

# CHAPTER ONE

## POPULATION AND DEVELOPMENT

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

Population is related to the development process and environment. This is because it is itself a reproductive resource that transforms the environmental resources so as to bring development. As such, population is both 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 and overpopulation that leads to poor or excessive resource utilisation as well as under- population which leads to underutilization of some resources, etc.

Hence, in planning for development, adequate knowledge of major population aspects is needed. These include population characteristics such as size, composition, and distribution; population control factors such as fertility, mortality and migration; and the impact of population change on resources such as land, water, vegetation and air.

### DEFINITION OF TERMS

1. **Human population** refers to the group of people occupying or residing in a certain geographical unit.
2. **Population size** refers to the total number of people in the country. This may change over time due to dynamic components, like births, deaths and migration. -Population size is Obtained through censuses.
3. **Population distribution** refers to the way in which people are spread out across the earth's surface. Also, it can be defined as occurrence or non occurrence of people in certain geographical unit. Distribution is uneven and changes over periods of time.
4. **Population density** refers to the ratio between the number of people and a given area, which they are occupying, or number of people per unit area.

$$\text{Population Density} = \frac{\text{Number of people}}{\text{Area of the people}}$$

### CHARACTERISTICS OF POPULATION

Population has the following general characteristics:

1. It is unevenly distributed over the surface such that some areas have low density, others have medium density and some areas have high-density population. Other areas have no population at all and are referred to as non-ecumene.

2. Population is dynamic in the sense that it is migratory as people move from one place to another either permanently or temporarily depending on the prevailing conditions. Also population changes in terms of number. It tends to increase in some places and tends to decrease in other places. The developing countries are marked with rapid population growth while in the developed countries the population growth is very slow or almost stationary. Population change is caused by either natural increase due to birth, natural decrease through death or artificial increase due to in-migration or immigration; artificial decrease due to out-migration or emigration.
3. Population has age-sex structure. This refers to the composition or proportion of population in terms of sex, age, occupation etc. Population structure varies from country to country such that in the developing countries children are more than young adults hence there is high dependency ratio while in the developed countries children are fewer than the young adults and hence there is low dependency ratio. Age structure is important since it influences employment pattern as well as public expenditure. Population structure also shows the sex ratio. This is defined as the number of males per 100 females. Sex ratio is not balanced in the world. For example in Africa on the whole women are more than men and this is a consequence of out-migration or in-migration of only one sex group. In urban areas there are more males per 100 females because more young men migrate to cities than young women while in rural areas there are more young females (e.g in Moshi rural areas) because of the movement of young males to the cities and towns.
4. Population is characterized by variation in the level of development and technology. Some countries are more developed due to the use of advanced 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.
5. Population usually faces problems like diseases such as HIVA IDS, environmental calamities like famine, floods, earthquakes and environmental pollution

## **POPULATION DISTRIBUTION AND DENSITY**

*Population distribution* is the way in which people are spread over space or occurrence or non-occurrence of people in a certain area. Population distribution varies from place to place such that some places are having many people and other places are having few or no people at all (It is unevenly distributed). Generally, the inhabited areas of the world's land surface are called as ECUMENE and uninhabited or sparsely populated areas are referred to as NON - ECUMENE.

Population density refers to the ratio between the number of people and the area they occupy. Like distribution, population density varies from place to place. Population density can be distinguished into high density (200 persons per square kilometre and above), medium density (100 to 200 persons per square kilometre) and low or sparse density (less than 100 persons per square kilometer).

Examples of areas which are densely populated are The Nile Valley in Egypt because of water availability and fertile soil in the valley, Ganges valley in India due to flat, extensive and low-lying undulating areas with fertile soils, Highlands of Tanzania like the southern slopes of Kilimanjaro mountains (Chagga land) due to fertile volcanic soils and high rainfall, North west

Europe like Netherlands due to reliable, evenly distributed rainfall, mild temperatures and fertile soils, etc.

Areas with sparse population are the deserts like the Sahara and Kalahari, rugged fold mountains like Andes, Amazonia and Canadian Shield due to dense forests, Scottish highlands and Lake District due to poor soils.

## **FACTORS INFLUENCING POPULATION DISTRIBUTION AND DENSITY**

There are several factors influencing population distribution and density in the world and these can be divided into physical and human factors.

### **Physical Factors**

1. **Relief (Topography):** Where the slope is steep there is low or no population due to poor soils and nature of the land but where there are gentle slopes or flat surfaces there is high population since the soils are good and mechanization can take place easily.

Highlands normally attract population due to good soils, rainfall, cool climates and being free from floods.

But some lowlands, which tend to flood usually, have low population since people avoid settling in those areas.

2. **Climate:** Areas with reliable rainfall like the North West Europe have attracted high population, but where there is poor rainfall like in the deserts there is low population. Also areas with very high or very low temperatures do not attract population while the areas with moderate temperature attract high population.
3. **Vegetation:** In areas where dense vegetation is difficult to clear like in the Tropical rainforest of Amazon basin and the Congo basin as well as the Rufiji valley and mangrove forest along the coastal areas people are discouraged to live leading to sparse population or no population at all. Dense vegetation hinders penetration or communication and development. Conversely, the areas in which vegetation has led to the development of fertile soils, people are attracted since they grow crops after clearing for cultivation especially in the temperate deciduous forest and temperate grassland areas like the Paris basin.
4. **Soils (Edaphic Factors):** Thin, infertile or badly leached soils discourage settlement since they cannot support agriculture. Examples are the Lake District and Scottish Highlands where there has been severe leaching. Equatorial areas also discourage settlement due to soil leaching which causes decline in fertility.

Good soils attract population; for example in the Nile Basin and the southern slopes of the Kilimanjaro Mountain.

5. **Mineral and Energy Resources:** The areas with mineral and energy resources attract population, for example, the rand of South Africa, iron and coalfields in Western Europe

like the Rhur region in West Germany, and Southern parts of West Africa where there are rich mineral deposits like Diamond, Oil, etc.

6. **Natural Hazards:** Areas that are prone to natural hazards like floods in lowlands, earthquakes, tornadoes are avoided by people. But this is not always so since some areas which experience frequent floods like the fertile plains of Bangladesh and volcanic areas of Java and Indonesia are highly populated.
7. **Biological Factors like Diseases and Pests:** People like settling in areas which are free of diseases and pests. These will have high population like the highlands of Tanzania which have healthy climate like Arusha etc. But areas with high incidence of diseases and pests infestation like mosquitoes that cause malaria, Tsetse flies and locusts discourage population settlement like the central parts of East Africa. In Tanzania the worst affected areas are the western and southern districts like Mpanda and Liwale respectively.
8. **Human (Anthropogenic Factors):** These include culture (tradition, religion) economic structure, transport and communication and politics.
9. **Social - Cultural Aspects:** Some tribes have a tradition of going to live in areas which have been left by their ancestors as heritage and continue to reproduce in the same area to create clans. In time, these areas become overpopulated and hence highly fragmented like the Kilimanjaro among the Chagga people.

Traditional beliefs like superstitions can make people avoid living in certain areas due to the fear of risking their life.

Also, areas where social services are readily available like in towns there is high population unlike the rural areas where social services are poorly available.

10. **Economic Structure:** People tend to settle in areas where there are economic opportunities like in towns due to the presence of trade and industries. Urban industrial areas like the rand in South Africa are densely populated. But the areas with poor economic base have low population since people avoid settling in those areas.
11. **Political Factors:** Areas with political stability and peace attract population but where there is political instability people tend to avoid. These areas face depopulation due to conflicts like in Sudan, Somalia, Rwanda and Burundi.

Also the policies especially on resettlement schemes so as to solve the problem of overpopulation influence population distribution in the country. For example the government can decide to establish new settlement areas and force people from the overpopulated areas to come and settle.

Also the establishment of colonial rule like in Tanzania led to the concentration of people in the most productive areas leading to low population in other areas.

The creation of national parks as well as the forest and game reserves by the government has prevented people from settling in such areas.

12. **Transport and Communication:** Areas which are served with transport and communication attract high population since they can transport their goods to the market

areas. But areas which are poorly served with transport and communication like Western parts of South Africa and China have low population. These areas are remote and hence are not accessible.

## **POPULATION DISTRIBUTION (STUDY CASES)**

### ***Population Size, Composition and Distribution***

Since independence, Tanzania has conducted four censuses in 1967, 1978, 1988 and 2002; these have been the main source of population data. These censuses have indicated that the population of Tanzania increased from 12.3 million in 1967 to 17.5 million in 1978 and reached 23.1 million in 1988, also to about 35 million in 2002. During this period, the population growth rate was estimated at an average of 3.2 percent per annum between 1967 and 1978 and declined to an average of 2.8 per annum during the period between 1978 and 1988. The 1988 and 2002 censuses indicate that there is a variation between the regions, for example at a regional level the estimated annual growth rates ranged from 1.4 per cent (Mtwara) to 4.8 per cent (Dar es Salaam).

Tanzania has a young population. According to the 1988 Population census, about 47 percent of the population is aged below 15 years, and 4 percent aged 65 years and above. The 2002 census also showed that the young are more than the old. This youthful age structure entails a larger population growth in the future, as these young people move into their reproductive life irrespective of whether fertility declines or not.

Tanzania's labour force, defined as the economically active persons in the 15 to 64 years age group, has been growing steadily since 1960. From 1960 to 1993 for instance, the average annual growth rate of the country's labour force was 2.8 per cent and it is projected that during the coming years, it will grow to 3.0 per cent. Tanzania's economically active population was estimated to have risen from 7.8 million in 1978 to 11.3 million in 1990. The 1990/91 Labour Force Survey (LFS) showed that out of an estimated labour force of 11.3 million, males and females constituted 49.8 and 50.2 per cent respectively.

An important feature of the population profile is its spatial distribution over the national territory and its rural-urban migration patterns and trends. The analysis of population distribution by district carried out on the basis of the 1967, 1978, 1988 and 2002 census results indicate that about two-thirds of the population is concentrated over a quarter of the land area. The population distribution ranges between 4 persons per square kilometre as observed in Liwale district to 383 persons per sq. km. observed in Chakechake and 282 found along the slopes of Mount Kilimanjaro. About 79 per cent of Tanzanians still live in rural areas (majority of whom are women) though the urban population has been growing at a rapid rate of more than 5 per cent per annum over the past three decades.

### ***Components of Population Growth***

The main components of population growth in any country are mortality, fertility and net migration. In Tanzania, fertility and mortality are the most important factors influencing

population growth at national level. Previous censuses have shown that net migration component has been negligible.

Mortality rate has declined substantially in Tanzania over the decades. The main contributing factors to the decline are improved access to health care and better environmental sanitation. The crude death rate (CDR) is estimated to have fallen from about 22 per thousand in 1967 to 15 in 1988. Infant mortality rate (IMR) per 1000 live births is estimated to have declined from 170 (1967) to 115 in 1988 and then to 88 in 1996 (TDHS, 1996). In the same period, the under-five mortality rate per thousand live births, declined from 260 to 137. The declining mortality is reflected in the rising life expectancy at birth from a level of about 40 years in 1967 to about 50 years in 1988. In spite of this decline, mortality still remains high by world standards. Maternal mortality rate (MMR) is still high. The 1996 TDHS shows that the MMR is estimated at 529 maternal deaths per 100,000 live births.

The fertility rate in Tanzania is estimated to have declined slightly over the past decade. At 1996 fertility level, a Tanzanian woman will give birth to an average of 5.8 children during her child-bearing years. This implies that the total fertility rate (TFR) has declined from 6.4 (1988) to 5.8 (TDHS, 1996) births per woman with significant regional and educational differences. For example in 1996, Mainland Tanzania recorded 6.3 and 4.1 births per woman in rural and urban areas respectively. Differences related to education are inversely much wider. Fertility rate for women with no education is 6.4, with primary education 5.4 and with secondary and higher education 3.2 (TDHS, 1996).

High fertility level observed in Tanzania is an outcome of a number of factors including:

1. Early and nearly universal marriage for women. For example, the median age at first marriage for women aged 25-49 is 18 years and by the age of 20, over 67 per cent have married at least once (TDHS, 1996). The 1971 Marriage Act stipulates a legal minimum age at marriage of 15 years for females and 18 for males; and,
2. The absence of effective fertility regulation within marriage: For example, the contraceptive prevalence rate is currently estimated at 16 percent among women aged 15-49.

Other underlying factors contributing towards high fertility and rooted in the socio-cultural value system include:

1. Value of children as a source of domestic and agricultural labour and old-age economic and social security for parents;
2. Male child preference; this is perpetuated by men.
3. Low social and educational status of women in society which prevent them from taking decision on their fertility and use of family planning services; and
4. Large age differentials between spouses which constrain communication on issues related to reproductive health.

Rural-urban migration has been a main feature of migration in Tanzania for many years. The increase in rural-urban migration has led to increasing rate of urbanization, especially in major

urban centres like Dar es Salaam, Mbeya, Mwanza, and Arusha. The proportion of population living in urban areas increased from 5 percent in 1967 to 13 in 1978 and 21 percent in 1988. Between 1978 and 1988, the urban population for Tanzania increased by 53 percent. There are variations between regions with regards to the rate of urbanization. Dar es Salaam alone contained about 25 percent of the total urban population in 1988. The unprecedented migration of people from rural areas increases the burden on already over-loaded public services and social infrastructure especially in the squatter areas, which stimulate the flourishing of communicable diseases like tuberculosis, cholera and malaria. Rural- rural migration also contributes to the regional and district level variations in terms of population pressure over resources. These variations are demonstrated by differences in population densities between districts, wards and villages. The general observation is that population increase has not been in line with the land area available for human use.

### ***Population and Development interrelationships***

Rapid population growth is one of the primary obstacles to development. In the short run, its effects may appear marginal, but it sets into motion a cumulative process whose adverse impact on various facets of development might turn out to be very significant over the medium to long term. This is because population factors impinge on development and the welfare of individuals, families, communities at the micro level and at the district, regional and the national level as whole at the macro level. The effects and responses to population pressure interact at all these levels.

Rapid population growth tends to increase outlays on consumption, drawing resources away from saving for productive investment and, therefore, tends to retard growth in national output through slow capital formation. The strains caused by rapid population growth are felt most acutely and visibly in the public budgets for health, education and other human resource development sectors. Food requirements for the rapidly growing population also means that part of the gains from increased agricultural production are eroded.

Adverse economic effects due to rapid population growth are shown explicitly by looking at projection of future population and the costs of providing social services. If the 1978 -1988 intercensal population growth of 2.8 per cent per annum does not decline, then costs for the provision of health services will rise annually but without improvement in either the quality or coverage of the current services.

Population and development influence one another. The influence may be positive or negative depending on other factors and conditions. In the case of Tanzania, the afore-mentioned demographic factors interact and create the following problems:

1. The rapid growing young population demand increasing expenditure directed to social services such as education, health and water;
2. The rapidly growing labour force demands heavy investments in human resource development as well as development strategies which ensure future job creation opportunities;

3. Rapid population growth in the context of poverty reduces the possibility of attaining sustainable economic growth.



# CHAPTER FIVE

## MINING INDUSTRY

### MINERAL EXTRACTION (MINING INDUSTRY)

Mining is the activity that involves the extraction of minerals from the ground. **Major categories (classification) of minerals:** Minerals can be classified into metal and non-metals.

**Non-metallic minerals include:** Salt, phosphate, potash, nitrates, sulphur, diamond (precious mineral), limestone, meerschaum, coal, mineral oil and natural gas.

**Metallic minerals include:** Gold, zinc, copper, iron, tin, silver, lead, chromium, nickel, cobalt, manganese, aluminium, tin etc.

### Distribution of Minerals Found in the World

1. **Coal is found;** USA in Pennsylvania, West Virginia, Ohio, Interior states like Illinois, Indiana, Kansas, Oklahoma, and the Gulf province in states like Texas, Alabama. The former USSR in Moscow, Donetz Coal Basin, and Kuznetstk Coal Basin. Other countries include China, United Kingdom, South Africa, Zimbabwe at Wankie, Zambia, Nigeria, Botswana, The Democratic Republic of Congo, Mozambique, Morocco, Malawi, Sudan and Taiwanii from the Ruhuhu basin, Ketewaka-Mchuchuma and Songwe Kiwira.
2. **Gold** is found in South Africa, Ghana, Tanzania, Zimbabwe, Democratic Republic of Congo, Uganda, and Kenya.
3. **Salt minerals** in Tanzania along the coast, uvinza in Kigoma and China.
4. **Copper** in Zambia, The Democratic Republic of Congo, Uganda (Kilembe), Mauritania, Botswana, Chile, Canada, [the former USSR and USA.
5. **Natural gas** found in Tanzania at Songosongo Island in Kilwa, Nigeria, and Middle East.
6. **Diamond** found in Tanzania (Mwadui), South Africa, The Democratic Republic of Congo, Namibia, Sierra Leone and Guinea.
7. **Phosphate** in Tororo Uganda and Morocco at Khourigba, Youssonfia and Ben Guerir within the Maseta.
8. **Bauxite** is the ore of Aluminium. It is located in Guinea, Ghana, and Cameroun.
9. **Iron ore** in Germany, Sweden, USA, China, Brazil, Australia, France, UK, Liberia, Mauritania, Zimbabwe, Gabon, Algeria, Angola, South Africa,

### MINING METHODS

Various methods are used in the mining activity depending on the occurrence of the concerned mineral, easiness of the method and how cheap it is. The common methods of mining include:

**Open Cast Method (Strip Method)**

It is the method that involves the removal of the upper surface layer of soil where the mineral deposits lie horizontally near the surface. The method is cheap.

### ***Underground (Shaft) Methods***

It is the method which is used in extracting the minerals which are found deep in the ground. It involves digging deep hole (shaft) to the lower levels in the ground.

### ***Placer Method Mining***

It is the simple method, which is used in extracting alluvial minerals by using the pans in the river valley. It is used in diamond mining in South Africa. It involves digging out the sand and gravel from the river bed, swirling it round with water in shallow pan. Then the pan is tilted in such a way that the lighter sand or gravel is washed over the side, leaving the heavier mineral at the bottom of the pan.

### **Contribution of the mining industry to the economy (Economic importance of mining industry) of any country:**

1. The mining leads to the development of industries in the country for example steel cutting industry, Coal has led to the development heavy industries in China, USA and chemical industries.
2. Mining contributes to the earning of foreign currency in the country for example copper in Zambia, Gold in South Africa, Oil in Nigeria, Libya, Algeria, Middle East and Kuwait.
3. Mining industry provides employment opportunities to the people. E.g. in Zambia copper mining employs a lot of people, also many people are employed in the Gold mining areas in South Africa (in the Rand mining area)
4. Mining stimulates the development of transport and communication systems in any country. For example in South Africa mining has led to the development of a dense network of Roads and railway lines in the Eastern part.
5. It encourages the development of other economic sectors since it generates capital for the country. For example mining in China has led to heavy investment in Agricultural machinery.
6. Mining also leads to the improvement in the international relations through forming the international organisation for the countries mining and exporting certain type of mineral. For example Nigeria is the member of OPEC to the oil mining industry.
7. Mining leads to the development of towns and large cities like the industrial conurbation of Rand in South Africa. Conurbation is the large zone formed as a result of the combination of many towns into one zone. Also, in Tanzania Mwanza has grown because of Diamond mining, Mpanda in Rukwa and Chunya in Mbeya because of gold mining and other minerals.
8. Also mining leads to the diversification of the economy of the country so that a country cannot depend on one source of revenue or income.
9. Mining has stimulated the construction activity especially in the supply of corrugated iron sheets for roofing the buildings etc.

10. It also supplies energy since some minerals are energy resource like coal, petroleum, uranium, and natural gas.

**Factors that influence the development of mining industry include the following:**

1. Availability of capital to be invested in the mining industry like buying the machines.
2. Nature of transport system. If the transport system is efficient, mining develop fast but if the transport is poor then mining does not develop fast.
3. Labour availability is another factor that influences the development of mining sector. For mining to develop fast there should be readily available labour but if labour is not available then mining becomes poor.
4. Nature of market. If the market is good then mining industry grows fast but if it is poor mining industry develops slowly.
5. Water availability also leads to fast development of the mining industry if the supply of water is reliable. But the development can be slow if the supply of water is poor. Water is needed for cooling the engines of the machines and cleaning the minerals
6. Nature of the government policy. If the policy is supportive the mining industry develops fast but if the government is non supportive then the mining industry develops so slowly.
7. The availability of deposits and their value. If the deposits are large and valuable, mining takes place fast.

**Problems Facing the Mining Industry in Africa and Other Parts of the World**

1. Decline or exhaustion of the mineral deposits because of over exploitation like coal, copper in Zambia, and some parts of USA and South Africa.
2. Lack of skilled labour in the developing countries like Tanzania. This has led to poor exploration and low yield.
3. Lack of capital in the developing country has led to the decline in the mining industry.
4. Some countries lack important mineral deposits like Japan and Norway. In some countries the available mineral deposits are of poor quality like coal in Tanzania.
5. Poor transport system especially in the developing countries have led to poor mining activity. Some parts of central Tanzania have poor roads which are impassable during the wet season.
6. Competition with other economic sectors for water supply is another problem. For example in South Africa water is scarce and the available is competed for by Agricultural sector, mining and manufacturing industry.
7. There is a severe problem of constant power supply. This affects the mining industry.
8. Poor conditions of workers in the mining areas lead to the problem in labour supply.
9. Political problems especially civil wars lead to the poor mining development caused by labour unrest.
10. There are problems of local market especially in the developing world.
11. Also there is a problem of price fluctuation in the world market, which affects the development of the mining industry in many countries in the world.
12. There are problems of food supply in some countries like in Zambia in Africa. This also leads to the poor mining development.

## **Problems Caused by the Mining Industry**

1. Mining leads to environmental problems like land degradation, soil pollution, water pollution, and deforestation. When the minerals get exhausted and the land is left derelict after being abandoned.
2. It attracts people causing high population pressure in the mining centres, which in turn causes many social and economic problems like poor housing, unemployment etc.
3. Mining leads to the death of people due to accidents caused by the collapse of mines.
4. Mining causes the decline of the economic sectors especially agriculture since many people rush to the mining centres to supply labour. Also, the size of the land decreases because of mining.
5. Mining industry has also led to the occurrence of political conflicts like wars, which are taking place in the Democratic Republic of Congo, and the Gulf war of 1990s was due to mineral resource, that is oil.
6. Over concentration on the mining activity leads to the problems of food supply because people give low priority to agriculture. This has been the case in Zambia where food is being imported from other countries.

## **Effects of Mining to the Environment**

1. It leads to environmental pollution like water pollution, air pollution, soil pollution and noise pollution.
2. Mining causes land dereliction (abandoning of the exhausted land). This destroys the nature of the landscape and leads to mineral resource exhaustion
3. It accelerates deforestation as a result of clearing of vegetation so as to establish the mining centres and settlement.
4. The size of the land is reduced and the soil structure and texture are destroyed because of the mixture with fragments of rock and hence plant growth cannot take place easily.
5. Mining leads to the disappearance of valuable plant species.
6. Green house effect and global warming can occur as a result of the use of energy generating minerals like coal, uranium etc. These minerals produce gases like carbon dioxide, which pollute the atmosphere.
7. The pits, which are flooded with water, act as mosquito breeding places and hence accelerate the spread of malaria.

## **Suggested Ways of Minimizing the Effects of Mining to the Environment**

1. Improving the methods of extraction.
2. Reducing the population pressure through establishing resettlement schemes birth control.
3. Reclaiming the areas, which have been affected by mining like planting the trees.
4. Developing other sources of energy rather than depending on energy resources from the ground.
5. Establishing other economic activities like fishing, tourism and market gardening instead of depending on mining only.

## **Case Studies**

### ***Gold Mining in South Africa***

Gold was first discovered near Olifants River, Transvaal in 1868. But true mining began in 1886 with deposits at Witwatersrand between Krugersdorp and Springs in Transvaal.

#### ***Occurrence***

It is found in the rock layers known as reefs which vary in thickness from a few centimeters to more than a mile. It is the most valuable mineral and has been highly valued throughout the history. Today it is widely used as the basis of world's money and jewellery.

South Africa is the leading producer in the world and it has the largest reserves. About 56% of the world's output is produced from South Africa.

#### ***Distribution***

The main mining area is at Witwatersrand in Transvaal and is the single major mineral producing in South Africa. The Witwatersrand goldmines are close to Johannesburg, a city that grew fast because of gold.

Another rich area is in the Orange Free State centred on Odendaalsrus where mining began in 1948 and stretches in a 400km arc as well as Natal. But the mines in the western rand are the largest producers in the country.

### **Methods of Gold Mining**

Formerly open cast method was dominant since the gold seams were near the surface. But today mining involves shaft method. The rock in the reef is called *banket* and it is this, which is mined. Processing

The banket (gold-bearing rock) is crushed into fine powdery dust and then mixed with water (stirred) until it becomes liquid mud or slime. Then cyanide solution is added to dissolve gold content. Then it is mixed with zinc-dust to cause gold to precipitate out. Then gold is smelted and then moulded into bars at Germiston in the rand.

During the process of purifying gold, uranium is also extracted. Uranium is used for the production of atomic (nuclear) energy.

### **Factors that Facilitated the Development of Gold Mining in South Africa**

1. The presence of large deposits in the country especially in the rand. The large deposits have made South Africa the leading in the world.
2. The use of advanced technology in the exploration, mining and processing of gold. Extensive exploration was done by the foreigners and companies began the mining

activities. Anglo- American Corporation is one of the Companies, which got involved, in the gold mining in South Africa. Other companies are Johannesburg Consolidated Investment Limited (JCI Limited and Johnnies Industrial Corporation.

3. Availability of cheap labour in mining areas was another factor that facilitated the development of gold mining. The companies were using migrant labour from the neighbouring countries like Malawi and Mozambique. The labourers were being paid low wages so as to keep the cost of production low and get higher profit.
4. The development of efficient transport network in the mining areas had a great contribution in the mining sector. For example railway construction began at Cape Town in 1859 and today a large portion of it is electrified. Also, the development of roads in the country has enhanced the gold mining activity in the country. There are ports like Cape Town, Durban and Port Elizabeth help in the export of gold.
5. Large market in the country because of the presence of many industries. There are so many metalworking and engineering industries. Also, there is a great external market of gold. Gold accounts for 35% of export trade in the followed by wool.
6. Small size of the arable land has led to the concentration on the mining activity.
7. The value of gold at a global level especially in the making money and other uses has made the government in South Africa to strongly concentrate on the gold mining.

### **The Role of Gold Mining in South Africa**

1. It has created employment opportunities to the people of not only of South Africa also from outside the country like Malawi, Tanzania and Mozambique who went there as migrant labourers.
2. It has stimulated the development of towns like Johannesburg as a mining and business center in Transvaal.
3. It has been contributing to the generation of the government revenue and capital to be invested for further economic development.
4. It has stimulated the development of industries in the country and other mining activities like uranium, platinum etc.
5. There has been more development of social services like education, health services, and power supply.
6. It has earned South Africa an international repute and the world's leading gold producer.
7. It has stimulated the development of efficient and effective transport and communication system like railway lines, roads, airways and seaports that encourage exportation of goods.

### **Negative Impacts of Gold Mining in South Africa**

1. Gold mining contributed to the domination of South Africa by the Boers and the introduction of the apartheid policy in the country. The apartheid system brought problems of racialism and segregation whose relics can be seen even today. There are frequent conflicts, which occur between the Africans and other nationals.
2. It has contributed to the occurrence of environmental degradation because of creation of pits and this has led to the disappearance of vegetation. Other environmental problems include air pollution, water pollution, soil pollution and noise pollution.

3. Creation of mines has led to the reduction in the size of the Arabic land and hence the decline in agriculture.
4. There has occurred high population in the mining areas and towns creating some problems of pressure for land, poor housing, diseases and unemployment.
5. The problems associated with the decline in the prices and exhaustion have led to the laying off (redundancy) of some workers in the mining areas for example in 1990 at least 40,000 gold mine workers were laid off in South Africa and this continued through 1993. Lay-offs have then contributed to the increase in the crimes and other vices like prostitution etc.

### **Limitations of Gold Mining in South Africa**

1. Labour unrest is still a problem because of conflicts, which have been prevailing since the era of apartheid policy.
2. The rising cost of production because of the deepening of gold mines and some of the seams are smaller than the country took bringing problems of extraction.
3. The machines have become so old that they need replacement. The old condition of the machines leads to the decrease in efficiency and effectiveness causing the decline in production.
4. There are rising costs of goods and services especially food supply, medicine and education. These affect gold mining to a great extent.
5. There is a big problem of water supply since South Africa does not experience heavy rains in most of its parts especially the western part. Therefore, water available is competed for by different sectors like agriculture, industry, mining and domestic requirements.
6. The collapse and flooding of the mines is another hindering factor. The collapse leads to the killing of the miners and flooding leads to delays because removing of water from the mines takes long time causing time wastage.
7. Some mines get exhausted and are closed down, for example in 1994 Rand gold closed Durban gold mine leading to the laying off of the workers and decrease in the total production.
8. The world prices are not stable, they have been fluctuating such that in some years prices have gone high and in some years it has been going down. This has contributed to the problems of mining in South Africa because some companies could start paying the workers so poorly to raise the profit. For example the world prices fell in 1989 and the industry found that many of the low-grade ores were no longer profitable and nearly a half of the gold mines in operation were running at loss. Hence the gold deposits of poor grades bring low profit or loss during when the prices fall.

## CHAPTER EIGHT

### TOURISM

Tourism involves the movement of people away from home to other places of interest for leisure, or pleasure or studies etc. It involves visiting places of interest like wildlife conservation areas, historical sites, museums, beaches, etc.

#### Scope of Tourism

Tourism can be regarded as socio-cultural and economic activity.

**1. As socio - cultural enterprise** tourism involves traveling for the purpose of resting and relaxation, pleasure, curiosity or study tour. A person can travel far to the other place in order to study other cultural aspects, which are different from his or her own country. Some people travel so as to view spectacular features like mountains, lakes, and a wide variety of animals for pleasure. Some travel far to rest after a long period of hard work. Others travel far for adventures exercise like mountain climbing on the Mount Kilimanjaro. It also provides employment opportunities to the local people in the country.

**2. As an economic enterprise** tourism leads to the earning of foreign currency through the visitors who come. It also involves the expansion of the market for the local products. Some tourists travel far with their goods and some travel to look for the market areas for their goods. The money obtained from the tourist industry can be invested in other economic projects for the development of the country concerned. For example tourism in Switzerland has boosted a lot the economy of the country and it has contributed to the large-scale industrial development of the country.

Hence, tourism is an industry or enterprise which can be used to promote culture, widen the market for local goods, expanding education and creating employment as well as generating capital to be invested in other economic sectors whose performance has been dwindling.

#### Types of Tourism

1. Domestic tourism, which involves people traveling to places within the country for example from Dar es Salaam to Mikumi or from Tabora to Serengeti National Park.
2. International tourism, which involve people moving from home countries to other countries for leisure or studies.

#### Factors that Encourage the Development of Tourism in the Country:

##### *Physical Factors*

1. Pleasant climatic conditions especially sunny conditions attract tourists from colder countries during winter.



2. Attractive landscape (scenery) due to physical features like mountains, craters, lakes, coastal beaches, canyons and deserts.

### ***Socio - cultural Factors***

1. Presence of historical and architectural sites for example cities, churches, mosques, temples, palaces and pyramids.
2. Presence of recreational resorts swimming places, etc.
3. Good social services like shopping centres, medication, good food, water supply, and well-trained staff etc.
4. Presence of national parks like Serengeti, Yellowstone, Yosemite, etc.
5. Local skills like the Makonde carvings in Tanzania as well as the dressing style and traditional dances among the Masai and the Sukuma.

### ***Economic Factors***

1. Availability of capital to be invested in the tourist industry.
2. Advancement in transport and communication e.g. air transport, road, railway and water as well as internet services. These facilitate accessibility of different places of interest in the country.

### ***Political Factors***

1. Peace in the country encourages the development in the country since the tourists like visiting the country where there is peace like Tanzania in East Africa. They normally avoid the areas with political problems like civil wars.
2. Also the government policy can encourage the development of the tourist industry by financing or giving favourable conditions, which are not restrictive.

### **Importance of Tourism**

1. It provides employment to the people in hotels, guiding section, game parks, and traveling agents.
2. It provides foreign currency to the country, which is being visited.
3. It can facilitate rapid improvement in technology related to the tourist industry.
4. It provides opportunity for recreation or enjoyment.
5. It leads to the introduction of new culture.
6. Strengthening the international relationship.
7. It enables the marginal land to be used for economic development rather than staying idle. For example national parks occupy the areas, which were unproductive.
8. It promotes international respectability of a country. For instance today Switzerland is well known for flourishing tourist industry and it is known as 'the playground of Europe.'

### ***Why Tourism has increased Nowadays?***

1. People have accumulated greater wealth and are of higher standard of living such that they can afford traveling (Greater affluence in the societies).
2. There has been a great need for studying other cultures in other countries.
3. The start of long holidays with pay
4. Development of better transport facilities particularly in air- transport sector. This has made traveling fast and easy. In other words, it can be said that accessibility and mobility have improved including the increase in car ownership and affordable charter air flights to overseas.
5. Cheaper transport services especially air transport.
6. The development of attractive national parks in different parts of the world.
7. Increasing number of active people.
8. Greater awareness of locations, facilities and opportunities — through education, advertising and the media.

### **Trend of Tourism at a Global Level**

The world tourism by an estimated 7.4 per cent in 2000 its highest growth rate in nearly a decade and almost double the increase of 1999, but Africa was left out of the boom, increasing its international arrivals by just 1.5 per cent the World Tourism Organisation (WTO) said in its preliminary estimate of global travel. “While Kenya, Zambia, Mauritius, Morocco, Tunisia and Algeria achieved strong growth, South Africa and Zimbabwe; two of the Africa’s biggest destinations stagnated or suffered, the WTO said. International tourist arrivals in South Africa grew just by 1 per cent in 2000 to over six million tourists. The worst performance was Zimbabwe, which saw a 60 per cent decline of tourist arrivals to just 840,000 visitors. The decline in South Africa has been due to the contribution of the reports of crimes against visitors and floods in Mozambique and in Zimbabwe has been due to the recent land conflicts against the foreign farmers in the country.

German tourists continued to be the world’s second top travelers after the Americans and an estimated 48.4 million people (around 754 per cent of the population) went on a holiday in 2000 and their spending rose to DM 96.0 billion. Spain retained her position as the most favourite holiday destination abroad, followed by Italy, Austria, France, Turkey and Greece.

Major problems which are currently hampering the smooth development of tourism in the world include:

1. The world’s looming terrorism associated with bombardment of economically strategic centres like the World Trade Centre in the USA that took place on 11th September in 2001. Terrorism has scared many international tourists leading to the deceleration of tourism development in the world. Many people fear traveling with aeroplanes lest they encounter the problems of hijacks like what happened in the USA. Visa procurement procedures are also associated with a lot of restrictions as a result of terrorism.
2. The on - going crimes against the visitors in different corners of the world have contributed to the decline in tourism in some countries.
3. Environmental problems or hazards like floods in Mozambique and stormy winds contribute to the dwindling trend of tourism in the world. In other places like Turkey,

India, Japan and California there are problems of earthquakes since these are located along the zones of convergence.

4. The current political conflicts in different countries coupled with wars like in the Democratic Republic of Congo, Middle East (Palestine and Israel), etc. are a hitch or snag to tourist development.
5. Poor transport and communication network in the third world countries is another hurdle in the tourist development. There are poor roads in many countries such that visitors do not get a greater chance of having a glimpse (view) of different attractive aspects in the interior of the countries like the Southern Circuit of Tanzania.

### **Negative Effects of Tourism**

1. Tourism leads to environmental degradation like deforestation and erosion; pollution like water pollution and water pollution and air pollution.
2. It leads to the spread of diseases like AIDS etc.
3. Tourism needs high capital and hence if there is low capital it cannot develop easily. This discourages the development of other economic sectors.
4. Tourism can accelerate terrorism in the tourist country. The terrorists can come to the country as normal visitors.
5. It can also lead to the deterioration (destruction) of culture in the countries, which are visited.
6. It leads to the occurrence of conflicts in the country due to cultural destruction.

### **Solution to the Problems**

1. The visitors should be taught the culture of the natives in the country where they are visiting so that they cannot interfere with the people's cultural aspects like dressing, etc.
2. Reducing the number of visitors who visit the country so as to conserve the environment.
3. New areas should be opened up to reduce congestion in the existing tourist centres.
4. The government and international organizations should be active enough in supporting and governing the tourist activities in the country concerned.
5. There should be involvement of the local community in order that the local people can benefit and help in conserving the tourist centres (tourist attractions) like wildlife conservation areas etc.
6. There should be integration of tourist activities with the promotion of the environmental condition through the eco-tourism approach.