TRANSPORT.

Transport refers to the movement of people and commodities from one place to another. It is vital for economic development of every economy worldwide. It has greater effects that include influencing the exploitation of natural resources, human resource and the moving of manufactured goods to the various markets both domestic and foreign.

Types of transport:

- Road
-Water
-Rail
-Air
-Others - pipeline.

Road transport.

This is the most widely used / universal form of transport worldwide. It ranges from a forest path to the latest motorways and accommodates all forms of automobiles like cars, buses, coaches, lorries, e.t.c.

Case study: The Trans- African highway.

It is 6,5 km long, and stretches from Mombasa in Kenya through Uganda, the Democratic Republic of Congo, the Central African Republic to Lagos in Nigeria.Therfore it links the east coast of Africa to the west coast of Africa.

Benefits.

1. Trade has been encouraged between the east and west African countries in machinery, fish, vehicles to petroleum products, palm oil, e.t.c.
2. It has created access to sea for landlocked countries like Uganda, the Central African Republic.
3. It has enabled the natural resource exploitation like minerals in the Democratic Republic of Congo.
4. It has led to the development of trading centers, towns, nodal points like Kampala, Nairobi, Manfe, Bangui thus urbanization.
5. das promoted the development of hinterlands that are rich in agriculture like tea, coffee in Uganda, then cassava, maize, sweet potatoes in the Central African Republic.
6. It has boosted industrial development by encouraging the easy acquisition of raw materials, their distribution and the manufactured goods.
7. It has promoted economic and political co-operation between countries within the region like between Uganda and Kenya.
8. It has also boosted the tourism industry like the Mombasa -Nairobi road that links Tsavo east to Tsavo west National parks.
9. It has also facilitayed the dissemination of ideas in areas like agriculture, industries.
10. It has also provided employment opportunities to various levels of people ranfing fron the skilled peole like technicians in road construction to the unskilled .

Obstacles.

1. There are some sections of the road that are not tarmac ked therefore challenging to motorists during the rainy season.

2. There are high maintenance costs to the individual countries involved to ensure they are open all the year round.
3. Some sections are absent of road like the 200 km gap between Salo and Quesso in the Central African Republic.
4. There also exists political differences between various countries within the region reducing on co-operation levels.

WATER TRANSPORT.

This mode of transport uses the existing routes along rivers, seas, lakes. It is an important form of transport in many parts of the world and has two distinct advantages in that it uses existing routes like rivers, seas and lales, and it is also the cheapest formof transport for large, bulky goods. River transport forms an important inland waterway in various areas like the Rhine waterway in Europe, the St. Lawrence seaway in North America, the upper Niger and its tributaries in Africa.

The Rhine is the most important waterway in Europe, and passé through Switzerland, Germany, and the Netherlands.The rhine river is navigable upto Basel in Switzerland. It is linked to the Rhone river and the Mediterranean sea by the Rhone Rhine canal. Dredging has been carried out to ensure it is navigable.

C**ONTRIBUTION OF THE RHINE WATER WAY**

The water way is used to transport both imported and exported products from the Rhineland countries to other countries. It has provided a cheap form of water transport for countries like German, Netherlands, and Belgium. And in addition to these Rhineland countries, the river also serves neighboring countries like France, Italy, Australia, and Poland. Some of the imported products or out stream cargo include; crude oil, coal, iron ore, scrap metal, timber, cereals and many others. The major exports or downstream cargo include auto mobile machinery, electronics textiles and many other manufacturing product. Therefore the river forms a cheap mode of transport for such bulky cargo.

There has been development of towns and urban centers along the river in various countries where it passes. Such countries include Basel in Switzerland, Cologne, Duisburg as well as Mainz in Germany together with Rotterdam in the Netherlands. Many of these towns started off as small towns but attracted more people as well as investments leading to their expansion into major towns with developed social and economic infrastructure.

The Rhine water way stimulated industrial development along its course. Many industries have been setup in the various countries for example chemical and textile industries in Switzerland, Iron and steel, Auto-mobile, Electrical and many others in the Ruhr region of German together with oil refineries, chemical and petro-chemical in Netherlands. Such industries have developed due to the easy and cheap transportation of raw materials and finished industrial products.

The Rhine water way compliments other forms of transport for example road, railway and air thereby helping to create an extensive transport network among the countries.

The water way has strengthened both political and economic ties between the countries like Switzerland, Belgium together with neighboring countries like Poland, Austria. Such political and economic ties have led to economic growth and of other countries due to the increased trade as well as technology transfer.

Land locked countries like Switzerland have been provided with an easy access route to the sea which has promoted international trade between these countries. This is so as the river provides a cheap source of transporting their raw materials and finished goods.

The water way has led to promotion of tourism in the Rhineland countries. Tourists visit various countries where the river passes so as to have boat cruises along the Rhine to carry out sport fishing,

swimming and many others attractions for example ancient castles line along the water way. Other attractions include The Rhine rift valley and escarpments and many others. This has made the countries receive foreign exchange from the numerous tourists.

It has promoted mining activities in the area where it asses especially in the Ruhr region of German. Coal, iron ore, uranium, platinum and others are some of the minerals being mined in the Ruhr region and this due to the cheap transportation of such bulky ores to and from various mining centers. The temperate forests of Switzerland as well as the southern German has also been exploited as a result of the cheap water transport along the Rhine river.

Employment opportunities have been provided to a great number of people s ship captains, engineers, tour operators, managers, technicians and all those indirectly employed by the water way. Through such employment, the workers are assured of employment thus has increased their disposable income so as to improve on their living standards.

The rapid increase in population in the cities that emerged along the water way has enlarged the market for agricultural and manufactured products for the Rhine land countries especially those nearer the water way and its tributaries.

The water way has aided transfer of technology from more developed countries of the Rhine basin to the less developed for example from the German and Netherlands to Belgium and Switzerland. Through such technology transfers such countries have been able to achieve meaningful industrial and agricultural development.

It has led to the growth and development of inland ports due to te large volume of cargo or traffic being handled for example Basel in Switzerland, Duisburg in Germany and other smaller ports along its course.

The government obtains revenue through its port dues and taxes imposed on the goods going through or along such countries and such revenue has been used to provide various social and economic infrastructures.

The water way has brought about efficient control and administration of the countries where it passes. This has been due to the easy transportation of government officials and agents from one area to another for easy dissemination as well as supervision of various government policies.

Negatives

Congestion along the water way and at the Rotterdam Port due to the large volume of cargo being handled. This has resulted into delays in the delivery of both imports and exports to and from the Rhine land countries leading to losses.

Constant silting of the river channel requires regular dredging which is rather costly. This is so especially at the river mouth at the Port of Rotterdam.

Though the river channel has been widened some sections are still narrow thereby limiting the sailing of large ocean going vessels especially super oil tankers.

Accidents are common along the water due to too much traffic as well as foggy weather conditions leading to death as well as destruction of property.

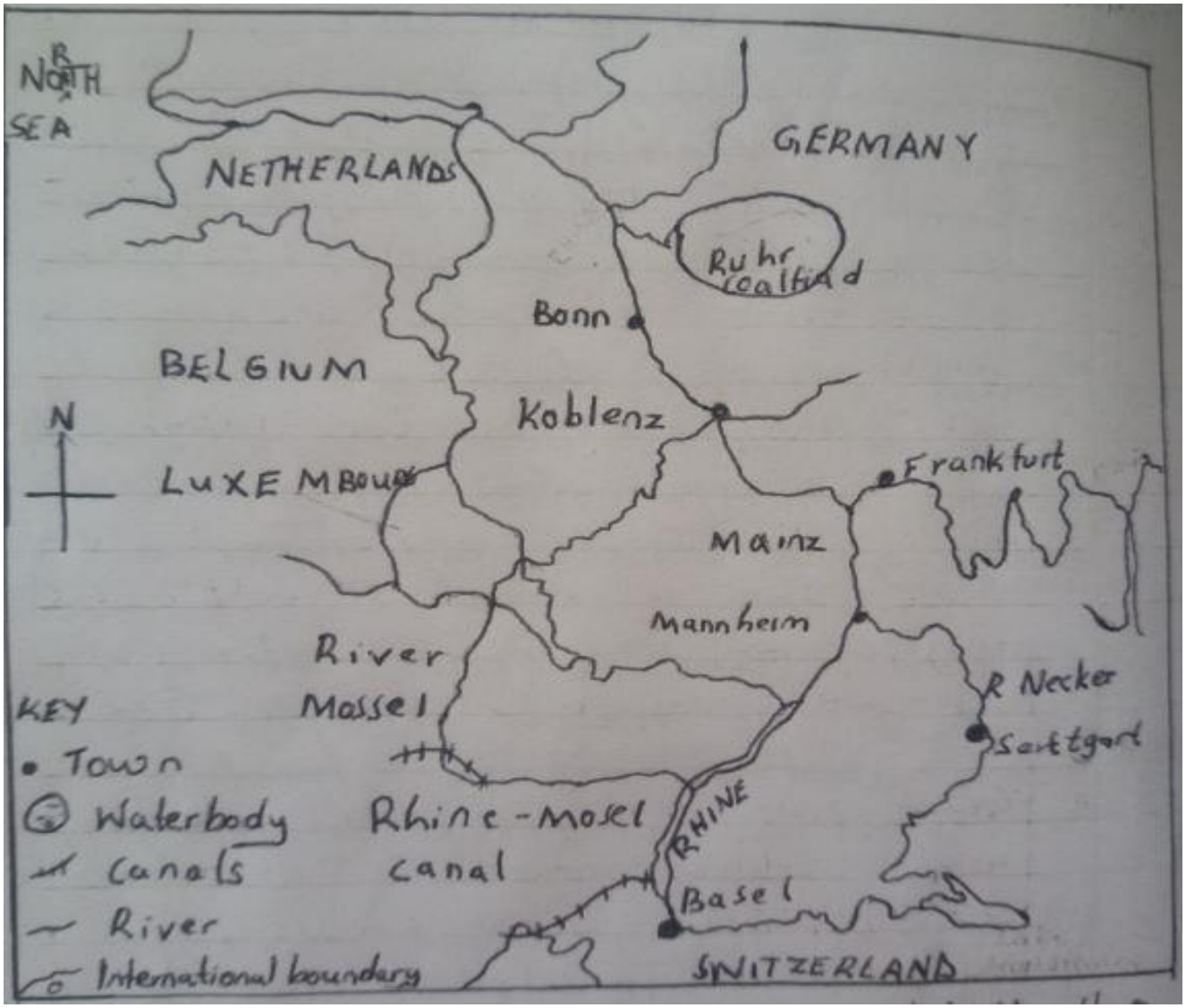
There are many locks along the water which leads to delays in the sailing of the vessels as ships take time negotiating through the various locks.

Development of towns and ports together with their associated problems like high crime rates, congestion, slum growth and development and many others.

In spring and summer winter snow melts and this causes flooding along the water way which puts the sailing of vessels to a halt or at times carried on but with difficulty.

Pollution especially water, air and soil pollution. This is due to the many vessels that use the water way and thus release toxic exhaust fumes in the lower atmosphere causing air pollution and at times due to accidents oil spills on the water way causing water pollution and the soils on the river banks.

A SKETCH MAP SHOWING THE RHINE WATERWAY.



STEPS TAKEN TO IMPROVE INLAND WATER TRANSPORT IN WESTREN EUROPE AND NORTH AMERICA.

Some rivers naturally cannot be used for navigation because of various factors some of which are physical while others are social-economic factors for example occurrence of rapids and waterfalls and cataracts, rocky outcrops, sharp bends, natural valleys, too much silting, occasional flooding, landslides and many others.

The steps taken include;

Regional co-operation to enhance the development and dues of the water ways for example between the USA and Canada that is St Lawrence sea way, between Netherlands, German, Switzerland and Belgium for the Rhine water way.

Enlargement or widening of the river valleys so as to accommodate more traffic.

Areas that are affected by silt deposits leading to a shallow depth and depending through dredging.

Canals have been constructed so as to enlarge the hinterland and also to by-pass rapids and waterfalls.

The lock system is used to create deep water in areas with shallow water levels.

There is use of ice breakers especially during the heavy winter season.

There is construction of ports and modernization or enlargement of existing ports.

Mobilization of funds so as to maintain the inland water transport routes.

Dams have been constructed to control water flow and also reduce flooding.

There is management of river banks for example through construction of concrete river banks carrying afforestation programmes along the banks so as to stabilize them and so much more.

Lighting systems are established and maintained so as to improve on visibility.

Straightening of river meanders for easy movement of vessels also to shorten the distance along the water.

There is continuous modernization on cargo handling so as to reduce on time wastage and damages for example the policy of containerization.

Regulating of traffic flow by time tabling movement of ships or vessels.

Controlled pollution or treatment of industrial waste so as to reduce on the effects of pollution like corrosion of vessels.

Improved security along the water ways so as to rid them off pirates and create a conducive atmosphere for sailing along the water ways.

Installation of modern weather warning systems so as to detect sudden storms and take processional measures. Modern marine navigational radars have also been reinstalled so as to detect or guide the incoming and outgoing vessels.

CANALS

SUEZ CANAL

This is also known as Mediterranean or Asiatic route as it links the far east that is Asia with Europe. The canal was opened in 1869 having been funded by the Great Britain and Egypt.

The major aims for its construction were:

1. To create a life line for Britain through transportation of her manufactured products to the far east.
2. To cheaply transport the raw materials from its colonies of Britain including those of far east Africa as well as far east.
3. To bring about effective control and administration of British colonies found in East Africa and the far east.
4. To shorten the distance that was once covered around the cape of good hope from North America and North of Europe to the far east.

The Suez canal is 163 kilometers long ten meters deep and between 60-65 meters wide and the travelling time from port Said to port Suez in South Africa is 12 hours however there are plans to widen an deepen the canal so as to allow large ocean going vessels to pass through easily.
The canal has no locks due to the flat terrain however there is one shipping lane with passing areas in Baclah bi-pass near elquantara and in the great bitter lake.
Ships are allowed to sail and at a low speed that is around the knots (15km/hr). the low speed helps to prevent erosion of the canal banks by the ships. A railway line on the west bank of the canal moves parallel to it for its entire length. The canal is managed by the Suez canal authority with its head quarters at Ismailia.

IMPORTANCE OF THE SUE CANAL

It's a source of income to Egypt from the clearing and handling charges of goods passing through the canal. By 1955 2/3 of Europe`s oil passed through the canal and in 2008 a total of 21415 vessels passed through the canal and receipts from the canal totaled 5.4 billion USA dollars with the average cost per ship at roughly 451000 USA dollars. Such revenue has been used to maintain the canal and also to expand the Suez canal.
It has stimulated the growth of industries along the canal for example petro-chemical industries, mortal vehicle assembly, electrical industries. These have developed along the canal due to the cheap transportation of raw materials and finished industrial products. The construction of the canal also attracted plenty of investments from Western Europe, Asia leading to the setting up of numerous industries in the canal zone.
The canal encouraged the growth and expansion of the ports as the goods being handled tremendously for example port Suez and Saidi in Egypt together with neighboring ports on the Mediterranean coast for example Marseille in France as well as Genoa and Venis in Italy.
There was reduction in transport costs due to the reduction in the distance covered. This is so because over 2700 miles were cut off by the construction of the canal due to the reduced voyage around Africa. This helped to reduce the cost of transporting cargo to and from various areas.
The reduction in distance covered resulted into efficient delivery of goods and services in the middle east, far east, northern Africa and western Europe.
Trade between Europe, north Africa and the far east was also enhanced due to the cheap and efficient transportation of goods and services across the canal to such areas.
Employment opportunities have been provided to a number of Egyptians as technicians, port workers, ship captains and crude as well as those employed in the various industries lined along the canal zone. This has helped to improve on such people`s standards of living.
The canal has stimulated exploitation of natural resources for example oil, iron ore, copper, manganese and many others in Egypt especially along the red sea coast due to the cheap transportation of such mineral ores and products.
The canal strengthened political and international relations between Egypt , Britain, middle east countries like Israel and far east countries like Japan and China. This has increased trade ties as well as technology transfers leading to economic growth and development.
The canal supplements other forms of transport for example road, air, railway so as o create a efficient transport network not only for Egypt but also other neighboring countries.
It has facilitated transfer of technology and new ideas from developed countries like those in western countries like USA and the middle east countries leading to economic growth and development.
It has promoted tourism since it is one of the major tourist attractions and also helps in transportation of tourists to other areas of interest like Mt. Sinai and Sinai peninsula, boat riders along the canal pyramids and so many other attractions. This has led to the development of numerous resorts along the red sea and the Suez canal like Nuweiba, Sharma elshek.

It has led to effective government control to not only Egypt but also other middle east countries like Israel, Jordan, Sicilia and many others. This is through easy transportation of government workers, troops policies and projects.

The canal helped to develop the formerly under developed desert area through attracting settlements, infrastructures and various investments in the area leading to the growth of numerous towns and urban centers like Port Said, port Dahalo, Nuwiba and Taba.

Negatives

Accidents usually occur resulting into death and destruction of merchandise.

Pollution of water as well as noise pollution due to the increased traffic along the canal as well as rapid industrialization in the canal zone.

Delay along the canal due to the increased traffic and longer traveling time of over 12 hours. The delay is also due to the narrowness of the canal which allows single lane traffic.

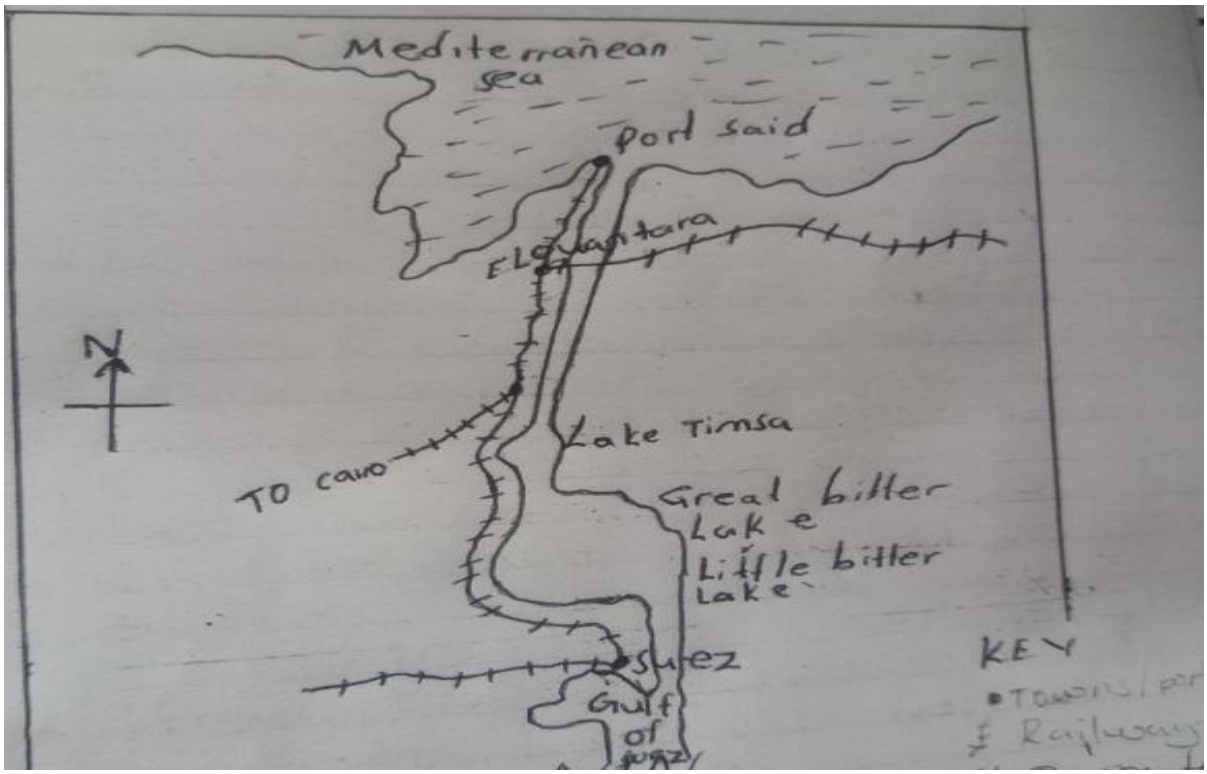
Constant silting of the canal which shallows down its depth and this requires regular dredging.

Development of towns and ports with associated problems like congestion, rural urban migration, slum growth and development and many others.

Regional imbalances in the economic growth and development in the north eastern parts of Egypt have developed at a faster rate compared to other areas in the country.

The canal has brought about political tension between Egypt and Israel at times leading to its closure for example between 1664-1967 resulting into a halt in its usage.

A MAP OF SUEZ



PANAMA CANAL

This is an important water route linking north America to south America but most importantly the Atlantic ocean with a width between 391-305, its depth is between 12-26 meters and the total tourniquet is 80000 tones. The canal was completed in 1914 having funded by the USA and built by the United States Marine corps engineers. However this was the second attempt after the first attempt the French who failed due to a number of reasons especially Malaria and other tropical diseases which wiped away almost the entire work force but most importantly due to bankruptcy of the French company.

It is a vital water way joining the Caribbean sea and the Atlantic ocean. the travelling time along the canal form one end to another is 14 hours and it is due to the numerous locks that were put so as to raise the water volume for larger going ocean vessels to sail through easily. Such locks are found at Gatum Pedro-migul and at Milafores.

The major aims of the canals include:

1. To provide a route way from the eastern to the western coast of the USA.
2. To promote trade between the Caribbean states and other countries of South America through reducing transport costs.
3. To protect America`s` strategic interests in south America so as to guard against soviet expansion in the area.
4. To stimulate exploitation of natural resources like minerals, forests and fisheries in the areas.

CONTRIBUTION OF THE CANAL.

There has been stimulation of the exploitation of natural resources for example minerals like gold and manganese mined from panama, oil from Costa Rica, coal from Columbia as well as gold and oil from California. In addition to mining activities from the gulf of Florida that is oil, iron ore, zinc and copper. This was through easy transportation of mining equipment, workers as well as minerals and mineral products.

There has been growth of towns and urban centers in areas that were too rural and under developed. Such towns started off as small trading centers but now are full modern centers with modern infrastructures that is Balbo in the south near Panama Columbia boarder, pedro-migul and Cristobal.

The panama canal helped to shorten distances that were originally covered by moving down cape horn from the Atlantic before connecting to the pacific for example the canal saves about 7800 miles (km) on a trip from new York t San Francisco by sea. This has helped to save months of hazardous voyages that were covered before.

Te canal has provided cheap transportation of various products from the eastern to the western coast of USA as well as from North America to Asia. Such products include manufactured industrial products like Auto mobiles, Machinery as well as agro products from the eastern coast of USA to central America and the western coast to Asia and other countries.

The completion of the canal in 1914 facilitated mobility of people and attracted linear settlements along the canal zone an area which was sparsely populated before the construction of the canal. Such settlements simulated the growth and development of other economic activities especially trade and commerce, industrialization and many others.

Industrial development was stimulated along the canal resulting into development of various industrial zones and towns for example Cristobal, Pedromigul, Gatun, Panama city and many others. The major industries include agro-0processing, mineral processing, ship building and repair, textiles and many others due to easy transportation of raw materials, workers and finished industrial products.

The canal opened up former remote areas to development as the areas were now made accessible resulting into easy transfer of technologies as well as provision of social and economic infrastructures.

The canal promoted inter territorial co-operation as various countries that use the canal for transportation of imports and exports have come up together so as to map maintenance and sustainability of the canal. This has been through formation of the organization of American states a grouping of North and central American states aimed at fostering mutual cooperation trade between countries.

The canal is a source of government revenue through taxation of the various commodities passing through it. This includes minerals and mineral products, agro-products timber and so many others for example in 2006 revenue worth 1.4 billion USA dollars was realized and such revenue has been used to offer various social services to the people of Panama.

Employment opportunities have been provided to a number of people from the construction stage to the present for example ship captains, traders, port managers together with those employed in the various industries which have been set up after the completion of the canal. This has made such people enjoy a dsposable income and thus improve on their living standards.

The canal has enabled effective government control of Panama leading to easy dissemination and supervision of government policies as well as transporting government agents to different parts of the country. This has been through the improve communication between the northern and southern parts of the country as a result of the canal construction.

The canal strengthened international relations between USA and Panama resulting into increased aid from USA to Panama as well as the increased trade between the two countries leading to economic growth and development.

The canal stimulated the development of an efficient transport and communication network as various road and railway lines were constructed to link up with the canal so as to create an efficient transport network. This has again helped to open up the various parts of Panama leading to their growth and development.

Increased foreign exchange has been realized by the various Caribbean and central American states through increased export of various products for example agro-produce minerals and industrial products from Costa Rica, Columbia, Panama and the Caribbean states like Cuba, Bahamas, Jamaica and many others.

It ha s promoted tourism since it's a major attraction being one of the major marvels of man as he was able to construct a water way in a formerly rocky and highland area. The canal its self transports tourists visiting various places of interest in central America like the dense tropical forests and wild life, drainage features like Gatum lake and other rivers are rich cultural heritage of central Americans and many other attractions with panama and neighboring countries.

Negatives

Accidents along the canal are common resulting in to death and destruction of property. At the construction stage over 10000 workers died due to drowning, Malaria and other tropical diseases as well as accidents. More people have been dying as a result of numerous accidents along the canal.

Development of towns with their associated problems like high crime rate, slum development, congestion and many others towns like Cristobel, Balbore, Pedromigul, Miraflores. There is congestion along the canal leading to delays and increased transport costs this is mainly due to the lock system as one vessel goes through the locks at a time and there are several locks at the Gatun, Pedromigul and miraflores.

Pollution especially air, water and noise pollution due to the increased traffic along the canal.

There is environmental degradation especially deforestation as forests had to be cleared to pave way for construction of the canal.

There was under cutting of steeper areas leading to increased landslides.

Loss of independence on the part of Panama as USA who were the major financers of the project took up control of Panama canal zone that is 50 km on either sides of the canal until the natives had to revolt

leading to the signing of the torrijos-carter treaty on 7th October 1997 which came into force on 31st December 1999 handing over the canal to Panama the run by the Panama canal authority however up to date, USA has a strong hand in running of the canal.
Rural urban migration and its consequences as many people have left the country to come and settle in the various towns that have come up along the canal.
It has also increased smuggling especially the contraband for example drugs, ammunition and other products.

A SKETCH MAP SHOWING THE PANAMA CANAL.

MULTI-PURPOSE RIVER PROJECT

These are undertakings along the river aimed at achieving various purposes or solving numerous problems. Such projects usually have a number of aims and these include ;

1. Controlling flooding
2. Generation of HEP
3. Providing water for irrigation purposes
4. Creating a reservoirs for fresh water for domestic and industrial use .
5. To promote inland fishing.
6. Generally foster development of areas that were formerly under developed and facing various limitations. The development of the multi-purpose river project started in Europe and America and later on spread to south America and Asia.

In Africa the major projects include the following:

1. Aswan high dam project in Egypt.
2. The Volta project in Ghana.
3. The kariba project in Zambia.
4. The orange river project in south Africa.
5. Caborabassa project in Mozambique.
6. Niger project in Nigeria.
7. Inga project in DRC.
8. Lesotho highlands water project.
9. Claque river project in Namibia.

ASWAN HIGH DAM PROJECT

The project is located on river Nile in Egypt. It has two major dams. One was built in 1903 but was inadequate and therefore a second one was started in 1956 and completed by 1970. It is this second dam that gave meaning to the project.

The project was built with technical and financial assistance from the former soviet union at a cost of over one billion dollars.

The major aims of the project included:

1. To control floods which used to cause destruction especially along the nile valley.
2. To create a large reservoir of water for irrigation purposes of the dry desert lands.
3. To generate HEP.
4. To promote fishing and navigation on the manmade lake.
5. To produce more food for the country`s `ever rising population. After the completion of the dam, a large manmade lake was created and named after the man who championed the whole project (Abdul Nasser) and it is called Lake Nasser. It stretches up to Sudan thereby forming large fishing grounds as well as inland water way.

Contributions.

It helped to increase the cultivated land in Egypt. before the project was under taken 2.2 million hectares of land were under cultivation but after the completion, additional land was made available and today the total land under cultivation is over 5 million hectares. Additional land is also being developed from the formerly sandy area of the country commonly known as the new lands.

Generation of HEP that is over 1000 mega watts of power is being generated and used mainly for domestic and industrial purposes and that is why most industrial centers like Aswan, Luxor, Helwan and Cairo draw power from the Aswan power plant.

The complete control pf the Nile through Damming helped to reduce the risks of floods thereby saving money which would have been spent on flood damage repairs. This control of the Nile also stopped disturbances of the various economic activities in the lower Nile valley. The generation of the power has also saved foreign exchange which was initially spent on imported fuels for thermal power facilities. This money has been diverted for agricultural production.

The formation of lake Nasser as well as the stabilization of the Nile waters made navigation possible as the new water level of the lake helped to cover former dangerous sports like rock shoals as well as cateras.

There has been development of industries due to the constant supply of power for example iron and steel industries, grain milling located at various industrial centers like helwan, Luxor, Cairo and many others located nearer to the power station.

Foreign exchange is earned through the export of power to neighboring countries especially Sudan and Libya. In addition agricultural products got from te various irrigation fields are also exported to other countries thereby earning Egypt foreign exchange.

It created a reservoir for fresh water that is supplied to the major cities of Egypt for both domestic and industrial purposes for example Cairo, elm hula, el-kubra, itelwan and many others.

The success of the dam project made it a model project leading to the emergence of other river schemes in the country for example the new valley projects and the Taherero province. These are irrigation projects aimed at increasing projects in the country. Additional various small HEP stations have been opened up center based on the Aswan high dam project mode.

The scheme led to the development of a new township and urban centers which were rather remote and under developed. There are over 70 new types which were formed due to the construction of the dam and one such towns have modern social and economic infrastructure including piped fresh water and the recreational facilities.

The project is a major tourist attraction attracting plenty of tourists from within and outside the country due to its various features like the dam wall, manmade lake sluice gates and turbans making the country earn foreign exchange from such tourists and thus developing the tourism sector.

Fishing is carried out on the manmade lake that is lake Nasser thereby providing Egyptians with the cheap source of animal proteins as well as stimulating the industrial development in the form of fish processing industries.

The formation of the lake Nasser as well as the damming of the Nile created an important inland water way connecting Egypt to Sudan and this led to easy transportation of passengers and cargo between the countries.

Afforestation programmes were carried out as part of the scheme with the aim of stabilizing the banks of the Nile and also to form wind belts so as to reduce on soil erosion and its impact on such a scheme. Such forests led to the modification of climate experienced within the area.

The project promoted and strengthened international relations between Egypt and other countries like Sudan, Uganda, Russia and the UK. The relationship with Uganda and Sudan is mainly due to sharing river Nile while the relationship between Russia and UK were due to financing aid given to Egypt by the 2 countries. Such relations have led to increased trade ties, technological transfers and other inter-sectral cooperation leading to the development of the 2 countries.

The success of the project led to the transformation of the formally idle desert lands into agriculturally productive areas as well as industrial centers leading to development of the region.

Negatives.

There was displacement of people from their original settlements for example 42000 people were displaced from 13 villages to the north. A complete townish of Wardihaifa was displaced in the process. The project further displaced Namibians of southern Egypt and other parts of Egypt.

The resettlement of people cost a lot of money since they were to be given land twice as big as their original plots and provided as an incentive for people to agree to move to new areas.

There was loss of silt which used to increase on the fertility of soils in the Nile delta. This is so due to the construction of the high dam wall which held back the silt.

Having deprived the Nile delta of an annual delivery of over 150000 tones of silt, there is now serious erosion from the Mediterranean sea thereby reducing on the expansion of the delta and also reducing on the fishing activities especially sardine fishing.

Much water is lost due to excessive evaporation as well as infiltration form the lake and other surrounding rocks.

The project led to the increased salinity of the soils due to excessive evaporation resulting into lower yields as well as increased costs due to the use of chemical fertilizers so as to replenish soil fertility.

Development of town and their associated problems like congestion, high crime rate, slum development in town like ko-ombo, Aswan Luxor and many others.

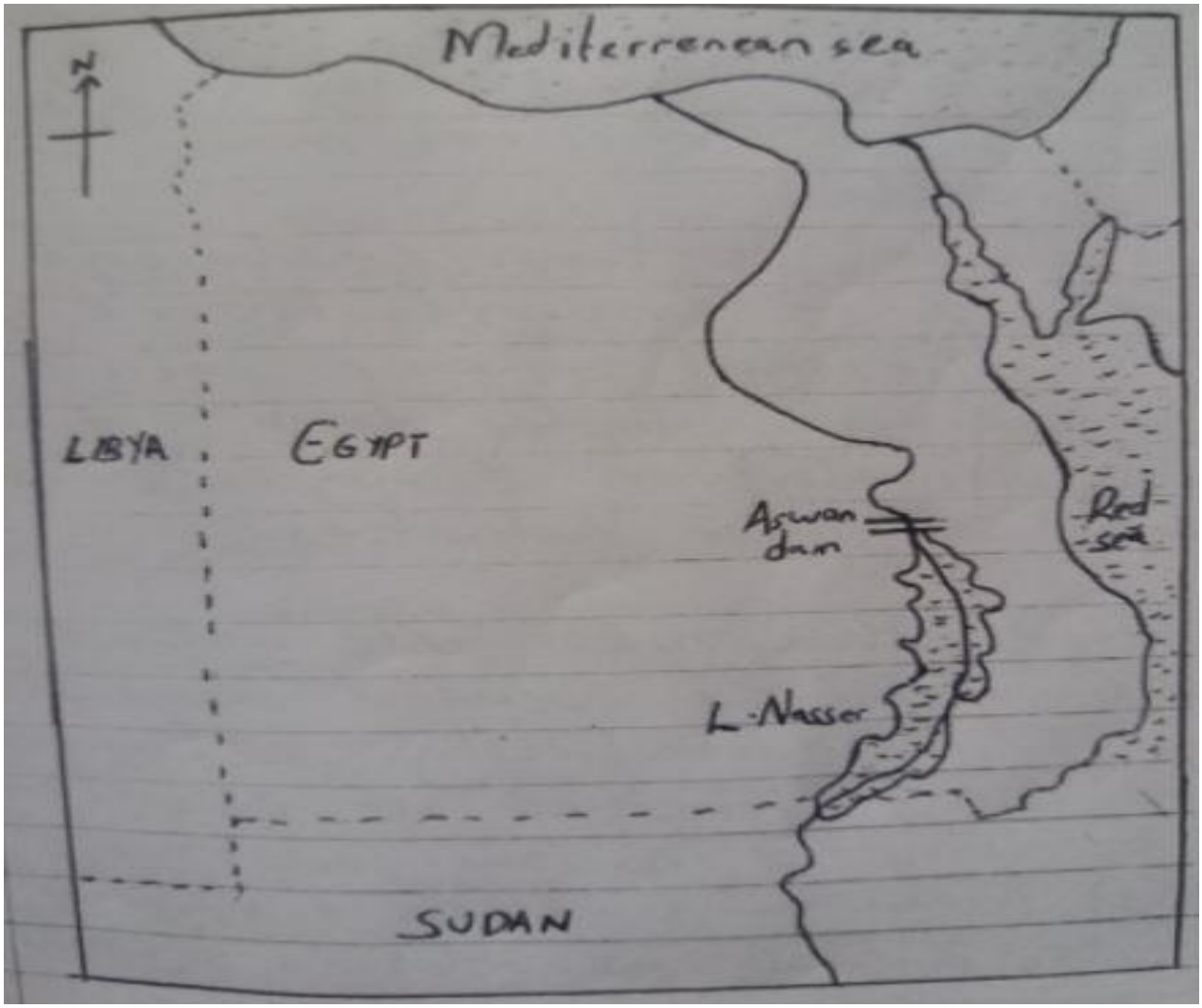
Pollution from the various industries as well as the increasing use of chemical fertilizers causing air and water pollution.

The stagnant waters from the irrigated fields are breeding grounds for disease causing vectors like mosquitoes and water snails resulting into malaria and Bilharzia respectively.

Rural-urban migration and its consequences for example rural under development and reduction in food production as well as congestion in the urban centers.

Regional imbalances in economic growth and development as areas where the project is located have grown at a faster rate compared to those areas far away especially in the west of the country.

A SKETCH MAP SHOWING THE ASWAN HIGH DAM PROJECT.



VOLTA PROJECT (GHANA)

This is a multi-purpose river project found in Ghana. It was financed by the USA and the world bank United Kingdom and a small contribution by Ghana. The project began in 1963 and was completed in 1966 with the main dam at Akasombo on river Volta.

The main aims of the project include:

1. To generate HEP so as to boost industrial development especially aluminium smelting at Tema.
2. To promote irrigation agriculture by constructing a large water reservoir.
3. To control occasional flooding especially between October and march which used to destroy property and cause loss of lives.
4. To supply fresh water to neighboring countries.
5. To promote navigation along the river and on the manmade lake that is lake volt.
6. To reduce foreign exchange outflow due to the importation of coal and oil for thermal power production.
7. To generally foster development of the area through stimulation of agriculture, industrialization, fishing and other activities.

The Akasombo site where the main dam is located was selected due to is suitability that is having a hard rocky structure for the basement of the dams, a narrow section of the river (gorge) making it easy to block a large volume of water as well as a wide valley behind the Akwapim which provided the ideal site for the water reserve.

The dam generates 550 mega watts from the 6 turbines and its reserves that is lake Volta is 3rd largest manmade lake in the world stretching over 320 km from north to south. After the success of the Akasombo dam project, another project was undertaken 40km downstream from the Akasombo and its own as the Kpong project.

CONTRIBUTION OF THE PROJECT.

Generation of HEP for both domestic and industrial purposes. The dam generates 550 mega watts which has been used for various domestic purposes as well as industrial uses.

Foreign exchange is earned after exporting power to other countries especially Togo and Benin. This foreign exchange has been used to maintain the dam and other infrastructures.

Reduction in coal and oil imports thereby saving foreign exchange which as formerly spent .

There has been expansion of the mining sector due to the cheap supplies of power for example gold mining at Obuasi and Dunkwa, Manganese at Takoradi and Sekondi, Iron ore and diamonds at Tarkwa and Bibiani.

There has been rapid industrial development for example iron and steel industries, aluminium smelting, petro-chemical industries as well a agro-processing industries found in Ghana`s industrial zones like Takoradi, Sekondi and Accra-Tema industrial region.

The manmade lake that is lake Volta provides inland water transport for both passengers and cargo across Ghana.

The project is a major tourist attraction as tourists both local and foreign visit the area to have a look at the manmade lake and many other attractions making the country to earn foreign exchange.

Employment has been provided to the people of Ghana as technicians, engineers, managers, secretaries and many others which has led to an improvement in the living standards.

Stimulation of infrastructure development for example roads, schools, recreation centers thereby improving on the living standards of the areas where such are found.

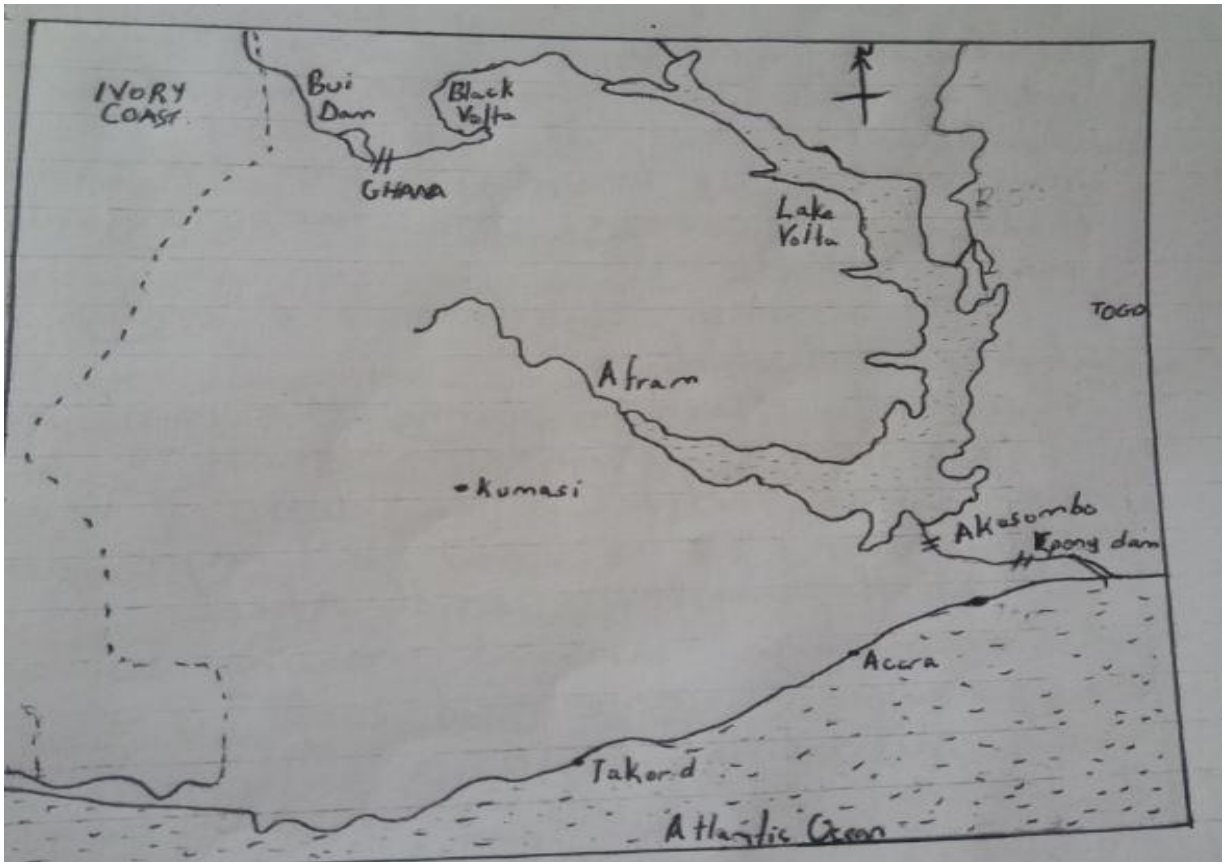
There has been development of towns and urban areas in areas that were formerly rural and under developed. These started off as smaller townships, attracted more people and investments leading to

their expansion and today they are major towns with developed social and economic infrastructures that is Kumasi, Aswaso, Koforindwa, Kema Kipong and many others.
Floods which used to destroy life an property have been controlled thereby saving money which would have been spent on flood damage repairs.
The project increased land under cultivation due to provision of water leading to more food production as well as cash crop growing for example rice, ground nuts and many others.
Fishing is carried out on lake Volta thereby providing a cheap source of animal protein to the people of Ghana.
The project strengthened international relations between the donor countries like Ghana together with other countries that that import HEP from Ghana like Togo and Benin.
The project acted as a model project to other multi-purpose river projects not only to Ghana as it is the case with the Kipong project but even in other African countries.
Government obtains revenue through taxing the various industries established as well as the workers that provide the social services.
There was modification of climate through the increase in evapo transpiration as well as the various forests that were planted as part of the project.

Negatives.

The project was expensive in the part of Ghana costing over 120 million dollars which money was borrowed from USA, UK and the world bank therefore citizens had to be taxed highly so as to repay the loan.
Displacement of over 50000people from their villages and the resettlement of the same people cost the government dearly.
The back ponding of the waters due to the construction of the dam wall flooded farm land resulting into destruction of crops.
Pollution that is air, water and noise pollution from the various industries that were set up as well as the usage of the fertilizers on the farm lands.
The lake became a common barrier since it separated Ghana making east and west communication rater difficult.
Regional imbalanced in economic growth and development as areas near Akasombo dam have developed at a faster rate compared to the northern and western parts of the country.
Growth of towns and associated problems.
Loss of silt which is used to fertilize the soils downstream.
High maintenance costs for example dredging and other activities.

A SKETCH MAP SHOING THE VOLTA.



THE ORANGE RIVER PROJECT.

Is the largest multi-purpose river scheme in the whole of Africa found in south Africa and it has been a major basis for the country`s` agricultural and industrial development. The scheme started in 1962 and by 1990 a greater part of it had been completed. Its cost has been put to over 900 million dollars.

The scheme has several dams for example the Vaal dam, Hertz dam Hendrikverwolerd, Gariep, Vanderkloof, Torquay, Clan William and Buchuburg. The orange river on which the scheme is located originates from the Drakensburg mountains in the east flowing west wards through the republic of South Africa to the Atlantic coast. It also forms an international boundary between South Africa and Namibia. It has several tributaries for example Caledon, Vaal, Fish and Hertz.

The main objectives of the river scheme include:

1. To control flooding during the rainy season.
2. To encourage irrigation farming in the drier but fertile dams of the semi arid regions of the central cape province and the north western south Africa.
3. To encourage animal rearing as well as growing of more food crops for the country`s ever increasing population.
4. To reduce soil loss to the Atlantic ocean by controlling the rate of soil erosion an silt loss.
5. To develop the north western areas of the republic of south Africa so as to help in decongesting the eastern parts of the country.
6. To generate HEP so as to foster industrial development in the country.

IMPORTANCE OF THE SCHEME.

The orange river project increased irrigation thereby creating more land for agricultural development for example at the Buchuburg dam an increment of 28000 hectares of agricultural land was realized while at Torquay more than 1200 hectares f land was added onto the existing land.

Increase in agricultural land also increased crop production to over 25% especially in the production of fruits, vegetables, maize, wheat, ground nuts, cotton and many others which were grown on a large scale thereby guaranteeing food security for the south Africans.

The dangers of severe droughts over a large area of the Karoo was greatly reduced through artificial application of water and South Africa became a major producer of wool as a result of improved sheep rearing in the region.

Flood control was also under taken through the building of dams, stabilizing of the river banks well as reducing silting and all this reduced damages. It also helped to save funds which would have been sent o the flood damage repairs.

Te creation of the large water reservoirs through damming helped to stabilize water supply for the new and existing irrigation schemes and in addition helped to supply fresh water with the neighboring towns and urban centers like Kimberly Buchuburg, Clan Williams and many others.

There has been production of HEP for both domestic and industrial use for example 240 mega watts are produced at vanderkloof power station. Over 500 mega watts from Gariep station and this combined with power from other stations has provided much needed HEP for both domestic and industrial purposes.

The success of the project made it a reference point and model scheme for setting up other multi-purpose projects not only in the republic of south Africa but also in the rest of Africa for example the Kainji project in Nigeria, Kariba project in Zambia, Kaborabosa in Mozambique as well as the Lesotho highlands water project.

Employment opportunities have been provided to a number of people of south Africans as farmers, engineers, transporters and those employed in the various industries. This has made them earn a disposable income and thus improve on their living standards.

The project and its various facilities like the dams and manmade lakes, the power houses, recreation facilities and many others have promoted tourism as both local and foreign tourists have been attracted to the area so as to see the various facilities. This has earned the country foreign exchange.

There has been development of social and economic infrastructures as schools, health centers, recreation facilities and many others have been set up in the area either by the government as part of the scheme or by the various industries established as part of their cooperate social responsibility. This has improves on people`s standards of living in the area.

There has been modification of climate from semi-desert climate to a modified sub-tropical type due to the reforestation and afforestation carried out in the area as part of the project.

Foreign exchange is acquires after export of power to neighboring Namibians as well as export of various irrigation fields to other countries.

There has been attraction of settlements into a formerly sparsely and under developed area. North western Africa was sparsely populated and rather undeveloped due to the harsh climatic conditions which cannot support agriculture and other activities but the success of the project attract settlements into the area.

There has been development of towns and urban centers which started off as small trading centers but are now major towns with developed social and economic infrastructure for example Vanderkloof, Gariep, Torquay, Buchuburg and many others.

The project promoted international relations between the republic of south Africa and other countries in which it under took te project that is Lesotho and Namibia and also other countries that sponsored the project that is UK and USA. This led to increased trade ties as well as economic growth and development.

Negatives.
Pollution.
Development of towns and associated problems.
Rural urban migration and its consequences.
Displacement of people from the area.
Loss of silt in downstream areas.
Accidents which led to death of workers as well as destruction of property and the increased level of water in te surrounding areas.

TENNESSEE VALLEY AUTHORITY.

By 1930 there was massive deforestation followed with poor farming methods in southern USA. This resulted into severe gulley erosion and the soils eroded from the slopes were deposited into river Tennessee and other rivers like Ohio and Cumberland.
This swallowed the river for navigation and resulted into flooding. The floods damaged people`s crops and led to loss of lives as far as the lower Mississippi. This isolated te area from other parts of the USA making it under developed. In order to rehabilitate the area, the Tennessee valley authority was setup by then president Roosevelt was to supervise and coordinate the projects that were set up in the area.
The major aims included the following:

1. To control soil erosion.
2. To control flow of rivers so as to reduce flooding.
3. To generate HEP
4. To create viable infrastructures so as to generate or stimulate economic activities in the area.
5. To generally foster or encourage economic growth and development in the area which was under developed compared to other parts of USA.

The major steps which were taken included:
Damming of rivers that is 29 dams were put in place along the rivers Tennessee, Ohio, Kamba and the dams included Kentucky, Pickwick, Wheeler, Chattanooga, Nick jack and many others.
Afforestation and reforestation programmes.
Demonstration firms were put up to teach farmers modern farming methods.

Contributions.
Foreign exchange is acquired after the export of power to neighboring countries like Mexico as well as export of agricultural products from the numerous farms that were put up through te provision of irrigation water.
Employment opportunities were provided to a number of Americans s technicians, engineers, builders, engineers and others working in the various departments of the valley authority. This made them earn a disposable income thereby improving on their living standards.
Provision of safe fresh water to the various communities as well as townships found in the area. This was mainly through the damming of the rivers which created large fresh water reservoirs from where water could easily pumped to nearby towns for both domestic and industrial uses.
The project helped to reclaim lands that were formerly flooded as well those which needed irrigation water so as foster agricultural production.
There was development of tourism due to various attractions that were created as a result of the Tennessee valley authority for example the various dams and their architectural types, manmade lakes,

the power houses and other attractions that came up as a result of the project. This makes the various states earn foreign exchange from the tourists.

The project stimulated inland fishing activities from the numerous manmade lakes as well as rivers. This made the to possess a cheap source of animal proteins ad also employed a number of them through the fishing activities.

There was development of towns and urban centers in the area that was formerly rural under developed and some parts abandoned. Such towns started off as small trading centers attracted various industries as well as modern infrastructures leading to attraction of more people in the area. They are now bigger towns with modern infrastructures for example Knoxville, Colbert, Kingston, Chattanooga, Guntersville.

Navigation along river Tennessee and others like Ohio and Kambaland was made possible due to the various steps that were under taken along the rivers for example stabilizing of the river bank, damming, dredging to increase the depth as well as afforestation and reforestation programmes as well as planting of guava crops aimed at reducing erosion.

Generation of HEP from the over 24 power stations and this is being used for both domestic and industrial purposes.

There was stimulation of industrial development for example aluminium smelting at Chattanooga, paper milling and printing at Calhoun as well as textiles at Alcoa together with agro processing industries and fish processing industries. The success of the scheme made it a model scheme for other schemes in the country s well as other countries for example lessons learnt at Tennessee valley authority were instrumental at California water transfer scheme.

Government revenue through taxing the various industries and the workers in the different industries and other projects which were set up in the area. Such money is used to set up various social and economic infrastructure.

There was increase in food production due to the increase in land under cultivation as well as the provision of irrigation water.

The success of the project especially reforestation and afforestation programmes helped to modify the climate of the area through the high evaporation as well as evapo-transpiration rates experience in the area.

Negatives.

Pollution from the numerous industries as well as agricultural chemicals used on irrigated farms.

Loss of silt in downstream areas of the rivers that were dammed as well as the lower Mississippi vally.

Displacement of people from the area as over 15000 families were displaced from the areas affected by the project.

Stagnant water in the irrigated fields became the breeding ground for disease causing vectors like mosquitoes and water snails.

Regional imbalances in economic growth and development as areas covered by the project developed at a faster rate compared to other areas far away from the project area.

Development of towns and their associated problems like congestion, slum development, easy disease spread and many others.

Rural-urban migration and its consequences.

SKETCH MAP OF SHOWING AREAS COVERED BY TENESSEE VALLEY AUTHORITY .

Questions.

1. Examine the contribution of either the Niger river project or Tennessee valley authority?
2. Assess the importance of either the Aswan high dam project or the Kariba dam project to the economic development of its respective area?
3. Outline the major aims of the orange river project?
4. Of what significance of the project in (a) above to its respective area?