

GEOGRAPHY
FORM FOUR
NOTES

INTRODUCTION TO RESEARCH

Concept of Research

Research is considered to be more formal, systematic and intensive process of carrying on a scientific method of analysis. Scientific method in solving problems may be an observation, analysis and conclusion or observation, problem identification and hypothesis formulation by formal application. Research may be defined as the systematic and objective analysis and recording of controlled observation that may lead to the development of generalisations, principles, or theories, resulting in prediction and possibly ultimately control of an event.

Research

Explain the meaning of research

Research may be defined as the systematic and objective analysis and recording of controlled observation that may lead to the development of recommendations, principles, or theories, resulting in prediction and possibly ultimate control of an event.

THE OBJECTIVES/AIMS OF RESEARCH IN EDUCATION.

1. Research is applied to solve problems in a certain area.
2. It helps the learners to gain the knowledge and skills.
3. It can also be used to simplify the process of teaching and learning.
4. The research conducted can be used to test the validity and be used to develop new theories.

STAGES OF RESEARCH

Research is scientific and systematic process of collecting, analysing and interpreting data basing on a certain problem or phenomena, Research work also is the scientific and systematic process of finding the truth concerning a specific phenomena or problem. Normally research work use scientific stages and finding the solution of the identified phenomena such stages are Identification of problem, Pre-survey, Literature review, Formulation of hypothesis, Research

design, Data collection, Analysis of data, Hypothesis testing, Data interpretation and preservation, Report writing.

The Importance of Research in Daily Life

Assess the importance of research in daily life

The main purpose of research is to discover answers to different questions through application of scientific procedures. All fields of studies require research to develop their theories both in natural sciences. Countries with manpower in research and development they are far more developed than others. The purpose of research is to bridge gap between what is known and what is not known.

States of Research Work

Research Stages in Conducting a Research

Describe research stages in conducting a research

The following are the stages of conducting research.

1. Problem identification or formulation of research problem.

A problem is a question or idea of interest which ought to be answered through data collection.

The researcher is required to:

1. Single out the problem of study.
2. Understand the problem e.g.; mass failure in secondary schools.

2. Pre-surveying

Researcher should make a survey of a place where the research is going to be conducted to know things like transport, weather etc.

3. Literature review

This reading various publications to know what other people say about what you are investigating.

4. Formulation of hypothesis

This is an assumption based on what one expects to find out in the field. It can be either true or false.e.g mass failure in school is due to inadequate teaching and learning materials.

5. Research designing

This is the arrangement of conditions for collection and analysis of data in the manner that aim to combine relevance to the research purpose. It is the conceptual structure within which the study is conducted.

6. Data collection

Refers to the collection of various information data in the field to enrich a research. Data collection can be done by observation, interview, questionnaires, or group discussions.

7. Analysis of data

The data you have, make no sense until you convert the information into sensible ideas, and make no sense until they answer the question you had asked in the problem.

8. Hypothesis testing

After data analysis the researcher needs to test the hypothesis formulated earlier the major question here is whether the fact support the hypothesis or not.

9. Data interpretation and preservation

After getting correct information about the study topic the analyzed data is interpreted and preserved in different statistical graphs and charts so that it can be understood to everyone.

10. Report writing

At the end of the research, the researcher has to prepare a report of what has been done the researchers' finding have to be communicated or exposed to the public.

Conducting Research

Conduct research

Research needs to be conducted in a clear and organized manner so as to obtain answers to the stated problem.The preparation of research proposal should be done before conducting it. Sometimes it may be hard to get data from the targeted population. Sampling should be used to obtain a representative population and save time as well as utilize resources economically.

The use of Research Output and Recommendations

Explain the use of research output and recommendations

Generally all the above steps are helpful, if each stage will be done effectively will help to obtain factual information/solutions about various phenomena under consistence /effective preparation.

Research recommendations are the results or conclusion of research conducted. They are very useful to individuals and nations as a whole. Social economic conditions are assessed based on various researches. Research recommendations can be used to change the constitution, make policies and creating new ways of doing things. To invest in researches is worth, they're great drive of development.

CLIMATE AND NATURAL REGION

World Climatic Types and their Characteristics

Major Climatic Types of the World and their Characteristics

Describe major climatic types of the world and their characteristics

Climate is the average weather conditions of an area observed and recoded over a long period of time (about 30 years).

The scientific study of climate is called climatology and a person who studies climate is called climatologist

WEATHER AND CLIMATE

There are marked differences between weather and climate. The table below summarises these differences:

No.	Weather	Climate
1.	Describes the atmospheric conditions at a specific place and time.	Describes the average atmospheric conditions of a place over a specific period of time.
2.	Weather is defined as the day to day state of the atmosphere, and it is short-term (minutes to weeks) variation.	Climate is defined as statistical weather information that describes the variation of weather at a given place for a specified time interval.
3.	Weather conditions are measured over a short period e.g. a few hours or days.	Climate conditions are measured over many years, e.g., 30 years.
4.	Determined by real time measurements of atmospheric pressure, wind speed and direction, humidity, precipitation, cloud cover, and other variables.	Determined by averaging weather data over periods of 30 years.
5.	Weather changes abruptly within a short period.	Climate changes slowly and gradually over many

		years.
6.	Weather varies from one place to another within a region.	Climate remains uniform over a large area.
7.	Most weather elements are measured by weather instruments.	Climatic elements are not measured but calculated from the recorded weather data.

How different Geographical Factors Influence Climate

Explain how different geographical factors influence climate

Usually, the elements of weather (which make up climate) vary from place to place. In the lesson on weather we learned about the elements of weather. Because climate is influenced by weather, the elements of weather are the same as the elements of climate. Therefore, the factors that cause variation in weather elements will likewise influence the climate. The factors influencing climate and weather are discussed below

Latitude

This factor influences temperature and rainfall. Areas around and close to the equator experience higher temperature and receive higher rainfall than those farther away. So the rainfall and temperature decreases as one moves away from the equator.

The amount of heat received at any place on the earth's surface depends on the angle at which the sun's rays strike the surface of the earth and the duration of the sunshine. At the equator, the sun's rays fall on the Earth's surface at almost right angles throughout the year, but the angle at which the sun's rays strike the Earth's surface decreases as one moves towards the poles.

Therefore, temperatures decrease with increase in latitude because the equator receives vertical rays of sunlight while the north and the south poles receive slanting rays. Because of this fact, the equator and places near the equator are hotter while places in or near the south and north poles are colder.

Altitude

This influences temperature and atmospheric pressure of an area. Temperature decreases with increasing altitude at the rate of 0.6°C for every 10 metres rise in altitude. Therefore, low-altitude

areas are warmer than high altitude areas. Atmospheric pressure decreases with increasing altitude. Pressure at sea level is higher than pressure at the summit of a high mountain.

Ocean currents

The nature of the ocean current influences the temperature of the wind blowing over it and transfers this influence to the land adjacent to the ocean. This will either lead to reduction or increase in the temperature of the land depending on the type of the ocean current. The wind blowing over warm ocean currents will pick moisture from the ocean and often causes heavy rainfall over the land while the wind blowing over the cold ocean current brings little or no rainfall to the land.

Distance from the sea

This influences temperature and rainfall. Places located near the sea experience high temperature and receive high rainfall than those located farther away. This is because of high rates of evaporation from the water surface, which eventually causes heavy rainfall along the coastal areas. For this reason, coastal regions often experience higher temperatures and rainfall than inland areas.

Aspect

This term refers to the direction in which a slope faces. It influences temperature and rainfall. For example, the south facing slopes in the northern hemisphere are always warmer than the north-facing slopes. Also the windward side of the mountain receives heavier rainfall than the leeward side.

Wind and air masses

Wind carries moisture with it as it flows. Warm wind blowing over a cold region warms the cold region over which it flows. However, if the wind is cold, it cools the region.

Warm, moist wind blowing towards a cold, dry region may lead to formation of rainfall in the destination region. Cold, dry wind blowing over a dry region brings no rainfall and if the blowing is repeated over several years, it may cause aridity in that region.

Alignment of the coastline

This refers to the arrangement of the region's coastline in relation to the direction of the wind. If the winds blow across the coastline they cause rainfall. If they blow in parallel to the coastline, they cause drought.

Intertropical Convergence Zone (ITCZ)

This is a low-pressure area around the equator. The moist winds meet within this region. Places farther away from this zone experience only one rainy season while places close to the zone experience two seasons of heavy rainfall. This is because the winds converge around this region twice a year.

Forests

Areas covered with forests normally receive high rainfall as compared to those with little or no vegetation. This is because of high rates of evaporation and transpiration, leading to high humidity. Therefore, these areas often, receive high amounts of rainfall and have a modified climate.

Human activities

A range of human activities such as agriculture, mining, transportation, construction, etc affects the climate. For instance, clearing of the forests to get land for agriculture and settlement leads to the loss of biodiversity, making the land arid and unproductive.

The impact of climate

Climate has many impacts to human activities. Various economic activities conducted by man in different parts of the world are governed by the type of climate experienced in a particular region. For example, people living in deserts and semi-arid regions do not practice much

agriculture because their environment does not favour crop cultivation or animal husbandry. In these regions, however, a very limited agriculture and animals rearing is conducted. The animals kept include camels, goats, sheep, donkeys and other hardy animals. Only drought resistant crops such as dates are grown in deserts and arid areas.

In tropical and equatorial regions, a lot of agriculture is carried out. The inhabitants of these regions take part in cultivation of crops and keeping of animals. Crops grown include cocoa, banana, horticultural crops and grains. The animals kept in these climatic zones include cattle, pigs, donkeys, horses, poultry and other farmyard animals. Specific types of various economic activities carried out in each climatic region will be discussed in detail in the section below.

Natural Regions of the World

Different regions of the world experience different amount of temperature and rainfall. The differences in the amount of rainfall and temperature experienced in different regions of the world make them have different climatic characteristics. This gives rise to various climatic regions around the globe. Temperature and rainfall are the main elements that determine the type of climate. Both elements vary considerably from one region to another and form a basis for classifying climate. The five broad types of climate are hot, warm, cool, cold and arctic (very cold) climates. Each of these climates is further subdivided into different subtypes as it will be explained in detail below:

HOT CLIMATES

These are the type of climates found within the tropics, mainly between $23\frac{1}{2}^{\circ}$ north and $23\frac{1}{2}^{\circ}$ south of the equator. Hot climates include the following climate sub types:

1. Equatorial climate
2. Tropical continental climate
3. Tropical monsoon climate
4. Tropical marine climate
5. Tropical desert climate

Different Types of Natural Regions

Identify different types of natural regions

Equatorial climate

Location

The region is found approximately between 0° and 5° north and south of the equator. It may extend up to 10° north or south of the equator in some regions. Examples of areas found within this region include the Amazon basin (South America), and the Congo basin, the southern Ivory Coast, south Ghana, western coastal Nigeria, and eastern coastal Malagasy Republic (all in Africa).

Climatic characteristics

1. There are no marked seasons.
2. High temperature throughout the year; - The annual temperature range is about 3°C.; - The daily mean temperatures are about 26°C all the year round.
3. The daily temperature range is rarely more than 8°C because of the thick cloud cover.
4. Rainfall is heavy and is usually convection rain.
5. Rainfalls usually occur in the afternoons and they are accompanied by lighting and thunder.
6. Total annual rainfall is about 200 mm with two maxima (peaks).
7. High humidity and intensive cloud cover throughout the yearThis climate can generally be described as hot and wet throughout the year, with a small annual temperature range.

Highlands located within the equatorial region have their temperatures modified by altitude. The temperature of some of these highland areas, e.g., the East African Highlands, is lowered to about 15°C. These regions are said to have a modified equatorial climate.

Variations on the basic type of climate occur in the highland regions of equatorial Africa. The climate of most of these regions has an equatorial rainfall pattern.

In areas such as the south-eastern Nigeria, Cameroon, the south-east Asian islands of Malaysia, Indonesia and the Philippines, the climate is equatorial monsoon because of the seasonal reversal of winds. This results in even heavier rainfall.

Human activities carried out in the equatorial climate region include shifting cultivation and plantation agriculture. Crops grown in this region include yams, cassava, maize, millet, sweet potatoes, sorghum, beans, water melons, bananas and groundnuts. Examples of areas where this type of farming is practiced include some parts of West Africa and Asia.

In plantation agriculture, crops such as cocoa, rubber and oil palms are grown on large scale farms. Most rubber plantations are found in Malaysia, Indonesia, Thailand and Sri Lanka. They are also found in Liberia. Cocoa plantations are found in Brazil and West Africa (Ghana, Nigeria and Ivory Coast). Oil palms are grown in Nigeria, Malaysia and Indonesia.

Rainforests are also common in equatorial regions. In Africa, the equatorial forests are found in the Democratic Republic of Congo (RDC), Gabon and some parts of West Africa.

Tropical continental climate

This climate is also known as Sudan type or Savannah climate. In the interior of the continents it is referred to as tropical continental climate.

Location

This climatic region occurs between 5°N and 15°N and 5°S and 15°S though it extends to 25° north or south of the equator. It is best developed in most parts of Africa, and some parts of South America, India and Australia.

Climatic characteristics

1. Hot summers (32°C) and cooler winters (21°C).
2. The annual temperature range is about 11°C.
3. The highest temperatures occur just before the rainy season begins.
4. Heavy rains, mainly convection, occur in the summer.

5. Total annual rainfall is around 765mm, though this increases in the areas lying close to the equatorial climate region. Similarly, rainfall decreases towards the tropical deserts.

6. Humidity is high during the hot, wet season.

This climate is characterized by tall grass and trees which are more numerous near the equatorial forest region. The savannah region is suitable for herbivores animals such as giraffes, elephants, buffaloes, rhino, zebras, antelopes, wildebeests and many other animals. There are also carnivorous animals such as lions, leopards, hyenas, etc. The region also supports a variety of species of birds, reptiles and insects.

People living in this region mainly engage in livestock keeping, cultivation and tourism. Also lumbering is practised. Many tourists come from foreign countries to view the wildlife that live in the vast grassland. Numerous national parks have been established in this region. In Tanzania, for example, there are established national parks such as Serengeti, Mikumi, Selous, Tarangire, Ruaha, Saadani, Ngorongoro, Katavi and Manyara.

The major crops grown in this region are maize, millet, groundnuts, beans, onions, cotton, tobacco, sugarcane, sisal, rice and coffee.

Tropical monsoon climate

Location

The areas which mainly experience monsoon type of climate are South East Asia, Northern Australia, Southern China, and the Indian subcontinent. This type of climate is most marked in India.

Climatic characteristics

1. Seasonal reversal of winds (monsoon winds); onshore during one season and offshore during another season.
2. Onshore wind brings heavy rain to coastal regions while offshore winds bring little or no rain, except where they cross a wide stretch of the sea.
3. Temperatures range from 32oC in the hot season to about 25oC in the cool season, giving an annual range of about 7oC.

4. Annual rainfall varies greatly, depending on relief and the angle at which onshore winds meet the highlands (aspect).

5. There are three marked seasons: cool, dry season; hot, dry season; and hot, wet season.

This climate can generally be described as having a hot, wet season and cool, dry season. The main human activities carried out in areas experiencing this type of climate include rice growing and livestock husbandry. Apart from rice, the other crops grown are wheat, millet, maize, and sorghum.

Sugarcane, cotton and juice are important lowland crops grown in India, Pakistan and Bangladesh. The other crops grown are tea (Sri-lanka, Bangladesh and India) and rubber in Malaysia.

Animals kept in this climatic region include pigs, cattle, buffalos, sheep, goats, and poultry.

Tropical marine climate

Location

Regions with this type of climate are located on the east coasts of regions lying between 10°N and 25°N and 10°S and 25°S. These areas are under the influence of onshore trade winds. The main areas are the east coasts of Brazil and Malagasy, the lowlands of central American and the west Indies the coast of Queen land (Australia) and the southern Islands of the Philippines.

Climatic characteristics

1. Temperature characteristics are similar to those of the equatorial climate.
2. Hot season temperature is 29°C and cooler season temperature is 21°C.
3. Annual temperature range is about 8°C.
4. Total annual rainfall varies from 1000 mm to 200 mm depending on the location.
5. Rainfall is both convection and topographic (brought by onshore trade winds).
6. Maximum rainfall occurs in the hot season.
7. High humidity throughout the year.

This climate can generally be described as hot and humid throughout the year. However, the climate is cooled by the onshore winds blowing almost everyday.

The main human activities carried out in this climatic region include crop cultivation, lumbering and animal rearing. The crops grown include sugarcane, rice, banana and wheat. The animals kept are such as cattle, pigs, sheep, goats and poultry.

Tropical desert climate

Location

The tropical desert climate occurs on the western margins of landmasses between latitude 20° to 30° north and south of the equator. The climate is experienced in all the major tropical deserts of the world. The hot deserts occupy about one third of the earth's surface. The principal tropical deserts occur on the continents as follows:

1. Africa: Sahara, Kalahari and Namib Deserts
2. Asia: the desert of Jordan, Syria, Iran, Iraq, Saudi Arabia and Israel, and the desert of India.³
3. North America: Mohave, Colorado and Mexican Deserts.
4. South America: Atacama Desert
5. Australia: Great Australian Desert

WARM CLIMATES

Warm climates border the hot tropical deserts. They occur between 30° and 40° north and south of the equator.

There are four broad types of warm climates:

1. Warm temperature western margin.
2. Warm temperature continental.
3. Warm temperature eastern margin.

4. Warm temperature desert.

Warm temperate western margin (Mediterranean type)

This is also known as the Mediterranean climate

Location

This type of climate occurs between 30°N and 45°N and 30°S and 40°S on the western sides of the continents. Places experiencing the Mediterranean climate are on the coastal lands around the Mediterranean Sea (the Maghreb, Spain, Italy, Greece, Egypt and Israel), the western sides of north and South America (central California and central Chile), South Australia (Perth and Adelaide) and South Africa (Cape Province).

General characteristics

1. Temperatures range from 21°C in the summer to 10°C (or below) in the winter.
2. Mean annual temperature is about 15°C.
3. Annual total rainfall varies from 500 to 900 mm.
4. Hot, dry summers and cold, wet winters. This is because westerly winds blow off shore in the summer and on shore in the winter.

The Mediterranean climate can generally be described as having hot, dry summers and mild, rainy winters. The climate permits a wide range of crops to be grown, which include fruits and cereals. It is in this region that much of the world's citrus fruits are grown. Citrus fruits include oranges, lemons, grapes and limes. Other fruits grown here are peaches, apricots, plums, cherries, olives, almonds and pears. The cereals include maize, wheat, rice and barley. Agriculture has given rise to specialized industries such as wine-making, flour-milling, fruit canning and food processing industries.

Warm temperate continental (steppe type)

This type of climate is also known as warm temperate interior region

Location

It occurs in the interior of the continents, between 20° and 35° north and south of the equator. The best examples of the areas having this climate are Murray-Darling lowlands of Australia; The high Veldt of South Africa; and the central Paraguay and central Argentina (both in South

America); central lowlands of north America (Oklahoma and Texas and in northern Mexico); central European lowlands, and the plains of Manchuria.

Climatic characteristics

1. Temperatures range from 26°C in the summer to 10°C in the winter.
2. The annual rainfall varies from 380 to 700 mm, depending on the distance from the sea.
3. Rainfall is convectional type and falls mainly in spring and early summer. The main economic activities carried out in this region are cattle rearing and crop growing. Tourism is also practised.

Warm temperate eastern margin (China type)

Location

It occurs in the eastern sides of the continents between latitudes 23° and 35° north and south of the equator. The countries having this type of climate are central China, south eastern USA, southern Brazil, eastern part of Argentina, South Africa, southern Brazil, eastern part of Argentina, South Africa, southern Japan, and south eastern Australia.

Climatic characteristics

1. Temperatures are about 26°C in summer and 13°C in the winter.
2. The total annual rainfall varies is about 1000 mm.
3. The rain is convectional and torrential type and it mostly falls in the summer.

Temperatures and rainfall in this type of climate make it possible to grow crops and keep animals. Lumbering is also practised in the forested areas. The crops grown include rice, maize, cotton, sugarcane and tobacco. Animals are extensively kept in Argentina and Australia. The animals produce products such as meat, milk, butter and cheese for consumption and export.

Warm temperate desert

This type of climate is also called mid-latitude desert climate. The areas having this type of climate include Nevada and Utah states of North America and Patagonia in South America. It is also found in regions that extend from Turkey, northern Iran, across the Caspian sea and Aral areas into former USSR. It is also experienced in the Gobi desert of Mongolia.

COOL CLIMATES

These climates are experienced in regions between 35° north and 60° south of the equator. They are characterized by definite seasonal variations in temperature.

There are four types of cool climates:

1. Cool temperate continental (British type).
2. Cool temperate continental (Siberian type).
3. Cool temperate eastern margin (Laurentian type).
4. Temperate desert.

Cool temperate western margin (British type)

Location

It occurs on the western sides of the continents between 45° and 60° north and south of the equator. Areas with this type of climate include North West Europe, British Columbia in western Canada, Southern Chile, Tasmania, and the south Island of New Zealand.

Climatic characteristics

1. Winter temperatures range between 2°C and 7°C, while summer temperatures range from 13°C to 15°C.
2. The annual temperature range is between 8°C and 11°C.
3. Rain falls throughout the year, with maxima in winter.
4. The total annual rainfall is about 760 mm.
5. The rain is both convectional and cyclonic in nature.

People living in this region engage in a myriad of economic activities which include agriculture, mining, lumbering, manufacturing and commerce. Agriculture is of extensive type and includes keeping of beef and dairy cattle and sheep and the growing of wheat, barley oats, vegetables and fruits. In British Columbia lumbering is an important economic activity. In Tasmania and New Zealand, sheep rearing for wool and mutton is an important activity. Fruit farming, especially apples, is practised throughout the region.

Cool temperate continental (Siberian type)

Location

This type of climate is found extensively in the northern hemisphere. It occurs in the interiors of North America and Eurasia between 35° and 60°N

Climatic characteristics

1. Moderately warm summers (18°C) and very cold winters (-19°C).
2. The annual temperature range is very high (37°C).
3. Most of the rain falls in the summer.
4. The rain is convectional type and is often accompanied with thunder.
5. The annual precipitation (rain plus snow) ranges from 400 to 500 mm.

The main human activities in this region include lumbering fishing, mining and some agriculture.

Cool temperate western margin (Laurentian type)

Location

This type of climate is found extensively in the northern hemisphere. It occurs in the interiors of North America and Eurasia between 35° and 60°N

Climatic characteristics

1. (a) Moderately warm summers (18°C) and very cold winters (-19°C).
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Cool temperate western margin (Laurentian type)

Location

It occurs on the eastern sides of the continents between 35°N and 50°N, and south of 40°S. It is experienced mainly on the eastern sides of North America and Asia

Climatic characteristics

1. Winter temperatures range from -10°C to 4°C.
2. Summer temperatures range from 12°C to 24°C.
3. The annual temperature range is large and averages 24°C.
4. Precipitation (in the form of rain and snow) is distributed throughout the year.
5. Annual precipitation varies between 700 and 1000 mm.
6. Rainfall is both convectional and cyclonic.

The main economic activities in this region are farming, mining, and manufacturing. The crops grown include wheat, maize, millet and soya beans. Sheep farming is important in Patagonia. Mining and manufacturing are practised where minerals are found.

Temperate desert

Location

This climate occurs in the interiors of Eurasia and North America, and in Patagonia (South America).

Climatic characteristics

1. Winters are very cold with temperatures often below -7°C .
2. Summer temperatures vary between 25°C and 37°C .
3. Diurnal temperature range is about 35°C while the annual temperature range is about 40°C .
4. Precipitation is very low, it averages about 250 mm.
5. Most of the rain falls in late winter and early spring.

The human activities carried out in this region include mining, animal rearing and some agriculture. The animals reared are such as camels, donkeys, sheep and goats. The main crops grown in this region are date palms, oil palms, and millet. Agriculture is mostly practised in oases and along river valleys.

COLD CLIMATES

Cold climates are mainly experienced in regions between latitudes 60°N and 68°N

There are three types of cold climates:

1. Cold temperate western margin.
2. Cold temperate continental.
3. Cold temperate eastern margin.

Cold temperate western margin

Location

This climate is confined to coastal areas of Scandinavia and Alaska.

Climatic characteristics

1. Short, cold summers with temperatures of about 12°C .
2. Long winters with temperatures ranging from -2°C to 4°C .

3. Annual rainfall is about 750 mm.
4. Rain falls in most months except the winter when snow falls.

The main economic activities practiced in this region include agriculture, mining and manufacturing. Dairy cattle farming is mainly practiced in the Scandinavian countries such as Norway Denmark and Sweden.

Cold temperate Continental

Location

This climate occurs between 55°N and 68°N in the interior of America and Eurasia.

Climatic characteristics

1. Cold and long winters with temperatures ranging between -34°C and -45°C.
2. Warm and short summers with average temperatures up to 21°C.
3. Annual precipitation is very low, about 380 mm.
4. Most of the rainfalls in summer, but in winter, precipitation is in the form of snow.

Cold temperate eastern margin

This climate occurs in the north east pacific of Russia.

Climatic characteristics

1. Long, cold winters with an average temperature as low as -20°C or below.
2. Short, hot summers with an average temperature up to 21°C or higher.
3. Total annual rainfall varies between 500 and 1000 mm.

ARCTIC CLIMATES

These types of climates are experienced in regions beyond the Arctic Circle (66½°N) and around Arctic Ocean. They are also known as polar deserts. The main features of these climates are low amounts of precipitation (rain), mild summers and very cold winters.

Arctic climates comprises of Tundra and Polar climates

Tundra climate

Location

This region occurs in the northern coast of North America, southern coast Greenland and the Arctic coast of Europe and Asia.

Climatic characteristics:

1. Very long, cold winters with temperatures ranging between -29oC and - 40oC.
2. Short, cool summers with temperatures of about 10oC.
3. Annual precipitation is 250 mm; some of it falls as snow in winter and as rain in summer.

Polar climate

Location

It occurs in the interiors of Iceland, Greenland and Antarctica.

Climatic characteristics

1. Temperatures are permanently below 0oC.
2. Precipitation is in the form of blizzards (now storms).
3. The winters consist of continuous night, and summers of continuous day.

Because temperatures are very low, most these regions are uninhabited and hence limited human activities take place here. The natural occupations are hunting, fishing and herding of reindeer.

Mountain climate

This type of climate occurs in the main mountain areas of the world. The areas that experience such climates include the East Africa Mountains, the Ethiopian highlands, the mountains and plateaus of central Asia, the Alps of Europe, the Andes of South America and the Rockies of North America.

Climatic characteristics

1. Pressure and temperature generally decrease with increase in altitude.
2. Precipitation increases with altitude.

3. In areas around mountains within the tropic, temperatures may range from high at the foot of a mountain to very cold at the peak, e.g. Mount Kilimanjaro.

We have seen how particular climatic conditions influence human activities. Now, let us see how specific climatic conditions are suitable for given human activities.

Agriculture

Agriculture is strongly influenced by weather and climate. The nature of agriculture and farming practices in any particular location depends on the type of climate experienced in that location.

Crops thrive well in any area with a fertile soil and which receives sufficient rainfall as well as optimum temperature conditions. In such areas both commercial and subsistence crops may be grown.

The equatorial region receives high rainfall and experiences high temperature throughout the year. This climate is suitable for crops that can thrive well in moist and hot conditions. The crops that can be grown in this region include cocoa, banana, rubber, sugarcane and yams.

Livestock rearing can be practised in the tropics where rainfall permits the growth of pastures. This area also supports the cultivation of a variety of tropical crops such as fruits, tobacco, sugarcane, tea, maize, rice and a variety of horticultural and cereal crops

Cooler climates also support crops which grow better in climates like barley, wheat, oats, sugar beet, and fruits such as apples, peaches and apricots. These areas also support the rearing of dairy animals.

In semi desert and desert climates where very little rainfall is received, there are reduced agricultural activities. However, drought-resistant crops like millet, date palms, oil palms and sorghum can be grown. The keeping of hardy animals such as sheep, camels, donkeys and goats can be done.

Settlement

People like to establish settlements in areas with favourable climates and which support a variety of agricultural activities. Such areas are often well-populated. Very hot or extremely cold areas are usually sparsely populated because their climatic conditions are unfavourable for human settlement.

Forests thrive well in areas that receive ample rainfall and which have adequate temperatures. Dense forests of the world are concentrated in the equatorial and tropical climates which experience high rainfall and temperature throughout the year. The presence of forests in these regions stimulate lumbering and growth of other industries such as paper-making and carpentry.

Fishing

Most of the world's fishing grounds are in cooler regions. The cooler water is thought to support the growth of water plants called plankton on which fish feed. Tropical areas are not suitable for fish as compared to regions with temperate climates.

Tourism

For tourism industry to flourish, the climate in the host countries must be favourable enough to attract the tourists to visit them. Tropical countries, like Tanzania, are often visited by tourists from cooler climates during winter in their home countries to enjoy the warmth of the tropical countries where they swim in warm waters and sunbath in tropical beaches.

Industry

The establishment and growth of industries strongly correlate to the climatic conditions. Most industries are established in areas where raw materials are adequately available. For instance, milk, tea, tobacco, meat, fish and fruit processing industries are often located where raw materials are found. Likewise, lumbering industries are built close to forests.

Transport

Development of the transport systems in some climatic regions is very difficult. For example, the tropical and equatorial regions, which receive much rainfall throughout the year, have poorly developed roads. Routes passing through areas with clay soils become muddy and slippery when it rains. This makes it hard to travel on earthy and murrum roads. Roads in desert regions may be blocked by sand blown onto them, making the roads impassable. In very cold regions, precipitation in the form of snow may cover roads, making them impassable during winter.

CLIMATE CHANGE

Climate change is a large-scale, long term shift in the planet's climate (weather patterns and temperatures). The overall effect of climate change is termed as global warming.

What is global warming?

Global warming refers to increase of the earth's average surface temperature due to effects of the greenhouse gases. These gases trap heat that would otherwise escape from the earth. The greenhouse gases include water vapour (H₂O), carbon dioxide (CO₂), methane (CH₄), dinitrogen oxide or nitrous oxide (N₂O), ozone (O₃) and chlorofluorocarbons (CFCs).

Since the early 20th century, the global air and sea surface temperature has increased by about 0.8°C, with about two-thirds of the increase occurring since 1980. Each of the last three decades has been successively warmer at the earth's surface than preceding decades since 1850.

The recent rapid warming was caused by human activities which contribute to the production of greenhouse gases, such as carbon dioxide, that trap heat in the earth's atmosphere. It is predicted that the continuation of these activities will result in 1.8–4°C average temperature increase over the next century.

Causes of global warming

Scientific understanding of the cause of global warming has been increasing. Global warming is mostly caused by increasing concentrations of greenhouse gases in the atmosphere. The following greenhouse gases are the main contributors to global warming. They are the main causes of global warming.

Carbon dioxide

Carbon dioxide is the main greenhouse gas. The gas contributes over 50% of the greenhouse effect. It is because of this reason that man is struggling to reduce carbon dioxide emissions. The following are some of the man-made sources of carbon dioxide in the atmosphere:

Deforestation

Green plants absorb carbon dioxide gas from the atmosphere and use it to manufacture their food through the process of photosynthesis. Cutting down trees means that a few trees are left to absorb carbon dioxide gas from the air. This has led to the increase in the amount of carbon dioxide in the atmosphere.



A deforested land

Combustion of fuel

Burning of fossil fuel such as wood, coal, petroleum and natural gas, releases carbon dioxide into the atmosphere. The gas is produced during combustion of these fuels in car engines, power stations, industries, etc.

Methane

The main source of methane is from agricultural activities. It is released from wetlands such as rice fields and from animals, particularly cud-chewing animals, like cattle. The emission of methane gas into the atmosphere, therefore, increases with increase in agricultural activities. Since 1960s the amount of methane in the air has increased by 1% per year, twice as fast as the build-up of carbon dioxide. Methane is also produced by the decomposition of waste materials by bacteria. It is the major component of natural gas. The gas is also produced during the mining of coal and oil (as natural gas) and when vegetation is burnt.

Nitrous oxide (dinitrogen oxide, N₂O)

Dinitrogen oxide is produced from both man-made and natural processes. Human activities which produce dinitrogen oxide include combustion of fossil fuels in vehicles and power stations, use of nitrogenous fertilizers and burning of vegetation and animal waste. During combustion of fuel in automobile engines, the air gets so hot that nitrogen reacts with oxygen to form dinitrogen oxide.

The gas is also produced by digesting bacteria, and is part of the nitrogen cycle, one of the most important natural processes on earth.

Chlorofluorocarbons (CFCs)

The sources of CFCs in the atmosphere include refrigerators, air conditioners and aerosols. CFCs are extremely effective greenhouse gases. One CFC molecule is about 10,000 times more effective in trapping heat than a carbon dioxide molecule. Some of them are up to 14,000 times effective than carbon dioxide, the main greenhouse gas.

Effects of global warming

Global warming is expected to have far-reaching, long-lasting and, in many cases, devastating consequences for planet earth. The following are some effects of global warming:

Increase in average temperatures

One of the most immediate and obvious impacts of global warming is the increase in temperatures on the world. The average global temperature has increased by about 0.8°C over the past 100 years. Scientists predict that the earth's average temperature will increase by between 1.4 and 5.8°C by the year 2100.

Increase in global temperature will affect both the land and the ocean environments. The average temperature of the oceans has increased significantly in the past few decades, causing negative effects on marine life.

When the ocean water gets warm, the algae in the ocean tends to produce toxic oxygen compounds called superoxides which are damaging for the corals. Global warming is threatening the coral reefs to a great extent, and the fact is that if coral reefs are wiped off the planet, it will affect one third of planet's marine biodivers

Extreme weather events

Extreme weather events include record-breaking high or low temperatures, floods or intense storms, droughts, heat waves, hurricanes and tornadoes, etc. These are effective measures of climate change and global warming.



Floods

Scientists project that extreme weather events, such as heat waves, droughts, blizzards and rainstorms will continue to occur more often and with greater intensity due to global warming.

Other effects of extreme weather events include:

1. higher or lower agricultural yields;
2. melting of arctic ice and snowcaps. This causes landslides, flash floods and glacial lake overflow;
3. extinction of some animal and plant species;
4. increase in the range of disease vectors, that is, organisms that cause diseases.

Change in world's climate patterns

It is forecasted that global warming will cause climate patterns worldwide to experience significant changes. Climate change resulting from increasing temperatures will likely include changes in wind patterns, annual precipitation and seasonal temperature variations.

Climatic patterns in most parts of the world have already changed. Rains fall when least expected and at irregular intervals. This has greatly affected the timing of planting and harvesting activities. Sometimes the rains fall so heavily to cause floods, or too little leading to drought.

Most of the arable land that once used to be productive is slowly turning arid. With time, farmers will run short of the land for cultivation, a fact that will result in famine.

Because high levels of greenhouse gases in the atmosphere are likely to remain high for many years, these changes are expected to last for several decades or longer.

Rise in sea levels

Continued increase in the global temperature will cause the melting of ice caps in the poles and mountain glaciers. Melting polar ice and glaciers are expected to raise sea levels significantly. Global sea levels have risen about 8 inches since 1870 and the rate of increase is expected to accelerate in the coming years. If current trends continue, many coastal areas will eventually be flooded.

Scientists predict that by the year 2100 the sea level will raise by at least 25 m, leading to coastal flooding that will displace millions of people. Small islands in the Caribbean, South Pacific, Mediterranean and Indian Ocean will be totally covered by ocean waters.

Ocean acidification

As levels of atmospheric carbon dioxide increase, the oceans absorb some of it. This increases the acidity of seawater. Since the Industrial Revolution began in the early 1700s, the acidity of the oceans has increased about 25%.

Because acids dissolve calcium carbonate, seawater that is more acidic has a drastic effect on organisms with shells made of calcium carbonate, such as corals, mollusks, shellfish and plankton. The acid water is likely to dissolve the carbonaceous shells, thus endangering the lives of these sea creatures. Change in ocean acidity will also affect fish and other aquatic animals and plants.

If current ocean acidification trends continue, coral reefs are expected to become increasingly rare in areas where they are now common.

Effects on plants and animals

The effects of global warming on the earth's ecosystems are expected to be profound and widespread. Many species of plants and animals are already moving their range northward or to higher altitudes as a result of warming temperatures.

Additionally, migratory birds and insects are now arriving in their summer feeding and nesting grounds several days or weeks earlier than they did in the 20th century.

Warmer temperatures will also expand the range of many disease-causing pathogens that were once confined to tropical and subtropical areas, killing off plant and animal species that formerly were protected from disease.

These and other impacts of global warming, if left unchecked, will likely contribute to the disappearance of up to one-half of the earth's plants and one-third of animals from their current range by 2050.

Effects on humans

As dramatic as the effects of climate change are expected to be on the natural world, the projected changes to human society may be even more devastating.

Agricultural systems will likely be affected badly. Though growing seasons in some areas will expand, the combined impacts of drought, severe weather, lack of snowmelt, greater number and diversity of pests, lower groundwater tables and a loss of arable land could cause severe crop failures and livestock shortages worldwide.

This loss of food security might, in turn, create havoc in international food markets and could spark famines, food riots, political instability and civil unrest worldwide.

The effect of global warming on human health is also expected to be serious. An increase in mosquito-borne diseases like malaria and dengue fever, as well as a rise in cases of chronic conditions like asthma, are already occurring, most likely as a direct result of global warming.

A World Map Showing Different Natural Regions

Draw a world map showing different natural regions

Activity 1

Draw a world map showing different natural regions

The Relationship between Human Activities and Climate

Explain the relationship between human activities and climate

Human activities are human undertakings which are done to earn a living, they include, fishing, lumbering, hunting and gathering and manufacturing. Climate influences human activities directly. E.g. In agriculture, different crops have different requirements of temperature and rainfall as the major climatic element. Therefore it is not advisable to cultivate permanent crops in deserts.

Ways of Solving Climatic Problems

Propose ways of solving climatic problems

There are natural and man-made causes of climatic change that bring about climate problems. There are possible solutions to climatic problems such as:

- education,
- avoidance of bad methods of farming,
- application of good farming methods,
- application of appropriate technologies,
- land reforms,
- afforestation,
- laws and rules,
- as well as the reduction of carbon dioxide emissions from industries.

HUMAN POPULATION

The scientific study of human population is referred to as demography. It covers its growth, density, distribution and movement as well as the aspect of economic and social development.

Concept of Population

Population

Define the term population

Population is related to the development process and environment. This is because it is a reproductive resource that transform the environmental resources to bring development. As such population is both a means and goal of all development. Thus it requires essential services like education, law and order. As a resource, it provides labour force, especially when skilled so as to be used in the production process in various sectors of the economy.

Population can have negative effects on development especially when there is low education and technology, overpopulation and under population.

Over population leads to excessive utilisation of resources, poor housing, pollution and conflict over resources: Under population leads to under utilisation of some resources. All this help the government to plan and implement effectively the process of providing social services.

The word population comes from latin word *populus* meaning people.

Population or human population refers to the total number of people found in a given area at a specified time.

Population size refers to the total number of people in the country. This may change over time due to the dynamic components like birth, death and migration. Population size is obtained through censuses.

The Characteristics of Human Population

Describe characteristics of human population

GENERAL CHARACTERISTICS OF POPULATION

1. It is unevenly distributed over the surface such that some areas have low density other have medium density and some areas have high density population other areas have no population at all.

2. Population is dynamic in the sense that it is migratory as people move from one place to another place either permanently or temporarily depending on the prevailing conditions.

3. Population has age – gender structure.

This refers to the composition or proportion of population in terms of gender, age and occupation

1. Population is characterised by variation in the level of development and technology, Such as Japan, America and France while other countries are less developed or poor due to the use of low technology like Tanzania, Malawi and Mozambique.

2. Population usually face problems like diseases such as HIV-AIDS, Environment calamities like famine and flood as well as earthquake.

The Importance of Studying Population

Explain the importance of studying population

The importance of population:

1. It promotes the supply of labour that can be used in exploiting or harnessing the idle resources like minerals, land, water bodies etc.

2. It can encourage or stimulate the diffusion of technology into the destination from other areas the people who migrate posses different skills of different environmental orientations these can be spread into destination and help in the utilisation of local resources.

3. Migration can lead to the expansion of market for the local goods in the destination regions

4. It can encourage intensification of agricultural activities as a result of the reduction in the size of arable land.

5. It can stimulate the growth of towns (urbanisation) and the associated advantages.

6. Development of strong defenses against external enemies.

Population Distribution

Population distribution refers to the way people are spread out on the land. Population distribution is uneven since some areas are densely settled while others are not. Or sometime population distribution can be described as being even or uneven, scattered or concentrated in a particular places.

This describes the concentration of people in a specific area. There are places where people are concentrated in one area while the land in the neighborhood may be unoccupied. Population density is obtained by taking the number of people in a given area and dividing that number by the total area of the place. Thus it gives us the number of persons per unit area of land. Population density can be described as dense, moderate, or sparse.

Factors Governing Human Population Distribution

Describe factors governing human population distribution

The distribution of population in the surface of the earth is not uniform due to many factors. These factors can be classified into four main groups, namely physical, historical, economical and political.

PHYSICAL FACTORS

The physical factors are divided into climate, relief, vegetation, soil, drainage and diseases.

Climate

Temperature and rainfall are the two main influential climatic elements. People have a tendency to adapt to moderate variations in temperature. Extreme temperatures however play a significant role as far as human population is concerned.

Very high temperature like those experienced in Tanga, Zanzibar and Dar es salaam discourage human settlement and consequently influence the population pattern.

Places receiving rainfall of over 1000 mm are densely populated, e.g. Kilimanjaro and Kagera.

Relief

Areas of high altitude have low population because of extremely low temperatures experienced there. Most crops do not do well beyond an altitude of 2500 m. However some communities choose to live in the mountain areas for security reasons.

Vegetation

Dense forests are sparsely populated. It is difficult to develop communication line in such areas. They are also habitats for wild animals which may be a danger to human habitation, Livestock and crops. Areas such as Miombo woodlands of Tanzania are infested with tsetse flies which are a threat to people and livestock. This has discouraged settlement in such areas.

Soils

Areas with fertile soil such as those areas around lake Victoria have attracted many people. Place with infertile soils such as the leached soils of the savannah are sparsely settled because they are agriculturally unproductive.

Drainage.

Well drainage areas attract settlement and hence have high population. Swampy places and areas with seasonal swamps are normally uninhabited. Such places do not attract settlement or farming. People avoid settling in areas that are prone to flooding.

HISTORICAL FACTORS

Historical events may also be responsible for low population densities in some areas. In the 18th century, many parts of the East, Central and West Africa were affected by slave trade. Strong young men and women were captured and sold as slaves to go and work on the farms in the West Indies and America. Some were taken as slaves to the Arab world. Meanwhile, other people ran away from the same areas to avoid being captured and never returned. This reduced population in these areas.

Tribal conflicts and war have led to some places becoming sparsely populated as people, seeking safety move away from them.

ECONOMIC FACTORS

Economic development resulting from activities such as exploitation of natural resources attract a large population of job-seekers and service providers. Mining centres, no matter how remote they may be in a country, usually attract large population.

People move and settle near established transport routes such as roads. The establishment of towns and industries attract human settlements for similar reasons as mining. This accounts for the large population in the major towns of East Africa.

POLITICAL FACTORS AND GOVERNMENT POLICIES

Political unrest in many parts of the world have caused migration from certain areas. Between 1971 – 1979 many Ugandans ran away from their homeland to other parts of the country or into neighboring countries to avoid political persecution during the reign of dictator Idi Amin. Many people from Southern Sudan and Somalia have sought refugee status in Kenya in recent years because of political instability in their respective countries.

Some government programmes may require the removal of people from certain areas in order to settle them in new areas. For example the construction of large dams or road constructions. This cause formerly inhabited areas to become sparsely populated while new settlement realize an increase in population.

National parks and forest reserves are areas that are controlled by the government. Human occupation of such areas is therefore prohibited. These areas are sparsely populated with the only people living there being workers and, in some isolated cases, illegal squatters.

Population Change

Population Change

Define Population Change

Population change refers to the difference between the size population at the beginning and at the end of a period. It can refer to the growth or decline in population.

Population change can also be described as population growth. This is the increase (positive growth) or decrease (negative growth) in the number of the people. Change in the population is caused by birth, death and migration.

Factors which Influence Population Change

Explain factors which influence population change

Population change can also be described as population growth. This is the increase (positive growth) or decrease (negative growth) in the number of the people. Change in the population is caused by birth, death and migration.

BIRTH RATES

A high birth rate coupled with a low death rate result in a positive change in population. This translates into an increase in population.

A high birth rate is caused by high fertility and fecundity within a population.

Fertility is defined as the ability to conceive or to reproduce. Fecundity refers to the ability to give birth to many children's i.e. high fertility.

Fertility rate is expressed as a ratio of live birth in an area to the population of that area.

For example, according to the United Nations estimates for 1995 - 2000, the total fertility for Tanzania was 5.5 children per women aged between 15 and 49 years. This is the average number of children that a women of a child-bearing age will have in her life time.

The factors influencing fertility include the level of education of the women, urbanization, career prospects and birth control measures. These factors tend to influence fertility rate.

The high fertility rate in East Africa is attributed to improved nutrition, improved health services and weakening of the traditional customs like prolonged period of breastfeeding and sexual abstinence after birth.

The Crude Birth Rate (CBR)

The crude birth rate is estimated rate of births in a year. It is not a precise figure because the values for the total population that are used for the calculation are an estimate as by the middle of the year.

It is obtained by dividing the total number of the birth recorded in the year by the estimated total population by the mid year and multiplying the fraction by 1,000. The formula would be $\frac{\text{Total number of births in the year} \times 1,000}{\text{Total population (mid-year estimates)}}$ Tanzania crude birth rate during the period 1995 to 2000 was 40.2 annual live births per 1000 persons.

DEATH RATE.

This factor is sometime expressed as mortality and it refers to the number of deaths within a given population. There are three types of death rates.

Infant Mortality Rate. Is the number of deaths in the first year of life per one thousand live births.

Child Mortality Rate. Is the number of deaths of children aged between 1 and 5 years per one thousand live births.

Adult Mortality Rate. Refers to the number of adult dying per one thousand of the total population.

Mortality is significant in that it results in reduction of population numbers. It also affects the population structure.

A high death rate of a particular gender or age has a negative bearing on population growth.

Large-scale mortality may be caused by an outbreak of war, famine, disease epidemic or natural disasters such as floods, earthquakes and volcanic eruptions.

The deaths of a large number of youths and men who are of child-bearing age reduce the number of people involved in child-bearing.

The Crude Death Rate (CDR)

The crude death rate is estimated rate of deaths against an estimated total population by the middle of the year in question. It is calculated in the same way as the crude birth rate, Thus:
$$\frac{\text{Total number of deaths rate in the year} \times 1000}{\text{Total population (mid-year estimate)}}$$

The crude death rate is also expressed as the number of deaths per one thousands people. From the United Nations statistics, Tanzania crude death rate during 1995 to 2000 was 12.9 annual death per 1,000 persons.

The reasons why they use the term “Crude” is because other characteristics such as age, sex and composition within a population are ignored.

The natural population growth is obtained by subtracting the CDR from the CBR. It can be expressed as percentages as
$$\text{CBR} - \text{CDR} \times 1001000$$

From the 2002 population census conducted in Tanzania, the annual growth rate was found to be 2.9% for the period between 1988 and 2002 (i.e intercensal period).

MIGRATION.

Migration is the movement of people from place or region to another which result in change of residence. It may be temporary or permanently.

Migration may involve immigration where people come into a new area. Those people are referred to immigrants.

It may also involve emigration where people leave their native land for another land. These people are called emigrants.

Migration across countries borders is called International Migration.

Migration across the boundary within a country is called Internal Migration.

Such migration influence population change in both sides (Origin and Destination) which are affected positively or negatively.

Emigration of the large number of people from their native land results in reduction of population. In Africa, an exodus of people from their native countries has largely been attributed

to civil wars. Large numbers of refugees flock neighboring countries result in an increase in population in the host countries.

Tanzania has been host to many refugees from Rwanda, Burundi, Uganda, the Democratic Republic of Congo and even Somalia.

Migration of these refugees has resulted in a decrease in population in their native countries. Some of the refugees may even opt to stay permanently in their host countries and some even change their citizenship. The populations of refugees also grow through children born among them within the host countries. All these result in positive change in population.

TYPES OF MIGRATION

There two (2) types of migration which include internal migration and external (International) migration. These types of migration can be in a form of permanent, temporary, voluntary or involuntary.

INTERNAL MIGRATION

This is a movement of people within a country. It can be temporary or longterm. It may be voluntary or forced. This type of migration goes on all the time and many governments do not attempt to control it.

The reasons for this type of migration are varied. They include searching of jobs, settlement, seeking safer areas or improvement of people's lives. There are those who move to parts or countries where the climate is more favorable. There are four forms of internal migration

1. Rural to Urban migration. In this form, people move from rural areas to towns. People migrate in search of jobs, better social amenities or education, some move to avoid wide spread of unemployment in the rural areas or work on farms.
2. Rural to rural migration. In this form, people move from one rural area to another. Some people move into plantations for employment in the large farms. There are those who moved into new settlement and do farming.

Nomadic pastoralists migrate in search of water and pasture for their animals.

1. Urban to rural migration. Some migrants who moved to towns in search of jobs move back to rural areas to settle because they now have capital to invest in the rural areas.
2. Urban to urban migration. Are migrants who may move from one town to another. This may in search of better employment or business opportunities.

EXTERNAL MIGRATION.

External migration are also know as international, interstate or inter-regional migration. It is the movement of people from their own countries to other countries. The people involved are referred to as in their original countries, emigrants and as Immigrants in their destination countries.

Migration may be voluntary as in the case where people go for further studies, employment or settlement or it may be forced as in the case of refugees.

This migration can be temporary or permanent. For example International tourists are temporary migrants

The Effects of Population Change to an Individual and the Nation

Analyse the effects of population change to an individual and the nation

The effect of population change are quite varied. Population change affect both the individuals as well as the nations at large. The effect can be positive or negative.

EFFECT ON THE INDIVIDUAL.

A high fertility rate results in a large number of children that a family has to look after. Migration has its own effects on individuals in the number of ways.

1. Some individuals may change their life styles by becoming more sophisticated. This happens after gaining more skills and exposure to more sophisticated lifestyles where the individual migrated to.
2. Some individuals after migrating to urban areas and getting jobs, may take a much longer time to get married.

3. When spouses are separated for long periods of time, this may lead to break up of marriages. Either spouse may engage in extra marital relationships during the period of absence of the partner.

4. Some individuals who migrate to urban areas lose their cultural values and this lead to immorality. Some turn to crime.

5. Some people saves lot of money from the income they get from working. The income is used to improve their standards of living.

EFFECTS OF POPULATION CHANGE IN A NATION.

It tends to lead to increased poverty. This is because these countries are lagging behind in technological advancement in areas such as agriculture and industries because of the insufficient capital as well as poor management of resources.

As technological advancement continues, population pressure may cease.

1. Over population is a situation where by a region or country has such a high population that it cannot be supported fully due to a strain on the available resources. In such a situation, many people live in object poverty.

2. Over population also leads to unemployment or even under development of a nation or even under employment.

3. Over population lead to poor housing and health facilities because demand for these facilities is far greater than the supply.

4. Agricultural resources are underutilized because of shortage of land and traditional land tenure systems which hinder modernization of agriculture

5. Slow industrial growth because of shortage of skilled labor. Although there is a large labor force, it is largely unskilled.

By conclusion; Most over populated developing nations have a population that is largely traditional. The bias of traditional attitudes slow down modern development as many people stick to the traditional customs and ways of doing things.

A large population increase the demand for food. This demand reduce the production of cash crops while increasing production of food crops.

Population Data

Means information on population. Or is the information pertaining to population and relate direct with some economic, social and demographic matters.

Sources of Population Data

Explain the sources of population data

There are two basic sources of population data, There are Primary sources and Secondary sources.

1. Primary sources, this is a source of population data which is obtained directly via registration of person like registration of births and deaths, data is also obtained first hand when there is population census and when sample survey are limited amount of data could also be obtained from resourceful persons.
2. Secondary sources of population data, include reports in population which are compiled and published as census reports, data is also obtained from textbooks and other reference books, atlases, magazines, newspaper, journals, periodicals and research papers.

It can also be obtained from draft reports, annual reports as well statistical abstracts which are published annually and are available in government offices.

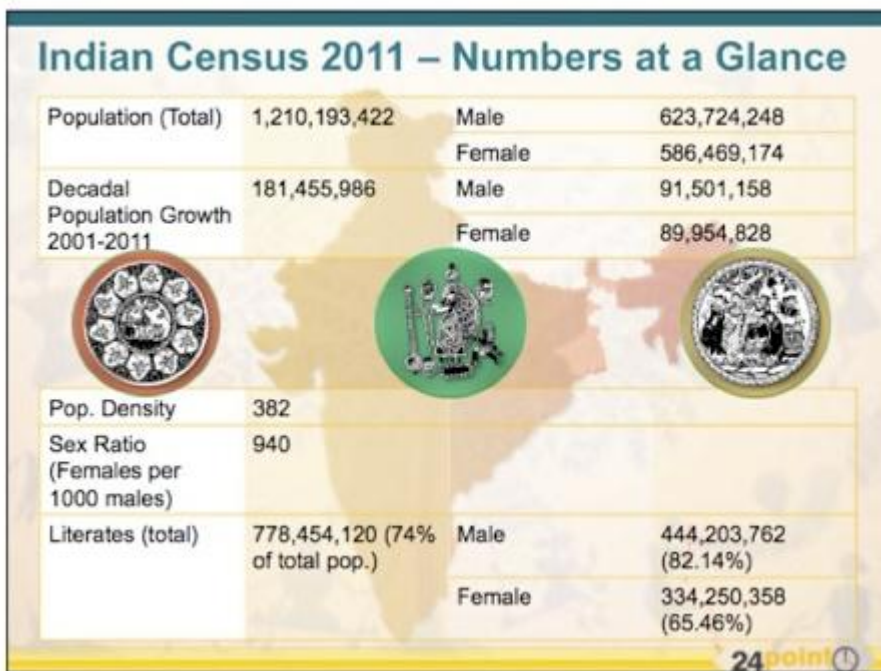
Population data may also be obtained or available in the electronic media as well as on the internet.

Interpretation of Population Data

Interpret population data

When population data has been collected, it is subjected to processing or analysis. It is during this process that calculations are made, these include means densities, birth and death rate, sex ratios and other relevant information population

Statistics can be studied in their raw form or in a processed form by studying such information conclusion can be made and explanation sought. Example of data presentation;



The Uses of Population Data

Explain the uses of population data

USES OF POPULATION DATA

1. Population numbers and density enable the government to plan on how to allocate resources. Also the knowledge of population can be useful in solving land congestion.
2. Data birth and death rates as well as fertility and mortality enable government to plan how to provide medical services and health education, especially where the death rate is very high.
3. Data on migration can enable a government to plan how to curb influx of people into urban areas from the rural regions if corrective measures are taken, loss of man power in the rural areas would be curbed as well as reducing influx of immigrants in urban centres.
4. Knowing the number of dependents enable the government to plan for expansion of schools, medical and other social amenities to take care of large number of children below the

age of 15. When the government has ideas about the number of the aged, It can budget for provision of welfare better.

5. It enable planning for creation of jobs, population census data provide information about overpopulation and underpopulation.

Population Problems

Human population refers to the total number of people at a given place in specific period of time. Population problem refers to the problems which human population face in a certain area, these problems occur in groups as follows:

Elders

1. Lack of provision of social services especially health services to adult people
2. Lack of social security measure that address problems of elders

Children and Youth

1. Lack of development policies and laws that support family stability.
2. Lack of development of talents and capabilities of the children and youth.

People with disabilities

1. Failure in encouraging private sectors and religious organisation to invest in provision of social services for people with disabilities as well as poor government policies on people with disabilities
2. Refugees.
3. Lack of preparedness plan for handling refugees.

Analysis of Population Problems

Analyse population problems

Population problems are challenges associated with the existing population. Population increases should match the capacity of resources to support the growing population. The extent to which

resources are used determine whether there is over-population or under-population. When resources match with existing population it is called optimal population.

The Effects of the Population Change on Economic Growth, Labour, Human Needs and Investment, and Suggest Possible Solutions

Analyse the effects of the population change on economic growth, labour, human needs and investment, and suggest possible solutions

Population problems arising from birth rates, deaths rates and migration have an impact on economic growth, labor, human need and investment. Example if population increase very rapid it results to availability of labour which is cheap but people with low incomes. Investment in consumer goods will increase as the result of increasing demand.

Population Policy

Population Policy

Explain the meaning of population policy

Population policy refers to the statement law or regulations enacted to some demographic goals. It is a deliberate effort by the government to influence the demographic factors like fertility, mortality and migration. Thus the ultimate goal of the population policy is to influence population size, composition, distribution and growth. The policy also tends to take into consideration the relationship between population and development as well as the impact on environment condition.

POPULATION POLICY CAN BE EXPLICIT OR IMPLICIT EXPLICIT POPULATION POLICY, refer to the document or clear statement issued by the government department and its commission which is intended to control population growth and raise the standard of life of the people in the country. Explicit policies can also stem from the law, policy declaration by a party or directive issued by the President of the country. Explicit laws are well stipulated and strictly followed or reinforced. Such policies prevailed in China where the limit in the number of children was set and incentives were given to all those who could follow while penalties were given to those who did not follow. Other countries with explicit policy are Sweden and England.

Hence the explicit policy is the elaborate statement that spell out the rationale objective, goals, targets policy program and implementation.

IMPLICIT POLICIES, refer to particular law, regulation or statement, which may have direct or indirect effect on population growth. Implicit policy is not as elaborate as explicit since it is somehow unclear and cannot be easily understood leading to failure in terms of implementation.

Population policies, whether explicit or implicit, have the ultimate aim of influencing a country's population size, composition, distribution and growth.

PRINCIPLE TO GUIDE POLICY IMPLEMENTATION

1. Consideration of regional and district variation with regard to the level of socio-economic development
2. Adherence to the development vision which among other things emphasize the role of the market in determining resources allocation and uses
3. Continued democratization of the political system with its intended political pluralism as symbolized in the emergence of various political parties or actors and mushroom of independent mass media
4. Thrift exploitation of the country's non-renewable resources taking consideration the needs of future generations.
5. Recognition and appreciation of the central role of the government, NGOs, private sector communities and individuals in population and development.

JUSTIFICATION OF THE POPULATION POLICY

This policy takes cognizance of the achievement, constraint and limitation of implementing post population policies as well as new development and continuing challenges.

ACHIEVEMENTS

The achievement of both implicit and explicit population policies include the followings:

- a. Considerable awareness of population issues particularly those related to reproductive health and child survival by the masses of the people for example fertility, infant and child mortality has decline overtime
- b. Adoption of an explicit population policy in 1992, which recognised the links and interrelationship between population, resources, the environment and development.
- c. Expansion and /or introduction of population studies in institutions of higher learning in the country
- d. Increased number and capacity of NGOs engaged in population related activities including advocacy and social mobilisation, service delivery and capacity building.
- e. High knowledge and use of contraceptive methods among both men and women and male involvement in family planning which has increased contraceptive prevalence from about 10 in 1980s to 16 in 1996.

Comparison of the National Population Policy on Family Planning Strategies in Tanzania to the Population Policies of other Countries

Compare the national population policy on family planning strategies in Tanzania to the population policies of other countries

Tanzania is not the only country which has adopted a population policy. In the 1950's, China was overpopulated and in 1952 it became the first country to introduce a population policy. Nigeria is the most populous country in Africa and launched its first population policy in 1988.

SETTLEMENTS

Concepts of Settlement

Settlement

Define settlement

A Settlement is a place or location where people live and establish their livelihood.

Settlement; is a place where people live. Settlement can come in different sizes.

A settlement may be as small as a single house in remote area or as a large as a mega city.

A settlement may be permanently or temporary. An example of a temporary settlement would be a refugee camp. However a temporary settlement may become permanent over time. This happen to many refugees camps that have been built in conflict zones. Actual piece of land upon which a settlement is built is known as the settlement site.

Settlements usually develop in a particular pattern (but not always).

1. A nucleated settlement is where the buildings are closed around a central point such as market square.
2. Linear settlement is where the buildings are arranged in a line usually along the river or road.
3. A dispersed settlement is where the buildings are spread out or scattered. Dispersed settlement are often found in remote, sparsely populated areas.

Categories, Types and Characteristics of Settlements

Explain categories, types and characteristics of settlements

TYPES OF SETTLEMENTS

There are two (2) types of settlements which are urban settlement and rural settlement. The characteristics which define a settlement of urban or rural include the size, density of the population and activities being under taken in these two types of settlement.

URBAN SETTLEMENTS

Are geographical areas with dynamic boundaries. The growth of an urban centre refers to the expansion of a town as a result of birth rate, change of the town boundaries.

Population in urban settlements are used in many analyses as an important variable in social, environment and demographic studies.

Characteristics of urban settlements:

1. The number of urban settlement and their boundaries will change overtime, depending on construction activities and change of present population.
2. The delimitation of the urban settlements are independent of the administrative boundaries.
3. Urban centre are characterised by denser engaged industrial activities.
4. Trading is a major activities under taken in urban areas.

RURAL SETTLEMENTS

Are geographical morphologies, comprising of all places with less than 10,000 population;- They comprise of small rural town villages and homesteads.

In Tanzania about 80% of the population live in rural areas. To supplement their farming activities some rural communities engage in other traditional activities such as weaving, carving, fishing and extracting of timber from the forest.

Characteristics of rural settlements:

1. It is sparsely populated pattern of settlement.
2. Agriculture is the major activity undertaken in rural areas.

SETTLEMENT PATTERNS

Is the layout of dwelling in a particular place. Settlement patterns assume a distinct form as it grows, settlement patterns may be influenced by different factors such as topography of an area and availability of suitable land for farming. Transport routes and communication lines also may influence the pattern that emerges. Human factors such as an increase in population may lead to the spread of settlements because they may be searching for new land to settle on.

Types of settlement patterns

Nucleated Settlement Pattern

This settlement pattern consists of a cluster of dwellings, shops and other buildings in one place. The settlement is close to one another forming a cluster. Nucleated settlement may develop as a result of the availability of social services, the presence of industrial plants and limitation of building land leading to the clustering of buildings in one place. Settlements such as Mwanza in Tanzania and Kimberley in South Africa are nucleated mining settlements.

Linear Settlement Pattern

Linear settlement pattern may develop along communication lines or along specific physical features such as a river, the houses and other structures appear to be arranged in a line along a road, a river, or a canal or a coastal line. Such a settlement may form a curve depending on the shape of the features.

Linear settlements are common along the coast of East Africa, along the shores of Lake Tanganyika and along some parts of Lake Victoria. They are also common along many roads and foot paths.

Dispersed Settlement Pattern

It is also referred to as a scattered settlement pattern because it consists of houses and other structures which are scattered. The houses may be separate from one another by physical features such as valleys, rivers, and ridges. Dispersed settlement is common in areas where people own individual plots of land.

The Functions of Settlements and their Importance

Explain the functions of settlements and their importance

The functions of settlement describe all the activities that occur in it, there are three common functional classification of settlement rural settlement and institutional settlement. Settlements established for a specific purpose. In this aspect there are categories which includes.

1. Market towns: Originate as centres for sale and distribution
2. Mining towns: are located in areas that contain a supply of natural resources such as coal, diamond and tin.
3. Manufacturing and industrial towns: grown around the source of raw materials often in conjunction with mining towns.
4. Route centres: located at nodal points that develop from the transportation of raw materials for processing of manufactured products to the marketing centres.
5. Administrative centres: Involve settlement that are strategically well placed to combine several functions and provide a administrative services on a regional or national basis.
6. Port centres: The original function of ports is the settlement of raw materials, goods and passengers with development of national and international trade, such centres have naturally acquired additional functions like business.

Growth of settlements

This refers to the increase or expansion of the place or areas where people live and engage in different economic activities.

There was the rapid growth of settlement in Europe after the industrial revolution. The growth of settlement of a given place is always dynamic as it changes time after time due to the different factors.

Factors that Lead to Growth of Settlements

Analyse factors which lead to growth of settlements

THE FACTORS WHICH INFLUENCE THE GROWTH OF SETTLEMENTS:

1. A nucleated settlement is where the buildings are closed around a central point such as market square.
2. Linear settlement is where the buildings are arranged in a line usually along the river or road.
3. A dispersed settlement is where the buildings are spread out or scattered. Dispersed settlement are often found in remote, sparsely populated areas.
4. The number of urban settlement and their boundaries will change overtime, depending on construction activities and change of present population.
5. The delimitation of the urban settlements are independent of the administrative boundaries.
6. Urban centre are characteriSed by denser engaged industrial activities.
7. Trading is a major activities under taken in urban areas.
8. It is sparsely populated pattern of settlement.
9. Agriculture is the major activity undertaken in rural areas.
10. Provision of social services, People migrate from their original places and live near areas where social services are easily available to them. Example of social services are health centres, schools, electricity and water supply.
11. Climate conditions, people settle in good climatic areas. Rainfall and temperature have a great influence from human settlement. Areas that receive abundant rainfall and favourable temperature attract more people. This is because people are able to engage in both subsistence and commercial farming such areas are Kilimanjaro, Mbeya, Ruvuma and Iringa region where there is abundant rainfall.
12. Relief, it is a strong factor influencing settlement. Gentle slopes are ideal areas for building houses as they are well drained. Steep stops are usually uninhabited because they have thin soils which inhibit growth of crops and pasture.
13. Vegetation cover, vegetation is the total plants cover over an area. Thick vegetation discourages establishment of settlement. Dense forest such as Congo of central Africa and

Amazon, in South America are not accessible. They may also be habitats for dangerous wild animals and disease carrying vectors.

14. Political factor has great influence on settlement establishment. A settlement may be located in a certain area because of political reasons for example in 1967 the government of Tanzania introduced ujamaa village where by people were settled in villages.

15. Economic factor, people establish settlement in places which offer economic opportunities. Migration from rural to urban centres is mainly due to prospects for employment and trading opportunities. Mining activities also leads to the establishments of settlements for example development of Mwadui towns was the results of Mwadui Diamond mines.

16. Cultural factors, some areas may be productive but due to some cultural beliefs people may be prohibited to establish settlements on such areas. Example mumbanitu forest in Njombe.

17. Historical factor, prior to the division of Africa some communities moved in various directions and settled in their present homelands. Those movements were caused by various factors mainly wars for example Mfecane war in South Africa.

Social and Economic Problems Associated with Urban Growth

Assess social and economic problems associated with urban growth

Numerous attempts have been made to classify settlements based on functions, but this tended to refer to places in industrialised countries, and is not longer applicable to post-industrial societies.

Urbanization is associated with a number of problems, some of these problems include environmental degradation, rise in criminal activities, inadequate housing, traffic congestion, unemployment, immorality, shortage of public utilities such as water, and emergence of street children.

Overcrowding, Great number of immigrants and people are coming from farms. There is an increase in birth rate and drop in mortality rate. People migrate from original places due to corruption, poor water supply and poor health services.

Political instability, the increase of the people at certain areas cause the increase of bad behaviour like crime which lead to political instability at a given area.

Eruption of diseases like cholera, malaria, HIV/AIDS and other outbreaks due to population pressure caused by the increase of people.

Unemployment, due to the increase of people in urban areas from the rural most of them search for jobs in the urban centres which result in lack of job vacancies.

Traffic Congestion, These refer to the presence of high number of vehicles especially private cars, these lead to noise pollutions as well as air pollutions for example Dar -es salaam.

Shortage of social services, like water, schools. Some urban centres do not have reliable sources of water. As population increase water sources are strained and most residential areas experience water shortage for instance Dar es salaam suffer from water shortage throughout the year.

Emergence of street children, As people increase resulting to the lack of social services and conflicts in the family and at the end family break-ups which result to street children. These people decided to run away due to the lack of social services in their family.

Ways of Solving Existing Problems Related to Urban Growth

Suggest ways of solving existing problems related to urban growth

The following are the ways of solving existing problems related to urban growth as:

Improvement of social services like water, electricity, churches, schools for example construction of more dams to preserve water for the population in the cities also there be improvement of infrastructure so as to facilitate economic activities.

Creation of employment opportunities. The city council has to create more jobs so as to cure the problem of unemployment for example increase in investments in industries as well as agriculture, which will lead to the provision of jobs to youths.

Good urban planning, There must be good planning in the constructions of buildings so as to avoid the poor arrangement of housing in the cities. Housing design must try to meet the demand of the citizen.

Improvement of infrastructure to accommodate the motor vehicles. Private cars have been increasing extensively and becoming a problem. It is necessary to set up a reasonable system and width of roads, reserve necessary parking place.

Family planning, As street children are caused by the lack of social services, this can be reduced by using the family planning to reduce the number of children in the family. This will make the provision of social services as well as the employment opportunities.

ENVIRONMENTAL ISSUES AND MANAGEMENT

The Concept of Environment

Environment

Explain the meaning of environment

This topic deals with problems that occurs within our environment, causes, effect on living things and how to mitigate these problems.

In this topic we are going to deal with the sub topic called environment conservation.

ENVIRONMENTAL CONSERVATION

Concept of environmental conservation

Refers to the protecting of environment from being destructed through practicing various ways of environment protection such as destocking, afforestation and planting of cover plants.

WAYS OF CONSERVING THE ENVIRONMENT

Destocking, refers to the process of reducing number of animals on the environment because when the number of animals increase on the environment, they can feed on all the plants which help to prevent soil erosion or land slides.

Afforestation and Reforestation refer to the process of planting trees in bare land and re planting trees in the presence of other trees.

Control industrial gases and industrial sewage system, industrial location should be far apart from the water sources

Practicing proper irrigation skills. When irrigation is practiced improperly especially on the land with slope the water can wear out the nutrients and cause poor production.

Control of industrial fertilisers instead of depending on industrial fertiliser we can use manure since manure has no effect on the soil while industrial fertilisers add acid on the soil.

To control fishing activities, bad fishing method should be discouraged for example charging and punishing for those who practicing bad methods.

Control construction of road and buildings to avoid construction of building on steep slopes because this can accelerate soil erosion.

PRACTICING ENVIRONMENTAL CONSERVATION AND MANAGEMENT AT SCHOOL LEVEL

This part is practically based on students in groups to practice various ways of conserving the environment such as planting trees, flowers, cleaning environment around the school campus.

CAUSES AND EFFECTS OF FAST RATE OF POPULATION AND URBAN GROWTH ON ENVIRONMENT

Population can be higher in particular areas due to the availability of social services, (food, shelter, hospital), good economic activities, agriculture, trade, good infrastructure, climatic condition. When the population is high, it can cause the following effect on the environment.

EFFECT OF FAST RATE POPULATION AND URBAN GROWTH ON THE ENVIRONMENT

1. Soil erosion: This is because when the population increases it leads to the expansion of settlements and residences. People need to build houses which involves digging the land to set the foundation of the houses.
2. Deforestation: Occurs when the population increases and leads to the expansion of settlements and residences. People will cut trees in order to create space and for building.
3. Loss of biodiversity: This is due to risky human activities that endanger the live of organisms for instance using chemicals in agriculture and fishing and deforestation also cause biodiversity.
4. Desertification: Occurs when the bare land is directly heated by the sun.

5. Air pollution: The number of people increasing in an industrialised settlement, this produces large amount of gas.

DESERTIFICATION

Is the development of desert-like condition in regions that have experienced human disturbance such as deforestation, overgrazing, poorly managed agriculture. Although the extent of the world deserts expand and contract in response to naturally changes in climatic condition.

CAUSES OF DESERTIFICATION

1. Overgrazing: Overgrazing was not a problem long ago because animals would move in response to rainfall. Now, animals can graze in a single area for a long time.
2. Farming of arable land: Farming of arable land is causing desertification worldwide. Farmers are clearing arable land and using it which takes away the richness of the soil
3. Destruction of plants in dry regions: This is causing desertification to occur. People are cutting down trees to use them as a source of fuel, once these trees are cut down there is nothing to protect the soil.
4. Incorrect irrigation in arid regions cause a build up of salt in the soil. This is commonly used in poorer areas farmers use poor techniques because of lack of water.
5. Deforestation: Since this involves cutting down of trees without planting more trees causing the land to be bare that the soil can be easily carried by the wind

EFFECT OF DESERTIFICATION.

1. Soil becomes less usable, The soil can be blown away by wind or washed away rain nutrients in the soil can be removed by wind or water. Salt can build up in the soil which make it hard for plant growth.
2. Damaged loose soil may bury plants or leave their roots exposed also when overgrazing occur plants species may be lost
3. Places that have war and poverty are most likely to have famine occur. Drought and poor land management contribute to famine.

4. Food loss. The soil is not suited for growing food, Therefore the amount of food being grown will decline. If the population is still growing this will cause economic problems and starvation.

5. Desertification can cause flooding, poor water quality, dust storms and pollution. All of these effects can hurt people living near an affected region.

IMPACT OF POVERTY ON ENVIRONMENT

1. Poverty influences environment degradation. Environment degradation is the process induced by human behavior and activities that damage the natural environment.

2. Poverty considered as a great influence of environment degradation in many regions of the world, regional overgrazing has resulted in destruction of grazing lands, forest and soil

3. The carrying capacity of the natural environmental has been reduced, As the people become poorer they destroy the resources faster

4. They tend to overuse the natural resources because they don't have anything to eat or any means of getting money except through the natural resources so starting to depend more on natural resources

5. Due to the lack of sufficient income people start to use and overuse every resource available to them when their survival is at stake.

GLOBAL CLIMATIC CHANGE

Is a significant and lasting change in the statistical distribution of weather patterns over periods ranging from decades to millions of years.

CAUSES OF GLOBAL CLIMATIC CHANGE

1. Both natural and human factors change earth's climates.

2. Before human changes in climate, changes resulted entirely from natural causes such as changes in Earth's orbit, changes in solar activity or volcanic eruptions.

3. Since the industrial era began humans have had an increasing effect on climate particularly by adding billions of tons of heat trapping green house gases in the atmosphere.
4. Most of the observed warming since the mid 20th century is due to human caused greenhouse gas emission.

CONSEQUENCES OF GLOBAL CLIMATIC CHANGES

Loss of biodiversity, since when the climate change there is occurring of drought that can cause plants and micro-organism die.

Causes disease such as skin cancer, when the ozone layer is destructed it can cause the sun rays to penetrate directly to the earth surface since the ozone layer previously acting as a blanket to prevent the sun rays is now destructed.

Famine or hunger. It is difficult to practice agriculture when climate is changing. it may cause drought making it difficult for plant growing.

Increase in sea levels since the climate change can cause the melting of ice due to increase in temperature on the earth surface that cause increase of the sea level.

Loss of habitat for living organism since there are some living organisms living in cold areas or in ice so when the climate changes due to increase in temperature those organism fail to survive and die.

THE CONCEPT OF ENVIRONMENT

The term “environment” refer to the surrounding and the influence surroundings have on living things. Surroundings include the living and the dead things. Thus environment include land, water, atmosphere and living things. In the environment, human beings are taken to be the centre because they influence the environment and in turn it influences them.

Simply environment includes everything surrounding us including ourselves.

THE COMPONENTS OF ENVIRONMENT

Our environment is often divided into three components. These are the physical, the living and the cultural environment.

1. The Physical Environment It consist of air, water, soil and rocks form the non – living or physical environment.

2. The living Part of the Environment The second component is the habitat which is the home of living things (all living things). The habitat provide conditions necessary for life to prosper. The various creatures depend on each other for survival E.g. animals depends on plants for foods, plants depends on insect for pollination and dispersal.

3. The Cultural Environment.

The cultural or human environment is unique for two ways:

1. People are part of the living environment.
2. People are capable of influencing each and every other part of the environment.

Thus the cultural environment reflects the impact of human being such as:

1. Homes, industries, ports, transport and communication.
2. Their capability for agriculture.
3. Their capability to conserve or destroy the environment.

THE ENVIRONMENT AS A SYSTEM

Environment is made up of independent components and processes, hence what is part of the environment can relate to something else. The destruction of one of these mean damaging a lot others E.g. If we destroy a forest:

1. We destroy habitants for so many other creatures.
2. We are destroying natural cycles which involve the production or consumption of gases for sustaining life.

Importance of Environment

The Importance of Environment

Explain the importance of environment

Therefore we should note that environment is a big system of parts, in which none can work alone. Environment is important for the following aspects:

1. General life support.
2. The environment contains ingredients essential for live, health and human welfare.
3. Supply of raw materials and energy necessary for production and consumption.
4. Absorption of the waste products of the social and economic activities. This absorption is done through air, soil or water

Environmental Problems

Environmental Problems

Identify environmental problems

Environment problems refer to the issue of harmful processes which are introduced or natural occurrences to the environment and make it unsafe for the users. Environment management: Refer to the solution of controlling or conserving or caring of environment for the future use.

The main environmental problems facing the environment are,

1. Pollution, these includes Air, Water, Soil, and Noise pollution.
2. Environment hazards which include, Floods, Drought, Desertification, Famine and loss of Biodiversity both plants and animal (flora and fauna).
3. Global warming.
4. Global climatic change.

CAUSES OF VARIOUS ENVIRONMENT PROBLEMS

ENVIRONMENT POLLUTION

Environment pollution these are problems which lead to pollution of environment due to addition of unwanted product or substance, these includes Air pollution, Soil pollution, Water pollution and Noise pollution.

WATER POLLUTION;

Water pollution is the addition of unwanted substance to the sources of water example River, Lake, Ocean, Dams, Swamp

CAUSES OF WATER POLLUTION.

1. Mining activities, due to the exploitation of minerals when rain falls it sweeps the soil to the source of water resulting in pollution.
2. Disposal of untreated sewage (effluent) into the water bodies from various sources e.g. Industrial wastes or domestic wastes.
3. Dumping of waste from the industries into the water bodies from various sources e.g. industrial waste.
4. Oil spills from the leaking oil containers of pipes during the transportation of such raw materials
5. Some chemicals and other waste from the farms can get into the water bodies through the surface run-off.
6. Volcanic eruption, Eruption of magma on the surface could lead to water pollution because it can flow to the source of water.
7. Testing of bombs.
8. Wind.
9. Use of chemicals by fishermen.

AIR POLLUTION;

Air pollution refers to the addition of unwanted substances to the atmosphere.

CAUSES OF AIR POLLUTION.

1. Industrial activities. These industries produce some gases which affect the atmosphere e.g. carbon dioxide, carbon monoxide and sulphur dioxide.
2. Automobiles, The presence of cars lead to air pollution due to the burning of oil which produce gases like CO₂.
3. Casual burning lead to air pollution due to gases produced.
4. Mining activities lead to air pollution due to the dust moved by wind.
5. Construction activities also pollute the air by dust.
6. Agricultural activities.
7. Volcanic Eruption.

SOIL POLLUTION;

Soil pollution refers to the introduction or addition of any substance in the soil which is unwanted or harmful to plants and animals and having adverse effects to the soil quality.

CAUSES OF SOIL POLLUTION:

1. Poor dumping of waste products from various sources e.g. industries, homesteads.
2. Mining activities, this lead to soil pollution due the fact that when these activities take place they leave a hole to the land as the result of soil erosion.
3. Agricultural activities through shifting cultivation. E.g. the use of chemical fertilisers.
4. Acidic rain, this can lead to the killing of vegetation over which protect soil from destructive means.
5. Overgrazing lead to pollution of soil as the result of erosion caused by large number of animals kept.
6. Deforestation due to the cutting down of trees.

7. Monoculture which affects the fertility of soil due to the monotonous production of one crop.

NOISE POLLUTION

Noise pollution is any disorganized loud sound. Sound is a form of energy but when it become so loud it cause negative effects

CAUSES OF NOISE POLLUTION:

1. Automobile e.g. Dar es salaam there so many cars so it facilitate noise.
2. Presence of factories or workshops.
3. Low flying air crafts.
4. Homesteads like slamming of the doors.
5. Thunderstorms and explosion of bombs.

DESERTIFICATION.

Desertification is the process by which the deserts are encroaching on potential agricultural land
OR

OR

Is the process in which the fertile land is demanded and degraded to initiate a desert – producing cycle that feeds itself and cause long term changes.

CAUSES OF DESERTIFICATION:

1. Mismanagement of land leads to desertification.
2. Deforestation, meaning that cutting down of trees make the land bare and as a result rainfall decreases because trees act in rain formation.
3. Scarcity of water, this leads to the death of some flora.

4. Population explosion, this accelerates desertification due to cutting down of trees in order to establish settlements.
5. Global warming this is the gradual increase of temperature on the earth's surface that kills vegetation and leads to desertification.
6. Burning of vegetation also leads to desertification.

DROUGHT

Drought is a state of an area facing prolonged dry weather without precipitation. OR it is a long period of dry weather when there is not enough water

CAUSES OF DROUGHT

1. Desertification due to long term changes.
2. Global warming due to high temperatures which leads to evaporation of water.
3. Population growth which leads to deforestation of trees which contributes to rain formation.
4. Casual burning of natural fire due to eruption of volcanoes.
5. Location of the place e.g. Lee ward side of the mountain therefore experience dryness due to rain shadow effect.
6. Overgrazing, this leads to drought because the cattle will use all the water available for consumption and lead to destruction of water sources.

FLOODS

Floods refer to the period of either high river discharge (when a river overflows its banks because of excess water) or overflow of water along the coast due to extremely high tides and storm waves

OR

Is the surface run-off of water from one place to another due to the influence of high rainfall.

CAUSES OF FLOODS:

1. Earthquake below the sea tend to lead to the formation of a large waves or tsunami.
2. Blocked up drainage systems in town or cities can also trigger the problem
3. Damming of the river by human beings or by lava spewed out during volcanic eruptions
4. The presence of many distributaries of the river can cause flooding.
5. Clearing of vegetation accelerates flooding because of the bare surface, water run faster.
6. Shallowness of the soil due to the presence of impermeable rock layers just near the surface.

GLOBAL WARMING

Global Warming is an unusual increase in the temperature of the earth's atmosphere caused by the green house effect. Green house effect occurs when the atmosphere traps and retains heat energy from the sun in the lower levels leading to the rise of temperatures.

CAUSES OF GLOBAL WARMING

1. Green house effect these are gases like CO₂ ChlorofluoroCarbons (CFCs).
2. Industrial activities these produce gases like CO₂CO, (Carbon Noxide).
3. Casual burning.

POPULATION EXPLOSION /POPULATION PRESSURE

Population explosion/population pressure refer to the increase of the total number of people in a given area compared to the resources available OR

It is the increase of the number of people in a geographical area compared to the resources available.

CAUSES OF POPULATION EXPLOSION

1. Soil fertility: People tend to concentrate in areas with fertile soil because of high production than in infertile soil areas.
2. High birth rate this is due to increase of births in a given area without using family planning
3. Immigration: Due to incoming people from various parts, this is caused by civil war, hunger and famine.
4. High life expectancy.
5. Availability of social services like Water, Hospitals, Schools.
6. Mining activities eg Geita, North Mara, and Buswagi.
7. The presence of good transport and communications.

DEFORESTATION

Deforestation is the process of cutting down trees or is the destruction of the forest through depletion or disappearance of different trees species.

CAUSES OF DEFORESTATION

1. Population growth leads to deforestation due to the establishment of settlements.
2. Construction of road and railways causes cutting down of trees.
3. Source of energy eg charcoal, wood.
4. Industrial activities like mining activities.
5. Lumbering activities also facilitate deforestation.
6. Poor organised agriculture activities example shifting cultivation.

The Causes, Extent and Effects of the Loss of Biodiversity

Analyse the causes, extent and effects of the loss of biodiversity

ACIDIC RAIN

Acidic Rain results from solution of gases like carbon dioxide that react with water to form acids. Therefore acidic rain is rain containing more acids than the normal amount.

FORMATION OF ACID/CAUSES OF ACIDIC RAIN

It is formed in the air from sulphur dioxide and nitrogen oxide which are emitted by thermal power stations, Industries, Motor vehicles, burning of coals and also industrialisation.

LOSS OF BIODIVERSITY.

Biodiversity: Refers to a variety of species of living organisms both plants and animals (flora and fauna).

Loss of biodiversity: Refers to the disappearance of different plants and animal species in a particular geographical unit or community.

Ecosystem: Is a natural system in which plants and animals interact with each other and the non-living environment.

CAUSES OF LOSS OF BIODIVERSITY

Bush fires, this lead to the disappearance of plants and fauna because some of the fauna will die due to the fire and some plant also die and disappear completely.

Poaching, this is the illegal killing of wild animals eg, killing of Elephants, Rhino and Zebra for various purposes.

Introduction of new species in a geographical unit for example Lions introduced to the place where there are herbivorous animals.

The Causes, Extent and Effects of Pollution and Waste Mismanagement

Analyse the causes, extent and effects of pollution and waste mismanagement

Environmental pollution has become a serious problem since the commencement of industrial revolution. Pollution is the contamination of the environment by solid, liquid and gaseous pollutants. The current increases in population are a major pollution causing factor. Environmental pollution negatively affects environments by increasing the loss of biodiversity.

The Causes, Extent, Effects of Fast Rate of Population and Urban Growth on Environment

Explain the causes, extent, effects of fast rate of population and urban growth on environment

Population can be higher in particular areas due to the availability of social services, (food, shelter, hospital), good economic activities, agriculture, trade, good infrastructure, climatic condition. When the population is high, it can cause the following effect on the environment.

- Soil erosion. This is because when the population grows high, it leads to expansion of settlement and residence because they will need to build houses which involves digging the land for setting the foundation of the houses.
- Deforestation when the population is higher it leads to the expansion of settlement and residence. That people will cut trees in order to create space and for building.
- Loss of biodiversity, This is due to risky human activities that endanger the life of living organisms for instance using chemicals in agriculture and fishing and deforestation also cause biodiversity.
- Desertification is a condition where the land is bare that it allows the sun to heat directly on the land since there is no land cover
- Air pollution since the number of people increasing on the environment improve industrialization. That will produce large amount on gases.

The Causes, Extent and Impacts of Desertification

Examine causes, extent and impacts of desertification

Desertification: Is the development of desert-like condition in regions that have experienced human disturbance such as deforestation, overgrazing, poorly managed agriculture. Although the extent of the world deserts expand and contract in response to naturally changes in climatic condition

Causes of Desertification

- Overgrazing, overgrazing was not a problem long ago because animals would move in response to rainfall. Now, animals can graze in a single area for a long time.

- Farming of arable land. Farming of arable land is causing desertification worldwide farmers are clearing arable land and using it takes away the richness of the soil
- Destruction of plants in dry regions this is causing desertification to occur. People are cutting down trees to use them as a source of fuel once these trees are cut down there is nothing to protect the soil.
- Incorrect irrigation in arid regions cause a build up of salt in the soil. This is commonly used in poorer areas farmers use poor techniques because of lack of water.
- Deforestation since it involve cutting down of trees without planting more trees causing the land to be bare that the soil can be easily carried by the wind

Effects of Desertification

- Soil becomes less usable, The soil can be blown away by wind or washed away rain nutrients in the soil can be removed by wind or water. Salt can build up in the soil which make it hard for plant growth.
- Damaged loose soil may bury plants or leave their roots exposed also when overgrazing occur plants species may be lost
- Places that have war and poverty are most likely to have famine occur. Drought and poor land management contribute to famine.
- Food loss. The soil is not suited for growing food, Therefore the amount of food being grown will decline. If the population is still growing this will cause economic problems and starvation.
- Desertification can cause flooding, poor water quality, dust storms and pollution. All of these effects can hurt people living near an affected region.

The Impact of Poverty on Environment

Explain the impact of poverty on environment

Impact of Poverty on Environment Include:

- Poverty influences environment degradation. Environment degradation is the process induced by human behavior and activities that damage the natural environment.

- Poverty considered as a great influence of environment degradation in many regions of the world, regional overgrazing has resulted in destruction of grazing lands, forest and soil
- The carrying capacity of the natural environmental has been reduced, As the people become poorer they destroy the resources faster
- They tend to overuse the natural resources because they don't have anything to eat or any means of getting money except through the natural resources so starting to depend more on natural resources
- Due to the lack of sufficient income people start to use and overuse every resource available to them when their survival is at stake.

The Causes and Consequences of Global Climatic Change on Environment

Analyse causes and consequences of global climatic change on environment

Global climatic change is a significant and lasting change in the statistical distribution of weather patterns over periods ranging from decades to millions of years.

Causes of Global Climatic Change

- Both natural and human factors change earth's climates
- Before human changes in climate, changes resulted entirely from natural causes such as changes in Earth's orbit, changes in solar activity or volcanic eruptions
- Since the industrial era began humans have had an increasing effect on climate particularly by adding billions of tons of heat trapping green house gases in the atmosphere.
- Most of the observed warming since the mid 20th century is due to human caused greenhouse gas emission.

Consequences of Global Climatic Change

- Loss of biodiversity, since when the climate change there is occurring of drought that can cause plants and micro-organisms die

- Causes disease such as skin cancer, when the ozone layer is destructed it can cause the sun rays to penetrate directly to the earth surface since the ozone layer previously acting as a blanket to prevent the sun rays is now destructed
- Famine or hunger. It is difficult to practice agriculture when climate is changing. it may cause drought making it difficult for plant growing
Increase in sea levels since the climate change can cause the melting of ice due to increase in temperature on the earth surface that cause increase of the sea level.
- Loss of habitat for living organism since there are some living organisms living in cold areas or in ice so when the climate changes due to increase in temperature those organism fail to survive and die.

Environmental Conservation

Environmental Conservation

Define Environmental Conservation

Environmental Conservation refers to the protecting of environment from being destructed through practicing various ways of environment protection such as destocking, afforestation and planting of cover plants.

Various Ways of Conserving the Environment

Analyse various ways of conserving the environment

Ways of Conserving the Environment include:

- Destocking, refers to the process of reducing number of animals on the environment because when the number of animals increase on the environment, they can feed on all the plants which help to prevent soil erosion or land slides.
- Afforestation and Reforestation refer to the process of planting trees in bare land and re planting trees in the presence of other trees.
- Control industrial gases and industrial sewage system, industrial location should be far apart from the water sources.

- Practicing proper irrigation skills. When irrigation is practiced improperly especially on the land with slope the water can wear out the nutrients and cause poor production.
- Control of industrial fertilizers instead of depending on industrial fertilizer we can use manure since manure has no effect on the soil while industrial fertilizers add acid on the soil
- To control fishing activities, bad fishing method should be discouraged for example charging and punishing for those who practicing bad methods. Control construction of road and buildings to avoid construction of building on steep slopes because this can accelerate soil erosion.

Environmental Conservation and Management at School Level

Practice environmental conservation and management at school level

This part is practically based on students in groups to practice various ways of conserving the environment such as planting trees, flowers, cleaning environment around the school campus.

Responsibility of protecting our dear planet earth should starts from the domestic to international level. Schools have a very unique role in environmental conservation. Environmental management education should be incorporated in national curriculum. Also students should be nurtured to preserve environment form the primary level.