

WANYANGE GIRLS SECONDARY SCHOOL

Study Notes for Geography.

FORMATION OF THE RIFT VALLEY AND BLOCK MOUNTAIN IN UGANDA

REFER TO NOTES OF FAULTING

THE INFLUENCE OF THE RIFT VALLEY ON THE CLIMATE OF SURROUNDING AREAS

The rift valley brings about positive and negative effects on the climate of surrounding areas as seen below:

Highland areas which form the rift valley shoulders are cooler than the valley floor due to difference in attitude as seen in Nyabirongo and Fort Portal.

The rift valley floor is sheltered from the rain bearing winds because it lies in a rain shadow of both the escarpment and mountains leading to little rainfall amounts in areas such as Ntoroko and Katwe.

The valley floor has hot temperatures and high evaporation rates. This creates dry conditions with a low water balance in the soil. The temperature is consistently above 30°C and sometimes reaches 38°C. This is evident in Katwe, Kikorongo, Muhokya, etc.

There is temperature inversion in the morning due to the accumulation of heavy cool air at night in the valley bottom. This is evident in areas like Katwe, Fortportal and Bwera.

Temperature inversion leads to condensation at the ground leading to the formation of fog and mist in the valleys such as the lowlands of Semliki, Kijura, Kamwenge, Muhokya and Kibuku.

The wind ward shoulders of the rift valley receive heavy rain fall in areas such as the rift escarpments, rainfall averages increase largely due to orographic influence. For example, Masindi receives an annual average rainfall of 1,359mm; while Hoima receives 1435mm. Rift valley lakes such as Albert, George and Edward affect the micro-climate of the surrounding areas through land and sea breeze influences. This leads to the formation of conventional rainfall in areas such as Wanseko and Ntoroko.

The rift valley floor experiences stiring winds (eddies). These are strong winds which blow along the valley floor in a north-east to south-west direction or vice versa, in areas like Semliki valley, Kamwenge and Kasese leading to soil erosion due to deflation process.

There is high pressure on the rift valley shoulders and low pressure on the rift valley floor. For instance Semliki flats, Katwe and Kasese town have high pressure while areas of high altitude such as Bundibugyo and Fortportal have low pressure.

The relative humidity in the Albertine graben is higher during rain seasons with maximum levels prevalent in May in areas such as Bundibugyo and Kabarole. The lowest humidity levels occur in dry areas like Kaiso-Tonya, Katwe, Muhokya and Ntoroko.

SELF EVALUATION QUESTIONS 2:2.

1. (a) Explain the formation of the Great rift Valley in Uganda. (10 marks)
(b) Discuss the importance of the rift valley on the climate of the surrounding areas. (15 marks)
2. (a) Account for the processes responsible for the formation of the rift valley. (10 marks)
(b) Describe the effects of the rift valley on the climate of surrounding areas. (15 marks)

Suggested approach

- ✓ Define the term rift valley and trace its origin
- ✓ The theories responsible for the formation of the rift valley should be clearly brought out.
- ✓ Relevant diagrams should be drawn
- ✓ Positive and negative effects should be given illustrated by place names within the rift valley region.

THE INFLUENCE OF THE RIFT VALLEY ON HUMAN ACTIVITIES IN UGANDA

The formation of the Western rift valley resulted into a number of positive and negative influences on human activities in Uganda namely:

POSITIVE INFLUENCES

The rift valley has beautiful sceneries such as Lake Albert and Lake Edward, Butiaba and Kichwamba escarpments, Murchison falls, Bugoma and Budongo forests. The valley floor also has a number of crater lakes such as Lake Katwe and Lake Nyungu which promote research and tourism activities leading to the generation of foreign exchange for economic development.

It has moderately productive soils which promote agricultural activities such as rice growing and animal rearing in Kibuku in Bundibugyo, tea plantations in Bugamba sub-county in Hoima and cotton growing in Muhokya and Mubuku prison farm. The area has also promoted livestock rearing because of the existence of grassland vegetation and low rainfall which provides ideal conditions for livestock rearing in areas like Buliisa, Kiryandongo and Ntoroko.

The Western rift valley has important rift valley lakes such as Albert, Edward and George. These encourage fishing activities leading to provision of fish rich in food protein resulting into improved health.

It contains rift valley lakes such as George, Albert and Edward which act as sources of water for home and industrial use in areas like Bullisa, Ntoroko and Kasese. The Secondary fault due to rift valley formation provide areas for river flow like the Kazinga channel and Semliki River which are used as sources of water for domestic and industrial use.

The rift valley floor has encouraged the development of transport routes because it is flat for example Hoima-Kaiso -Tonya road and Hoima–Masindi road. Rift valley lakes such as Lake George, Lake Edward and Lake Albert in the rift valley region are used for water transport to link up Islands to mainland areas such as Kabazimu Island, Izinga and Katako Islands on Lake Edward.

The rift valley region has minerals of great economic importance to the country like salt at Lake Katwe, lime extraction at Muhokya and limestone at Hima and petroleum in areas like Mputa, Wanseko, Kaiso-Tonya and King Fisher.

It is associated with several forests like Budongo forest, Bugoma forest, Semliki forest, Kibale forest and Mt. Rwenzori forest. These have boosted the lumbering activities.

The relatively flat nature of the rift valley floor has encouraged settlement and urbanisation with their related advantages such as market as seen at Katwe-Kabatooro, Muhokya and Bwera, Kalango, Rubona, Karugutu and Buliisa.

It has promoted wild life conservation because it contains rangelands that are habitats for varied animals leading to development of National parks and wild life reserves such as Queen Elizabeth national park, Murchison falls NGP, and Karuma Wild life reserve.

NEGATIVE INFLUENCES

The rift valley has casued a rain shadow effect leading to little rainfall amounts in areas like Mubuku, Katwe, Kikorongo and Ntoroko leading to low agricultural production.

It contains steep escarpments such as Butiaba and Kichwamba escarpments which hinder the development of transport routes.They make the construction of roads in areas like Bundibugyo, Rubirizi and Kabarole not only difficult but also expensive.

The steep slopes and rugged landscape on the riftvalley scarps limit fishing activities on Lake Albert, river Semliki and river Mpanga because they cause inaccessibility.

The rift valley is associated with crustal instability resulting into frequent occurrences of earth quakes and landslides leading to displacement of people For example, the 1994 Kisomoto Earth quake measuring 6.2 on the Ruchter scale killed 8 people and damaged property in Kabarole

The rift valley floor is prone to flooding. The heavy rains in Rwenzori Mountains in 2013 and 2014 led to bursting of river Nyamwamba causing flooding in the low lying areas. This has led to disruptions in mining activities at Hima, Muhokya and Kilembe mine. The 2014 flooding in Ntoroko resulted into destruction of people's houses and crops.The 2019 floods in Bundibugyo

left about 16 people dead, 4000 about people displaced and the main Fortportal-Bundibugyo and Nyahuka-Nudibugyo roads were completely destroyed.

It is associated with wild life centres such as Murchison falls and Semliki national parks as well as forests like Budongo and Bugoma forests. These are habitats of dangerous wild animals which limits forestry activities.

It is associated with rebel activities which greatly endanger the tourist industry For instance the ADF rebels in Kasese and Bundibugyo, greatly limited the tourist receipts in the Queen Elizabeth national park and Mt. Rwenzori.

The rift valley lakes such as Albert and Edward are too deep and these limit fishing activities.

It contains rift valley lakes like Edward and George which are breeding grounds for disease causing vectors leading to death of human lives.

Self evaluation question 2:3

1. (a) Describe the processes responsible for the formation of rift valley in Uganda. (10 marks)
- (b) Explain the influence of the rift valley on human activities in Uganda. (15 marks)

Approach

- ✓ Define the term rift valley and trace its origin
- ✓ Describe the processes which led to the formation of the rift valley (tensional and compressional processes).
- ✓ Relevant diagrams should be drawn
- ✓ Explain the positive and negative influences of the rift valley on human activities

All points should be well explained and illustrated with names of places with in the rift valley region.

FORMATION OF MOUNTAIN RWENZORI

Mountain Rwenzori is a block mountain formed due to formed due to faulting. Faulting is the breaking of the earth's crust and its displacement. Geochemical and radioactive reactions in the mantle generated heat and pressure that melted the rocks forming magma which is mobile in form of convective currents. The converging convective currents led to the development of compressional forces.

Compressional /Differential uplift theory

According to this theory, geochemical and radioactive reactions beneath the earth's crust set off convective currents which resulted into the development of compressional forces. These forces pushed towards each other leading to the development of reversed faults and divided the crust into blocks. This was followed by differential rates of uplift of the crustal blocks with the central block rising faster than the side blocks, to form a block mountain/ mt.Rwenzori while the

adjacent side blocks remained stable. The block mountain was later modified by denudation forces such as river erosion, glaciation, weathering and mass wasting forming its present shape.

Diagrams

OR

Mountain Rwenzori is a block mountain formed due to formed due to faulting. Faulting is a process of breaking up the earth's crust that eventually leads to displacement of large blocks of land on either side of the fault. Geochemical and radioactive reactions in the mantle generated heat and pressure that melted the rocks forming magma which is mobile in form of convective currents. The converging convective currents led to the development of compressional forces.

Theory of tensional/ relative sinking

Geochemical and radioactive reactions in the mantle generated intensive heat and pressure. This melted the rocks into a semi-liquid state(magma) which is mobile in form of convective currents that diverge from each other leading to the development of tensional forces.

Formation by tensional theory: Tensional forces pulled the crustal blocks apart, resulting into formation of normal faults in the crustal blocks. This was followed by sinking/subsidence of the side blocks. It was later subjected to denudation forces such as river erosion, glaciation, weathering, mass wasting, etc resulting into its present shape as seen in figure.

Diagrams

ECONOMIC INFLUENCE OF MT.RWENZORI ON HUMAN ACTIVITIES

POSITIVE IMPACTS OF MT. RWENZORI ON THE SURROUNDING AREAS.

Mt. Rwenzori has encouraged the formation of relief rainfall of over 1500mm that support the growing of crops like coffee, cocoa and bananas in areas such as Nyabirongo, Kabarole, Bundibugyo and Bwera. The lower slopes of Mt.Rwenzori have fertile soils which are used for

the growing of crops such as Arabica coffee, onions, yams and cotton in areas such as Kabarole, Mubuku, Muhokya and Bwera.

Mt.Rwenzori is associated with Mt.Rwenzori forest, which supports lumbering activities leading to increased income in areas such as Buhweju, Kabarole and Bundibugyo.

Mt. Rwenzori has promoted research and tourism due to the beautiful scenery in form of the snow capped margherita peak, glacial landforms such as cirques like Lac du Speke, v-shaped valleys and numerous water falls which attract tourists, leading to the generation of foreign exchange. It is also used for research and study purpose in such areas as seismology and geophysics.

The foot hills of Mt. Rwenzori are rich in important minerals like copper, cobalt and lime in Kasese and gypsum in Bundibugyo. There is also quarrying of stones and boulders taking place at the banks of river Mubuku and river Bujuku. These have given rise to mining and quarrying activities.

Mt. Rwenzori is a source of various rivers. These originate from melt waters from the glaciers and heavy rain fall like river Sebwe, Nyamugasani, Mubuku, river Lhubiriha, Nyamwamba, Lume, etc.These are used in the provision of water for domestic and industrial use as well as hydro power generation. River Mobuku is used to generate hydro electricity at Mobuku power station. This power is also used in industries like Muhokya lime processing and Hima cement industry.

It acts as a habitat for wildlife and conservation of biodiversity such as monkeys, baboons and numerous birds For example Mt.Rwenzori national park and Queen Elizabeth national park are natural habitats leading to wildlife conservation.

The lower slopes of the mountain support settlements and development of towns because they are relatively flat for instance Kasese town, Bwera, Muhokya, Kilembe, Kikorongo and Rubirizi.

The rivers from mountain Rwenzori have facilitated fishing activities For instance, rivers such as Nyamwamba, Rwimi, Tokwe, Sebwe and Mubuku act as sources of fish rich in food protein leading to improved nutrition.

Mountain Rwenzori is associated with forests like Mt.Rwenzori forest which is used as hunting grounds as well as gathering of fruits and honey in areas like Kabarole, Buhweju and Bundibugyo.

NEGATIVE IMPACTS OF MOUNTAIN RWENZORI.

The Mt. Rwenzori region is vulnerable to natural hazards like landslides due to steep slopes and heavy rainfall.This has discouraged settlement in areas like Kasese, Buhweju and Bundibugyo.

Soil erosion is a serious problem in this region due to steep slopes and where the natural vegetation has been cut for settlement limiting food gathering and hunting especially in Bundibugyo and Kasese.

Rivers which originate from Mt.Rwenzori such as river Lumu, Sebwe, Mubuku and river Nyamwamba carry large quantities of water to the lower slopes especially heavy rains and melting of ice, leading to flooding that causes destruction of property and loss of lives. The bursting of River Nyamwamba in 2013 saw the destruction of part of Kilembe mines and Kilembe hospital.

It acts a haven for rebel activities For instance it was used as a base for ADF rebels in the 1990's which claimed people's lives in Kasese and Bundibugyo.This phenomenon affected wildlife conservation and receipts for the tourism sector.

The mountain Rwenzori forest acts as habitat for dangerous animals and vermines limiting lumbering activities in areas such as Bundibugyo and Kasese.

The mountain has caused the rain shadow effect which has reduced agricultural productivity resulting into nomadic pastoralism among the Basongora in Kasese. Low rainfall totals received on the leeward slope explains why irrigation is carried out in areas such as Mobuku in Kasese.

The Mt.Rwenzori region has many steep slopes which limit the development of transport and communication routes particularly roads. This explains why roads in Kabarole and Bundibugyo wind for long distance so as to avoid the steep slopes causing remotenes.

SELF EVALUATION QUESTIONS 2:4

1. (a). Describe the processes that led to the formation of the Rwenzori mountain.
- (b) Examine the economic importance of the Rwenzori Mountains to Uganda.
2. (a) Describe the processes responsible for the formation of Mount Rwenzori. (10 marks)
- (b) Assess the impact of Mount Rwenzori on human activities in the surrounding areas. (15 marks)

Suggested approach.

- ✓ Identify the type of mountain
- ✓ Define the type of mountain thus block mountain.
- ✓ Describe the processes of formation using any one theory(Tensional or compressional)
- ✓ Bring out the impact of Mt. Rwenzori on human activities

N.B:

- ✓ All points should be explained and illustrated by place names with in the Mt. Rwenzori region.
- ✓ Link all points to human activities which should not be repeated each category(positive and negatve)

