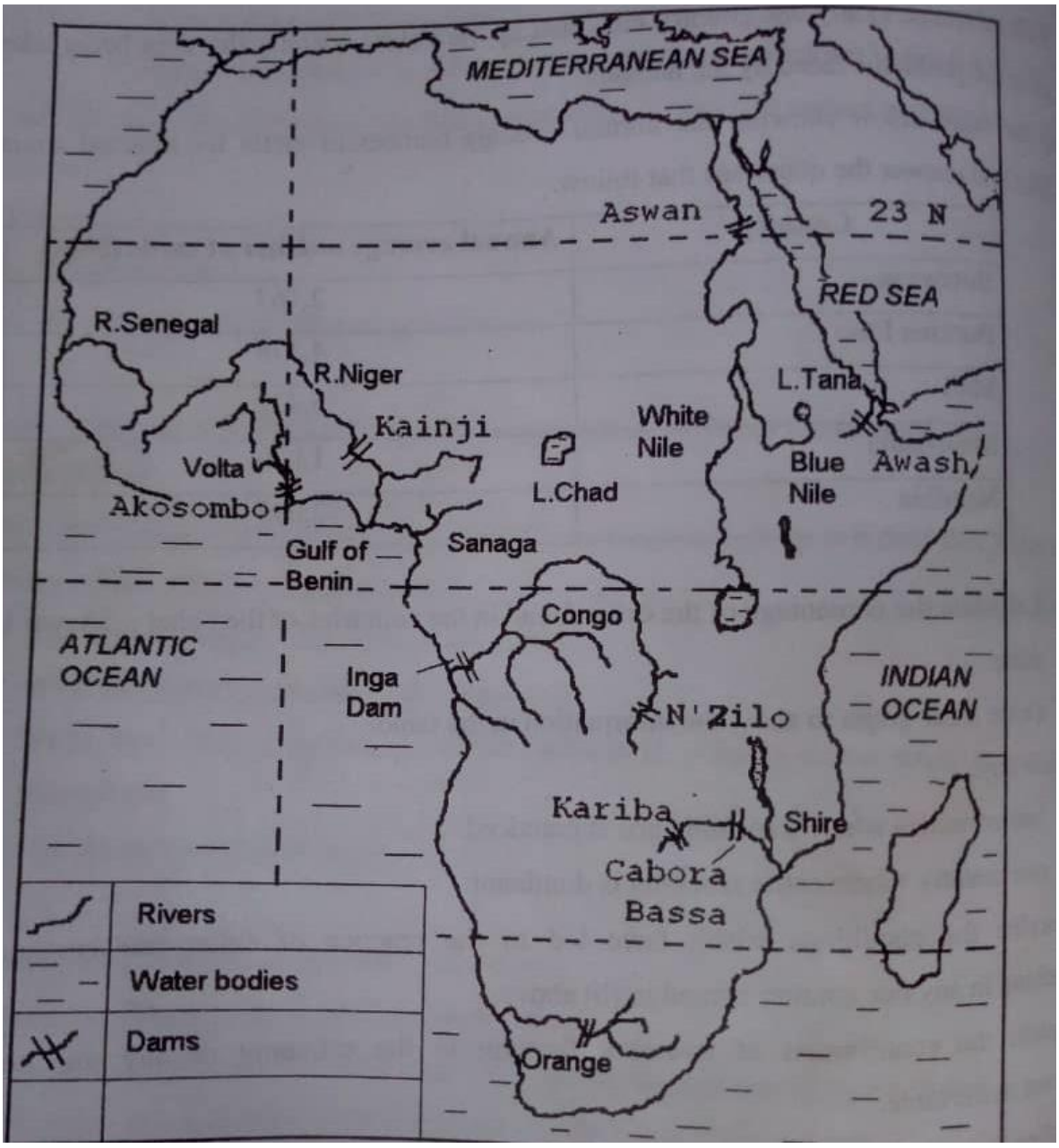
S3 GEOGRAPHY

MULTI-PURPOSE RIVER DAM PROJECTS

A multi-purpose project refers to man's efforts to control a river to serve him in a number of ways other than work against him like generating electricity, controlling floods, providing irrigation water, developing transport, among others.

A SKETCH MAP OF AFRICA SHOWING MULTI-PURPOSE RIVER DAM PROJECTS IN AFRICA.



REASONS WHY A SITE FOR ANY RIVER DAM PROJECT WAS CHOSEN

Qn; Explain conditions that favoured establishment of any one river dam project.

PHYSICAL CONDITIONS

- Presence of a water fall on which to build the dam.

- Presence of a gorge, which simplifies building construction given the narrow space.

- Availability of hard basement rocks to support dam construction.

- Presence of fast flowing water to allow electricity generation.

- Availability of large water volumes, to sustain the project.

- Presence of vast land space on which to establish the project.

- Presence of gently sloping landscape to allow easy flow of irrigation water.

- Presence of a permanent water source i.e. a river on which to establish the project.

- Presence of a broad valley to act as a reservoir (man made lake) behind the dam.

- Existence of drought conditions that require water supply.

- Presence of a flat scape allowing establishment and expansion of the project.

HUMAN CONDITIONS

- Availability of adequate capital to buy needed machinery for the project.

- Presence of a low population to provide space for the project.

- Availability of skilled labour to work on establishing the projects.

- Presence of a wide market for example for the to be generated power.

- Presence of efficient transport e.g. roads to transport labour and equipment.

- Positive policies of gov't like providing funding for the project.

OBJECTIVES FOR ESTABLISHMENT OF ANY MUTI-PURPOSE RIVER DAM PROJECT

- To provide water for irrigation.

- To generate hydro-electric power.

- To provide fresh water by creating a man-made lake behind the dam

- To control river flooding.

- To develop water transport.

- To allow fishing activities on the lakes and rivers.

- To promote tourism activities on the man-made lake.

- To create employment opportunities e.g. for the fisher men.

- To ensure adequate food supply.

- To prevent excess water loss to the sea.

- To control soil loss in form of silt to the sea or oceans.

BENEFITS OF MULTI-PURPOSE RIVER DAM PROJECTS

- Increase in food production for the country using irrigation farming.

- Fresh water is provided from the man-made lakes for domestic use.

- Providing electricity for domestic and industrial use.

- Water transport is developed on the lakes and rivers.

- Fishing is carried out on the man-made lakes.

- The dam controls river flooding.

- Infrastructural development is realised in form of roads, railway lines and electric lines.

- Egypt earns foreign exchange through tourism and exports of Hydro Electric Power to neighbouring countries.

- Creation of employment opportunities giving the locals income.

- Reduced government expenditure on importation of Hydro Electric Power and food staffs provided by the dam.

- Industrial development due to adequate power supply from the dam e.g. aluminium plant, fertilizer plants/factories.

- There has been development of towers and urban centres near and around the dam e.g. Aswan town with advantages like better roads.

- Generation of local revenue from taxes used to build roads.

PROBLEMS RESULTING FROM ESTABLISHMENT OF A MULTI-PURPOSE RIVER DAM PROJECT.

- Displacement of people in order to establish the project.

- Human diseases like bilharzia in the shallow waters near the project.

- The man-made lake cuts off transport from one end to another of the country.

- The generated power is usually very expensive for the local consumers.

- Soil pollution from industries and chemical fertilizers.

- Soil exhaustion resulting from monoculture, on farmlands around the dam.

- Urban related problems like high crime rates in the towns around the dam.

- Continued flooding destroying property and farm lands.

- Loss of fertile soils to the sea inform of silt.

- Loss of grazing land and farm land to the formed man-made lakes.

-Silting of canals preventing water flow.

- Crop pests and diseases affecting crop production.

SOLUTIONS/STEPS BEING TAKEN.

- Resettlement of people in new areas.

- Building health centres to treat the sick.

- Applying fertilizers to improve soil fertility.

- Dykes/walls are built to control flooding.

- Putting in place anti pollution laws to prevent pollution.

- Spraying with pesticides to control pests and diseases.

- Continuous dredging of canals to prevent silting.

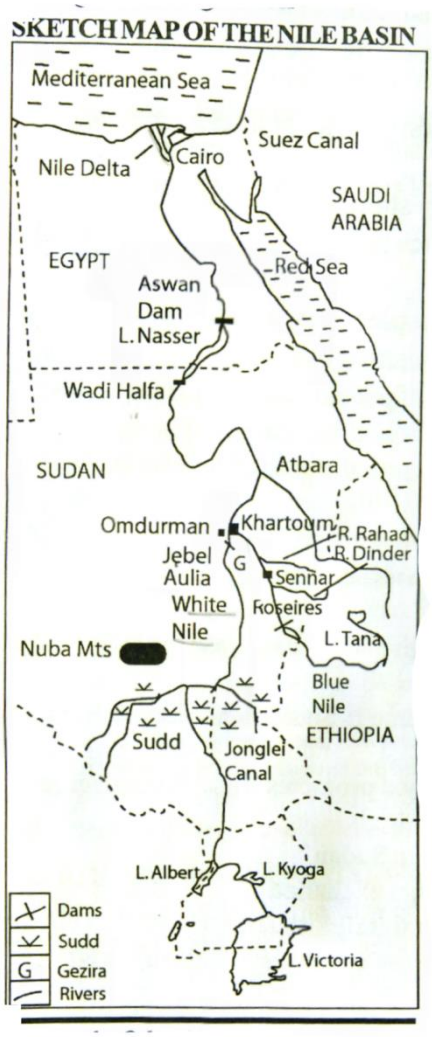
CASE STUDIES OF MULTI-PURPOSE RIVER DAM PROJECTS IN AFRICA.

THE ASWAN HIGH DAM.

This dam is found in southern Egypt, along river Nile. It was completed in 1970. Funding and experts for its construction were provided by Russia, in addition to the country's local labour.

The dam has capacity to produce 2100 megawatts, although at present it produces 1000 megawatts.

LOCATION OF THE DAM


SKETCH MAP OF THE NILE BASIN
Mediterranean Sea
Suez Canal
Cairo
Nile Delta
SAUDI
ARABIA
EGYPT
Red Sea
Aswan
Dam
L. Nasser
Wadi Halfa
SUDAN
Atbara
Omdurman
Khartoum
R. Rahad
R. Dinder
Jebel
Aulia
G
Sennar
White
Nile
Roseires
L. Tana
Nuba Mts
Blue
Nile
ETHIOPIA
Sudd
Jonglei
Canal
L. Albert
L. Kyoga
L. Victoria
Dams
Sudd
Gezira
Rivers

THE VOLTA RIVER PROJECT ON AKOSOMBO DAM IN GHANA.

This is one of the oldest schemes in Africa. Construction started in 1963 and it was opened in 1966.

Funding of the project was from the world bank, USA and UK, by persuasion of then prime minister Dr. Nkwame Nkrumah.

LOCATION OF AKOSOMBO DAM

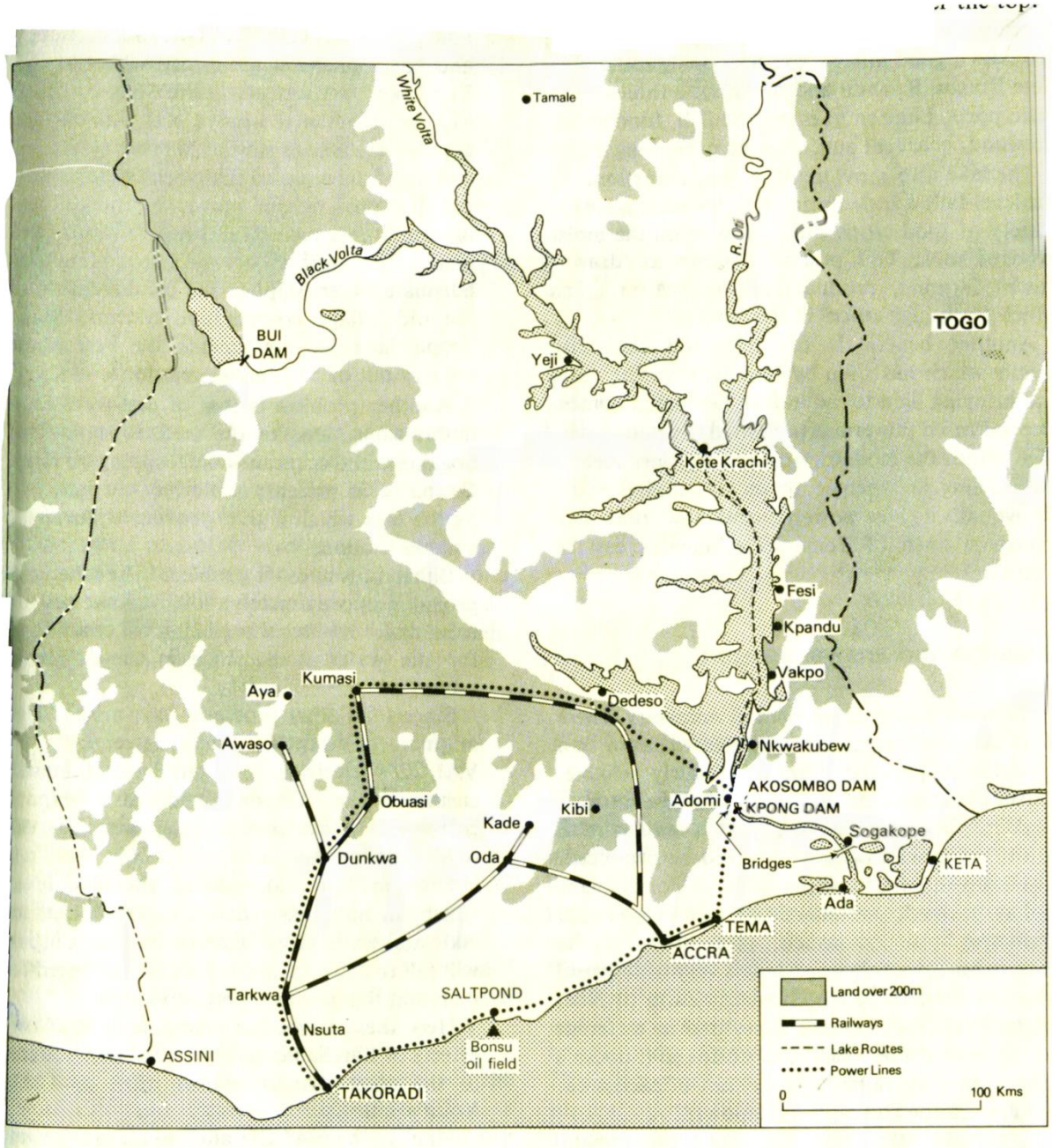
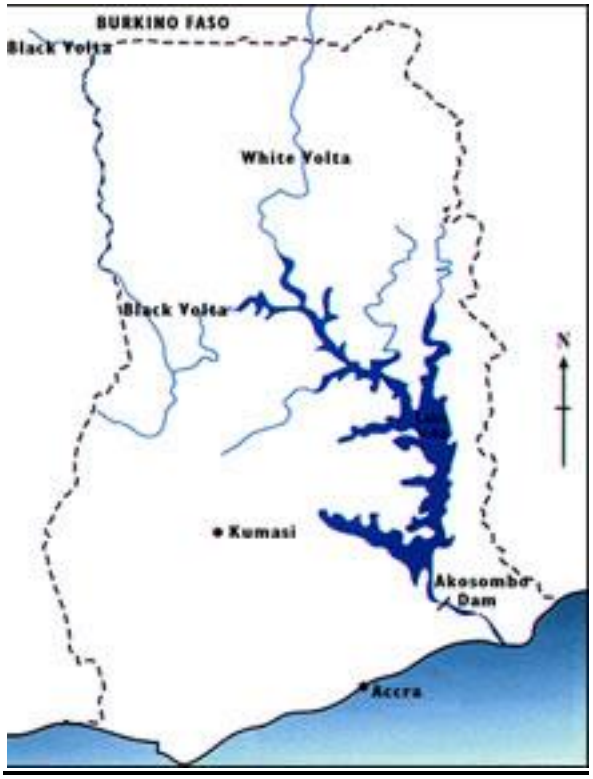


Fig. 88 The Volta River Project



KAINJI DAM IN GIGERIA

Kainji dam is found on river Niger about 550km north of Lagos in Nigeria.

The dam opened in 1969 and has 12 generators, that produce 960 megawatts.

The dam is 66m high and 55m long. Behind the dam is a manmade lake called Kainji reservoir, that is 130 km long.

LOCATION OF KAINJI DAM

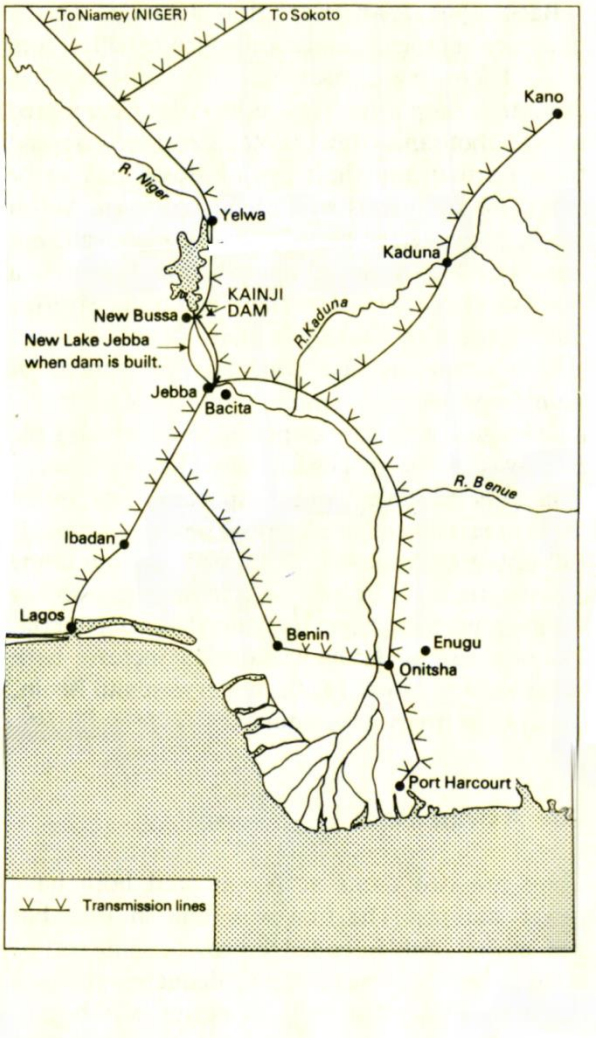


Fig. 90 The Kainji Dam

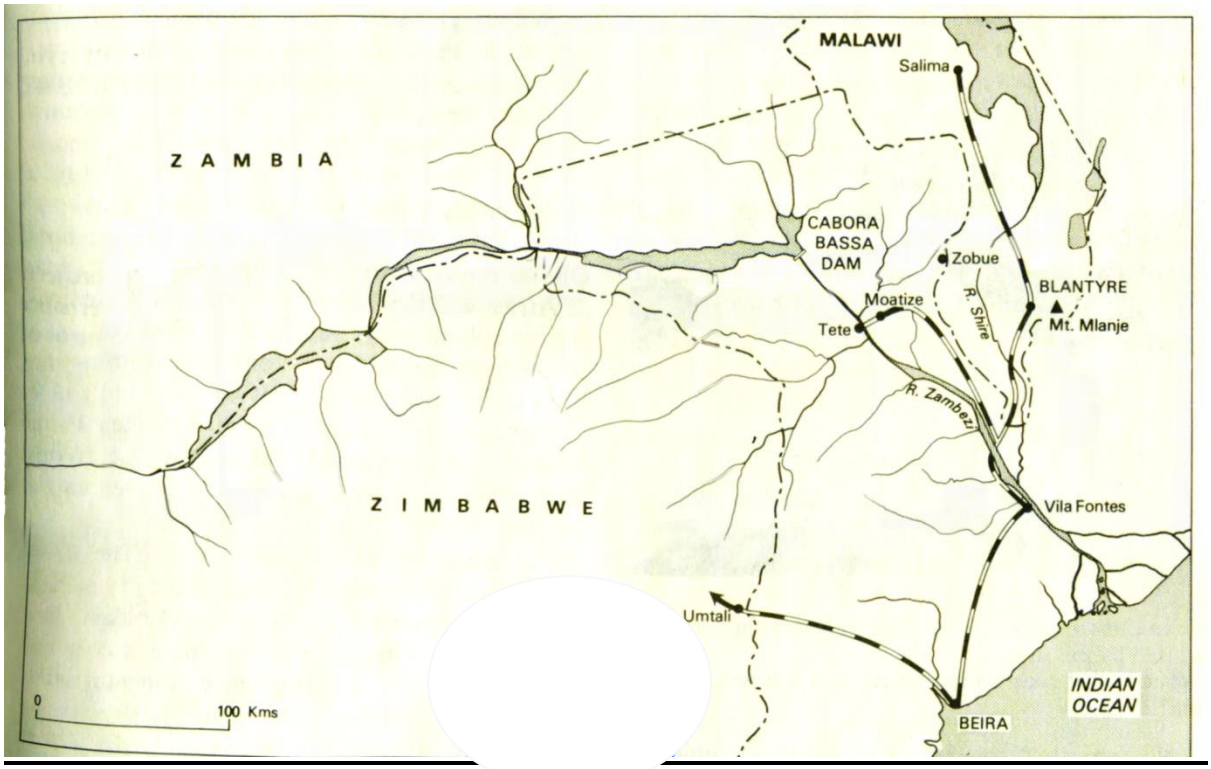
CABORA BOSSA DAM IN MOZAMBIQUE

Its found on river Zambenzi in Mozambique and was built on the Quebrabasa gorgewhich is narrow, making construction easy and less costly.

Construction of the dam started in 1969 and the first phase was completed in 1975.

The dam is 160m high and 300m long. It produces 2000 megawatts from its five 408 megawatts generators. Its funding was by south Africa.

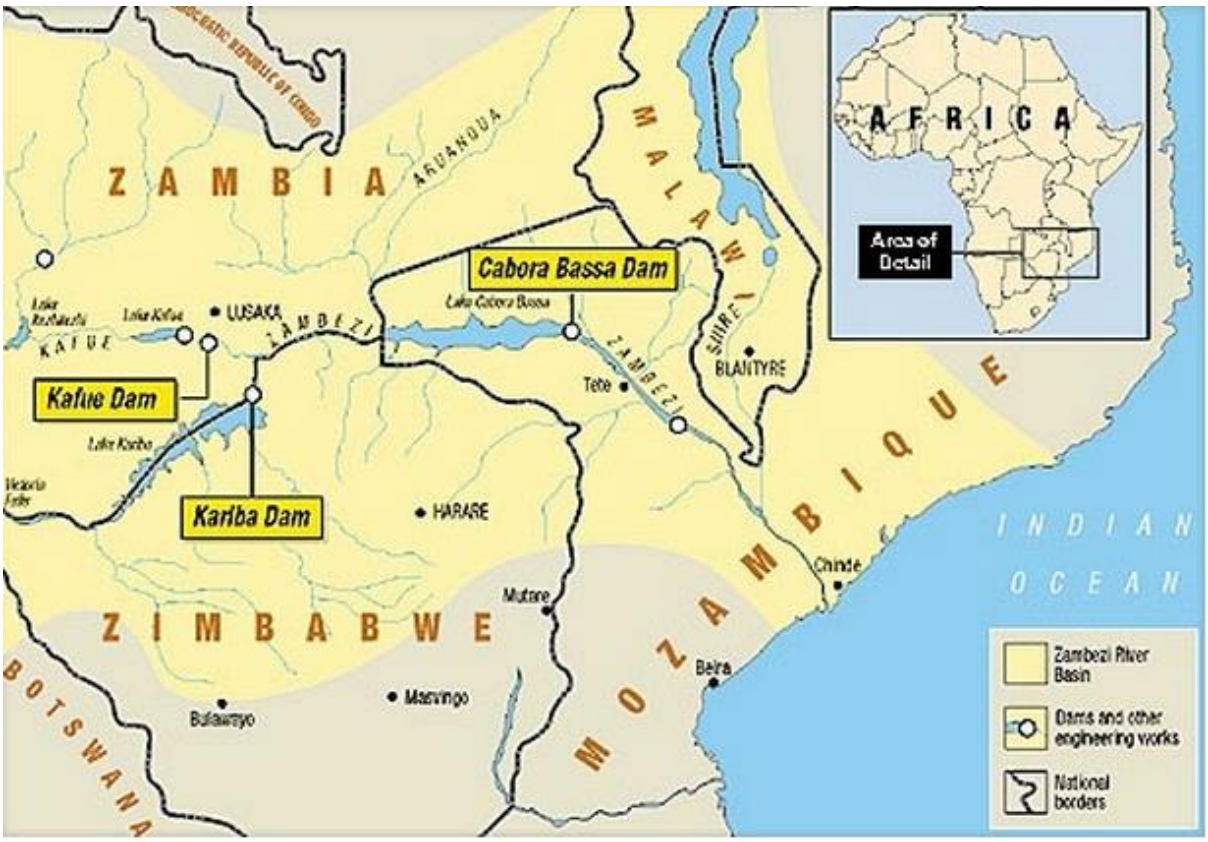
LOCATION OF THE DAM



KARIBA DAM IN ZAMBIA /ZIMBABWE

The dam is found on river Zambezi along the border between Zambia and Zimbabwe.

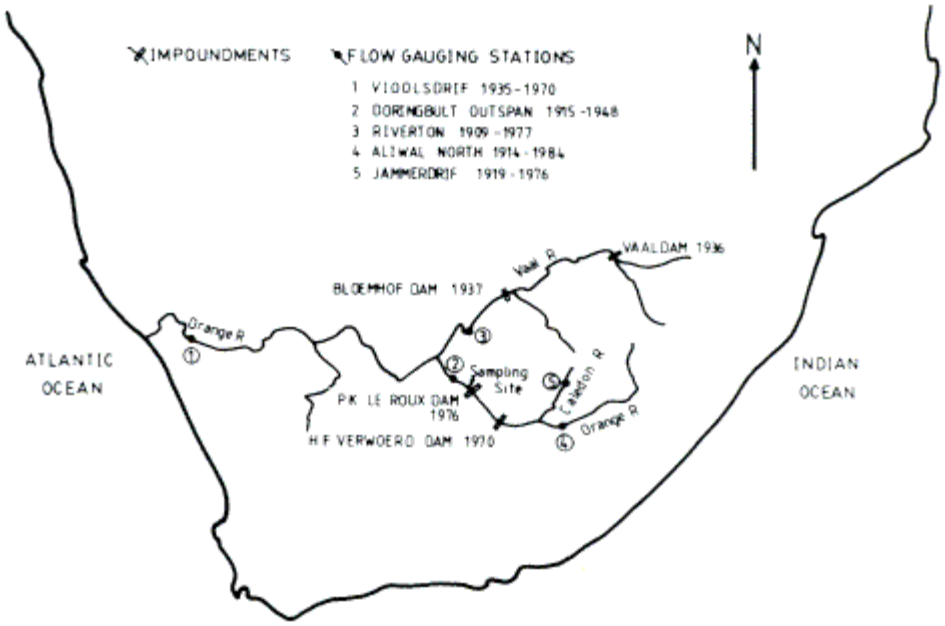
The dam generates 600000kilowatts, 49% of which goes to Zimbabwe and 51%, to Zambia.



THE ORANGE RIVER SCHEME

This is an extensive scheme on river Orange and her tributaries. construction started in 1962 and work was completed in the 1990's. It comprises of various dams.

LOCATION OF THE SCHEME

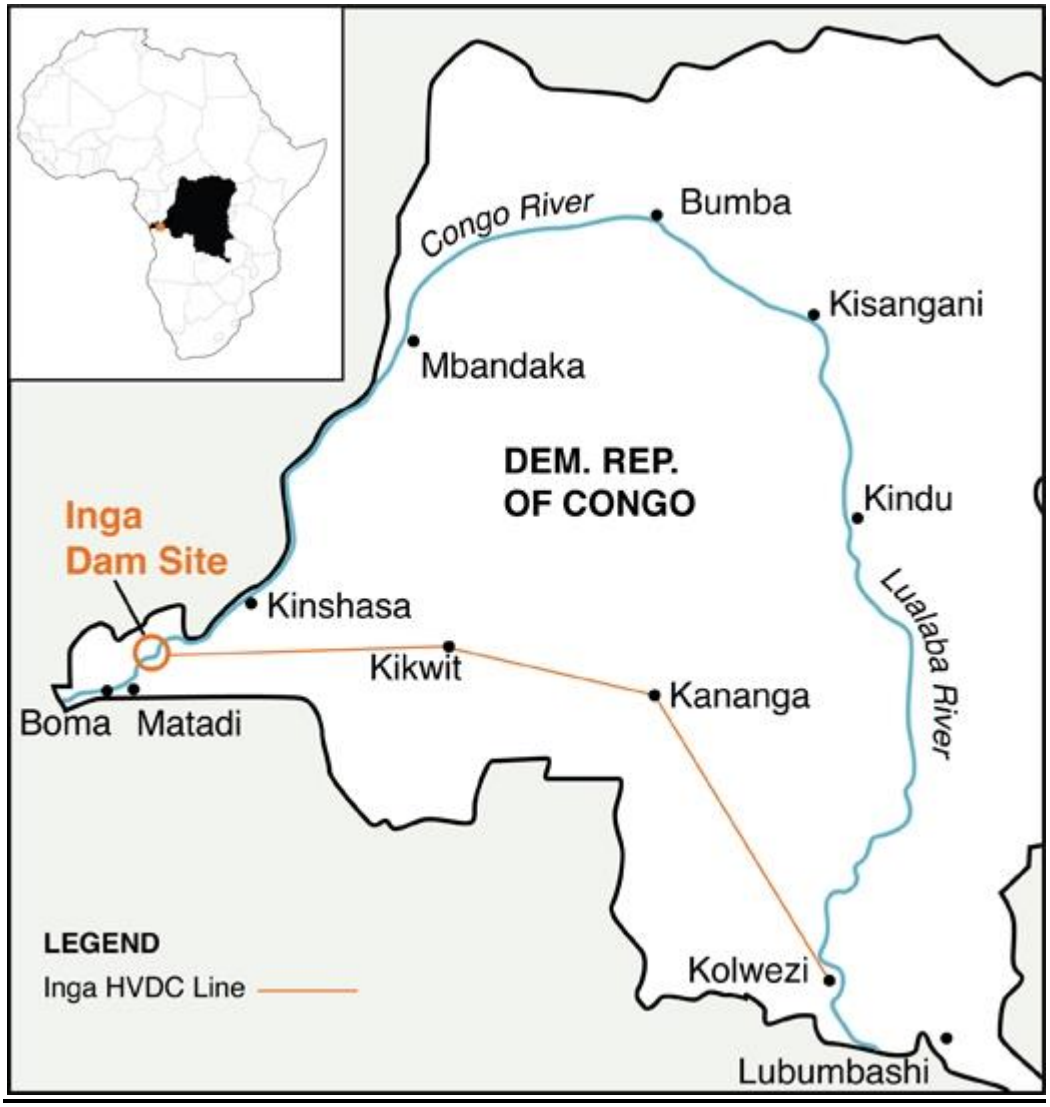


INGA AND N'ZILO DAMS

These two dams are on river Zaire or congo. Inga dam produces 1200megawatts from the rushing water of the Inga falls near Matadi town on river Zaire/Congo.

N'zilo dam is on river Lualaba a tributary of the Congo river, and it mainly produces power for the copper mines in the Shaba province.

LOCATION OF INGA AND N'ZILO DAMS


Congo River
Bumba
Kisangani
Mbandaka
DEM. REP.
OF CONGO
Kindu
Inga
Dam Site
Kinshasa
Lualaba River
Kikwit
Kananga
Boma
Matadi
LEGEND
Inga HVDC Line
Kolwezi
Lubumbashi

N'zilo dam