**
f. There is **effective introduction of drought resistant and more nourishing pastures.**

Dairy Farming

There is limited dairy farming in East Africa.
It includes dairy farms in the central highlands, and the rift valley in Kenya and the dairy farms in the highlands of North East Tanzania mainly supping the coastal towns.

Animal Products:

1. **Meat:** including, beef, mutton and bacon are being produced for the increased local demand in urban centres like, Kampala, Nairobi and Dar-es-Salaam. Kenya and Tanzania are exporting some canned and frozen meat.
2. Dairy products including, **milk**, **butter** and **ghee** for the domestic market. Kenya is exporting some dairy products including cheese.
3. Hides and skins mostly exported but some furnish the local textile industry.
4. There is also an increase in **poultry** because of the high demand for **eggs** and tabora birds.
5. **Wool**. Kenya is exporting some wool from the Merino sheep imported from Australia.
6. **Hooves** and **Horns** used in the manufacture of glue and buttons respectively.
7. **Cow Dung** for manure and plastering of walls and floors of houses.

Dowry

Importance of the Livestock Industry:

1. Cattle/Animals are **a ready source of rich animal food** that is milk, meat and blood.
2. It provides **a wide range of raw materials** for industrial development, like milk, beef, hides and skins.
3. It is **a major source of income** to the population like the farmers, hence, improving their standards of living.
4. It is **an assured source of foreign exchange** when the products are exported.
5. Leads to **increased development of infrastructure** like, roads used to transport farming inputs and products to markets.
6. Encourage **effective development of modern agricultural schemes,** like ranches.
7. It is **a ready source of employment opportunities** to the population e.g farmers and people processing animal products.
8. It leads to **increased urbanization** in the agricultural hinterland, e.g where **industries** processing agricultural products are established.
9. It leads to **increased development of agro-based industries** like leather tanning, meat packing and dairy products processing industries.
10. It is a **sure source of a variety of other animal products** like manure and ghee.
11. It is **an assured source of revenue** to governments through taxation of livestock related activities, like, processing industries and transportation of products.

Problems faced by the livestock Industry:

1. **Hot/High temperatures** which make it hard to keep livestock in good conditions for producing either milk or beef.

2. **Constant dependence on natural pastures** without feeds. Yet the low and unreliable rainfall leads to unreliable growth of pastures.
3. **Uncontrolled grazing** leading to constant shortage of pasture.
4. **Overstocking** among the nomadic pastralists leading to overgrazing, soil erosion, poor pastures e.t.c.
5. **Serious soil erosion** due to overgrazing leading to decline in soil fertility and likewise poor pastures.
6. **Overgrazing leading to shortage** of pastures, soil erosion and sometimes loss of animals.
7. **Poor/low quality animals and likewise**, poor/ low quality animal products.
8. **Frequent pests and diseases** leading to low productivity, and or death of animals like Nagana, rinder pest, East coast fever and foot and mouth disease.
9. **Inadequate veterinary services** leading to diseases being always fatal.
10. **Inadequate market** for livestock products due to, inadequate marketing facilities, like, transport systems.
11. **Inefficient transport systems** especially to transport the products to markets.
12. **Inadequate water supply** due to seasonal drought and unreliable rainfall.
13. **Limited education of livestock** farmers in modern animal husbandry methods.
14. **Inadequate capital to invest** in the industries like, to buy inputs e.g drugs and feeds.
15. **Occasional insecurity** leading to loss of animals e.g cattle rusting, wars and political instabilities.
16. **Seasonal shortage of pasture** leading to **constant wondering** in search for pastures.

Measures being taken to improve the livestock industry.

1. **Increased improvement of the breeds**, like through artificial insemination and cross-breeding i.e, local disease resistant breeds with exotic high quality breeds.
2. **Constant inoculation against diseases**.
3. **Constant provision of modern animal husbandry methods like regular dipping.**
4. **Constant education of livestock farmers about modern animal husbandry methods**.
5. **Regular variation of methods of animal** husbandry e.g encouraging mixed farming so that animals supply manure and ox-plough labour to crops but they feed on crop products.
6. **Increased establishment of modern ranches** and **dairy farms to improve on the traditional methods of animal husbandry.**
7. **Rational introduction of drought resistant and more nourishing pastures.**
8. **Regular application of chemical fertilizers to pastures** so that they are more nutritious.
9. **Constant provision of permanent water sources** like valley dams and bore holes for animals.
10. **Increased improvement of the marketing system** and its facilities, like, transport systems.
11. **Increased provision of adequate capital** e.g through encouraging formation of cooperative ranches and dairy farms which can secure credit facilities easily.
12. **Increased training and deployment of extension staff like** veterinary personnel or doctors.

MINING IN EAST AFRICA:

A wide variety of minerals have been discovered in East Africa. But very few are of commercial value and are being exploited. This is because most of the minerals in East Africa occur in small quantities, too small to support economic mining.

The main commercial minerals in East Africa include:

Uganda

Copper: It used to be the third most valuable export after coffee and cotton. However, the copper mine at Kilembe was closed in 1975 partly due to increased costs of mining and partly due to a fall in world copper prices. But there is hope that copper mining will be resumed at Kilembe.

Limestone for cement extracted from the limestone deposits in the volcanic plugs of South Eastern Uganda at Tororo and Sukulu, Hima in Kasese and of recent in parts of Karamoja.

Phosphates for the manufacture of fertilizers in Tororo.

Salt from L. Katwe in Western Uganda.

Cobalt: A by-product of copper at Kasese.

Oil/Petroleum and Natural Gas in the Albertine basin in Western Uganda.

Others include: **Tungten,Tin, Bismuth, Barly, tantalite, Columbite, Lithium,** Gold and some **Iron**.

Kenya:

Soda Ash: The most important mineral export of Kenya extracted from L. Magadi.

Salt: Extracted from L. Magadi.

Gold: From scattered places.

Limestone coral limestone for cement near Mombasa.

Others: Especially for the future include: **Lead** and **Zinc** near Mombasa, **Niobium** at the coast and

Oil a recent discovery.

Tanzania

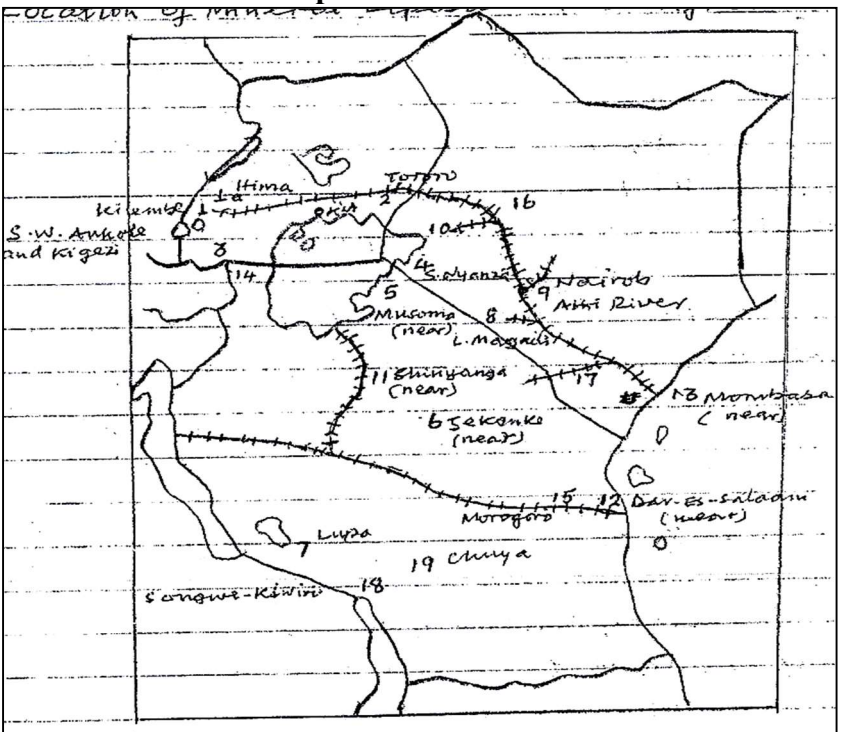
Diamonds: They are Tanzania's fourth largest export by value. It is mined at Mwadui near Shinyanga. The deposits were discovered in 1940/1 by Dr. J. T. Williamson, hence, the Williams Diamond Mines.

Gold: used to be Tanzania's second most important mineral but exploration has stopped.
Limestone: For Cement using coral limestone. It is processed at Wazo Hill near Dar-es-Salam.
Coal and Iron: In South Western Tanzania
Coal at Elina and Iron at Chuya.
Natural Gas: A recent discovery.
Note:
Water: Water is said to be the most essential of all minerals and East Africa suffers from shortage of it. And this is why wide areas of East Africa are underdeveloped.
Water shortage in East Africa is mainly due to limited rainfall, long dry seasons and high or excessive evaporation rates.

Factors/Conditions necessary for Large-Scale Mining:

1. Presence of **large reserves of mineral** deposits to sustain the mining for at least 20 years.
2. **Easy accessibility of the mineral ores**, i.e, be near the surface to minimize mining costs.
3. Presence of **modern or advanced technology** i.e machines to work the mines.
4. Presence of **efficient and cheap transport** systems to transport the mining inputs and ores to processing centres and products to markets.
5. **Reliable supply of adequate capital** to open up the mines e.g buying the mining inputs, like, machinery and setting up the necessary infrastructure e.g transport systems.
6. **Assured supply of skilled labour** to be employed e.g in exploration and exploitation.
7. Presence of **cheap labour** to be employed especially where large quantities of ores are mined.
8. Presence of **abundant power supply** to run the processing and refining of the ore.
9. **Political stability** to ensure attraction of capital and skilled man power from outside.
10. Presence of **ready market** for the mineral ores.
11. **Positive government policy** of supporting the mining activities.

Location of Mineral Deposits in East Africa:



Railways
3 Mining Centres
1 Copper
1a Limestone for Cement
2 Limestone for cement
Phosphates for fertilizers
3 Tin and Wolfram, Beryl
4 Gold in Copper
5, 6, 7. Gold from Sevel small mines
8 Sodium Carbonate and Salt
9 Limestone for Cement
10 Gold
15 Mica
16 Fluorspar
17 Rubies
18 Coal
19 Iron

Methods of Mining:

1. **Adit Mining:** It involves drilling horizontal or near horizontal tunnels or adits into the hill side where deposits are so that man and equipment can get in and ore is brought out e.g copper mining at Kilembe.
2. **Dredging:** It involves digging and scooping out the ore mainly in water bodies, like, the case of soda Ash from L. Magadi.
3. **Quarrying:** Involves mining where the, mineral deposits are at the surface normally using tools like, explosives, hammers, and pick axes e.g store quarrying in many parts.
4. **Open cast:** Where the mineral deposits are near the surface. Excavators remove the surface layer and then the minerals are mined.
5. **Shaft Mining:** Where vertical shafts are drilled and sunk to the deposits which are mined and brought out like, the case of Petroleum.

Importance of the Mining Industry:

1. It is **an assured source of foreign exchange** when the mineral ores or products are exported.
2. It is **a sure source of revenue** to government through taxation of mining activities, like, exploration, exploitation, processing, transportation and marketing.
3. Mining companies normally **offer a variety of Social services** to the population around, like health, accommodation and education.
4. It leads to **improved and increased development of infrastructure** like roads and railways used to transport mining inputs, Ore to processing units and products to markets.
5. It leads to **increased development of industries** like, for producing mining inputs e.g explosives and mineral processing industries e.g the copper smelt at Jinja.
6. It leads to **increased urbanization** in the areas where mining activities and mineral processing industries are located e.g Kilembe town.

7. It provides **a wide variety of employment opportunities to the population** e.g engineers, miners, and transporters.
8. It is a **major source of raw materials** for development of industries which use the mineral ores as their raw materials e.g the Kasese Cobalt Company.
9. Mining companies **normally train their workers in professional/technical skills,** like, exploration and mining.
10. It is **an assured source of income** to the population, i.e, investors and employees which improves their standards of living.
11. It leads to **rational diversification of the economy as an alternative economic activity.**
12. It provides **ready market to some agricultural products** e.g food to feed the workers.
13. It **effectively saves foreign exchange** that would have been used to import the mineral in question and or its products e.g cement.
14. It leads to **cordial international relationship** between the producing country and importing countries.

Problems faced by the Mining Industry:

1. **Most of the mineral deposits occur in very small quantities**. Not adequately large to justify economic mining.
2. **Inefficient and inadequate transport systems** to transport mining inputs and ores or products to processing and marketing centres.
3. **Constant fluctuation of world mineral prices** particularly regular fall of the world prices for minerals which discourages investors.
4. **Inevitable mineral exhaustion** since minerals are non-renewable resources. This puts the investors out of operation.
5. **Limited research and exploration** to discover mineral prospects, i.e, new mineral deposits e.g oil and natural gas have just been discovered in Uganda, Kenya and Tanzania respectively.
6. **Low concentration and in some cases low grade of the known mineral** deposits which does not justify economic exploitation.

7. **Inadequate capital** to invest in the mining sector e.g in exploration and exploitation.
8. **Inadequate skilled man power** to be employed in the mining sector.
9. **High cost of mining activities** like exploration, exploitation, infrastructure and buying machinery.
10. **Recurrent political instabilities** which disorganize mining activities e.g LRA, ADF, MUNGUKI etc.
11. **Irregular power supply** which interferes with the mining activities.
12. **Occasional mining accidents** which sometimes lead to death of mine workers.
13. **Occasional flooding of the operational mines** which interrupts mining activities sometimes for long periods of time.
14. **Stiff competition with other producer**s especially since some mineral ores are of low grade.

Measures Being Taken to Improve the Mining Industry

1. **Carrying out intensive mineral survey** and exploration to discover more minerals/new minerals e.g the case of oil and natural gas in Uganda and Kenya and natural gas in Tanzania.
2. **Numerous measures are being taken to attract both local and foreign investors** to come and invest in the mining sector to overcome the problem of inadequate capital e.g giving **tax holidays** to investors.
3. **A variety of financial institutions are being approached** to secure financial aid for the mining sector e.g the World Bank, IMF and ADB.
4. **Political stability and relative peace** are being ensured through the National defence forces and regular peace talks wherever there are conflicts.
5. **Increased training of local personnel** to acquire mining skills both at home and abroad.

6. There is **increased development of infrastructure** particularly **transport systems** e.g roads and railways to ease mining activities e.g the Tanzam railway.
7. **Increasing the market** for minerals and mineral products e.g through joining regional economic organisations like, E.A.C, COMESA. E.t.c.
8. **Increasing power supply** to ensure effective running of mining activities e.g opening up the, Kiira, Bujagaali and Nyagak power stations.

Note:

1. There is a possibility of discovering new mineral deposits like the case of Oil and natural gas in Uganda, Kenya and Tanzania.
2. Limestone for cement together with clay, sand and other building materials are rapidly increasing in output.
3. Improvement in the world prices may boost the mining industry.

INDUSTRIAL DEVELOPMNET IN EAST AFRICA

Industrial development in East Africa is limited due to a number of factors, like, inadequate capital, skilled labour, transport and communication systems, essential raw, materials, energy supply, market and low level of technology. Because of this industrial development is still in infant stages. There are some light industries and very few heavy industries.

Factors/conditions which are influencing/favouring Industrial Development in East Africa.

1. **Reliable and ready supply of raw materials** to be used in the industries, like, cotton for ginneries and textiles, coffee for hulleries, sugar Cane for Sugar refineries and grains for flour mills/food processing industries.
2. **Reliable supply of adequate capital** to invest in industrial activities, like, buying inputs such as raw materials, setting up infrastructure and clearing the wage bill.
3. Presence of **efficient and cheap transport systems** to transport industrial inputs and products to markets, like, roads, railways waterways and sometimes air transport.
4. **Reliable supply of skilled and semi-skilled labour** to be employed like, engineers, technicians and transporters.
5. **Supportive governments policy** which encourage industrial development, for instance, by identifying the industrial zones, like, Jinja and Namanve and giving Credit facilities and tax wavers.
6. Presence of **abundant water supply** used in the industries as a raw material and for cooling machines e.g in breweries, soft drinks and textiles provided by the numerous rivers and lakes.
7. Presence of **ready market for** industrial products due to the increasing population.
8. The **improved technology** being employed in the industries i.e, use of advanced technology from outside e.g automated machines.
9. Presence of **improved and increased power supply** used to turn machines particularly H.E.P and sometimes thermal power.

10. **Improved political stability** which has attracted private and foreign investors as well as skilled man power to set up industries.

    The main industrial centres include, Jinja, Kampala, Nairobi, Mombasa, Nakuru, Dar-es-salaam, Arusha and Mwanza.

The Main industries include:

Processing Industries processing raw materials like:

1. Manufacture of cigarettes through tobacco processing at Jinja, Kampala, Nakuru, Nairobi and Dar-es-Salaam.
2. Leather Tanning for foot wear fabrication and repair at Jinja and Nairobi.
3. Manufacture of cement from limestone at Tororo Hima, Mombasa, Nairobi and Dar-es-salaam..
4. Textiles and ginneries processing cotton at Jinja Mwanza and Dar-es-Salaam, and clothing fabrication e.g Pheonix Logistics in Kampala as well as blankets manufacturer from wool at Nairobi.
5. Sugar refining and the associated confectioneries at Kakira, Lugazi, Kinyara, Arusha, Chini, Chimili and Mohoroni.
6. Oil production from cotton seeds and coconut for soap edible oil and margarine at Jinja, Kampala, Mombasa, Nairobi and Dar-es-Salaam.
7. Grain milling of wheat, rice, maize at wide spread locations e.g at. Jinja.
8. Pineapple processing for soft drinks at Masaka and Kampala and for canning at Thika.
9. Meat Processing at Dar-es-Salaam and Soroti.
10. Dairy processing at Kampala, Mbarara, Nairobi and Dar-es-salaam.
11. Soft Drinks production at Kampala, Nairobi and Dar-es-Salaam.
12. Brewing and Blending of alcoholic beverages at Jinja, Kampala, Nairobi and Dar-es-Salaam.
13. Chemicals and Pharmaceutical at Kampala and Nairobi.

14. Oil Refining using imported crude oil at Mombasa and Dar-es-Salaam.

Service Industries including:

1. Light Engineering involving locomotives services at Nalukolongo-Kampala, Tororo and Nairobi, Motor Repair, Electrical Machinery and Repair at Kampala Nairobi and Dar-es-Salaam.
2. Tyre Retreading and Bicycle tyre production at Jinja, Kampala, Nairobi and Dar-es-Salaam.
3. Industries supplying domestic needs like production of paints, Kitchen ware, convas, rubber shoes, plastics, metal-products like beds like TUMPECO at Kampala, Nairobi and Dar-es-Salaam.

Manufacture of containers to hold local manufactured products and imported goods e.g

1. Manufacture of cans for beef and fruits at Dar-es-Salaam and Mombasa.
2. Manufacture of Glass bottles using Magadi; Soda at Mombasa.
3. Manufactured of paper bags and fibre bags at Mombasa, Thika, Tororo and Jinja.

Construction Industries like,

1. Timber and Wood workings.
2. Production of bricks, concrete blocks, clay and concrete products at Kajansi-Kampala.

Importance of the Industrial sector:

1. It is a **ready source of employment opportunities** to the population like engineers, technicians, transporters and machine operators.
2. It is **an assured source of income** to the investors and employees which improves their standards of living.
3. It leads to **improved and increased development** of infrastructure like roads and railways used to transport industrial inputs e.g raw materials and products to markets.
4. It provides a **wide variety of manufactured goods to the population** and sometimes at cheaper prices e.g Sugar- e.t.c.

5. It **effectively saves foreign exchange** that would have been used to import the manufactured goods in question.
6. It is a **ready source of foreign exchange** when the products are exported.
7. It leads to **increased development of urban centres** where industries are established e.g, Jinja and Kampala.
8. It leads to **rational diversification of the economy** as an alternative economic activity.
9. It provides **large market for agricultural products** which are used as raw materials e.g cotton, coffee and provision of food stuffs to the employees like maize and bananas.
10. It leads to **increased value to raw materials** by processing them before marketing or export.
11. It leads to **improved cordial relationships between East African Countries** and the countries supplying industrial raw materials and those importing the products.

Problems faced by the Industrial sector:

1. **Inadequate capital** to invest in the industrial sector due to poverty. Hence, **constantly depending on borrowing or relying on foreign investors.**
2. **Limited market for the industrial products** due to poverty and low population.
3. **Inadequate skilled man power** to manage industrial activities, like engineers. Hence **over dependence on imported skilled labour** which is expensive and increases the cost of production.
4. **Low level of technology** necessary for industrial development e.g modern machines.
5. **Inadequate energy resources and energy supply** necessary for industrial development e.g very little coal, no oil and irregular HEP supply.
6. **Chronical corruption** of government officials in charge of industrial development which discourages private and foreign investors in industrial activities.

7. **Inevitable landlockedness for Uganda** which increases the cost of transportation of imported raw materials and finished products to foreign market.

Measures being taken to improve industrial Development.

1. **Constant improvement in the transport systems** to ease transportation of raw materials and distribution of finished products to markets.
2. **Regularly encouraging** private **investors** to acquire **credit facilities** from financial institutions to invest in the industrial sector.
3. **Constantly attracting foreign investors** to come and invest in the industrial sector, i.e, who come with their own capital and skilled man power.
4. **Constantly struggling to attain political stability and peace** so as to attract foreign investors into the industrial sector using security forces and peace talks.
5. **Constantly struggling to widen the market for industrial products,** like through joining regional economic organisations like E.A.C and COMESA.
6. **Constant training of people in industrial skills** at home and abroad so as to get skilled labour to their industries.
7. **Careful exploitation of the available resources** e.g through agriculture, mining, fishing, forestry in order to get local raw materials for industrial development.
8. **Improving and increasing on energy supply** by putting up new HEP power stations, thermal power stations and discovering oil and natural gas to boost industrial development.
9. **Constant importation of modern machinery** to be used in industrial activities.
10. **Strengthening the anti-corruption measures** e.g through institutions like the I.GG.

TOURISM IN EAST AFRICA:

Tourism is a form of invisible trade. So it acts as an invisible export. It involves organised travelling of people from one place or country to another to visit places of interest for leisure study purposes e.t.c for instance see new places things or faces.

In East Africa the tourist industry is most developed in Kenya followed by Tanzania and then Uganda.

This is because Kenya has relatively well developed transport and communication systems and Nairobi in particular has a number of good quality hotels that can accommodate large numbers of people. Nairobi also has a Game Park in the neighbourhood. Meanwhile, Kenya and Tanzania have the advantage of coastal tourist attraction features, like, coral reefs, beaches and the sea Kenya and Tanzania also have been relatively politically stable.

Tourist Attractions in East Africa:

Physical Tourist Attractions.

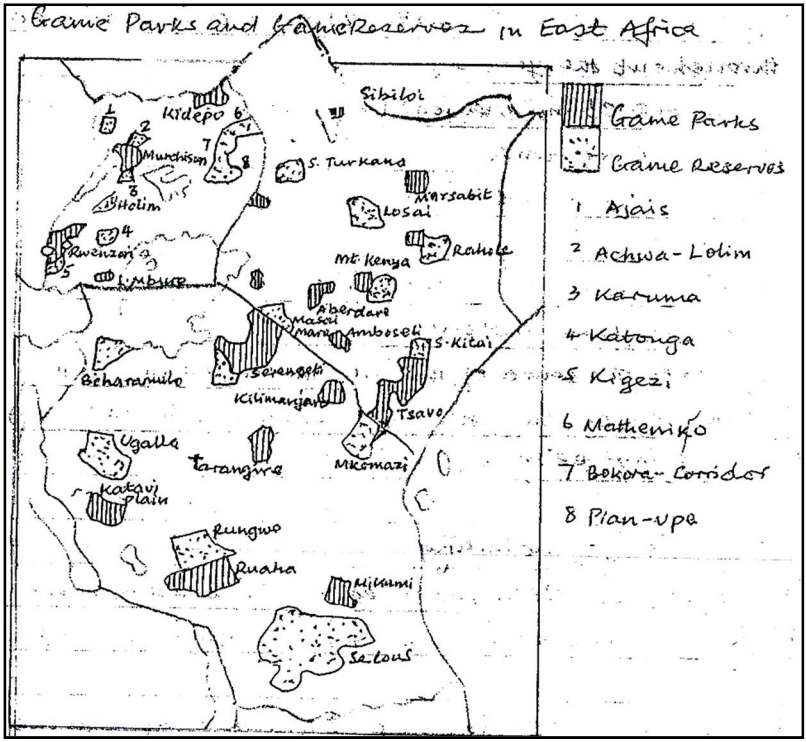
1. **A wide variety of wildlife of fauna** in the numerous National Game parks, Game reserves, Animal sanctuaries and Zoos like Elephants, lions, Flamingos in Kidepo Tsavo and Serengeti National Parks.
2. **The varied beautiful scenery**, such as the Kabale highlands and the Inselbergs of Eastern Uganda e.g Soroti rocks (Opiyai and solot).
3. **Varied mountain Scenery** e.g the snow capped mountains, Kenya, Kilimanjaro, and Rwenzori.
4. **Varied Volcanic features** e.g volcanic cones like, Elgon, Craters and crater lakes e.g L. Katwe in Uganda. Lava plateaus e.g the Yatta plateau in Kenya, lave dammed lakes e.g L. Bunyonyi in Uganda and Hot Springs in Western Uganda e.g Sempaya.
5. The **extensive rift valley** and the associated features, like block mountains/horsts e.g Mt Rwenzori, escarpments and rift valley lakes like L. Tanganyika.
6. **A wide range of coastal features** like, coral reefs beaches, cliffs, spits and sand bars.

7. **A wide range of vegetation types** e.g tropical rain forests, like, Mabira and the Savanna grasslands of northern Uganda.
8. **A variety of water bodies**, like, L. Victoria the third largest fresh water lake in the World, the source of R. Nile the longest river in the world magnificient water falls e.g; Karuma and hot springs in Western Uganda.
9. **The balanced tropical and equatorial** climate with 12 hours of sunshine daily throughout the year for sun bathing.
10. **The warm climate throughout the year** enjoyed by visitors especially from areas of high latitudes /temperate climatic area.
11. **The tropical thunderstorms** unique in tropical regions.

Human Tourist Attractions:

12. **Numerous historical sites**, like, Olduvoi Gorge in Tanzania, the Martyrs' shrine in Namugongo, Nyero Rock Paintings and Ologesaile pre-historical site in Kenya.
13. **Varied Local Cultures**, like traditional dances e.g Kiganda dance, Abwola dance and ding ding dances, rituals like circumcision, local costumes e.g the Gomes, Crafts e.g wood curvings, local dishes e.g Luwoombo and 'Odi' e.t.c.
14. **A variety of sporting activities**, like mountaineering, fishing, hunting, swimming and sun bathing.
15. **Improved and efficient transport systems** of roads, air and water transport which ease tourists' travelling.
16. **Relative Political stability** in most of the East African countries which attracts visitors.
17. **Wide spread hospitality of most of the local communities** in East Africa which makes the visitors comfortable.
18. **Improved and increased advertisement** of the tourist attractions in East Africa locally and abroad through films,

    rocures e.t.c.
19. **Improved and increased accommodation facilities** like modern hotels and lodges.



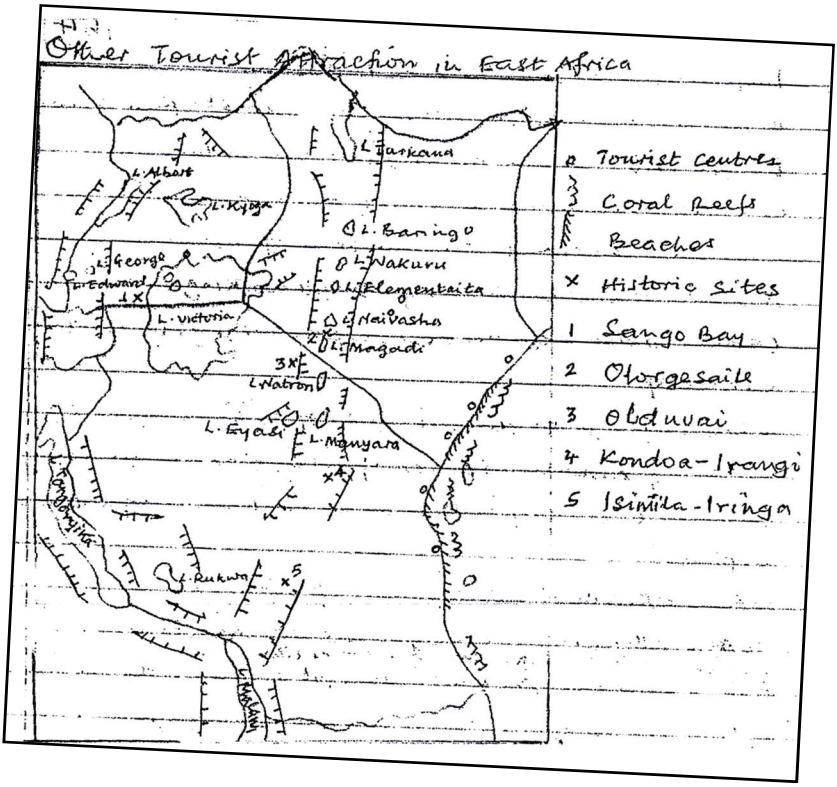
NOTE:

1. Main National/Game Parks in East Africa.

Uganda: Kidepo, Murchison Falls/Kabalega, QueenElizabeth/Rwenzori, L. Mburo National Parks.

Kenya: Tsavo, Marsabit, Nairobi, Aberdare, Samburu Mt. Kenya,Amboseli, Malindi Marine National Parks.

Tanzania: Serengeti Meru, Mukumi, Mkomazi, Ruaha.



2. **Main Game Reserves:**
   Uganda: Ajai, Bokora corridor, Karuma, Katonga, Kigezi, Kyambura, Matheniko, Pia-Upe
   Kenya: Mara, Nairobi, South Kitui, Losai
   Tanzania: Selous, Ugalla, Biharamulo, Ngorongoro, L. Manyara, Tarangire, Kilimanjaro.

3. **Main Animal Sanuaries**
   Uganda: Kazinga, Entebbe, Jinja, Malaba, Zoka Forest, Dufile, Otze, Mt. Kei.
   Kenya: Around lake Nakuru, a sanctuary for pelican birds
   Tanzania: In the Gombe stream near L. Tanganyika

4. **Zoos.** Zoo at Entebbe, that is, the wild life Education Centre.
5. **A National/Game Park**: is a tract of land gazetted by government to be left in its natural state for the preservation of wildlife both fauna and Flora.

6. A Game **reserve:** is a tract of land gazetted by government for administration and research for future development of wildlife species.
   In National parks and game reserves, human settlement, cultivation and stock grazing are prohibited.
   Game reserves also act as buffer zones between national parks and settled areas, hence, minimize direct overlap with areas of human settlement. They also shelter animals in case of trouble. They can act as source of food for animals during scarcity.
7. **An Animal Sanctuary**: Is attract of land gazetted by government to preserve as well as protect animals and birds which are rare and probably nearing extinction. In
   In Sanctuaries, hunting is prohibited unless with permission from the game department, like during cropping of wild animals. However human activities are allowed like; settlement, cultivation and raising of domestic animals.

8. **The animals common in most Game parks and Game reserves include;** elephants, Chimpanzees, Uganda Kobs (Kobs), Lions, Giraffes, Cheetahs, Gazelles, Gorillas, Crocodiles and Kirk-diks.
   There are also a variety of birds like; **Pellicans**, Water birds, Quils, Ibisis, Egrets, Herons and Flamingos
9 (a) Gorillers and forest Elephants are common in the wet forested areas. (b) Gazelles and **Gazelles and Cheetahs are common in the low rainfall areas.**
   (c) Zebras, Topis, Kobs and Elephants are found in the plateaus with **medium rainfall**.
   (d)Hippopotamuses and Crocodiles are common in lakes and rivers

Importance of the Tourist Industry.

1. It is **an assured source of foreign exchange** when foreign tourists come and pay for accommodation, travelling, entering game parks etc
2. It is **a ready source of employment opportunities** to the population, such as tour guides, transporters and people working in hotels, lodges and tourism ministries.
3. **It is a sure source of revenu**e to government through taxation of tourism activities and facilities like hotels and transport activities.

4. It is **an assured source of income** to the people engaged in tourism activities like transporters, guides and those working in hotels and lodges hence improving their standards of living.
5. It has led to **strict conservation of wildlife** i.e. fauna and flora in their habitat for future use.
6. It has led **to improved and increased development of infrastructure**, like roads, hotels and lodges used to transport and accommodate visitors.
7. It has **effectively promoted the local crafts industry** as tourists buy the works of art which they carry home as souvenirs
8. It **provides a wide market for some of the agricultural products,** like foodstuffs for the hotels and lodges where the tourists stay.
9. It has promoted **effective diversification of the economy** of East African Countries as an alternative economic activity.
10. It has led to **effective and economic utilisation of land** that would have been otherwise useless like game parks and game reserves in dry areas e.g. Kidepo and areas infested with tsetse flies e.g. queen Elizabeth nation parks.
11. It **has promoted cordial international relationships** between East African Countries and the countries where the tourists come from.
12. It has **effectively** promoted East Africa's **cultural heritage** like various historical articles viewed in museums, historical sites and cultural sites
13. It **has promoted increased development of urban centres** due to increased hotels and lodges put up in the main tourist resorts like Nairobi, Kampala and Jinja.

Problems Faced by the Tourist Industry

1. **Increased encroachment on areas gazetted for National Parks and Game Reserves** due to increased need for land for settlement and agriculture caused by the constantly increasing population.
2. **High level of poaching** for tusks, meat, hides and skins which is reducing the population for wildlife especially the endangered species e.g. Elephants and the white Rhinoceros
3. **Occasional natural hazards** like excessive seasonal drought which negatively affects flora and fauna important in attracting tourists.
4. **Frequent pests and diseases** which attack and destroy wildlife both flora and fauna leading to remarkable reduction of wildlife, hence discouraging visitors from coming.

5. **Occasional epidemics** like Ebola and Marbourg which scare away the visitors.
6. **Remarkable remoteness** of some of the areas with tourist attractions which make establishment and maintenance of transport system difficult and expensive.
7. **Limited and inefficient transport systems** particularly roads and air transport hence discouraging and limiting visitors who come.
8. **Inadequate capital** to invest in the tourist industry, like, to provide efficient tourist facilities and services to the visitors e.g. modern hotels and transport systems.
9. **Limited and inadequate accommodation** facilities to comfortably handle large numbers of visitors like hotels and lodges.
10. **Inadequate provision of skilled labour** to handle and manage the essential tourist facilities and services e.g. hotels, lodges end tour guides.
11. **Limited masterly of international languages** to handle visitors from all over the world especially the eastern world e.g. Japanese, Chinese, Korean, Russian etc
12. **Occasional civil wars and political instabilities** which scare away the visitors e.g. LRA, ADF etc
13. **Limited advertisement** of the tourist potentials of East Africa especially to the outside world.
14. **Limited interest of the local population in the tourism industry,** hence limited local tourists which does not promote the tourist industry.
15. **Less developed tourist resorts** due to limited capital and skilled man power

Measures being Taken to Improve the Tourism Industry.

1. **Increased improvement of the transport and communication systems,** like, roads, railways, airways and waterways
2. **Increased improvement in the existing tourist facilities** such as hotels and lodges.
3. **Effective development of new tourist facilities and resorts** e.g. hotels, lodges and travel tour agencies to handle large numbers of visitors.

4. **Increased training of man power** locally and abroad to provide skilled labour to the tourist industry e.g. in hotel management.
5. **Strict preservation of wildlife** especially the endangered species, like in animal sanctuaries and zoos and flora in forest reserves as well as gazetting new game parks.
6. **Constant education of the masses** on the importance of wildlife and tourism through wildlife clubs, radios, news papers and films
7. **Constantly improving security** to ensure political stability and peace to attract visitors.
8. **Regularly encouraging tourism institutions** to acquire credit facilities from financial institutions so as to improve on the tourist facilities and services
9. **Constantly encouraging the local people to participate** in touring, like, through reduced rates.
10. **Constantly encouraging the promotion of local cultures** in the different communities to ensure variation of culture (presence of numerous cultures) to attract visitors
11. **Regularly strengthening the anti-poaching squads** to contain poaching and save wildlife.
12. **Rationally privatizing tourist facilities** to ensure better management and service delivery.
13. **Increased training of people in more international languages** like; French, Germany, Spanish, Latin in addition to English and Kiswahili to widen the area of tourist origin.
14. **Regularly improving and increasing advertisement of the tourist potentials of East Africa** locally and internationally through newspapers, radios, brochures, short films and internet.