XII Commerce

Commercial Geography Notes
POUPULATION

Definition: The population growth is defined as the increase in the number of human inhabitants of a given place.

BIRHTS, DEATHS AND GROWTH:
The total population of any area of the earth surface represents a balance between two forces. One is a natural change caused by the difference between the number of births and deaths. If births exceed death rate the total population will increase and if it is less than vice versa. This simple relationship is modified by migration (2nd place). When immigrants are more than emigrants the population increases, when emigrants exceed the immigrants the population declines.

DYNAMICS OF POPULATION GROWTH:
While the facts of birth and growth at an individual level are clear, then effect on the growth and decline of population is more opaque. Here we look at the shape of the population growth and the yardstick to measure it.

The main components of population growth are:
1. Fertility
3. Mobility (migration)

1. FERTILITY: This is recorded as the actual no of line births in a population unit in one year, while ___ fertility is the number of live births for a group on ___ women during the span of reproduction. Actual live birth constrained with ____ I demography, which is the potential capacity of biological reproduction. The other principal factor is age of marriage, the unavailability of contraception attitude towards family size. Fertility rate is determined by the number of children born every year 1000 women of childbearing age (15-45). The number of birth rate is given by number of live births per thousand persons of all ages in a year. So birth rate can be recorded by knowing population of an area and number of births in a year dividing to1000.

DETERMINANTS OF FERTILITY

Important factors are as follows:
I. Per capita income percentage of population in the reproductive age group, % of rural population and % of literacy rate.

II. Fertility is very much affected by changes in age at marriage spacing it I related to social economic and cultural conditions.
III. Economic status influences fertility. Poverty is also associated with it including illiteracy, ill health, poor diet, keeps the birth rate high. Death rate is usually high among poor people often children.

IV. Religion and social attitudes are important factors, where people are tradition oriented and fatalistic, the birth rate is high.

V. Illiteracy and ignorance are responsible for high growth climatic conditions. In hot regions puberty occurs at an early stage and menu-pause later in women are more thus fertility is higher in warmer countries.

VI. Standard of living influences fertility as desire for higher standard would reduce the birth rate and low the standard of living increases the birth rate.

VII. Attitude towards family planning and birth control are equally important.

VIII. Family organizations assures sharing of responsibilities of children therefore fertility of loss inhabited

IX. Fertility rates are different in urban and rural areas practice early marriage resulting high fertility. People on urban areas marry at later age and do not feel hesitation in using contraceptive and may go for abortion.

X. Occupation has an important bearing upon fertility.

2. MORTALITY:

Mortality data are normally expressed in terms of number of deaths per thousand individual as specified by age, sex and social class. Mortality rates provide indication of infant mortality rate. Different mortality rate between social classes indicate inequalities in health care, wealth, and working conditions. In Britain the cause of death from disease has been a mark shift. The crude death rate is number of deaths per 1000 living members of a population per year. The standardized death rate is the number of deaths for any given age groups per year. The death rate among people of 65 years of age is higher than teenagers. Comparison of crude death rates and crude birth rates provides us with the basic measures of fertility of population increase is the excess of crude birth over the death rate.

DETERMINANTS OF MORTALITY

There are a lot of other factors apart from epidemics, wars famines etc, which are socio economic in nature are

- Rural and urban living.
- Martial Status: A significant portion of 9-11% males and females, who do not marry have more deaths to decrease and hence they levy higher death rates.
- Occupation: Some occupations are determined to health for example working in chemical nuclear or metallurgical industries, mining etc, and laborers already in poor health are affected.
- Rural Factors: Certain disease (hereditary and genetic) is prevalent in certain areas.
- Climate: High death rates are observed in tropical areas, which affect the living dirt and hygiene due to biological and climatic factors.
3. **MOBILITY:**
In population the birth and immigrants lead the population to increase while deaths and emigrants push the rate down although migrants may be most important factor in small area.
In a village for example it is less significant on National level. For the world as a whole migration is irrelevant because all movements take place within the limits of the recording area, in other words if interplanetary travel comes along the planet earth can be safely treated or closed system of demographic purposes.
WORLD POPULATION GROWTH

The present world population is of 5.771 million about 4 of the 77000 millions estimated to have live during last 6000 years. The quickening in population growth dates only from the middle of 17th century. The annual rate of increase doubled between 1650-1850 doubled again in 1920 and since doubled again. The total population has doubled during this century and during 1950’s it raised by 1/5 or nearly 50 million. Estimated population in the mid 17th century, the annual increase has now exceeds 70 million persons. If the increase rate persists at its present level the world population will be multiplied six fold within 100 years, but if there is a continued rise in the annual rate of increase there will be several billions as more as people. Projections by the U.N demography have been conservative as there will be between 500-7000 million people on earth by AD 2000. The greatest influence on the world population growth had certainly been the increase in the number of Asians, even without the population of Russia has long constituted the majority of mankind. The highest of increase was in South-West Asia but more impressive in South, Central and East Asia.

TYPES OF POPULATION GROWTH:

A. The Growth of Population:

Until quite recently the systematic study of population has been largely neglected by geographers, in contrast with other fields of human Geography. However, in recent years there has been a growing awareness of importance of population studies within the broad framework of human Geography. Population Geography is concerned with study of demographic process and then own consequences is an environmental context. The study of population is called demography and it is important for human geographers to know the country or area studying the following facts.

1. The size or number of the population.
2. The density and distribution of population.
3. The growth during recent times.
4. The current rate of growth and movements.
5. The age structure of the population.
6. The balance between male and females.
7. The standard and ratio of literacy.

These are the matters of the consequence to the state government for they have economic and social and even politics military implications. Looking at the history of growth of population of the world, the population has increased rapidly over a particular period of time. The expansion has been so great during the recent generations that we have come to peak of population.
B. **The Pattern of World Population Distribution:**

Apart from their rapid rate of increase human beings are also very unevenly distributed, which leads to the problem of over population. Various geographical and other factors are mentioned which affected the distribution and density of population on this earth. In brief it can be said that population will concentrate in those parts of earth where natural and cultural environmental conditions are most favorable for human settlement and economic activities.

The general pattern of world’s population activities is studied under the following head.

1. **High Density Areas:** Areas with population of more than 125 persons per square mile are termed as densely populated regions. Some areas are very densely populated for example Singapore has an average of 9000 people per square mile. In fact 80% of the total population occupies less than 20% of the land surface. South East Asia, Europe and North Eastern North America are recognized as the spots or human concentration. These three regions alone occupy the 70% of the world's population, only in South East Asia. More than 50% of the world’s population occupies less than 5% of the land area, while a further 4% occupy Atlantic of North America. Besides this there are smaller areas having high density of population, viz, Java in Indonesia, Nile Valley in Egypt, South Eastern Brazil is South America and Sydney in Australia. In the North East of USA and North West of Europe and in Japan the concentration of population is mainly due to
   
   I. Manufacturing activity has been possible primarily because of large supply of minerals- coal and iron.
   II. Large amounts of capital investment.
   III. An advanced stage of science and technology.
   IV. Lies entirely within the temperature zone.
   V. Men have greater capacity of work.
   VI. Developed countries.
   VII. Developed trade relations with others parts of the world.
   VIII. Large scale production of the products machinery.
   IX. High standard of living.
   X. Use of machines and agriculture.
   XI. Fertile agriculture lands.

(1) **AGRICULTURAL MONSOON ASIA:**
This is the largest area of continuous high density population. It includes populous countries, China, Japan, India, Indonesia, Pakistan and Bangladesh are densely populated of
1. The fertile alluvial soils of Hawang-Ho Yang Tze.  
2. Together with the rich volcanic soils of Java, Philippines and ocean Plateaus of India.  
3. Japan a very important industrial power in the world.  
4. Due to the suitability of environmental conditions for the growth of agricultural crops (rice, wheat, rubber, jute, cotton, sugarcane).  
5. In these lands because of importance of manufacturing industries, the mineral areas also are becoming centers of dense population.  
6. rice and Fish are the main cause of fertility in the women.  
7. In no part of the world the land is so intensively filled and people are also so closely packed together as in those parts of Monsoon Asia.

(II) MODERATE DENSITY AREAS:  
Areas with a population between 25-125 persons per square mile are classified as moderately Populated Regions. These regions includes Niger Valley and Eastern coast of Africa, Turkey Central Iran, Pakistan, Highlands of China and some parts of Eastern USA.  
This covers large areas of the cool temperate forests, the faiga of Eurasia and the Canadian coniferous forests. Lumbering districts do not need many people. But if the forests are cleared for farming, population may be larger. Similarly the temperate and the tropic grassland where pastorates and large scale mechanized farming predominate only a moderate population is found. It includes the southern R.F (steppes), USA and Canadian _____ and the grassland of the South continent.  
The rest of the agricultural USA Mediterranean, Europe, Africa and most parts of the East Asia may also be classified as moderately populates except for pockets of high population densely caused by local factors.

(III) SPARSELY POPULATED REGION:  
Areas with a population between 2-25 persons per square mile are termed as “Sparsely Populated Areas”. It includes drier parts of the temperate grassland in even highlands the Taiga and tropical Africa. Obviously the reasons for the less density of the areas of the world are:

1. In these areas rainfall is scanty.  
2. Agricultural activities are not possible in many areas.  
3. Bad and unfavorable environmental conditions for human settlement.  
4. Lack of economic activities.  
5. Lack of means of transportation and communication resulting isolation.  
In some areas there is a small amount of rainfall which is not sufficient for agriculture. Grazing is the main occupation of the people. In the some areas agriculture is on small scale, fruit gathering and animal keeping are one of their man occupations.
(IV) NEARLY UNINHABITED REGIONS:
Areas with a population of less than 2 persons per square mile are termed as “Nearly Uninhabited Regions”. The important areas are the northern Europe, North America, West Australia, Sahara and Kalahari Deserts and Amazon and Congo Basins. The lands of these areas are not suitable for cultivation due to climatic conditions. Due to extreme climate, the densities of population of this region are very negotiable. The main occupation of people of those areas are hunting, animal keeping and fruit gathering.

Factors Affecting Population Distribution
The population of any area is at once the cause and the result of its economic possibilities. Man usually congregates where natural conditions most easily offer a supply of food or provide a means of earning a livelihood. Where a condition are difficult that is where the chances of finding a food supply are limited or the opportunities of earning a living are closely restricted. Man is no tempted to settle-down and reproduce his kinds.

1. GEOGRAPHICAL FACTORS:
There are many geographical factors which influence population densities and their pattern of distribution.

i. ALTITUDE:
It is obvious that population numbers densities decrease with altitude in response to the increasing difficulties involved in settlement of high level environment. High altitude imposes physiological limits upon human existence through reduced atmosphere pressure and low oxygen content.

ii. MOUNTAINS:
These areas do not attract people for settlement.
1) Land for cultivation is limited here.
2) They are restricted very largely to the improvement of communication by constructing roads , railway crossings.
3) Rivers are very swiftly flowing.
4) Because of irregular topography and thin course and immature soil cover.
5) Mountains offer very little attraction to agriculturists. Since they largely determine the food supply. Manufacturing industries are also not possible because transportation is difficult. Raw materials and skilled labour are not available. The consuming markets are at a far distance.

   Due to these reasons the mountainous regions of the world are thinly populated.

iv. PLATEAUS:
Man’s utilization of plateaus will depend upon such factors as localization, height, origin, presence or lack of minerals or other factors. Plateaus are mostly made up of crystalline igneous formation that carry rich mineral deposits is them. Hence mining becomes the chief occupation of the people. But plateaus do not bear a permanent and stable township because once minerals get exhausted in an area people move to the other favorable areas. Hence plateaus generally have moderate settlements of population.
v. **PLAINS:**
   Most plains of the world have fairly extensive and fertile soil cover and so they form most important agricultural regions of the world. These regions supply the food articles for the human consumption transport and communication facilities can be established and maintained on plains and also the developed civilized cultured areas. But all plains are not densely populated; examples of such vast plains are the Sahara in Africa, Thar in Pakistan etc. Hence, in the intermediate latitude plains with sufficient rainfall are densely populated.

vi. **CLIMATIC CONDITIONS:**
   Climate influences the distribution of the population to a great extent. There is a correlation between the distributions of rainfall, while the bulk of the mankind is settled in the well-wanted regions, where such regular supply of water is available. The influence of rainfall determining the distribution of population is paramount. There are few regions of the world having less than 5” rainfall, where he density of the population exceeds 2 persons per square mile. It is very difficult to say what the ideal climate for the man’s development is.

vii. **SOIL:**
   The distribution of the population is also influenced by the character of the soil. Areas rich in soil support a heavy agricultural population and areas of poor soil support a very meager population. The soils of Ganges valley, Indus valley, the Yangtze valley, the Nile valley and the delta are very fertile and rich; so the cultivation in these areas carried on extensively to take advantages of richness of soil. The density of population of these areas is very thick. Thus we find that the soil by influencing agriculture influences the distribution of population.

viii. **MINERAL AND ENERGY RESOURCES:**
   Mineral deposits are very unevenly scattered over the globe. The distribution of population also depends upon mineral and power resources. Their presence in commercially exploitable quantities either in petroleum, natural gas form a vital factor in the location of industries which in turn support a high population Northern Canada and Interior Australia the presence of minerals has attracted small settlements for beyond the limits of urban areas.

ix. **VEGETATION:**
   World patterns of climate and soils influence the distribution of major vegetation type which in turn providing contrasting environments for a variety of agricultural activities. These are often associated with particular levels of population density consider.

x. **DISEASES:**
   diseases which attack man his animals or his plants still play a large part in determining the distribution of population .The density of population of some
parts of Africa is very thin as the people are attacked with yellow fever and malaria.

xi. INDUSTRIAL CENTERS:
The distribution of population is also determined by the concentration of industries. In the industrial areas population is generally thick. So the industrial cities of the world such as Karachi, Tokyo, Bombay, Manchester and Chicago are only thickly populated but all are the million cities.

xii. SUPPLY OF WATER:
Water is essential for agriculture, industry, settlement and its presence or absence has greatly influenced population distribution. That is what man has settled near a sure supply of water and that is settlements and villages determine the position of spring or river which supplies the water.

2. NON-GEOGRAPHICAL FACTORS:
In addition to physical, geographical factors e.g. the type of scale of economic activity of and historical and political kinds have sometimes influenced settlements of areas and population densities within areas.

I. THE TYPE AND SCALE OF ECONOMIC ACTIVITY:
Technological and economic advances are usually associated with changes in population, density and distribution e.g. the North American proiries presented different opportunities for the Indians with their hunting economy the 12th century ranchers, the later settled agriculturists and the modern industrialized and largely urbanized society. Each stage in the economic development of the region involved a growth of numbers and subtropical changes in the distribution pattern. On the whole it is true to say that increasing complexity and diversity of economic activity encourages unevenness of population distribution.

II. POLITICAL INFLUENCES:
In the present century with increasing government control over economic activity political influences have emerged as a significant factor affecting population patterns. In communist countries population may be directed to areas of social or economic need, while in western world various inducements may be offered to encourage or assist migration to new town, developed areas or simple away from over crowded conurbation. Political events have also been responsible throughout history for mass migration of population.

III. HISTORICAL PROCESSES:
Finally it will be evident that historical processes must also be taken into account into any analysis of contemporary population patterns. The duration of settlement in any area is of fundamental importance. The relatively in any area is of
fundamental importance. The relatively recent settlement of Australia is a basic reason for its low population density (2 persons per square km) may be partly explained in terms of its long history of civilization and occupancy.

DISTRIBUTION OF WORLD'S POPULATION (CONTINENT WISE):

- ASIA: Asia support over half the population of the world. In the year 1998 the total world population was 5771 million, about of this 3501 million was in Asia i.e. 57% of the world’s population. There is great unevenness of
population distribution in Asia in spite of the great size of population. There are areas like sin khang, Tibet and Himalayas where due to irregular relief low density of population is found. In Iran and Arabia, on the western side of Asia, only a few people live due to aridity but where water has been arranged, people live in larger numbers. High density areas are few in number the most important ones being Japan, Central Java in Indonesia, Eastern China, Bangladesh, Indo Gentia Plain, Kereland other coastal plains of India.

- **EUROPE**: The continent of Europe has the highest average density of population. In the world, Europe excluding Russia Federation, comprises less than (4%) of the total world’s land area. Europe, exclusive of R.F has the total population of 7.28 million, about 12% of the world’s total population. The pattern of population distribution in Europe is more uniform than elsewhere in the world. The average density of population is 200 per sq km, the distribution of population is very uneven. The four countries, the Germany, the U.K., Italy and France are the most populous in Europe having density of more than 280 persons per sq km. On account of irregular relief of lower birth rate, very extreme climate in the southern part of the continent and the eastern part is unfruitful, so the density of population in those areas is very sparse. The population is mostly urban. Some of the big urban centers of Europe are London, Paris, Brussels, Amsterdam, Munich because of climatic conditions people have devoted their attention to manufacturing and trade.

- **THE RUSSIAN FEDERATION**: The Russian federation has a population about 147.7 million. It ranks as China the 3rd largest country of the world exceeded only. The mainland and India is the largest of the industrialized country followed by USA, Japan and other countries. With respect to over all land area the Russian federation is one of the less densely populated countries of the world, supporting about 11 persons per sq km. Compared to 30 for the world as a whole. With respect to its local land area the RF is relatively under populated. The annual rate of growths of population is only 1%. There are several reasons for slow growth rate. Despite Marxist ideology. The Russian government has been liberal in their laws relating to divorce, marriage and abortion. There has been a wide spread knowledge of family planning women in the RF. The RF today is marked by a low and uneven populated density. The present density is about 10 persons per sq km.

- **AFRICA**: The population of Africa is 732 million or 97% of the total world’s population, the average density per sq km being 14 persons in the year 1980.

Salient Features: The salient features of the African population are as follows:

a. Most of the people live in Nigeria on the immediate banks of the Nile in Egypt, Algeria, Zaire, Ethiopia and Union of South Africa. The cultivation of crops is the main occupation in the river valley.
b. The distribution of people in the east Africa is very sea horde, with areas of this density in central Kenya, western Kenya, Rwanda and Burundi.
c. On the whole central Africa i.e. southern part of tropical Africa is a region of low population.
d. Mauritius Island has an approximate density of 465 persons per sq km. People of this small island are mainly dependent upon sugarcane plantation.
e. The population of Africa is probably increasing at a rate equal to or perhaps slightly above the average for the world as a whole.

- NORTH AMERICA: The total population of north America is about 295 or .1% of the total worlds population and the average density of population is 15 persons per sq km. North America is the 3rd largest continent in the world ranking after Asia and Africa it embraces approximate 1/7 of the land surface of the earth. Most of the population of the North America is concentrated in the manufacturing regions and in the wheat belts of the north eastern USA and south eastern Canada.

- SOUTH AMERICA: The population of South America is 323 million and average density is only 20 persons per sq km. South America has an area roughly the same as the USA and Canada combined (110 lakh sq km). The Equator passes through the south of its greatest river the Amazon and the tropic of Capricorn roughly bisects the distance between the north coast and cape horn. More the 2/3rd of its area lies with in the tropic. Middle America, Caribbean and Temperate south America has a total population of 323 million people or 8% in the year 1996.

Salient features: The salient features or characteristics of South America Population Distribution are as follows:
1. Since 1925, the population of whole of the Latin America has been characterized by a high rate of natural increase at the rate of 3%. This chiefly because mortality rate has declined while fertility rates have remained high.
2. Birth rates and death rates are both high in all the Latin American countries. Account to ABRAHAM and MARYBURK'' All Latin America is to be set by infections disease, under nutriment, poor sanitation, unhealthy Housing and working conditions, illiteracy, lack of proper clothing, a high infant and child mortality, accident of pregnancy and mother hood and a low capital income''
3. The recent increase in over all growth rate of population in Latin America cause attributed largely to a decline in death rate as a result of various health programs
4. Three densely populated areas are:
a. Around Valparaiso(near bantiago in Chile).
c. Coastal lands of the eastern highlands where soil eliminator favors the growth of coffee (especially in Brazil).

5. There is many uninhabited land or empty areas in South Venezuela, Eastern Columbia, Eastern parts of Peru, Bolivia, Ecuador and Northern Argentina. In brief a very large part of Amazonian and Patagonia are either completely or thinly populated. The favorable factors for human settlement in this region are prevalence of diseases, bad climate, distance from the coast dense, vegetation, poisonous insects and snakes.

- **AUSTRALIA AND NEWZEALAND:**
  - **AUSTRALIA:** The island continent of Australia lies wholly in the southern hemisphere. The general term "Oceania" is used to include Australia, New Zealand, and certain other important land masses within the southwestern guardian of the Pacific Ocean. The population of Australia in 1996 was 29.0 million.

  Salient features: The main characteristics and trends of Australian population distribution are as follows:
  1. Australia has a low death rate.
  2. Australia is one of the most sparsely populated countries of the world.
  3. It has an average density of 2 persons per sq km.
  4. Over half the population is concentrated in the six capital cities of Sydney, Melbourne, Brisbane, Adelaide, Perth and Newcastle.
  5. The greater part of tropical Australia is virtually uninhabited. The dry heart of Australia with less than 25 cm (10") of rain is almost uninhabited. The only exceptions are the mining centers of Kalgoorlie, Coolgardie and Broken Hill.
  6. Over 99% of the Australian population is of European origin.

  Under white Australian Policy. The immigration of Asians and other non-Europeans is restricted.

  - **NEWZEALAND:** The dominion of New Zealand consists of 2 large and several small islands in the south Pacific Ocean. Since the development of gold mining in the cities a large number of people were brought to New Zealand. Since then there has been a steady increase both by immigration of whites and by natural increase. Rapid growth of population is seen in Auckland and in the country to the north and south. About 40% population of New Zealand lives in these areas alone.

- **ANTARTICA:**
  Here the population is less than 2 persons per sq km. Here the population is nearly uninhabited. The population is less here because of non-suitable climate conditions. Due to extreme climatic conditions. The main occupation of the people living in Antarctica is fishing and hunting.
MINERALS

INTRODUCTION:
Nature has gifted man with enormous treasures in shape of various minerals under or above the earth. Man has been using these minerals from tunes immoral, Invention of machine became possible with help of minerals especially iron and steel. Mineral wealth plays an important role in this machine age. Finding there usefulness he started reckless
exploitation and discovered more minerals. By discovering more minerals man can increase the wealth of the earth, a mineral taken out once is lost forever and cannot be replaced if the extraction of minerals continues the world will be in a shortage in especially in petroleum and platinum. Minerals are rarely found pure in nature mixed with gangue or waste. The separation of gangue is ore dressing when ore is pured it is used for other things. Minerals found are classifies as under:

1. **BASIC MINERALS:**
   Those minerals which are to be considered the base of the industry or machine and without whom the construction of machine is impossible are known as basic minerals such as iron, copper, lead, zinc etc.

2. **POWER MINERALS:**
   Such minerals provide power to run machines such as coal, petroleum, natural gas, and hydro electricity.

3. **PRECIOUS MINERALS:**
   In these minerals gold, silver, uranium, platinum and diamond etc can be included.

**GOLD:**

**Nature And Properties:** Gold has been used from the earlier days because of its high metallic glister and its attractive yellow reddish colors. It can be made into beautiful ornaments and jewelry. Gold occurs either in alluvial or places deposits as in California, Alaska or as reefs underground as in South Africa. It is difficult to recover but its value makes very clean ones worth working.

**USES:**
1. The major use of gold in industry as jewellery.
2. Because of its reality value and durability it has always been highly preceded as a medium of exchange. Today the international monetary system is backed by gold.

**WORLD DISTRIBUTION:**
The greatest producer is South Africa 70%, Canada 5%, U.S.A 3%, Australia 2%, Philippines 2%, Zimbabwe 2% and Ghana 1.5%.

**URANIUM:**
Uranium has the similar thorium are radioactive minerals. Uranium is one of the heaviest minerals. It was first discovered by Martin H. Klaproth who named it after the planet uranium. Its impure is Urinate and pitch and it is prospected for with the use of the giger counter which measures radio activity.

**USES:**
Uranium and thorium are used in the generation of electric power in Nuclear Power Stations. They are also used to proper space ships. Military uses of uranium in bombs and missiles are also very important.

**WORLD DISTRIBUTION:**
Uranium is mined cheaply in the U.S.A 39%, South Africa 23% where it is reworked from the gold mines or produced with gold, Canada 21%, France 8%, Nigeria 6% as well as in Australia, Gabon and Russia 2%.

**NATURAL GAS:**
Natural gas is also an important need of today. It is used for industrial, domestic and for many other purposes. Some amount of natural gas is used in drilling and pumping operations of petroleum fields. Besides this it acts as fuel for glass, cement, iron and steel chemical and other industries.

**COUNTRIES OF NATURAL GAS DEPOSITS:**

**U.S.A:**
The use of natural gas in USA began in 1820 when 13 domestic consumers in New York were supplied with gas. In 1880 the production of natural gas has reached higher enough and due to its increasing demand its production has gone up to 17 million cubic feet. USA produces nearly 80% of the world natural gas. Today 30 thousand miles pipelines in
USA distribute gas to 27 states thus the mid continent gulf coast, Calaphonian region account for 90% of the USA gas.

**CANADA:**
The 2nd largest natural gas producing country of the North America. In this country gas is found in the provinces of Cubic and Antaisso.

**KAZAKHSTAN:**
The largest producer of natural gas in the central Asian states is Kazakhstan and enough quantity of natural gas is also found in Uzbekistan area.

**MEXICO:**
It is also an important gas producing country. The gas producing areas lie in tambice oil region.

**INDONESIA:**
Indonesia ranks top as gas producing country in Asia. Natural gas is mostly found in Sumatra and Borneo islands.

**PAKISTAN:**
Pakistan also produces some amount of gas. It is mostly found in Balochistan, Sindh and Punjab provinces.

**ELECTRICITY:**

Electricity is generated in two main ways by running water which drives hydro turbines to generate hydro electric power by burning other fuels such as coal or oil to drive turbines to produce thermal power. Once generated the electricity derived from these two sources is exactly the same. In terms of word electricity consumption thermal power is far more important than hydro electric power (h.e.p) or supplies about 3/4 of the world’s electricity. Hydro electric power generation has some advantages over t.p.g but at the present time despite the rising cost of generating thermal electricity new thermal plant and nuclear generators are more popular hydro electric power schemes. Electricity generations of whatever type is becoming more and more important in the world economy because electric power is very convenient for both domestic and industrial use.

**INDUSTRIAL IMPORTANCE:**
In addition to its use for lightening and heating in both domestic situations electricity can be used in industry in many ways not possible for coal or oil in particular it is indispensable in there rapidly expanding feed of telecommunication, radio, television, radar, telephones, telegraphic links including satellite links all depend on electricity. It is also particular important in such sophisticated industries as computers, remote control devices and space engineering infact the use of electricity has gradually produced a whole range of industries making and using electronic equipments. In regions of coal and oil deficiency electricity has a wide range of uses, it is used in place of mineral fuels in Switzerland for e.g. hydro electric power from the alpine falls is used for a wide range of
engineering industries. The manufacturing of machines, tools, clock and watches availability of electricity is also a deciding factor in the location of other industries e.g. bulb and paper and chemicals especially in the production of acid.

**THERMAL ELECTRICITY:**
When power is produced by burning other fuels such as coal, petroleum or natural gas in thermal generators or especially designed furnaces it is called thermal electricity it was originally used for lightning but now it is used for a very wide range of purposes.

**Factors affecting the location of thermal electricity Generating plant:**

1. **Fuel Supply:** Since thermal plants are dependant upon a supply of solid or liquid fuels they are advantageously sited on coal feeds, oil or natural gas feeds at importing ports where all is refined. Nearness to fuel supplies will greatly reduced transport costs of the basic fuels.

2. **Water Supplies:** When electricity is generated a great deal of heat is released and therefore much water is required for cooling purposes thus nearness to a large river, lake, estuary or a coastal site which be advantageous. Thermal plant consumes millions of gallons of water every year.

3. **MARKETS:** Location near the main market for electricity such as industrial sectors, towns with a large domestic power demand has several advantages; it reduces transmission cost of the generate current and it allows the plant to work at full capacity.

4. **ECONOMIC AND POLITICAL STABILITY:** Thermal generating planks are often financed and operated by private companies rather than government. Since the aim of the private companies is profit rather than supplying a service, stable governments in a large market are important to provide good conditions for investment.

**World Distribution Of Thermal Electricity Generation:**
The world distribution of thermal electricity shows a very similar pattern to the distribution of the densely populated industrial areas. Most favored areas are:

1. The major coal field of the world (lignite add even peat) are also used in some thermal power generation.
2. The chief oil and natural gas fields where there are near market.
3. The oil importing and refining parts.
4. Major industrial regions.
5. Highly urban regions.

The greatest concentration of thermal generating plants is in the densely populated and heavily industrialized part of the Western Europe and North Eastern America. The USA whose annual output of thermal electricity is
22,11,000 million almost twice as much as any other country is the leading producer and consumer. It accounts for the 31% of the world’s total electricity output. Second in importance is Russian Federation 16% followed by Japan and Germany.

HYDRO ELECTRICITY (H.E.P):
The generation of power from running water is not a recent achievement. People used to run some crude implements by the forces exerted by running water in the past. Water wheel was used to generate power during the material period. But the use of water power to generate hydro-electricity is rather a recent development, the invention of hydro turbine and the techniques of making cement has made hydro-electricity power generation possible. The hydro electricity power is cheaper and can be distributed to different places through power lines. Today the growing consciousness regarding the conversion of non-reliable resources has lead to greater generation of hydro electric power is determined by certain physical and economic conditions. The important ones are:

- Seismological less sensitive area.
- Fairly heavy rainfall distributed throughout the year.
- Moderate temperature so water does not freeze through evaporation.
- Steep slope to enhance water velocity.
- Narrow steep sides valley to facilitate dam compression.
- Existence of lake or space for water reservoir.
- Huge capital outlay.
- Transport facilities.
- Large demand for hydro-electric power.

Only certain surface areas appear to be favorable for generation of hydro electric power, they are:

1. Mountainous areas where rivers have rapid waterfalls and lakes in their sources and are fed with glacial water.
2. Tropical and temperate areas where fairly heavy and well distributed rainfall occur and major river exists.
3. The industrial regions with large demand for power.
4. The areas with multipurpose river valley projects can be operated.

DISTRIBUTAION
It has already been mentioned the generation of water power is not possible equally in all parts of the world. There is distant unevenness in this spatial distribution of water power in the world. In many countries there are immense potentialities for water power but they have been able to develop only a portion of total potentials. Only the technologically advanced countries are leading producers of water power.

1. USA: The highlands of rocky and Appalachian mountains the Mississippi and St. Lawrence Basin of USA are favorable for hydal power generation.
Hydro electric plants in Nigra fall and several dams in Mississippi are famous for hydro electric generation in the countries.

2. **Canada**: Canada generates 70% of its electricity output form the hydal source. Most of the countries hydro power stations are located in the eastern part with the dams on the St. Lawrence River system. The Michigan river and the Michigan lake on the north and the superior lake are also important sources of the hydal power in Canada.

3. **Russian Federation**: The mountain range along the southern border provides suitable condition for the development of water power. The Caucasus region alone accounts for more than half of the water power of European parts of Russian Federation Asiatic part is relatively rich about 80% of the potentials lie in this part.

4. **China**: It has the potentiality for hydro electric power generation; a number of dams are being constructed on the Hongo River. Yiang-Tze-Kiang and Sinkiang rivers control floods to generate hydal power.

5. **Japan**: Japan has progressed significantly in the hydal power development. Scarcity of coal and oil on one hand and the favorable topography adequate perspiration and heavy industrial demand on the other have been the major factors behind the progressive utilization of water power potential. Japan accounts 10% of the world developed water.

**NEUCLEAR POWER PLANT**: An atom is the smallest particle of any particular mineral element which retains the characteristics of the minerals. It was once believed that its structure could not be changed and that it could not be subdivided. Each atom is made up of a dense nucleus or a central core which accounts for most of the mass if the atom surrounded by a circle of electrons which rotates about the nucleus. Nucleus or atomic power s obtained by altering the structure of atoms. When such an alteration is made, much energy is released in the form of heat and this is used to generate electric power.

- **Nuclear Fission**: In this case the nucleus of an atom of heavy element such as uranium is split into two to release energy. This process is used in atomic bombs and in nuclear power stations today.
- **Nuclear Fusion**: In this process, the nuclei of the two light atoms such as those of hydrogen are fused together to form a new composite nucleus, at the same time releasing energy. Fusion is used in hydrogen bombs. Nuclear fission takes place in a reactor which consists of a heat producing core and cooling system. The heat released by the reactor is used to generate steam and the steam is used to generate electricity.

**USES**: The first nuclear power station was built in Britain in 1956 and there are now 33 nuclear stations in U.K and nuclear provides 14% of total electricity output. Britain was rapidly overtaken in this field by the USA where there are 66 stations in operation and a further 142 under construction, planned or projected. Nuclear power provides 11% of USA electric supply. Other countries with a
significant investment in nuclear power are Japan 11% of total electricity supply, Germany 9%, France, Sweden Canada and Spain. This most recent trend in for a number of developing countries opting for nuclear power as an alternative to convectional forms of electricity production. Among these countries are Egypt, Brazil, Iran, Iraq, India and Pakistan.

**COAL**

Coal has an important position among power resources. It was used for heating and smelting purposes in China and England. The use of coal as a source of power was discovered in recent years. The vast increase in the use of coal was chiefly due to the growth and development of modern facilities and it is said that discovery of steam engine was only possible with the help of coal and on industrial revolution.
Coal play an important role. It is known to be cheapest but bulky source of power.

**THEORIES ABOUT ORIGIN OF COAL:**
Coal has been formed by the disposition of the huge swampy forests, under beds of sedimetal rocks, which squeezed water, gas and fats. The trunks, branches, trigs and leaves under went chemical changes and by the application of heat the were hardened and transformed into coal. Carbon, hydro carbon, moisture and ash are the main constituents of coal and upon them depends its heat value. Coal rich in carbon and hydro carbon have high heat value than coal containing ash and carbon, so according to their characteristics coal may be classified as under.

**Anthracite**: It is jet black in color and contains from 80% of carbon. It is smokeless and is very hard and so is difficult to break. It burns with little flame but when it burns it produces greater heat. Due to its high heating power it is used for smelting iron ore.

**Bituminous**: It is of black color; contain 60-80% of carbon so it has high heating value. It is mostly used for domestic purposes.

**Liginite**: It is known as “Brown Coal”. Its color values from dark brown to blackish. It has 33% of carbon and 20-30% of moisture. Due to its low content of carbon and more moisture, its heating power is low. Thus it is used with other qualities.

**Peat**: It is not coal in the usual meaning of the term. It burns well, when dries; it has low heating value. It is mostly found in Finland, Russia and Canada.

**ITS USES AND BY PRODUCTION:**
The main purpose is smelting of iron ore or to run the factories, locomotives and steamships, supplying heat for domestic purposes is of secondary importance. Apart from this its by products are coal, perfumes, athizole, color films, swing thread, typewriter ribbons like about 200000 by products are derived from coal. Besides these during Word War I, Germany produced the liquid fuel from coal which was used by the German Air Force.

**DEPOSITS OF COAL IN THE WORLD:**
1. **USA**: The second leading coal producing country of the world. It produces about 24% of world’s coal. Coal production began in USA in early 12th century, but she achieved an important position as a coal producer within few years. The main coal areas are

   Appalachian Coal Field: Appalachian coal fields are considered to be the largest coal fields in the world, extending from northern peninsula to Arabian Peninsula. Mines produce most of the Anthracite coal of the country. Its location near the cities of the Antarctic seaboard is very advantageous. Here the coal mining is very cheap because coal lies at the very low depth, thus this coal field can be divided as:
   - Northern Appalachian Coal Mines: These mines are situated near Pittsburg, here a large amount of anthracite coal is found. Iron ore
is bought from Lake Superior areas, which is why Pittsburg has became an important steel centre of the world.

- Central Appalachian Coal Mines: These mines stand 2\textsuperscript{nd} to the production. There extend into West Virginia, eastern Kentucky and Terries States. Mostly these mines supply coal to the northern Industrial Region.
- Southern Appalachian Coal mines: Although these mines provide a very small quantity of coal, but that is enough for industrial area of Alabama and Birmingham. Besides the above some coal is also mined in Indiana, Washington and Dakota.

2. **RUSSIA**: Russia is the third leading coal producing country of the world. The main coal producing areas lie in the north of Black Sea in Donetz Basin. These deposits cover an area of about 10000 square mile. Most of Russia’s requirements are filled from these deposits. The anthracite type of coal is found there. Due to iron ore deposits near it at Kuva Rog, these areas have become more important.

3. **CHINA**: China has the largest coal reserve deposits in the world. Now its production has also gone higher enough, and its ranks 1t among the coal producing countries. Here coal is found in Loang, shantung, Szechwan, Shensikaro ad Hunan.

4. **INDIA**: India also ranks an important position among the coal producing countries of Asia. Here Raniyang, Jhevam Bokaro and Karenpora are the main coal mining areas. Besides this some coal is also found in Madhya Pradesh areas, Assam, Andhra Pradesh, Orissa and Rajasthan Sates.

5. **PAKISTAN**: Pakistan produces a very small amount of coal. The coal is of inferior quality. It is mined from Makarwal, Dandot, Kalabagh (Punjab), Shahrigh, Larkana (Sindh).

**IRON ORE**

INRODUCTUION: No other metal in the world has characteristics similar to iron. Iron being the more useful metal, so its use is greater than any other metal, due to its cheapness and its qualities of being easily molded, handed and softened. This in fact the industrial progress is impossible without the availability of iron ore. The availability of iron ore and steel is the main reason for the progress of industrially developed countries because without iron and steel, the
manufacturing of even small pins or heavy machinery is not possible. Iron ore when extracted is not found in pure conditions, many other minerals are also found mixed with it. Thus the value of iron depends upon the % of pure iron content found in that iron ore. Ore with less than 30% iron content is uneconomically to mine. In countries where smelting process has not fully developed, even the richer ones are not utilize, so according to the various characteristics the iron ore found in the world can be classified as under.

i. **Magnetite**: It is the best quality of iron ore, having black color. It contains about 72% of iron ore content, very few impurities are mixed with it. It is commonly found in igneous and metamorphic rocks area. The best example of magnetite is Kiwna and Gelivara in Sweden which contains about 8% of iron content.

ii. **Hematite**: It is the second best quality having reddish color. It contains about 60%-70% iron content. Mostly found in areas of igneous and metamorphic rocks or sometime it is seen into limestone areas. It is most prevalent iron ore. This ore is common in USA, Russia and India.

iii. **Limonite**: the third quality of iron ore is known as limonite. It contains yellowish colors. The iron content which it posses are about 50%. The ore is found in France, Germany and Europe.

iv. **Siderite**: It is the lowest quality of iron ore. It contains 30-40% of iron content. This ore has various varieties and colors ranging from ashtray to brown. This ore is found in England and Newfoundland in USA.

**EXTRACTION OF IRON ORE**: Iron ore is also found in impure conditions. In big iron furnaces coal is mostly used for smelting purposes but in some countries where coal is not available, electric furnaces is being used for this purpose. So the following processes changes into different shapes.

i. **Pig Iron**:The 1st process of iron ore smelting gives it the shape of pig iron few impurities are removed.

ii. **Cast Iron**: After the 2nd process by mixing of sulphur, phosphorus and limestone it changes its shape as cast iron.

iii. **Wrought Iron**: To make the cast iron more pure limestone and manganese is used in the 3rd process; it is converted into bars known as wrought iron.

iv. **Stainless Iron**: It is known as best quality of iron. TO make wrought iron more pure, strong and bright during the 4th process the chromium, nickel, tungsten are used and converted into stainless steel. It is estimated that about 100 mound of coal is required to make one mound of stainless steel. But now a day the use of electric furnaces has declined its cost.

**DEPOSITS OF IRON ORE IN THE WORLD**: Most of the world’s iron ore deposits are found in he countries of Northern hemisphere. In which USA, Russia, Canada, France, Sweden and India contains
about 70% of the world’s iron ore deposits. In southern Hemisphere, Brazil and Venezuela are only the important countries.

1. **USA.** USA also has an important position among the iron ore producing countries. Although this country produces about 10% of the world’s iron ore production, but due to heavy home consumption, she has to import a large amount iron ore from other countries. The following are the main iron ore centers in USA
   
i. **Lake Superior Region:** It is the biggest iron ore producing area in USA. Lake Superior region has iron ore ranger but Mesabi ranges is most important. Hematite ore is mined which contains 54% iron content and is low in impurities.
   
ii. **Alabama and Birmingham Region:** This is the second region account for 10% of USA ore. Mining is carried on the Red mountain and the Birmingham Valley. The ore is of Low quality.

2. **CHINA:** Cvhina is the leading iron ore producing country of Asia. The main iron ore producing areas lie in Yang-Tze-Kiang and Huang Ho valleys. The most important centre of iron ore is situated at Tayen in the middle of Yang-Tze- Kiang, Swan-Hwa at Anshan in Hwang-Ho valleys