Teaching of Social Studies (EDU 514)

Table of Contents:

Lesson 1

Introduction to Social Studies, Why Teaching Social Studies

Topic: 01. What are the social studies?

"The primary purpose of **social studies** is to help young people make informed and reasoned decisions for the public good as citizens of a culturally diverse, democratic society in an interdependent world."

The primary purpose of social studies is to help young people make informed and reasoned decisions for the public good as citizens of a culturally diverse, democratic society in an interdependent world.

Social Science is a branch of study which deals with Human Beings – their behavior, growth and development, relationships, resources they use and the various institutions they require to function and carry on their life smoothly. For example – family, school, workplace, government, judiciary, recreation clubs, etc. All these aspects of life are inter-related and interdependent on one another. So whether one wants to become a doctor or an engineer or a chartered accountant, an artist or a teacher, we all have to live in a society, interact with individuals belonging to different cultural and socio- economic backgrounds, adapt to various situations and circumstances, and also adhere to certain societal norms in order to lead a peaceful and productive life.

The inclusion of Social Studies in the curriculum right from primary to secondary classes signifies the importance of the subject and the role it plays in a student's life. Social Studies is incorporated in the school curriculum through a combination of subjects like – History, Geography, Cultural Studies, Economics, Political Science, Sociology, Psychology, Anthropology, etc.

These subjects help children to develop:

1.1. Awareness of the World and Environment:

Lessons in Social Studies related to topics like – My Family, My Neighborhood, Community Helpers, Early Man, Indus Valley Civilization, Modern Period in Indian History, The French Revolution, Great World Leaders, etc. teach students about the various civilizations, movements and renaissances that occurred over the years. This knowledge enables the students to understand how the world and different societies have evolved, the important events that have occurred in the past, enduring ideas and eminent personalities that have created an impact and affected the lives of people both locally and globally. It also helps students to understand how different societies are structured, managed and governed. This in turn helps students to understand their place in the world.

Lessons such as – Our Earth, Solar System, Major Landforms, Water Resources, Natural Vegetation and Wildlife Resources, Natural Disasters, Disaster Management, Pollution, enable students to learn about – outer space, formation of different landforms; evolution of animals, flora, fauna and man, water bodies, available resources, importance of conservation and preservation, environmental impact on present life and future generations. This information helps students to eventually develop a holistic understanding of their environment and the interrelationship which exists between the natural and human habitats.

1.2. Helps to Develop Critical Thinking Abilities:

Social Studies inculcate higher order thinking abilities and skills like – Comprehension, Application, Analysis, Evaluation and Synthesis, Creativity in students. Learning a variety of topics such as – Natural Resources, Water Resources, Transport, Communication, Caste System, Political Ideologies, Social Reformers, Our Cultures, United Nations, etc. give students a chance to gain appropriate information and data in various contexts. The information gained allows students to make relevant observations, identify similarities and differences, and make connections between related concepts, ideas and resources. Appropriate experiences further enhance the students' understanding about how different things and people affect their day to day lives. For example – in order to investigate

poverty in the society, students require knowledge of subjects like – History, Economics and Politics. Students first have to gain information and comprehend ideas such as discrimination, resource allocation and political priorities.

They then need to understand, analyze and evaluate the existing connections between those ideas and theories to make sense of how poverty affects certain populations in the country. This knowledge can be further put to use to foster creativity, if students are asked to think about ways or come up with new solutions and policies which they think can help reduce poverty. They could be given a chance to present their ideas in the form of debates, essays, role plays or class projects.

1.3. Helps to Enhance the Social Understanding of Students:

Different topics included in the Social Studies curriculum for various age groups like – Festivals of India, Different types of Families, Clothes We Wear, Food We Eat, Our Country, States of India, My Community, Socio-Religious Reforms, Challenging the Caste System – help students to observe, learn and understand human behavior, values and attitudes and the interrelationships which exist among different people. They come to know about the different religions and cultures which exist in the world other than their own. They also learn about the societal strata and norms of society and the need of various governing bodies and other institutions. This in turn helps the students to develop a wider perspective of society and the human condition.

Furthermore, learning about the different religions, social and cultural beliefs, castes and creed, nationalities and ethnicity, values, languages, festivals, food and clothing, types of families, etc. makes students aware that the society they live in, is diverse and multicultural and yet there is interdependence and inter-relatedness between different people, families, cultures, religions and countries. This helps students to recognize the benefits and challenges of living in a world with multiple cultures and ideologies. This awareness helps them to understand the importance of democracy, rights and freedoms and the fact that in order to live and coexist peacefully each and everyone needs to respect, trust and balance the various opinions, values and attitudes, lifestyles, cultures and practices and ideologies existing in society.

1.4. Helps Students to Become Better Citizens:

Subjects in Social Studies like Economics, Political Science and History educate students on Political Ideologies, Constitutional Laws, Citizenship, Rights and Duties, Morals and Virtues, Social Code of Conduct, thus making children aware of their roles and responsibilities particularly in relation to social and civic affairs. By providing relevant information and knowledge, skills and attitudes, the study of Social Science prepares students to grow up as active, responsible, and reflective members of society. It also teaches them to address societal and global concerns using literature, technology and other identifiable community resources.

Topic: 02. Key Concepts of Citizenship Education

Citizenship education has been a statutory subject in the English National Curriculum since 2001. It must be taught as part of the school curriculum to all pupils aged 11–16 years old in maintained schools in England. The current Program of Study was introduced in 2014, and identifies four key areas in detail:

- Politics: Parliamentary democracy in the UK; Parliament, voting, elections, political parties; Influence of citizens through democratic processes; Other systems of government beyond the UK; UK relations with Europe, Commonwealth, wider world.
- Financial Skills: The functions and uses of money; Personal budgeting, money management; Wages, taxes, credit, debt, financial risk, financial products and services
- Volunteering: The ways a citizen can contribute to the improvement of their community; Opportunity to participate actively in community volunteering

- Law: The precious liberties enjoyed by citizens of the UK; Nature of rules and laws, criminal and civil law; The justice system; Diversity in the UK – need for mutual respect and understanding

2.1. Issues in Social Studies: Dealing with Controversial Issues

This program examines how social studies teachers in any grade level can encourage open and informed discussions with their students while dealing with controversial issues. Topics range from stereotypes and gender–based discrimination to the conflict in the Middle East. Through clearly identifying issues, listening to multiple perspectives, and formulating personal positions, teachers can explore a variety of strategies that can be used to teach challenging issues such as these in their own classrooms.

2.2. Role of Social Studies Play in Helping Students Deal with Controversial Issues

How provocative should social studies topics be?

Some educators believe that certain issues are best addressed privately — at home, for example — and that social studies should focus on objective facts. Others argue that public controversy is characteristic of a healthy democracy and that working with others to address multiple perspectives is a skill that students need to develop in a classroom context.

Social studies teachers must inevitably deal with controversial issues, ranging from basic ideas of fairness and equality in a democracy, to immigration, to the distribution of world resources. Controversial issues require students to conduct thorough research, master concepts on both sides of an issue, and develop a perspective of their own.

The most difficult issues often have a profound impact on students, and class discussions about these issues can leave teachers feeling like referees. However, in a democracy it is critical for students to learn how to listen to opposing viewpoints, and the teacher's role must be to create an open forum that allows opposing viewpoints to be fully expressed. The challenge for all teachers is finding the fine line between engaging students' interest and maintaining a sense of objectivity that lets students master the material and develop their own perspectives.

Topic 3

How can teachers help students understand the ideas and values behind historical controversies, competing ideologies, and changing laws? In the video, "Dealing with Controversial Issues," teachers and students explore issues in social studies by:

- conducting research using several resources,
- discussing the facts linked to the controversy,
- determining points of view,
- supporting a point of view with evidence gathered from research,
- listening to opposing points of view and engaging in a debate, and
- Proposing solutions.

Teaching controversial issues relates specifically to the following themes:

- Culture
- Time, Continuity, and Change
- People, Places, and Environments
- Individuals, Groups, and Institutions
- Power, Authority, and Governance
- Global Connections
- Civic Ideals and Practices

Citizenship Rights

Citizenship rights is a set of **rights** and rules that governs in macro society, state-country and is a mixture of tasks and responsibilities of **citizens** toward each other and/ or government in its common meaning and also **rights** and privileges that government should satisfy them.

Topic: 4. The Evolution of The Concept of Human Rights:

In 1878, such **rights** were made inviolable by way of the 14th Amendment to the US Constitution. ... For the promotion of **human rights**, the United Nations General Assembly (UNGA) in its Third Session on the 10th of December, 1948, adopted a historical document known as the Universal Declaration of **Human Rights** (UDHR).

The concept of human security is based on the recognition that all persons are subjects of dignity and rights. Throughout history, different schools of thought converged in the generation and evolution of the consciousness of human rights, which were formally recognized in the Universal Declaration of Human Rights.

Rights and Responsibilities: Defining Human Rights

Rights	Responsibilities
• Freedom to express yourself. • Freedoms to worship as you wish. • Right to a prompt, fair trial by jury. • Right to vote in elections for public officials. • Right to apply for federal employment requiring U.S. citizenship. • Right to run for elected office. • Freedom to pursue "life, liberty, and the pursuit of happiness."	• Support and defend the Constitution. • Stay informed of the issues affecting your community. • Participate in the democratic process. • Respect and obey federal, state, and local laws. • Respect the rights, beliefs, and opinions of others. • Participate in your local community. • Pay income and other taxes honestly, and on time, to federal, state, and local authorities. • Serve on a jury when called upon. • Defend the country if the need should arise.

Human Rights in Education

Pakistan joined the United Nations in 1947. ... The purpose of Youth for **Human Rights** International (YHRI) is to teach youth about **human rights**, specifically the United Nations Universal Declaration of **Human Rights** (UDHR), and inspire them to become advocates for tolerance and peace. (Detail is given in PDF document).

Topic – 005: Defining Geography -1:

According to Greek philosophers, Geography is a subject of "the description of the Earth" "Geo" means the earth and "Graph" means the description. Most people think that geographers are concerned with naming places, drawing maps and writing travel descriptions. Geography is a field of science dedicated to the study of the land, features, inhabitants, and the phenomena of the Earth.

Geography is a spatial science with organized knowledge of the earth as the world of man. Spatial word is related to space.

Geography is the branch of science which deals with the study of earth and its physical and human environment with respect to its spatial and temporal variations. "To provide accurate, orderly, and rational description and interpretation of the variable character of the earth surface" explained by Richard Hartshorne, in 1959. The old definition of geography is "The purpose of geography is to provide "a view of the whole" earth by mapping the location of places" by Ptolemy explained in 150.

In the context of physical environment, it deals with the entire physical and natural phenomenon. All the meteorological, geological and geomorphic processes are studied under this umbrella. In context of human environment, it deals with all the types of human activities i.e. population, migration, economic activities etc.

Spatial variation means, the difference in the magnitude of a same phenomenon at two different places i.e. degree of temperature and rainfall at two different places while temporal variation means the occurrence of a same phenomenon at same place but at different time. For example, difference in temperature of Lahore in 1960s and in 2000s.

Topic – 005: Recent Advancements

Tradition in Geography

- Spatial Tradition
- Regional Tradition
- Cultural-Environment Tradition

- Earth Science Tradition

Spatial Tradition

1. Mapping (Boundaries, densities, etc.)
2. Quantitative techniques as computerized mapping, Geography Information Systems
3. Spatial patterns

Regional Tradition

1. Description of regions
2. World regional geography
3. How regions are different from one another

Culture-Environment Tradition

1. Human impact on nature
2. Impact of nature on humans
3. Natural hazards
4. Cultural, political, and population geography

Earth Science Tradition

1. Physical Geography
2. The lithosphere, hydrosphere, atmosphere
3. Earth-Sun interaction
4. Offshoots are geology, mineralogy, glaciology, geomorphology, and meteorology.
5. The study of the earth as humanities home

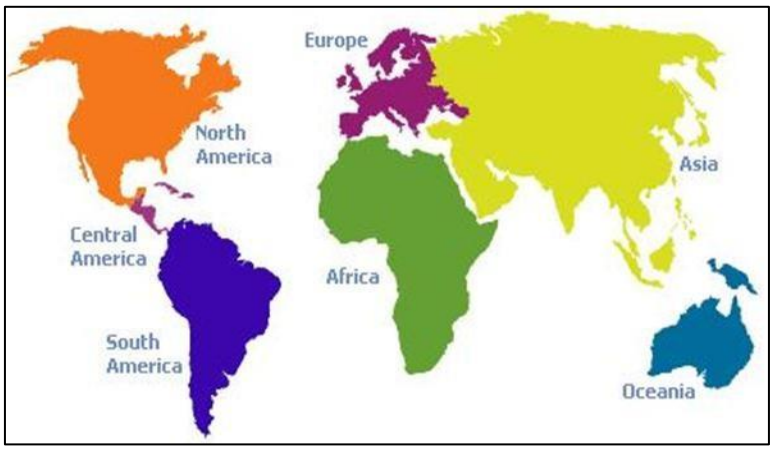
Topic - 007: Scope of Geography

Following is the scope of Geography:

- Providing an accurate, orderly and rational description and interpretation of various features of the earth's surface
- An exact knowledge of the distribution of phenomena on the earth's surface e.g. (Volcanic Mountains) like areas which are related to volcanic eruption is plate boundaries. Plate boundaries are linking the plates tectonic plates, these plates are moving away from each other are called diversion or moving closer to each other are called conversion or the third

type of movement called the lateral plate contact. These are sensitive areas where we can find volcanic mountains

- Physical environments are organized on the earth's surface and how man distributed himself over the earth. Like the climatic conditions, the relief features and soil are suitable for cultivation of different crops. We will find the major population clusters in these areas.



- Geographers are interested in understanding the character of the earth, continents, countries, regions or areas. Those characters belong to the human activities regarding production and services.

Topic - 008: Physical Geography:

Physical geography is concerned with the study of landforms which are produced by primary forces (tectonic plates & volcanic) and secondary forces (glaciers, river & wind), extent and nature of the oceans, the atmosphere, processes associated with weather and climate, soil, animals and vegetation.

Topic – 009 Branches of Physical Geography

- **Geomorphology** is the study of the origin and development of landforms on the earth.
- **Climatology** is the scientific study of climate. It describes distribution and regional patterns of climate.
- **Hydrology** is the study of surface and underground water properties, phenomena, distribution, movement and utilization.
- **Soil Geography** is the study of the origin, development, characteristics and distribution of soils.
- **Biogeography** is the study of distribution of plants and animals on the earth's surface.
- Plant geography is also called **Phytogeography**
- The study of animals is known as **Zoogeography**
- **Oceanography** is the study of extent and shape of ocean basins, the structure and relief of their floors, movements of sea water, its temperature and salinity. It also includes the study of organisms in the oceans.

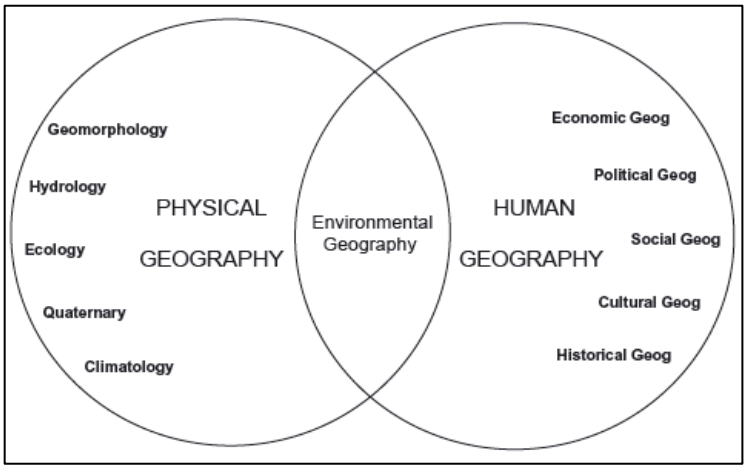
Topic - 010: Human Geography

Human geography deals with man and his activities. These human activities change the physical landscape and produce the cultural landscape.

- **Cultural Landscape** is composed of agriculture, cattle grazing, fishing, mining, settlements, manufacturing industries, and infrastructure (roads, electricity lines and telecommunication lines).
- **Population Geography** concerned with the study of population density, distribution, migration, growth, and structure.
- **Economic Geography** is the study of resources, production related activities as agriculture (Wheat producing areas).
- **Political geography** concerned with the distribution of political regions and ideas of power and conflicts.
- **Historical Geography** deals with the study of places as they existed in the past including agriculture and other landscape evolution.

Branches of Human Geography:

Following are the branches of Human geography:



Environmental Geography:

This branch deals with the study of environmental hazards like floods, earthquake, tsunami, droughts, cyclones and landslides etc. In this branch we also study responses of humans towards these hazards risk assessment, control and mitigation measures of the hazards and disasters.

Practical geography:

This branch of human geography deals with:

- Field work, because of some data which is available in the form of production; ground-truth, surveys conducted by GPS automatic level, theodolite are very important i.e. field research, field study
- Cartography, the art or work of making maps or charts in lab
- Aerial photography and remote sensing are used to take photographs of the earth's resources or any land use from an aircraft or a satellite without making physical contact with the object
- Quantitative methods, dealing with statistical presentations, it is also called mathematical geography

Introducing Earth

Topic – 11:

Earth is the third major planet of the solar system. It is the planet which is inhabited by the human beings and all the other living organisms. People live on the surface of the earth in a physical environment that is extraordinary complex and extremely diverse. A large portion of the planet is covered by the water body that is 71% while the remaining is the part of land surface. Earth has diversity in its physiography and its atmospheric composition.

The earth is the third planet from the sun in the solar system orbiting between Venus and Mars at an average distance of 149.6 million km from the sun, and has one natural satellite, the moon. It has an equatorial diameter of 12,756 km, an average density 5.5 times that of water, and is believed to have formed about 4,600 million years ago. The earth, which is three-quarters covered by oceans and has a dense atmosphere of nitrogen and oxygen, is the only planet known to support life.

Earth also called the world and is the only planet which has life. The Earth was formed around 4.5 billion years ago. The earth passed through different phases of development. Some eras were under volcanism and some were under drought. Earth's biodiversity has evolved over hundreds of millions of years. It is currently home to 10-14 million species of life including over 7.2 billion humans. All depend on biosphere and natural resources. The Sun is the only source of energy (Heat and Light). The earth is surrounded by the atmosphere, a layer of some important gases important for the survival of life. Earth's human population is divided among about two hundred sovereign states.

Topic – 12: The Shape of the Earth:

It has been a long debate to express the shape of the earth between different scholars of different time. More than 2600 years ago, Greek scholars correctly reasoned that Earth have a spherical shape. About 2200 years ago, Eratosthenes the director of Greek library at Alexandria, calculated the circumference of Earth by using trigonometric method. The Geographers and the mathematicians of later time believed that Eratosthenes did mistakes to calculate the circumference of the earth.
Later on, the Mathematicians of later ages gave their own point of view about the shape of the Earth. A few of them are briefly elucidated below.

Newton a famous mathematician challenged the spherical shape of the Earth and considered it like oval. A Scottish Mathematician, McLaren considered earth as a flat surface in in 1742. In 1834, Jacobs a Henry's Scientist viewed that earth is an elliptical in shape which is close to the modern point of view about the shape of the earth. In 1885, Poincare flue an idea of pear shape of the earth. At present it is common view that earth is an elliptical by shape but infect this discussion is not to be ended yet.

The Earth is one of the fastest spinning body of the solar system so it shape is roughly spherical, the bulge at equator results from the rotation of the earth.

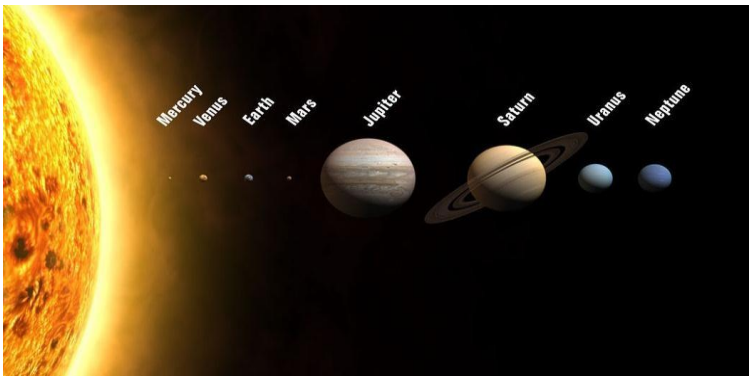
- Average diameter is 12,742 km, whereas
- Equatorial diameter is 12,756 km and
- Polar diameter is 12,714 km.
- The circumference or the distant around equator is 40,000 km.
- The spherical form of the earth is clearly visible in photographs of the earth taken from the satellites.
- If we observe a ship approaching land from the horizon, we see its smoke first and gradually more and more of the ship as it comes up over the horizon.
- Other planets are spherical, so we can assume that the earth is also spherical.
- When there is an eclipse of the moon the shadow of the earth on the moon is round. Only a sphere can cast a circular shadow.
- A person travelling around the world would return eventually to the same spot.
- The sun rises at different times over the surface of the earth. If the earth was flat the sun would rise at the same time over the entire surface.

Topic - 13: The Size of the Earth:

Our planet is just like of a grain in the Sahara Desert when it is discussed in the context of whole universe. The diameter of our planet is about 13,000 km (7900 miles).

The mean radius of Earth is 3,959 miles (6,371 kilometers). However, Earth is not quite a sphere. The planet's rotation causes it to bulge at the equator. Earth's equatorial diameter is 7,926 miles (12,756 kilometers), but from pole to pole, the diameter is 7,900 miles (12,720 km) a difference of only 40 miles (64 km).

The total surface area of Earth is about 509 million square kms. About 71 percent is covered by water and 29 percent by land.



The radius of Earth is 6,371kms. However, the Earth's rotational speed is 1666 kms/ hr. which is 37 times more than the speed of the bullet causes bulge at the equator. Mount Everest is the highest top on Earth above sea level, at 29,028 feet. The lowest point on Earth is the Mariana Trench in the western Pacific Ocean. Its depth is about 36,200 feet below sea level. Earth is the densest planet in the solar system because of its metallic core and rocky mantle. We could fit 1321 Earths inside of the Jupiter.

Lesson No. 5

Introducing Universe

Topic – 14 &15:

All the matter and energy (Light and heat) that exists anywhere in space and time is called the Universe including planets, stars, galaxies and the contents of intergalactic space. The universe expanded from an extremely dense and hot state and continues to expand today. It is gathered into about 100 billion galaxies. Most galaxies contain billions of stars and large clouds of gas and dust. The size of the Universe is unknown; it may be infinite with a radius of about 46 billion light years. In 2010 astronomers estimated, observable Universe contains 300 billion stars. The diameter of our galaxy Milky Way is 100,000 light - year, local group has about 5 million light years and the known universe has 20 billion light years astronomical distances.

A light year

A light-year is the distance when a beam of light travels with a speed of 300,000 km/sec and covered a distance of 9.446 trillion km in a year.

The light-year is most often used when expressing distances to stars and other distances on a galactic scale, the unit usually used in professional astrometry.

Topic - 16: Galaxy and Milky Way:

Galaxy

It is the system of millions or billions of stars, together with gas and dust, held together by gravitational attraction.

Milky Way

The Milky Way is the galaxy that contains our Solar System. Its name "milky" is derived from its appearance as a dim glowing band arching across the night sky whose individual stars cannot be distinguished by the naked eye. There are probably more than 100 billion galaxies in the observable Universe. A galaxy ranges from ten million stars up to one trillion stars. Most galaxies vary from about 10,000 to 200,000 light years in diameter, and are usually grouped in clusters of 20 to several

thousands. The Clusters are grouped in Super clusters. The Milky Way is our home galaxy, is roughly 100,000 light years in diameter, and contains our solar system. This galaxy has 100–400 billion of stars and planets as well. Galaxy is an assemblage of stars, planets and other space material in a disc like shape. The diameter of a galaxy varies; distance between two neighboring galaxies is 3 million light-years. Its name "milky" is derived from its appearance as a dim glowing band arching across the night sky, cannot distinguish individual stars. The Solar System is located within the Milky Way, about 27,000 light-years away from the center of the galaxy. Stars and other material are orbiting at approximately 220km/sec around the center of the galaxy.

Lesson No. 6

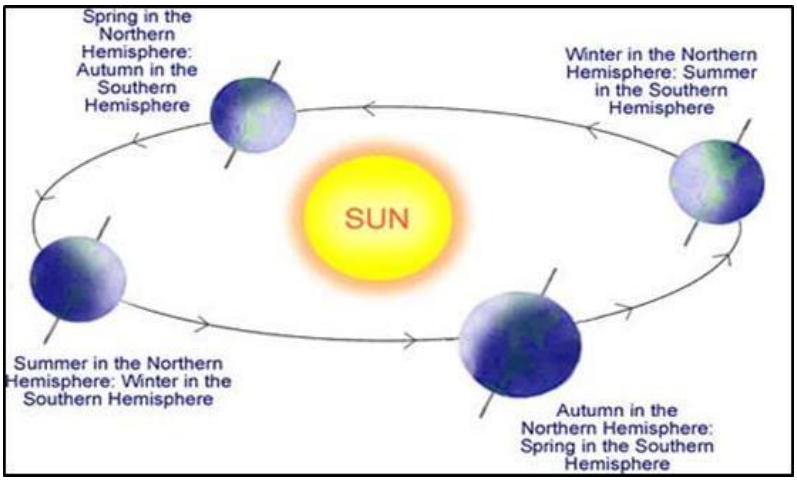
Earth's Rotation

Topic - 17: Earth's Rotation:

It is the process in which earth rotates around its own axis. It rotates from west to east on its axis. It requires about 24 hours to complete one cycle around its axis. It is rotating in anti-clock wise or counter clock wise direction. Sun always seems to appear in the east and set in the west because of spin of earth towards east ward direction. This phenomenon of rotation of earth controls the alternation of day and night. Rotation has several striking several effects on the physical characteristics of the earth's surface. These physical characteristics includes the cariole's effect, increase and decrease of the force of gravity of earth, moon and sun and most important is the time of illusion and darkness on the surface of earth. The Earth has two movements:

- It is the movement of the solid Earth around its own axis at inclined angle (23.5 degree).
- The Earth rotates once in about 24 hours with respect to the sun.

Earth's Revolution



It is the phenomenon in which earth completes its circle around the sun. Earth revolution takes 365 days, 5 hours, 48 minutes and 46 seconds or 365.24 days. This is also known as tropical year or solar year. The path followed by Earth in its journey around the sun is not a true circle but is an ellipse. Due to this elliptical orbit, the Earth-Sun distance is not constant. It varies from 147,166,480 KM at the perihelion position, perihelion is a combination of two Greek words, Peri- means closest and hellion stands for sun, to 152, 171, 500 km at aphelion. Aphelion stands for the farthest distance from the sun. This phenomenon of revolution of Earth controls the phenomenon of seasonal variation. During the month May, June and July Northern hemisphere enjoys summer season and the southern hemisphere enjoys winter season and the opposite is true during the months of December, January and February. Throughout the year, as our small blue planet orbits the Sun and experience changing seasons. The warm spring, hot summer, autumn and finally, comes cold, wet, and dry, winter.

The Earth revolves around the Sun once every 365.24 mean solar days. The Earth orbits the Sun at a speed of 108,000 km/h.

Topic - 18: Latitudes and Longitudes:

Geographic Grid:

The complete understanding of the physical features on the surface of earth is very illusive until the grid system is not fully understood. This system of grid system consists upon two types of lines which intersects each other at right angle. These lines are termed as longitude and latitude lines.

Equator:

It is the imaginary line which divides the globe into Northern and Southern Hemisphere.

Prime-Meridian:

It is the line perpendicular to the equator which divides the globe into Eastern and Western hemisphere.

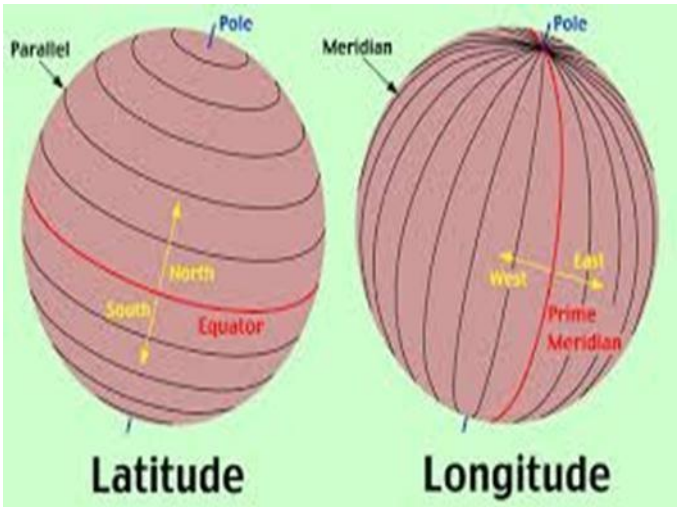
Latitude:

It is the angular distance from the equator. While the line joining these angular distances are termed as latitude. Latitudes run parallel to the equator line. It is expressed in the term of degrees, minutes and seconds. There are seven latitudes in the Geographic Grid System (GGS) are of primary importance. These seven latitudes are:

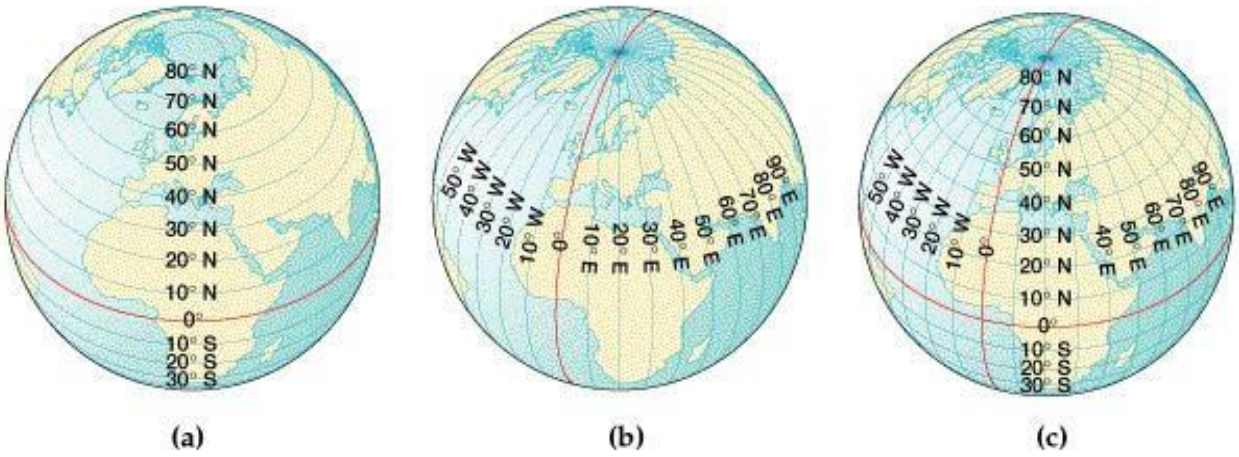
- Equator, 0 degree
- Tropic of cancer, 23.5-degree North
- Tropic of Capricorn, 23.5-degree South
- Arctic circle, 66.5-degree North
- Antarctic Circle, 66.5-degree South
- North Pole, 90-degree North

- South pole, 90 degree south

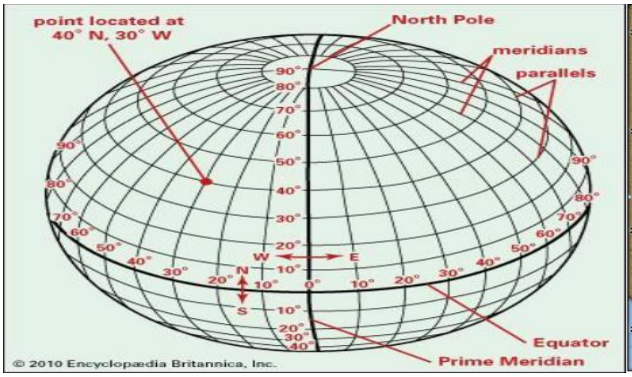
Longitude:

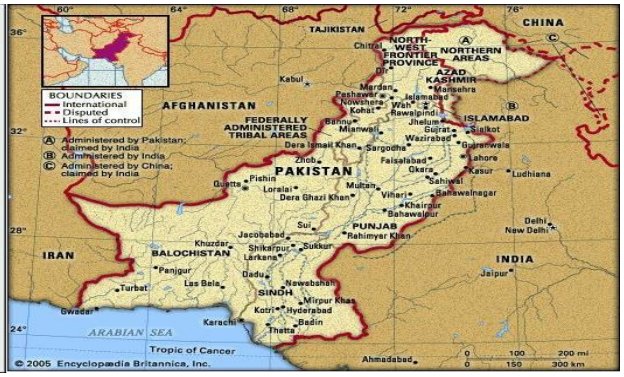


It is the angular distance from the prime-meridian while the line joining these points is called longitudes. These are also expressed in the term of degrees, minutes and seconds. These are also termed as time zones. Global Positioning System (GPS) is the most recent technology in the field of Geography to identify or calculate the exact location by longitude and latitude of a desired object. Remember that the lines of Latitudes are parallel with each other, while the lines of Longitudes meet at the poles.

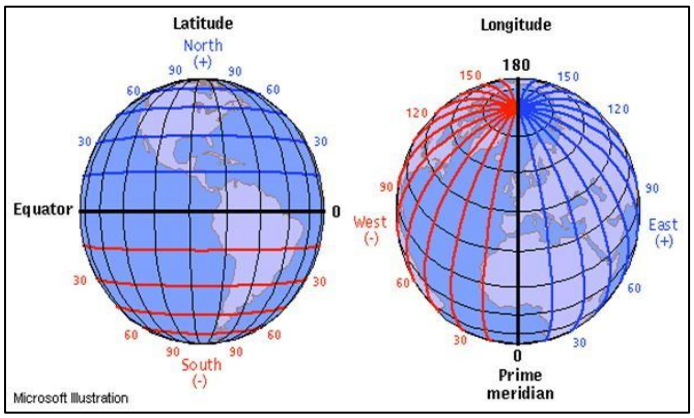


These lines help us to locate where we are or where any particular place is located.

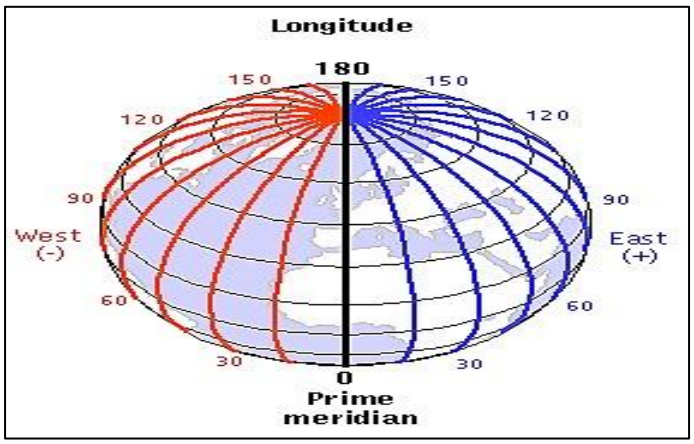




Topic – 19: Longitudes and Time:



The Earth takes 24 hours to rotate once and making a circle or moves 360 degrees. So, one degree is covered in 4 minutes. The earth will pass through 15 degrees of longitudes in one hour. A time zone is a region that has a uniform standard time for legal, commercial, and social purposes. Before clocks were invented, people marked the time of day with solar time. Greenwich Mean Time (GMT) was established in 1675 when the Royal Observatory was built. Time zones are based on Greenwich Mean Time (GMT) the mean solar time at longitude 0° (the Prime Meridian). All time zones are specified from GMT, passing through the Royal Observatory in Greenwich, London. Countries now legally define their standard time to GMT.



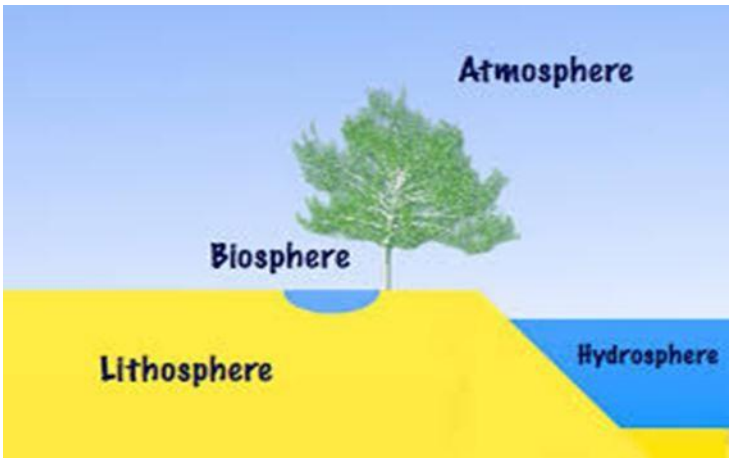
Longitude and time:

Longitudes are also termed as time zones. If there is difference of one degree between two places by longitude then there will be difference of 4 minutes by time. There will be a difference of 1 hour between the times of two places then there will be the difference of 15 degree by longitude. It means that, earth takes 4 minutes to rotate about 1 degree around its axis.

Lesson No. 7

Spheres of the Earth 01

Topic - 20:



The planet Earth is the only livable place for the human being. It consists upon different spheres which play a vital role in the prosperity of human-being. These sphere influence in all the walks of life i.e., from breathing to food and shelter. All the necessities of human-existence primarily depend upon these spheres. These are basically the blessings of Almighty to our planet, which has increased its significance than its counterparts. These range from the bare soil to the large water bodies and from the water bodies to the atmosphere. The planet Earth is the only livable place for the human being. It consists upon different spheres which play a vital role in the prosperity of human-being. These sphere influence in all the walks of life i.e., from breathing to food and shelter. All the necessities of human-existence primarily depend upon these spheres. These are basically the blessings of Almighty to our planet, which has increased its significance than its counterparts. These range from the bare soil to the large water bodies and from the water bodies to the atmosphere. These are four in numbers i.e. Lithosphere, Hydro-sphere, Atmosphere and Bio-sphere. All of them are briefly described below.

Lithosphere

This is composed of rock structure like earth crust. This surface is composed of 29 % the total planet

Atmosphere

It is in the form of gases compositions most of the gases are very important for existence of life

Hydrosphere

Hydrosphere is covered by the water surface and about 70 % of the total earth is comprises of water. It comprises of salt water.

Biosphere

This is actually life over the surface of planet the life in the form of marine, human, plant and animal.

Topic - 22:

Lithosphere:

It is the outer most portion of earth surface. The word lithosphere is derived from the ancient Greek lit hose meaning "rocky" and sharia meaning "sphere" and It is the place where we live and do all our activities to grow food and to build houses for our existence. A lithosphere is the rigid outermost shell of terrestrial surface that is defined by its rigid mechanical properties. On Earth, it comprises the crust and the portion of the upper mantel that behaves elastically on time scales of thousands of years or greater. The outermost shell of a rocky planet, the crust, is defined on the basis of its chemistry and mineralogy. The land forms contain features- as mountains, hills, and plains provide varied habitats for plants, animals, and humans. The solid rock of the lithosphere bears a shallow layer of the soil in which the nutrients elements become available to organisms. The surface of the lithosphere is eroded into landforms.

There are two types of the Lithosphere on the basis of the chemical properties of the soil surface i.e. oceanic lithosphere and continental lithosphere.

- Oceanic lithosphere is associated with oceanic crust and exists in the ocean basins. Its mean density is about 2.9 grams per cubic centimeter.
- Continental lithosphere is associated with continental crust and its mean density is about 2.7 grams per cubic centimeter.

Importance of lithosphere in the Environment:

Lithosphere is the solid outer part of the earth. It is the place where we live and also play a significant role in the environment. These are outlined below:

- Suitable to live
- Agriculture and the growing f crops are possible

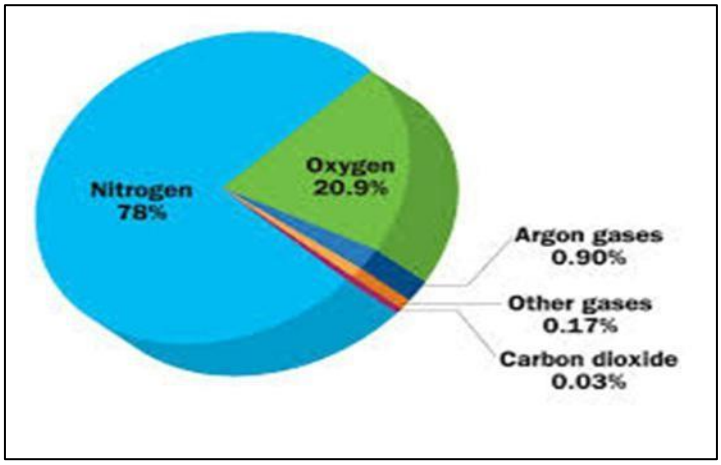
- Play a vital role in the prosperity of man
- Low temperature as compared to the other layers of Earth
- Rich in natural resources which are exposed at the time of volcanic eruption.
- It controls the stability of Earth crust

Environmental Problems of Lithosphere:

Besides of the positive role, there are also some environmental problems of lithosphere are:

- Soil degradation, erosion and pollution
- Deforestation
- Landslides and earthquakes
- Loss of agricultural land for nonagricultural purposes

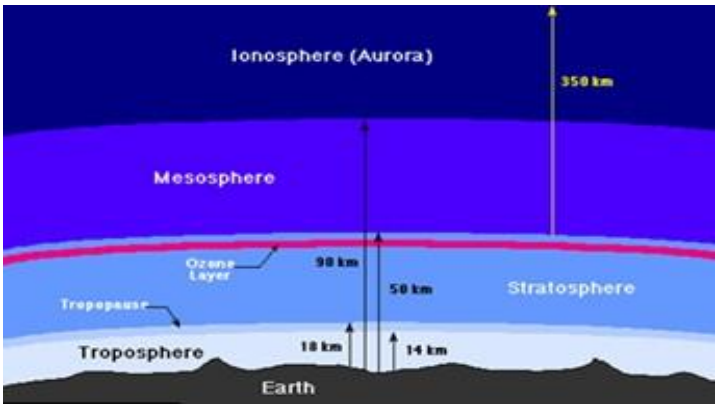
Topic - 23



Atmosphere

The Atmosphere is a thin, shell like envelope or shield composed of gases surrounding the planet Earth that is retained by earth's gravity. The atmosphere of earth is a layer of gases surrounding the planet Earth that is retained by earths' gravity.

The atmosphere absorbs ultraviolet solar radiation, warming the surface through greenhouse effect, and reducing temperature extremes between day and night (the diurnal temperature variations). The earth is the only planet where atmosphere is suitable for life. So, the life sustainability is due to atmospheric condition. The atmospheric composition on Earth is largely governed by the by-products of the life that it sustains. Dry air from atmosphere contains 78.08% nitrogen, 20.95% oxygen, 0.93% argon, 0.038% carbon dioxide, and traces of hydrogen, helium, and other "noble" gases (by volume), but generally a variable amount of water vapor is also present, on average about 1% at sea level.



Layers of the Atmosphere:

There are four major layers of Atmosphere i.e. Troposphere, Stratosphere, Mesosphere, Thermosphere.

Troposphere

This is the lowest atmospheric layer and is about seven miles (11km) thick. Most clouds and weather are found in the troposphere. The troposphere is thinner at the poles (averaging about 8km thick) and thicker at the equator (averaging about 16 km thick). The temperature decreases with altitude

Stratosphere:

The stratosphere is found from about 7 to 30 miles (11-48 kilometers) above the Earth's surface. In this region of the atmosphere is the ozone layer, which absorbs most of the harmful ultraviolet radiation from the Sun. The temperature increases slightly with altitude in the stratosphere. The highest temperature in this region is about 32 degrees Fahrenheit or 0 degrees Celsius.

Mesosphere:

The mesosphere is above the stratosphere. Here the atmosphere is very rarefied, that is, thin, and the temperature is decreasing with altitude, about –130 Fahrenheit (-90 Celsius) at top.

Thermosphere:

The thermosphere starts at about 55 kilometers. The temperature is quite hot; here temperature is not measured using a thermometer, but by looking at the motion and speed of the rarefied gases in this region, which are very energetic but would not affect a thermometer. Temperatures in this region may be as high as thousands of degrees.

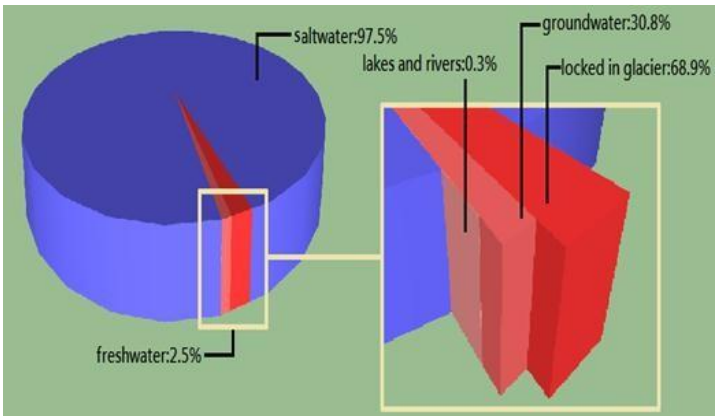
Exosphere:

The exosphere is the region beyond the thermosphere.

Importance of Atmosphere:

This sphere of physical environment of earth surface is equally important for the environment in following respects. From the perspective of the planetary geologist, the atmosphere is an evolutionary agent essential to the morphology of planet. The wind transports dust and other particles which erodes the relief and leaves deposits . Frost and precipitations, which depend on the composition, also influence the relief. Climate changes can influence a planet's geological history. Conversely, studying surface of Earth leads to an understanding of the atmosphere and climate of a planet — both its present state and it's past. For a meteorologist, the composition of the atmosphere determines the climate and its variations. For a biologist, the composition is closely dependent on the appearance of the life and its evolution.

Topic 24



Hydrosphere

The hydrosphere includes the oceans, seas, lakes, ponds, rivers and streams. It is the portion of water surface over the surface of Earth. It covers about 71% of the total area over the planet. It considers all the water resources like, Atmospheric water resources, surface water resources and ground water resources. It also includes the frozen and the liquefied state of water. It is the most pervasive and least well defined of the four spheres of Earth's physical environment. This includes water in liquid and frozen forms, groundwater, glaciers, oceans, lakes and streams. Saltwater accounts for 97.5% of this amount. Approximately 75% of the Earth's surface, an area of some 361 million square kilometers, is covered by ocean. Freshwater accounts for only 2.5%. Of this fresh water 68.9% is in the form of ice and permanent, snow cover in the Arctic, the Antarctic, and in the mountainous regions. 30% exists as fresh ground waters. Only 0.3% of the total amount of fresh waters is easily accessible. It is found in lakes, reservoirs and river systems. Freshwater accounts for only 2.5%. Of this fresh water 68.9% is in the form of ice and permanent, snow cover in the Arctic, the Antarctic, and in the mountainous regions.

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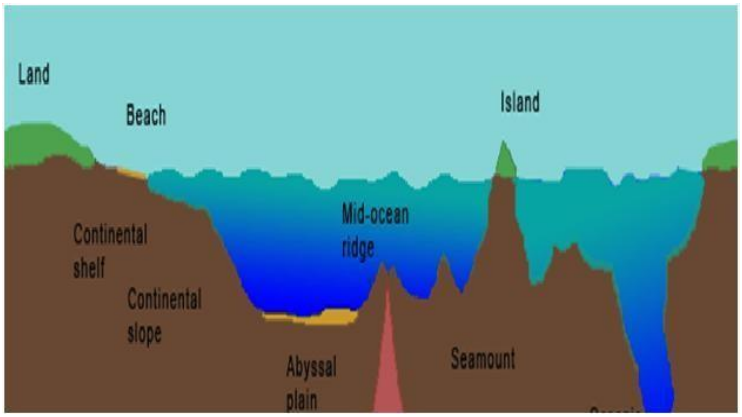


Components of Hydrosphere:

The major ingredients of hydrosphere are:

Surface water resources:
These water resources include oceans, rivers, lakes, swamps etc.
Atmospheric water resources: These water resources consist upon the precipitation, humidity, thunderstorms, rainfall etc. it may be in the form of drizzles, water droplets or in snow form.

Ground water resources:

These are the more purified and the safe water reserves. These resources include aquifer and ground water table etc.

Importance of Hydrosphere:

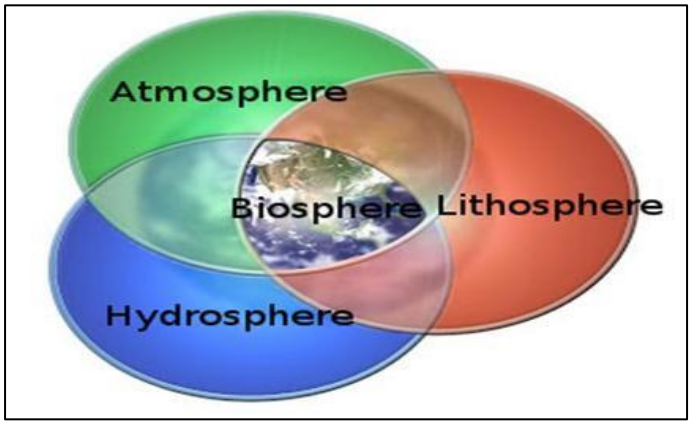
Water is life. Human existence on the planet earth is impossible without of the sufficient quality and quantity of water. Hydrosphere overlaps all other three spheres of Earth's physical environment. For example, liquid water, ice and even water vapors occur in the soil and rocks of the lithosphere.
Water vapors and cloud particles composed of liquid water and ice are the important constituent of the lower portion of the earth's atmosphere. In the biosphere, water is critical component of every living organism of biosphere. Life is impossible without water and every living thing primarily depends upon the efficient quantity of water. It is necessary for plant kingdom and animal kingdom, the two major kingdom classifications of living organisms. Indeed, the total mass of every living thing is more than half water, the proportion ranging from about 60% for some animals, for some animals is about 95% and the human body consists upon about 97% of water. Some other importance of the hydrosphere for human-being is pinned point below:

- It provides water for drinking.

- Water is also required for irrigation in rainfall deficit areas.
- Hydrosphere plays an important role in maintaining the global water cycle and bringing precipitation through the process of water cycle.
- Aquatic bodies play a great role in our ecosystem by supporting several aquatic floral n faunal lives.
- It acts as a global pollution sink, and dissolves several pollutants which are present in the atmosphere.

Biosphere

The Biosphere comprises of all living organisms of the earth. Life-forms on the earth utilize the gases of the atmosphere, the water of the hydrosphere, and the nutrients of the lithosphere. Most of the biosphere is contained in the shallow surface zone called the life layer. It includes the surface of the lands and the upper 100m or so of the ocean. On land, the life layer is the zone of interactions among the biosphere, lithosphere, and atmosphere, with the hydrosphere represented by rain, snow, still water in the ponds and lakes, and running water in rivers. In the ocean, the life layer is the zone of interactions among the hydrosphere, biosphere, and atmosphere, with the lithosphere represented by nutrients dissolved in the upper layer of sea water. Currently the biosphere has a biomass (or number of living things) at around 1900 rigatonis of carbon. It is not certain exactly how thick the biosphere is, though scientists predict that it is somewhere around 12,500 meters. The biosphere extends to the upper areas of the atmosphere, including birds and insects



Zones of Biosphere:

Zones of Biosphere are divided into following three zones.

Core Zone:

In core or natural zone human activity is not allowed. This area is legally protected and undisturbed ecosystem.

Buffer zone:

It is the immediate surrounding area of core zone is buffer zone. Here limited human activities live like research, education and research strategy is permitted.

Manipulation zone:

Manipulation or transition zone is the outermost or peripheral area of biosphere reserve. With the cooperation of reserve management and local people several human activities like settlements, cropping, recreation, and forestry are carried out without disturbing the environment.

Importance of Biosphere Reserve:

Some more important aspects of importance of Biosphere reserves are given below:

Conservation:

Biosphere reserves conserve genetic resources, species, ecosystems and landscapes without uprooting inhabitants. Rather the traditional life style and traditional resources of the local people are maintained.

Development:

Sustainable economic, cultural, social and ecological developments are ensured.

Restoration:

Biosphere reserve helps to rebuild any damage caused to ecosystems and habitats.

Education and Research:

Biosphere reserve provides a lot of scientific information for specific scientific studies and research. Exchange of information on restoration, conservation and development of biosphere can be made at national and international levels.

Lesson No. 8

Rocks

Topic – 25:

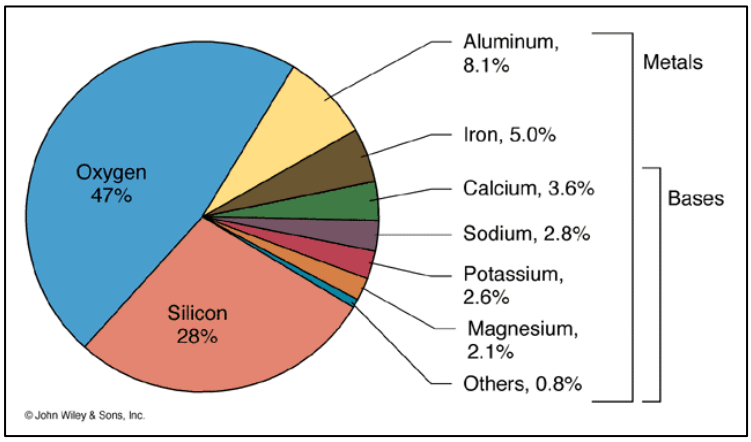
Minerals are naturally occurring inorganic substances, often with a crystalline structure. They are composed largely of the most abundant elements in the Earth's crust. Quartz is the second most abundant mineral in the earth's continental crust, after feldspar. There are many different varieties of quartz, several of which are semi-precious gemstones. There are over 4,900 known mineral species; over 4,660 of these have been approved by the International Mineralogical Association (IMA). The minerals compose over 90% of the Earth's crust. The diversity and abundance of mineral species is controlled by the Earth's chemistry. Silicon and oxygen constitute approximately 75% of the Earth's crust, which translates directly into the predominance of silicate minerals. Minerals are distinguished by various chemical and physical properties. Differences in chemical composition and structure distinguish various species, and these properties in turn are influenced by the mineral's geological environment of formation. Changes in the temperature, pressure, or bulk composition of a rock mass cause change in its minerals. But, for the substance to be considered as mineral, it must be:

- Solid by nature
- Naturally found in nature
- It should be inorganic
- It must have a specific chemical composition
- It should contain atoms arranged in a regular pattern to form solid crystals

Only about one-fourth of the elements are involved in the formation of minerals to any significant magnitude. These minerals are integrated to form rocks. The rock forming minerals can be grouped in to seven families on the basis of their chemical properties and internal structure. These families are outlined:

- Silicates

- Oxides
- Sulfides
- Sulfates
- Carbonates
- Halides
- Native Elements



As of April 2015, 118 elements have been identified, of these, only the first 98 are known to occur naturally on Earth. The remaining 20 heavier elements, not found today either on Earth or in astronomical spectra, have been produced artificially: these are all radioactive. Rock is a naturally occurring aggregate of one or more minerals. For example, the common rock granite is a combination of the quartz and feldspar minerals. The Earth's outer solid layer, the lithosphere, is made of rock. Most rock in the earth's crust is extremely old, dating back many millions of years, but new rock is formed due to eruption of lava. Rocks have been used by mankind throughout history. From the Stone Age, rocks have been used for tools. The minerals and metals found in rocks have been essential to human civilization.

Topic - 26: Types of Rocks:

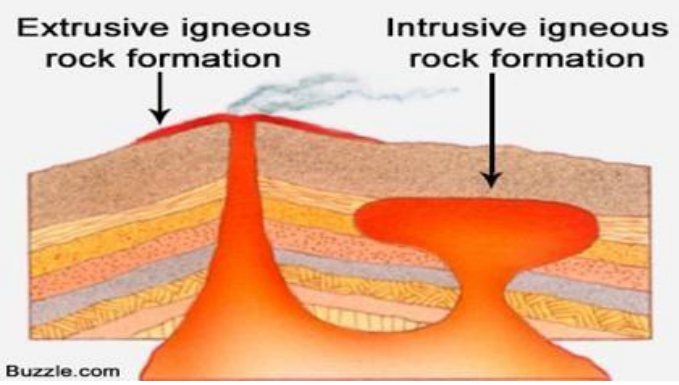
Rock of the earth's crust fall into three major classes:

- Igneous Rocks
- Sedimentary Rocks
- Metamorphic Rocks

Igneous Rocks:

Igneous rock (derived from the Latin word igneous meaning of fire) forms through the cooling and solidification of magma or lava. This magma can be derived from partial melts of pre-existing rocks in either a planet's mantle or crust.

Typically, the melting of rocks is caused by one or more of three processes: an increase in temperature, a decrease in pressure, or a change in composition. These rocks are harder and are not easily eroded by the different factors like river, winds, waves etc. They are solidified from mineral matter in a high temperature molten state. Igneous rocks are formed when molten material moves from deep within the earth and solidified there or erupted from the earth's crust.

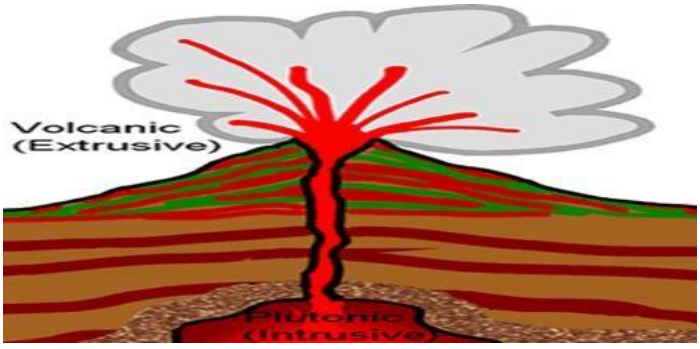


Types of Igneous Rocks:

There are two types of igneous rocks on the basis of nature of solidification of magma or lava. These two types are Intrusive igneous rocks or extrusive igneous rocks.

Intrusive igneous Rocks:

These rocks are also called plutonic rocks. Plutonic or intrusive rocks result when magma cools and crystallizes slowly within the Earth's crust. A common example of this type is granite. Beneath the surface of earth the Magma can be solidified either in horizontal or vertical dimension i.e. sill and dyke.

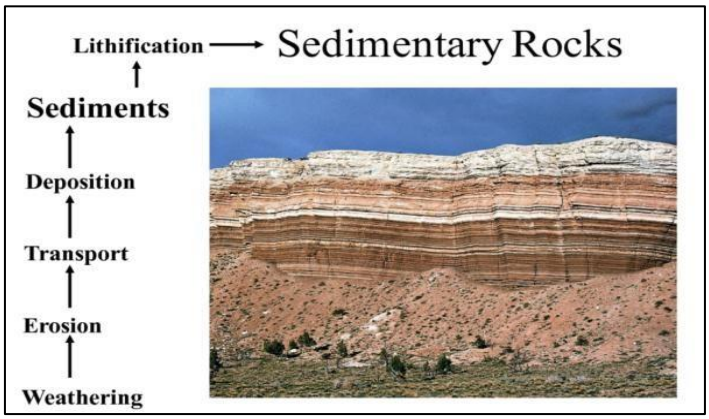


Extrusive Igneous Rocks:

These volcanic rocks are formed on the surface of Earth, either from the cooling of lava or accumulation of pyroclastic material such as volcanic ash or cinder. When lava cools on the earth surface, the solidification may be completed within hours. So, the mineral crystals in many volcanic rocks are so small as to be invisible without microscope. These rocks are also termed as volcanic rocks and the excellent examples are basalt, which consists upon only dark colored minerals, pumice is formed by the gas-rich material and tuff consists upon pyroclastic fragments. About 64.7% of the Earth's crust by volume consists of igneous rocks; making it the most plentiful category. Of these, 66% are basalts and gabbro, 16% are granite, and 17% granodiorites and diorites. Only 0.6% is senates and 0.3% peridotite sand dunnites. The oceanic crust is 99% basalt, which is an igneous rock of mafic composition. Granites and similar rocks, known as meta-granites, form much of the continental crust. Over 700 types of igneous rocks have been described, most of them having formed beneath the surface of Earth's crust. These have diverse properties, depending on their composition and the temperature and pressure conditions in which they were formed. In some special circumstances host important mineral deposits (ores): as tin and uranium are commonly associated with granite and diorite, whereas ores of chromium are commonly associated with gabbro.

Topic - 27: Sedimentary Rocks:

The mineral particles in sedimentary rocks can be derived from the preexisting rock of any of three rock classes as well as from newly formed organic matter. These rocks are formed from layered accumulations of mineral particles derived mostly by weathering and erosion of preexisting rocks. So, these rocks have stratification or layered structure. External processes i.e. mechanical or chemical operating on the rocks cause to disintegrate. This disintegration produces fragmented material some of which is removed by the water, winds, ice, or the combination of these geomorphic agents. These disintegrated particles are taken away by these geomorphic agents from their place of origin and are deposited anywhere else. In this way the same process is repeated from many years and accumulation of these particles resulted into the formation of sedimentary rocks. It is soft as compared to the igneous rocks.



There are three major classes of sediment.

1. Clastic sediment.
2. Chemically precipitated sediment.
3. Organic Sediment.

Clastic Sedimentary Rock:

The fragments of pre-existing rocks or minerals that make up a sedimentary rock are called clasts. Sedimentary rocks made up of clasts are called clastic (clastic indicates that particles have been broken and transported). Clastic sedimentary rocks are primarily classified on the size of their clasts.

Non clastic sedimentary Rocks:

These sedimentary rocks occur when minerals / mineraloids are precipitated directly from water, or are concentrated by organic matter / life. Components have not been transported prior to deposition. No clasts are present.

Chemical precipitated sediment:

Many of these forms when standing water evaporates, leaving dissolved minerals behind. These are very common in arid lands. Where seasonal "playa lakes" occur, ion closed depressions. Thick

deposits of salt gypsum can form due to repeated flooding and evaporation over long periods of time.

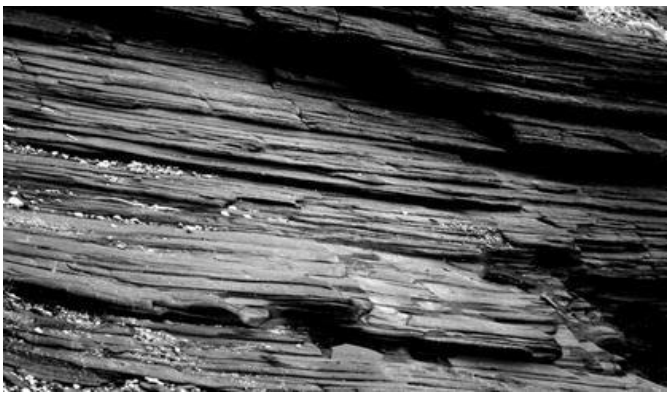
Organic Sediment:

Organic sediment is any accumulation of sedimentary debris caused by organic processes. Many animals use calcium for shells, bones, and teeth. These bits of calcium can pile up on the seafloor and accumulate into a thick enough layer to form an "organic" sedimentary rock.

Hydrocarbon compounds:

Hydrocarbon compound in sedimentary rocks are important because they provide an energy resource or fossil fuels on which modern human civilization depends

Topic - 27: Metamorphic Rocks:



All rock has under gone chemical or physical changes, either by heat, pressure or both to cause degree of alteration and modification of the rock. Metamorphic rock changed in texture and structure as classified into new rock. Recrystallization of the original minerals can also occur. Metamorphic rocks are originally either sedimentary or igneous rocks that have been drastically changed by heat or pressure.

Metamorphic rocks are formed by subjecting any rock type, igneous or another older metamorphic rock to different temperature and pressure conditions than those in which the original rock was formed. This process is called metamorphism; meaning to "change in form". The result is a profound change in physical properties and chemistry of the stone. The original rock, known as the photolith, transforms into other mineral types or other forms of the same minerals, by recrystallization. The temperatures and pressures required for this process are always higher than those found at the Earth's surface: temperatures greater than 150 to 200 °C and pressures of 1500 bars. Metamorphic rocks compose 27.4% of the crust by volume.

Igneous or sedimentary rocks may be altered by the tremendous pressure and high temperatures that accompany the mountain-building processes of the earth ‘s crust. And the resulting structure is called metamorphic structure.

28 Contact Metamorphism:

This type of metamorphism occurs beneath the surface of Earth where magma comes in contact with the surrounding rocks and altered the chemical or physical characteristics through heat or pressure due to mutual contact.

Regional Metamorphism:

It takes place where the large volume of rock deep within the crust is subjected to heat and pressure for long period of time.

Lecture 9

Topic: 29

Culture and diversity

Cultural diversity is the quality of diverse or different cultures, as opposed to monoculture, the global monoculture, or a homogenization of cultures, akin to cultural decay. The phrase cultural diversity can also refer to having different cultures respect each other's differences.

Topic: 30 Rationale for the Study of Culture

Culture consists of all learned, normative behavior patterns – that is, all shared ways or patterns of thinking and feeling as well as doing.

Word ‘culture’ comes from the Latin word ‘culture,’ related to cult or worship. In its broadest sense, the term refers to the result of human interaction.

Society’s culture comprises the shared values, understandings, assumptions, and goals that are learned from earlier generations, imposed by present members of society, and passed on to succeeding generations.

Sometimes an individual is described as a highly cultured person, meaning that the person in question has certain features such as his/her speech, manner, and taste for literature, music, or painting, which distinguish him from others.

Culture, in this sense, refers to certain personal characteristics of an individual.

Topic: 31. The Dynamic Nature of Culture

A culture is "the complex of values, ideas, attitudes, and other meaningful symbols created by people to shape human behavior and the artifacts of that behavior as they are transmitted from one generation to the next."

The above definition highlights three important attributes of an individual's culture. First, it is 'created by people,' evolving due to human activities and passed on to the succeeding generations.

Second, the impact of cultural influence is both intangible and tangible. People's basic attitudes and values are a direct result of their cultural environment. Beliefs in freedom of speech and choice, heterosexuality, and God are products of human action. Additionally, people leave physical evidence of their culture through art and craftwork, buildings, furniture, laws, and food.

Third, the cultural environment evolves, and it is most often evolving over lengthy periods. Changes in women's roles in the home and business and the outward desire for leisure time have come about quite slowly. Other changes, however, occur quicker. Clothing styles, for example, come and go rather hastily.

Topic: 32. Aspects of Culture

If we explain the above definition, we can identify three aspects of a given culture;

1. Culture is a pattern of behavior,

2. Culture is learned, and

3. Culture is transmitted from one generation to the next.

Culture is a Pattern of Behavior

Culture refers basically to the style of behavior. This style is found to be present in the behaviors of the majority of people living in a particular culture.

This pattern varies from culture to culture, and as a result, consumptions vary among countries. The pattern of behavior you will see in South-Asian culture will definitely not be seen in other cultures. The behavior established by culture is found to be practiced by the majority as it satisfies their needs.

Someone not following the established pattern of behavior is likely to be condemned by others in society. Since the majority follows the same style of behavior in a particular culture, it becomes a pattern.

To be successful, marketers must find out the patterns of behavior and design their marketing strategies accordingly to be successful in a culture.

Culture is learned

The second important aspect relating to culture is that we learn it through experiences and interactions.

The aspects of culture are not found in an individual right from his birth. He rather learns those from others in the society as he follows, observes, and interacts with them. Since experiences vary among people of different societies, they learn different things resulting in differences among cultures.

For example, a South-Asian child grows in a European country among the Europeans and will definitely not learn South-Asian cultural aspects but the European cultural aspects, influencing his behavior.

It clearly indicates that culture is learned, not present from birth, why people of different cultures see the same object or situation differently.

The reason is that their learning differs. For example, wearing mini-skirts by females is seen negatively in South-Asia, where it is seen positively in Western countries. Since people of two different cultures learn differently, they are likely to view the same object differently.

People learn about their cultures from their parents and different social organizations and groups. This will be discussed later.

33 Culture is Transmitted from One Generation to the Next

We have in our culture in terms of values, ideas, attitudes, symbols, artifacts, or other, and we are likely to conform to those.

We follow the patterns of our cultures and teach them to the next generation to guide them. This process of transmitting the cultural elements from one generation to the next is known as 'Enculturation".

Thus, cultural elements do not persist in one generation but are transmitted to the next generation and survive the entire life span of an individual. That is why a lot of similarities in behaviors are found between people of two different generations.

Lecture: 10

Study of Culture

Culture is a comprehensive and encompassing term that includes what we have learned about our history, values, morals, customs, art, and habits. Here in this section, we shall mention quite a few definitions of culture and analyze those to form a clear picture of a culture that may help us formulate appropriate marketing strategies.

Culture may also be defined in other ways. According to Kroeber, "the mass of the learned and transmitted motor reactions, habits, techniques, ideas, and values – and the behavior they include – is what constitutes culture. It is all those things about men that are more than just biological or organic, and that are also more than merely psychological."

It is the human-made part of the environment, the total way of life of a people, the social legacy that the individual acquires from his group. The culture into which we are born provides many ready-made solutions to problems growing out of the geographic, biological, and social environment in which we live.

These ready-made solutions are provided in the form of cultural patterns relating to the ideology, role definitions, and socialization procedures of the society in which we live. These cultural patterns are transmitted to individuals through social institutions such as family, educational institutions, religious institutions, social classes, languages, parents' attitudes, behavior, and reading.

Topic: 01. Importance of Culture

Culture is thus composed of common habits and patterns of living of people in daily activities and common interest in entertainment, sports, news, and even advertising. Culture is a comprehensive concept, which includes almost everything that influences an individual's thought processes and behaviors. Culture does not include inherited responses and predispositions.

Rather it is acquired. One more thing should also be borne in mind about culture. That is, in modern complex societies, culture seldom provides detailed prescriptions for appropriate behavior. Rather, it supplies boundaries within which most individuals think and act.

You should also keep in mind that the nature of cultural influences is such that we are seldom aware of them. An individual behaves, thinks, and feels like other members of the same culture because it seems natural.

The concept of culture has been debated in anthropological literature for at least two centuries and has acquired almost as many definitions as those trying to define it.

According to Singer, recent definitions of culture have grown progressively more formal and abstract. Culture has often been loosely defined as a behavior, as observed through social relations and material artifacts.

Although these may provide some raw data for a construct of culture, they are not, in themselves, the constituents of culture. In a deeper anthropological sense, culture includes patterns, norms, rules, and standards that find expression in behavior, social relations, and artifacts.

These are the constituents of culture. Singer's definition revealed this development: 'Culture consists of patterns, explicit and implicit, of and for behavior, acquired and transmitted by symbols, constituting the distinctive achievement of human groups including their embodiments in artifacts.

The essential core of culture consists of traditional (i.e., historically derived and selected) ideas, especially their attached values. Thus, according to the above definition, culture is the conditioning elements of behavior and its products.

Referring to Ralph Linton, Berkman, and Gilson in their book 'Consumer Behavior – Concepts and Strategies,' defined culture as 'patterns of learned behavior held in common and transmitted by the members of any given society.'

Thus, culture consists of a society's behaviors, which are well established and accepted by the members of that society. The majority follow these patterns.

For example, most South-Asian women wear 'share,' and it is an established behavior pattern in this culture. There are exceptions to this pattern as well.

For example, some women may wear T-shirts and trousers, but this will not be considered a pattern since it is not found in the majority's behavior.

Topic: 37. Cultural Elements

4. The basic elements of culture

- Language
- Norms
- Beliefs
- Symbols
- Values
- Cognitive Elements

- **Language**: – Every culture has a particular language which is passed by the person belongs to that particular culture to the next generation and the following generation also has to learn the language. The language can be defined, in a very precise manner, and can be compared, in the best way, with a vehicle. Language is a medium or an instrument which is used to express one's view and to keep forward one's opinion.
- Language is the most basic and most important element in a culture. For example, a person who speaks Nagamese can be judged to be a citizen of Nagaland. The person who speaks Hindi and having an accent like that of Indians can be recognized easily, that he is a citizen of India and likewise person speaking other languages can be recognized that to which culture he/she belongs.
- **Norms**: The very important element of a culture is this norm. This decides the rules and regulation of a society. Norms define two types of rules one of which it must be followed by people of that particular society these rules are known as "moss". The other rule tells the daily habits of individual of that society it is known as
- **Beliefs**: Before the creation of any culture by a society, society decides their source of motivation, which they considered as appropriate. For example, god Shiva to Hindus, Sikh wear bangle in one hand, bear a long beard, keeping a dagger. Cross for Christians and a necklace or a cotton thread around the neck.
- **Symbols**: Importance of Symbols may differ for different people, belonging to a different culture. For example, sign of cross means nothing for Hindus but for Christians, this is a symbol of Lord Christ.
- **Values:** Anything or any material when collects importance in our daily life it starts having value. Value of some materials, sometimes, are received and taught by parents to their children. Some values are explained by society, in this way value of a particular society gets accumulated and move forward from generations to generations.

- **Cognitive elements**: Cognitive elements are that element of culture which deals with the management of difficult times or natural calamities. Cognitive elements of culture are those through which an individual learn how to cope with an existing situation whether natural or social. These qualities are learned by children and taught, to them, by their parents, so that their son/daughter can live with peace in a particular situation
- Culture is a symbolic continuous, cumulative and progressive process.

Lecture: 11

Society and Socialization

A society is a group of individuals involved in persistent social interaction, or a large social group sharing the same spatial or social territory, typically subject to the same political authority and dominant cultural expectations.

Topic: 39. Society

A **society** is a group of individuals involved in persistent social interaction, or a large social group sharing the same spatial or social territory, typically subject to the same political authority and dominant cultural expectations. Societies are characterized by patterns of relationships (social relations) between individuals who share a distinctive culture and institutions; a given society may be described as the sum total of such relationships among its constituent of members. In the social sciences, a larger society often exhibits stratification or dominance patterns in subgroups.

Societies construct patterns of behavior by deeming certain actions or speech as acceptable or unacceptable. These patterns of behavior within a given society are known as societal norms. Societies, and their norms, undergo gradual and perpetual changes.

Insofar as it is collaborative, a society can enable its members to benefit in ways that would otherwise be difficult on an individual basis; both individual and social (common) benefits can thus be distinguished, or in many cases found to overlap. A society can also consist of like-minded people governed by their own norms and values within a dominant, larger society. This is sometimes referred to as a subculture, a term used extensively within criminology, and also applied to distinctive subsections of a larger society.

More broadly, and especially within, a society may be illustrated as an economic, social, industrial or, made up of, yet distinct from, a varied collection of individuals. In this regard society can mean the objective relationships people have with the material world and with other people, rather than "other people" beyond the individual and their familiar social environment.

The term "society" came from the Latin word which in turn was derived from the noun *socius*, friend, ally"; adjectival form used to describe a bond or interaction between parties that are friendly, or at least civil. Without an article, the term can refer to the entirety of humanity (also: "society in general", "society at large", etc.), although those who are unfriendly or uncivil to the remainder of society in this sense may be deemed to be "antisocial". However, the economist, taught instead that a society "may subsist among different men, as among different merchants, from a sense of without any mutual love or affection, if only they refrain from doing injury to each other. Used in the sense of a society is a body of individuals outlined by the bounds of functional possibly comprising characteristics such as or.

Societies are that differ according to the ways that humans use technology to provide needs for them. Although humans have established many types of societies throughout history, anthropologists tend to classify different societies according to the degree to which different groups within a society have unequal access to advantages such as resources, prestige, or power. Virtually all societies have developed some degree of inequality among their people through the process of

social stratification, the division of members of a society into levels with unequal wealth, prestige, or power. Sociologists place societies in three broad categories: , and .

1.1. Pre-industrial

In a pre-industrial society, food production, which is carried out through the use of human and animal , is the main economic activity. These societies can be subdivided according to their level of technology and their method of producing food. These subdivisions are hunting and gathering, pastoral, horticultural, agricultural, and feudal.

5. 1.1.1. Hunting and gathering

The main form of food production in such societies is the daily collection of wild plants and the hunting of wild animals. Hunter-gatherers move around constantly in search of food. As a result, they do not build permanent or create a wide variety of, and usually only form small groups such as and However, some hunting and gathering societies in areas with abundant resources (such as people of lived in larger groups and formed complex hierarchical social structures such as chiefdom. The need for mobility also limits the size of these societies. They generally consist of fewer than 60 people and rarely exceed 100. Statuses within the tribe are relatively equal, and decisions are reached through general agreement. The ties that bind the tribe are more complex than those of the bands is personal charismatic and used for special purposes only in tribal society. There are no political offices containing real power, and a is merely a person of influence, a sort of adviser; therefore, tribal consolidations for collective action are not governmental. The family

forms the main with most members being related by birth or marriage. This type of organization requires the family to carry out most social functions, including and.

6. ***1.1.2. Feudal***

was a form of society based on ownership of land? Unlike today's farmers, vassals under feudalism were bound to cultivating their lord's land. In exchange for military protection, the lords exploited the peasants into providing food, crops, crafts, homage, and other services to the landowner. The system of feudalism was often multigenerational; the families of peasants may have cultivated their lord's land for generations.

1.2. Industrial

Between the 15th and 16th centuries, a new economic system emerged that began to replace feudalism. is marked by open competition in a free market, in which the means of production are privately owned. Europe's exploration of the Americas served as one impetus for the development of capitalism. The introduction of foreign metals, silks, and spices stimulated great commercial activity in European societies.

Industrial societies rely heavily on machines powered by fuels for the production of goods. This produced further dramatic increases in efficiency. The increased efficiency of production of the industrial revolution produced an even greater surplus than before. Now the surplus was not just agricultural goods, but also manufactured goods. This larger surplus caused all of the changes discussed earlier in the domestication revolution to become even more pronounced.

Once again, the population boomed. Increased productivity made more goods available to everyone. However, inequality became even greater than before. The breakup of agricultural-based feudal societies caused many people to leave the land and seek employment in cities. This created a

great surplus of labor and gave capitalists plenty of laborers who could be hired for extremely low wages.

1.3. Post-industrial

Post-industrial societies are societies dominated by information, services, and high technology more than the production of goods. Advanced industrial societies are now seeing a shift toward an increase in service sectors over manufacturing and production. The United States is the first country to have over half of its work force employed in service industries. Service industries include government, research, education, health, sales, law, and banking.

Topic: 40. Socialization

In **socialization** is the process of the and Socialization encompasses both learning and teaching and is thus "the means by which social and continuity are attained Socialization is strongly connected to Humans need social experiences to learn their culture and to survive. Socialization essentially represents the whole process of learning throughout the life course and is a central influence on the behavior, beliefs, and actions of adults as well as of children.

Socialization may lead to desirable outcomes sometimes labeled as regards the society where it occurs. Individual views are influenced by the society's and usually tend toward what that society finds acceptable or "normal". Socialization provides only a partial explanation for human beliefs and behaviors, maintaining that are not scientific research provides evidence that people are shaped by both social influences and

Lecture: 12

Multiculturalism and its implications

Topic 43

Assimilation

Assimilation describes the process by which a minority individual or group gives up its own identity by taking on the characteristics of the dominant culture. In the United States, which has a history of welcoming and absorbing immigrants from different lands, assimilation has been a function of immigration. Most Americans have immigrant ancestors. In relatively recent history, between 1890 and 1920, the United States became home to around 24 million immigrants. In the decades since then, further waves of immigrants have come to these shores and have eventually been absorbed into American culture, sometimes after facing extended periods of prejudice and discrimination. Assimilation may lead to the loss of the minority group's cultural identity as they become absorbed into the dominant culture, but assimilation has minimal to no impact on the majority group's cultural identity. Some groups may keep only symbolic gestures of their original ethnicity. For instance, many Irish Americans may celebrate Saint Patrick's Day, many Hindu Americans enjoy a Diwali festival, and many Mexican Americans may celebrate Cinco de Mayo (a May 5th commemoration of Mexican independence and heritage). However, for the rest of the year, other aspects of their originating culture may be forgotten. Assimilation is antithetical to the "salad bowl" created by pluralism; rather than maintaining their own cultural flavor, subordinate cultures give up their own traditions in order to conform to their new environment.

Topic 44

Acculturation

Acculturation is a process of social, psychological, and cultural change that stems from the balancing of two cultures while adapting to the prevailing culture of the society. Acculturation is a process in which an individual adopts, acquires and adjusts to a new cultural environment as a result of being placed into a new culture, or when another culture is brought to you. Individuals of a differing culture try to incorporate themselves into the new more prevalent culture by

participating in aspects of the more prevalent culture, such as their traditions, but still hold onto their original cultural values and traditions. The effects of acculturation can be seen at multiple levels in both the devotee of the prevailing culture and those who are assimilating into the culture.

At this group level, acculturation often results in changes to culture, religious practices, health care, and other social institutions. There are also significant ramifications on the food, clothing, and language of those becoming introduced to the overarching culture.

At the individual level, the process of acculturation refers to the socialization process by which foreign-born individuals blend the values, customs, norms, cultural attitudes, and behaviors of the overarching host culture. This process has been linked to changes in daily behavior, as well as numerous changes in psychological and physical well-being. As enculturation is used to describe the process of first-culture learning, acculturation can be thought of as second-culture learning.

Under normal circumstances that are seen commonly in today's society, the process of acculturation normally occurs over a large span of time throughout a few generations. Physical force can be seen in some instances of acculturation, which can cause it to occur more rapidly, but it is not a main component of the process. More commonly, the process occurs through social pressure or constant exposure to the more prevalent host culture.

Topic 45

Diffusion and dissonance

It is very common for sub-cultural and main stream cultural groups to co-exists. Often their cultural traits and traditions spread back and forth between one another. Cultural Diffusion is when certain aspects of one culture are spread to another culture. An example in the US is the consumption of

salsa. According to Wolfe and Fernand (2000), salsa was rarely consumed in the US, but in the mid 1990's salsa consumption surpassed ketchup consumption and remains in the lead today with over $1 billion in annual sales. Salsa is a food traditional to the Spanish and Portuguese speaking nations of the Americas. Its move northward coincided with shifts in immigration patterns including more Mexican, Central, and South American immigrants to the US. Interestingly ketchup is still consumed as much as it was in the past. Salsa was added to the American diet, rather than adopted as a replacement to ketchup. Food is only one area where cultural diffusion can be readily observed. Clothing, music, television shows, movies, cars, technologies and many other aspects of cultures spread throughout the world today, diffusing cultures to a great extent. Cultural Leveling is the process in which cultures of the world become similar. As yet, we do not have a world-wide mainstream culture; however, there are those who've argued that oil is one aspect of our daily lives that is leveled throughout much of the world

In sociology and cultural studies, cultural dissonance is a sense of discord, disharmony, confusion, or conflict experienced by people in the midst of change in their cultural environment. The changes are often unexpected, unexplained or not understandable due to various types of cultural dynamics.

Studies into cultural dissonance take on a wide socio-cultural scope of analysis that inquire into economics, politics, values, learning styles, cultural factors, such as language, tradition, ethnicity, cultural heritage, cultural history, educational formats, classroom design, and even socio-cultural issues such as ethnocentrism, racism and their respective historical legacies in the cultures.

Topic 46

Multiculturalism

The term multiculturalism has a range of meanings within the contexts of sociology, political philosophy, and colloquial use. In sociology and in everyday usage, it is a synonym for "ethnic pluralism", with the two terms often used interchangeably, and for cultural pluralism in which various ethnic groups collaborate and enter into a dialogue with one another without having to sacrifice their particular identities. It can describe a mixed ethnic community area where multiple cultural traditions exist or a single country within which they do (such as Switzerland, Belgium or Russia). Groups associated with an indigenous, aboriginal or autochthonous ethnic group and settler-descended ethnic groups are often the focus.

In reference to sociology, multiculturalism is the end-state of either a natural or artificial process (for example: legally-controlled immigration) and occurs on either a large national scale or on a smaller scale within a nation's communities. On a smaller scale this can occur artificially when a jurisdiction is established or expanded by amalgamating areas with two or more different cultures (e.g. French Canada and English Canada). On a large scale, it can occur as a result of either legal or illegal migration to and from different jurisdictions around the world.

In reference to political science, multiculturalism can be defined as a state's capacity to effectively and efficiently deal with cultural plurality within its sovereign borders. Multiculturalism as a political philosophy involves ideologies and policies which vary widely. It has been described as a "salad bowl" and as a "cultural mosaic in contrast to a "melting pot".

Lecture: 13

Peace Education: Teaching Children the Skills to Resolve Conflicts

Topic: 49. Why Peace Education? Teaching Children the Skills to Resolve Conflicts

Positive Attitudes

Peace education is the kind of method which helps in obtaining wisdom, experience. It helps to develop attitudes, skills and behavior to live in oneness with each other's. This concept basically apprehended from philosophical ideals. Peace Education helps to nurture the values of nonviolence, love, trust worthiness, impartiality, we feeling, respect and devoutness towards humankind and all living organisms on our planet. It is a performance which leads towards peaceful socialization. By this kind of practice men could enshrined values. There are various declarations of United Nations on the relevance of peace education. Ban Ki Moon, U.N. Secretary General, has dedicated The International Day of Peace was first celebrated in 2013 by Ban Ki Moon, the sectary general of United Nations. According to him peace education in an endeavor to come in to the light again the minds of the peoples and allocating funds to find the ways to cultivate the practices of peace. Koichiro Matsuura, the immediate past Director-General of UNESCO, defined as the "fundamental importance to the mission of UNESCO and the United Nations".

Topic: 50. Communication and Negotiation

Communicating effectively is crucial for an effective business **negotiation**. Your goal is to make yourself and your position understood, and this relies on your **communication** ability. In a **negotiation**, there is no room for **communication** breakdowns and misunderstandings.

Communication plays an important role in negotiation.

2.1. What is negotiation?

Negotiation is nothing but a discussion among individuals to reach to an alternative which would satisfy all.

How is an effective discussion possible? Only through communication.

2.2. An effective communication is directly proportional to an effective negotiation.

The better the communication is the better the negotiation would be. Discussion does not mean fighting and shouting, instead it is simply the exchange of one's ideas, thoughts and opinions with each other. One needs to have excellent communication skills for a healthy and an effective discussion. Communication is an art and one should master it to excel in all kinds of negotiation. The other person will never come to know about your thoughts and ideas unless and until you share it with them. One can't see your grey matter. Lot depends on how you speak.

One should very sensibly convert his thoughts into a speech by carefully selecting relevant words. Be careful about your words. One should never use derogatory sentences or fowl words in his speech. Understand the power of speech. The way you present your thought matters a lot. Don't speak just for the sake of it. Haphazard thoughts and abstract ideas only lead to confusions. One must speak clearly what he expects from the other person. Don't eat your words and try to confuse others. Your thoughts and ideas must be expressed clearly for others to understand well. **Be crisp and precise in your speech**.

Ben wanted to purchase a pen for himself. He was not very convinced with the price the shopkeeper quoted and found it a little too high. Ben wanted him to reduce the price of the pen. Unfortunately, Ben lagged good communication skills and whatever he spoke only confused the shopkeeper. He kept on cribbing and pleading which further irritated the shopkeeper and he refused to further entertain Ben.

What was Ben's mistake?

Ben wanted to buy the pen, but his only mistake was he did not speak in a convincing manner. Had he spoken clearly and explained the shopkeeper as to why the price of the pen should be a litter lesser than what he had quoted, the pen would have been his. In this case the negotiation was not a fruitful one as nobody gained anything.

Effective communication is important in salary negotiations as well.

Express your salary expectations clearly in front of the recruiter. If you want your salary to be more than what he has quoted, mention it very clearly but politely. Try your level best to convince the recruiter why you need salary hike and probably how will you justify it once you join the organization. There is nothing to be afraid of; even the organization needs talented people like you. Learn to be a bit tactful. Your style, your accent, your pronunciations are also important. Do lay emphasis on words that you feel are important. If you are not satisfied with the offer, it's better to decline it but in a very polite way. Remember we all belong to good families and must behave like educated and cultured people.

An effective communication is of prime importance in business deals also. The terms and conditions must be mentioned clearly for better transparency and don't try to hide anything from the second party. It's always better to depend on written modes of communication like emails, letters, documents or agreements for better reliability. Use corporate terminologies, professional jargons and never use irrelevant statements in your speech. It is considered highly unprofessional.

One should also be very careful with his pitch and tone. Always remember battles can be won just by being decent and polite. Don't be rude and harsh on others. Speak slowly and convincingly in a tone audible to one and all. Do not speak either too fast or too slow. The other person must

understand your speech. Never be loud or shout on anyone. It's unethical to speak ill or insult anyone just for a deal. Relationships are more important and must be valued.

Nonverbal communication also plays an important role in an effective negotiation. Our facial expressions hand movements, posture matter a lot and must never be ignored.

Please go through the below example for a better clarity:

If you come across a person who is nervous, sweating unnecessarily and fiddling with things around, will you entertain such a person?

Obviously, No.

The same happens with the other party also. If they come to know that you are nervous, they would definitely try to sit on your head and the deal would never be in your favor. **Don't express your helplessness to anyone. You might need the job badly but don't let the other person know about it**. Be very confident and show a positive attitude. Whenever you are going for a negotiation, don't forget to carry your smile. Flash your million-dollar smile but don't laugh unnecessarily or crack silly jokes in between. Exchange greetings and compliments to break the ice Sit straight, don't lean on the chair and do make an eye contact with the person sitting on the other side of the table. It shows your confidence and strong will power. Don't play with things kept on the table. Concentrate on the negotiation and don't look here and there.

Negotiation is no rocket science. You just have to be very clear about your expectations and interests; express the same clearly, convince the other party and come to something acceptable to both. Don't speak anything which might hurt the other person. **Be very polite in your speech, involve everyone in the discussion and decide in the favor of all the participants for an effective negotiation**.

7. What is the significance of "communication" in a negotiation?

Negotiation is essentially an exercise in communication. The underlying objective is to use communication techniques to convince, persuade, or alter the perceptions of another. The three most significant elements of communication include verbal communications, non-verbal communications, and the medium of communication.

• Verbal Communication – The effectiveness of verbal communication in a negotiation depends upon the ability of the speaker to encode thoughts properly and on the ability of the listener to understand and decode the intended message(s). Language operates at two levels: the logical level (for proposals or offers) and the pragmatic level (semantics, syntax, and style). We often focus upon logical attributes instead of semantic or style attributes. In any event, the meaning conveyed by a proposition or statement is a combination of one logical, surface message and several pragmatic messages. A negotiator's word choice, tone, tempo, and inflections may not only signal a position but also shape and predict it.

Topic: 51 Skills – Empathy, Cooperation, Anger Management, and Problem Solving

8. Teaching the skills of peace

Claudia Miller

More elementary and preschools are going beyond "conflict resolution" to teach positive social behavior.

Susan Hopkins remembers back 30 years ago, when she was a teacher of four-year-old. Two boys were arguing over a toy. Just before it escalated into a fist fight, she descended on them with the popular refrain, "use your words!"

–Immediately, one of the boys turned to the other and said, "you poo-poo head, you stink!"" Hopkins says. "He turned to me with a big smile on his face, he was so proud of himself. It really struck me at that point that we weren't giving children the tools they needed to get along with each other."

Today Hopkins, a Nevada City resident, is an organizer of Peace Camps, run by the Women's International League for Peace and Freedom. Peace Camps teach preschool and elementary-school children positive attitudes and skills–empathy, cooperation, anger-management, and problem-solving, along with awareness of the environment and of international peace.

Recently more educators have realized the importance of going beyond "conflict resolution" to teach positive social skills–and the importance of starting younger. Two well-known programs, Second Step and Peace Builders, have developed preschool as well as school-age curricula, and recently they–vet added resources for families.

"These social and emotional skills are just as important for children to learn as academic skills," says Joan Duffel, Second Step director of communication. "It's important for parents to understand that there are ways they can help at home." Educators and parents offer some key pointers.

Model the kind of behavior you'd like to see in your children.

When teaching children social and emotional skills, "do as I say, not as I do," just doesn't cut it. Parents can teach their children caring behavior by helping an elderly relative, volunteering in schools, or being kind to a new neighbor. Julie Carrara of Nevada City says she regularly takes along her four boys when she volunteers at the local food bank "because I want them to know that it's important to me and our family."

Praise positive social behavior right away.

At Estrella Family Services in San Jose, teachers write "praise notes" to children who treat others with kindness, share toys, or solve conflicts peacefully. That's one strategy of Peace Builders, the violence-prevention program used at Estrella. Irene Burgos, a teacher of four- and five-year-old, says, "When I notice a child helping another child who's fallen on the playground, it's important to let them know that what they–vet done is special."

Think of conflict as an opportunity to listen and learn, rather than a negative.

Millie Livingston of Auburn, one of the creators of Peace Camps, helped develop a "peace table," a neutral place where children can meet to discuss conflicts with a mediator. "At home, parents can designate a special area where disputes are resolved. Children quickly realize that by going to this place, they will have a chance to speak and be heard and then figure out a way to solve the conflict," she says.

To build empathy, teach children words to express their feelings.

Children have the capacity to see when another person is hurting, says Marie Della Haye, who created a half-day course for parents, "Raising Peaceful Children," at the Mt. Diablo Peace Center in Walnut Creek. "As parents, it's important to give children the vocabulary to understand their own and others" feelings, no matter how unpleasant they may be."

When parents insist that children say, "I'm sorry" when they're not, "we're telling them to express a feeling that they really don't feel," says Della Haye. Instead, parents could have the child figure out what would make the hurt child feel better. For example, a child who has hit another child could get a band-aid, give the injured child a hug, or read him a book. "Young children aren't always ready to be entirely empathetic, but they can identify feelings with help from parents," Della Haye says.

Think about what kind of adult you'd like to see your child become.

In the midst of the hustle and bustle of daily life, says peace educator Susan Hopkins, parents need to look for opportunities to "intentionally talk to their children about their values. That means parents have to give some thought ahead of time to what they believe in and then seek out those "teachable moments."" For example, Joanna Lamour, a teacher at the Daisy Child Development Center in Oakland, told a group of preschoolers who were trying to capture and squish bugs during playtime, "We don't hurt bugs when they're outside because that's their home."

–Lecturing is pretty useless for young children," Hopkins adds, "but if parents have their values clearly in place, they can articulate them when the moment arises."

Lesson No. 14

Weathering

Topic – 52:

Geomorphological processes are natural mechanisms of weathering, erosion and deposition that result in the modification of the landforms at the earth's surface. Weathering is the breaking down of rocks, soil and minerals as well as artificial materials through contact with the Earth's atmosphere, biota and water. In the process of weathering the displacement of disintegrated particles are not done.

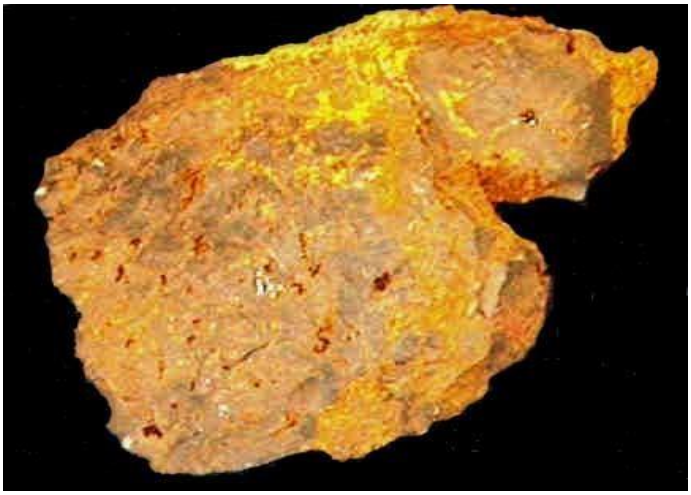
When rocks are exposed with atmosphere they react in different ways. The mechanism of weathering is discussed under the umbrella of its controlling factors. It is categorized in to three types' i.e. physical weathering, chemical weathering and Biological weathering. All of these are explained below:

Physical Weathering is the breaking down of rocks without substantial change to them chemical structure is known as physical or mechanical weathering. A big rock is disintegrated into small fragments. Mostly, mechanical weathering is occurred near the surface but in certain cases it may occur at considerable depth. Different processes are involved in the mechanism of physical or mechanical weathering.

Frost wedging is the most important single agent of mechanical weathering is the freeze-thaw action of water. At the time of rainfall or the flow of running water, water is percolated to the interior of rocks through the small cracks on the rock surface. As Temperature reduced that percolated water began to freeze and exerted pressure and caused disintegration of rock. When water freezes, it expands by almost 10 percent.

Topic – 53: Chemical weathering:

Chemical Weathering is the decomposition of rocks and minerals. In warm and wet climates, chemical weathering occurs far more rapidly than in arid areas. Almost all the minerals are exposed to chemical weathering when exposed to atmospheric and biotic agents. The following is the limestone covered area.



Here are some examples of chemical processes i.e.: oxidation, hydration, and hydrolysis. Oxidation is the reaction of rock minerals with oxygen, thus changing the mineral composition of the rock. When minerals in rock oxidize, they become less resistant to weathering. Iron, a commonly known mineral, becomes red or rust colored when oxidized. The following is the example.

Hydrolysis is a chemical reaction of water with another substance to produce a new compound which is relatively softer and weaker than the parent material. Igneous rocks are more

The burning of the fossil fuels and vehicle emissions creates atmospheric pollution. So, the Nitrogen dioxide and Sulphur dioxide are released and compounds react with in atmosphere to form acid rain.

Topic – 79: Biological weathering:

Living organisms contribute to the weathering process in many ways. Organisms, especially micro-organisms, play an important role in the weathering of rocks. Human, animals and plants are responsible for breakdown of rock into small fragments. Growing **plant roots** can exert stress or pressure on rock. Although the process is physical, the pressure is exerted by a biological process (*i.e.*, growing roots). Biological processes can also

produce chemical weathering, for example where plant roots or microorganisms produce organic acids which help to dissolve minerals.

Microbial activity breaks down rock minerals by altering the rock's chemical composition, thus making it more susceptible to weathering. One example of microbial activity is lichen; lichen is fungi and algae, living together in a symbiotic relationship. Fungi release chemicals that break down rock minerals; the minerals thus released from rock are consumed by the algae. As this process continues, holes and gaps continue to develop on the rock, exposing the rock further to physical and chemical weathering.

The surface or bared rocks are also disintegrated into small fragments or particles due to the grazing of animals or the walk of animals over the surface. But this phenomenon is activated at the rocks which are already mechanically weathered.

Lesson No. 15

Whether and climate

Topic - 56:

Weather is the day to day condition of the atmosphere at a particular place while climate is average of weather condition at a particular place over a long period of time. Four elements defining the weather and climate i.e. temperature, rainfall, precipitation, wind circulation etc. but, infect there is a large difference between both of these terms. The term weather is used to define the condition of weather variable for short period of time i.e. daily, weekly or monthly while climate is used to define the weather condition of a specific region for long period of time i.e. about thirty years or more.

Weather: For example, in Lahore, the weather is warm in the afternoon. But later in the day, when there are clouds blocking Sun's rays, the weather would become cooler.

Climate: For example, although the weather in Pakistan may be cool and dry during winter season, Pakistan's climate is hot and dry most of the time.

Meteorology studies weather, Climatology studies climate. Both are Atmospheric sciences.

Topic – 57: Weather elements:

There are several elements that make up the weather and climate of a place. The major of these elements are five temperature, pressure, wind, humidity, and precipitation. Analysis of these weather elements can provide the basis for forecasting weather on short time, medium and long time so here we can define the climate of a place.

Temperature is a very important factor in determining the weather, because it influences or controls other elements of the weather. How hot or cold the atmosphere is.

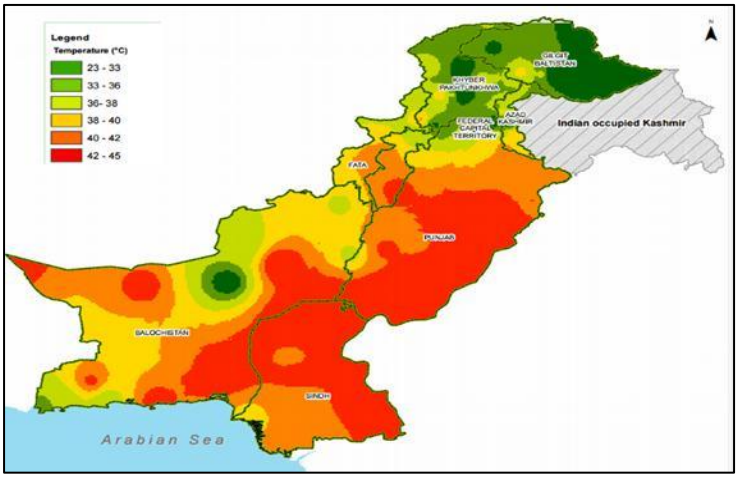
Humidity is the amount of water vapor present in the atmosphere. During day humidity is lower than in evening. In monsoon season the humidity level is higher than other seasons in Lahore.

Precipitation is the product of a rapid condensation process (if this process is slow, it only causes cloudy skies). It may include snow, hail, sleet, drizzle, fog, mist and rain.

Atmospheric pressure (or air pressure) is the weight of air resting on the earth's surface. Pressure is shown on a weather map, with lines called isobars.

Wind is the movement of air masses, on the Earth's surface. These are specially called permanent, seasonal and local winds.

Topic – 58: Factors effecting climate:



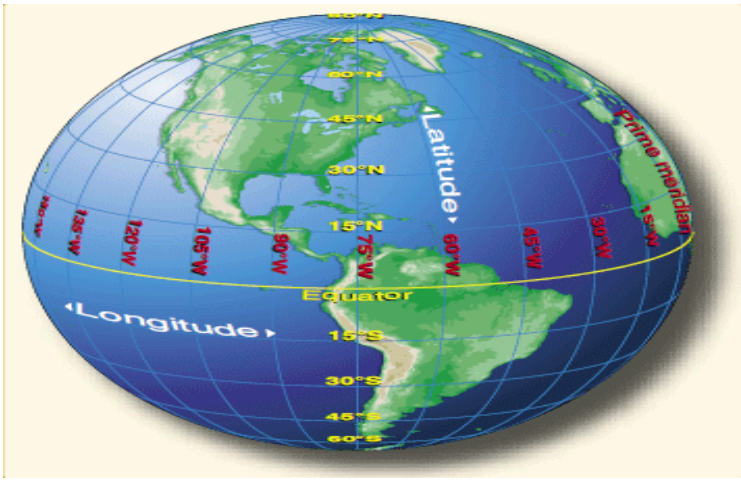
There are many different factors that affect climate around the world. Due to these factors we are experiencing different climates in different parts of the Earth. The most important natural factors are:

1. Distance from the sea
2. Ocean currents
3. Direction of prevailing winds
4. Shape of the land or 'topography'
5. Distance from the equator

It is now widely accepted that human activity is also affecting climate, for example the urban areas are act like heat island or hotter than open spaces.

One of the factors affecting the climate is wind. When wind is coming from the Mediterranean region it is moist and when wind is close to the equator it is warm. The oceanic winds have the capacity to take the moderating influence of the sea to coastal areas as is reflected in cool summers and mild winters. This effect is pronounced only on the windward side. The leeward side or the interiors do not get the moderating effect of the sea, and therefore experience extremes of temperature.

The distance from the equator affects the climate of a place. At the poles, energy from the sun reaches the Earth's surface at lower angles and passes through a thicker layer of atmosphere than at the equator. This means the climate is cooler further from the Equator. The poles also experience the greatest difference between summer and winter day lengths: in the summer there is a period when the sun does not set at the poles; conversely the poles also experience a period of total darkness during winter. In contrast, day length varies little at the equator.



The factors above affect the climate naturally. However, we cannot forget the influence of humans on our climate. Early on in human history our effect on the climate would have been quite small. However, as populations increased and trees were cut down in large numbers, so our influence on the climate increased. Trees take in carbon dioxide and produce oxygen. A reduction in trees will therefore have increased the amount of carbon dioxide in the atmosphere.

The Industrial Revolution, starting at the end of the 19th Century, has had a huge effect on climate. The invention of the motor engine and the increased burning of fossil fuels have increased the amount of carbon dioxide (a greenhouse gas - more on that later) in

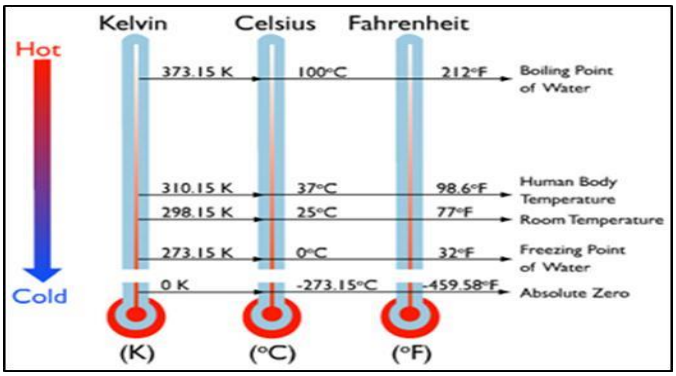
the atmosphere. The number of trees being cut down has also increased, reducing the amount of carbon dioxide that is taken up by forests.

The greenhouse gases. They include carbon dioxide, water vapor and Ozone. They occur both naturally and due to human activities. A greenhouse gas is one which traps heat radiated from the surface of the earth.

Lesson No.16

Temperature

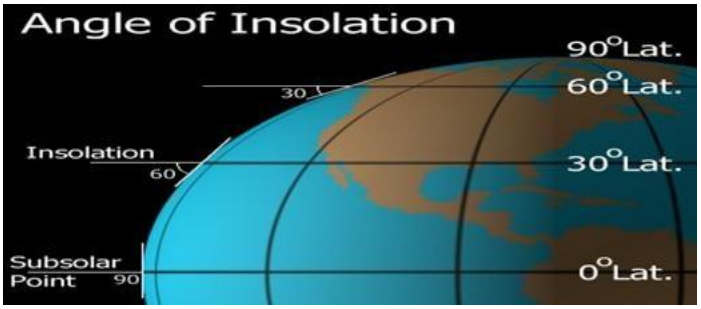
Topic - 59:



Temperature is a physical property of a system that underlies the common notions of hot and cold. Temperature is the degree of hotness or coolness of an object. But the Atmospheric temperature is a measure of temperature at different levels of the Earth's atmosphere. It is governed by many factors, including incoming solar radiation, humidity and altitude. Several scales and units exist for measuring temperature, the most common being Celsius(C; formerly called centigrade), Fahrenheit (F), and especially in science Kelvin (K). Temperature is important in all fields of natural science, including physics, geography, geology, chemistry, atmospheric sciences, medicine, and biology—as well as most aspects of daily life.

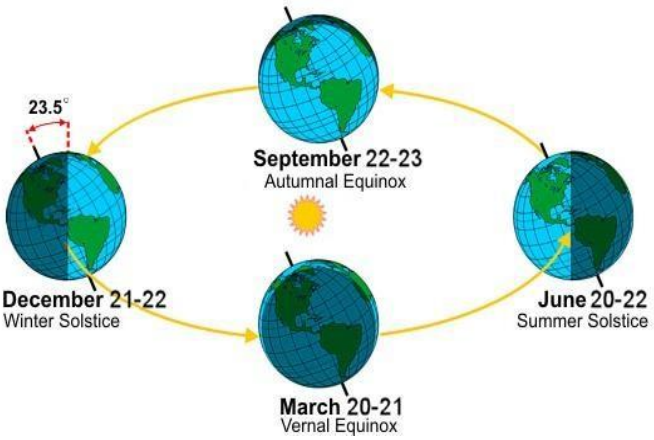
Topic - 60: Horizontal distribution of the temperature:

The earth's surface is covered by different types of the environment, may be vegetal or mountainous, so the horizontal distribution of temperature varies according to the surface condition. The angle of incidence or the angle which the sun's rays make with the earth's surface, determines the amount of solar radiation which a particular place on the earth will receive. A smaller angle means the same amount of radiation will have to serve a larger area on the earth and the intensity will be less concentrated. A larger angle means the sun's rays will be nearly vertical over the place and the given amount will have to serve a smaller area. As a result, the radiation received will be more concentrated and the intensity will be greater.

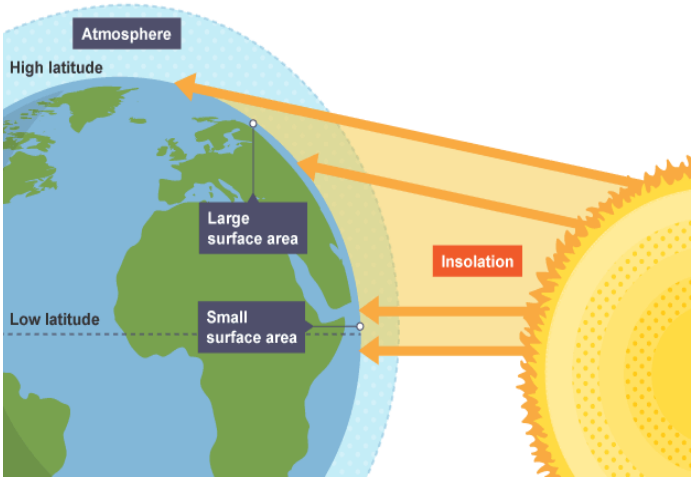


The amount of solar radiation received obviously depends on the length of time that the sun shines over a particular place. At the equator, where the duration of sunshine is 12 hours daily throughout the year, the amount of radiation received is

more compared to the other places on the earth. At winter solstice (22 December), the southern hemisphere receives more sunshine as it is summer there, while at summer solstice (21 June), the northern hemisphere receives more sunshine as it is summer time there.



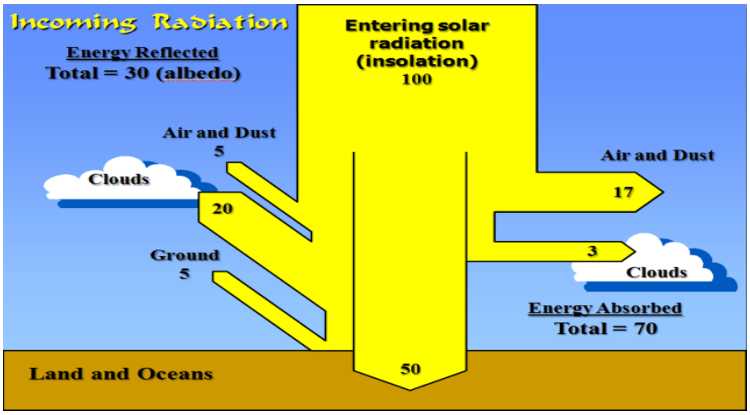
The temperature of the air resting over a landmass differs markedly from that of the air resting over an expanse of water in the same latitude: (I) Reflection is more by land than by sea. Especially snow-covered areas reflect up to 70%-90% of insolation, (ii) Average penetration of insolation, and therefore heat, is more in water—up to 20 meters, than in land—where it is up to 1 meter only. Therefore, land cools more rapidly, (iii) The specific heat of water is 2.5 times higher than landmass, therefore water takes longer to get heated up and to cool down, (iv) The currents, tides and drifts exist only in oceans which carry the heat to lower layers. This delays the process of heating and cooling.



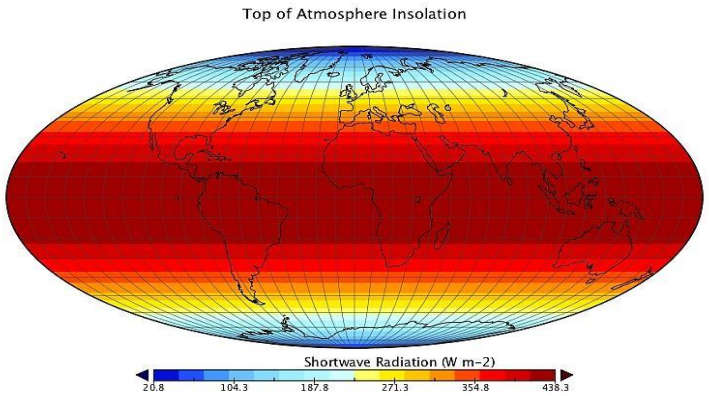
Ocean currents influence the temperature of adjacent land areas considerably. Warm currents raise the temperatures of the coastal areas, whereas cold currents lower them. For instance, in higher latitudes, the eastern coasts have much lower temperatures than the western coasts due to the influence of cold currents. Similarly, the North Atlantic Drift, an extension of the warm Gulf Stream, keeps winter temperatures in Great Britain and much of Western Europe warmer than one would expect for their latitudes. Because of the prevailing westerly winds, the moderating effects of the ocean currents are carried far in land.

Topic - 61: Vertical distribution of the temperature:

The temperature decreases with increase in altitude, that is 6.5 degree Celsius /1000 meters. This is called Environmental Temperature Lapse Rate (ETLR).

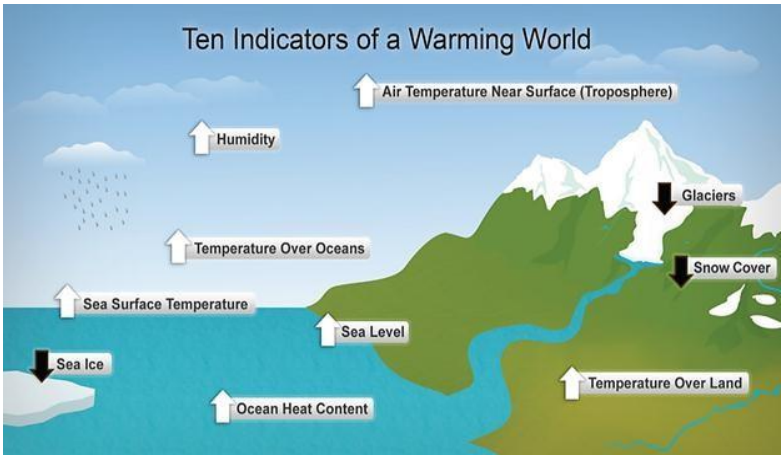


The troposphere is about 12 kilometers thick on average; it is thicker in summer than in winter. The troposphere over low latitude regions is usually thicker than over high latitude regions. The troposphere over the equator is about 18 kilometers thick, while its thickness in the regions nearest the two poles is only about eight to nine kilometers. The temperature in the troposphere usually decreases with height at the average lapse rate of 6.5 °C per kilometer. The air in the troposphere is more unstable and with strong convection. Almost all the water vapor in the atmosphere exists within this layer; therefore, common weather phenomena such as clouds, fog, rain, and snow, occur only in this layer and more often than not in its lower part.



Temperature inversion is a reversal of the normal behavior of temperature in the troposphere in which a layer of cool air at the surface is overlain by a layer of warmer air. But, under normal conditions air temperature usually decreases with height.

Topic - 62: Global warming and Green House effect:



The temperature of the earth is rising due to increase in Greenhouse gases in the atmosphere. The greenhouse effect is the process by which radiation from a planet's atmosphere warms the planet's surface to a temperature above what it would be in the absence of its atmosphere. If a planet's atmosphere contains radioactively active gases (i.e., greenhouse gases) the atmosphere radiates energy in all directions. Part of this radiation is directed towards the surface, warming it. The percentage of greenhouse gasses is outlined below:

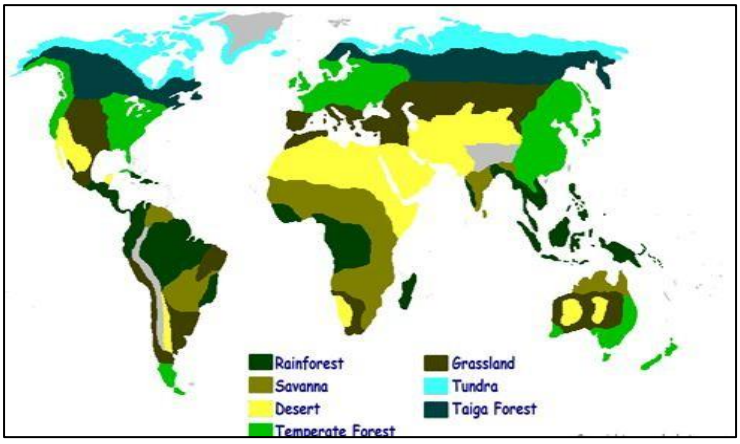
- water vapor, 36–70%
- carbon dioxide, 9–26%
- methane, 4–9%
- ozone, 3–7%

Lesson No. 28

Lesson 17

Effect of Weather on Landforms

Topic – 63:



Weather does, affect various landforms on the Earth. Blowing wind can shape rocks by erosion. Storms can change the shape of coastlines. In this way, weather can change the shape of landforms. More importantly, weather affects the biosphere -- the environment that allows life to exist. Changes in the weather can have an impact on what plants and animals can survive in a given place. Seventy-one percent of the Earth's surface is covered by water. "The Water Cycle" is fuels our weather and determines the various climates and biomes of the planet. Weather affects the inhabitants of Earth more than it affects the planet itself. Whole civilizations have sprung up and died because of the effects of the weather over the millennia.

Topic – 64: Effect of weather on human life:

Climate determines where, how, and why people live what they do. It determines their mode of dress, what type of house they live in, the food they eat, and even the length of their life span. Dry area is not suitable for cultivation. Following is the example of two different inhabitants. One of cause of global warming is deforestation. It is due to extension in agricultural practices. Normally, the carbon dioxide produced by human activities is absorbed by plants. Weather controls human settlements form on Earth. In areas where the weather makes the climate temperate, people have been able to settle, but places with severe weather are under less populated.

Lesson No. 18 **Lesson No. 28**

Biomes

Topic – 65:

A biome is a major community of plants and animals, classified according to its predominant vegetation and characterized by the organisms to that particular environment. A grouping of terrestrial ecosystems on a given continent that are similar in vegetation structure, physiography, features of the environment and characteristics of their animal communities. The most widely used systems of classifying biomes correspond to latitude (or temperature zoning) and humidity. Biodiversity generally increases with humidity and towards the equator. Major ecosystems that spread over a large portion of the earth and share similar abiotic and biotic factors are referred to as biomes.

Topic – 66: Classification of biomes:

A fundamental classification of biomes is based on:

1. Terrestrial biomes which includes grassland, tropical rainforest, temperate and tundra
2. Aquatic biomes (Freshwater, marine)

Climate is a major factor determining the distribution of terrestrial biomes. Among the important factors are:

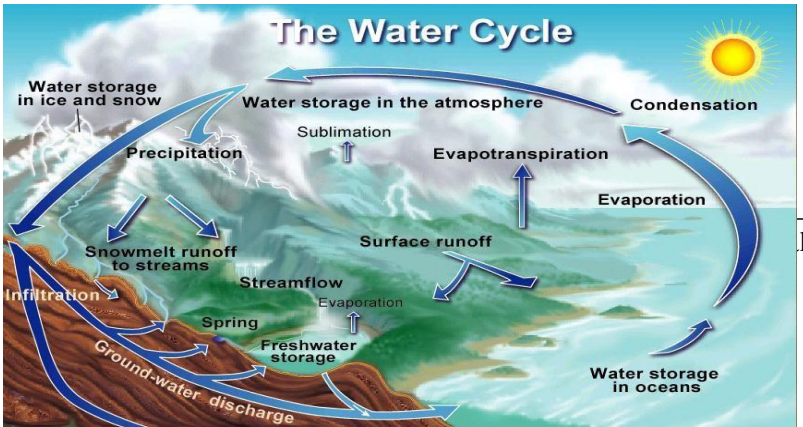
Latitude: Arctic, boreal, temperate, subtropical, and tropical.

Humidity: Humid, semi-humid, semi-arid, and arid

Elevation: Varying habitat types based on elevation.

Precipitations

Topic – 67:



In meteorology, "precipitation types" can include the forms of the precipitation which is falling

to the ground. There are four distinct ways that precipitation can occur.

Lesson No. 28

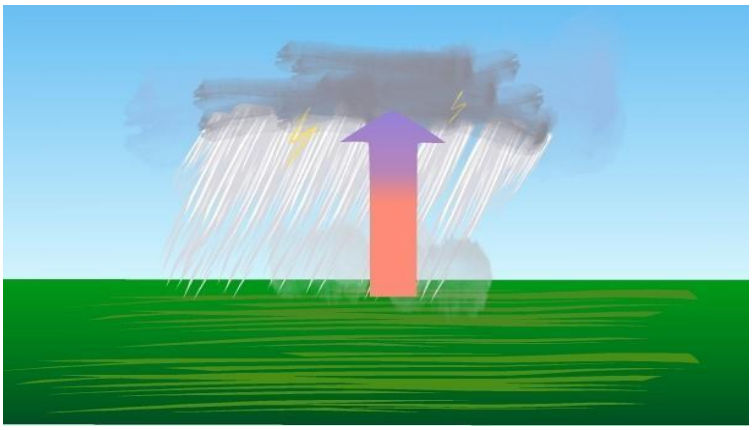
Precipitation occurs when a portion of the atmosphere becomes saturated with water vapor, so that the water condenses and "precipitates". Precipitations have three fates:

- It can evaporate.
- It can sink into the soil.
- It can run of the land.

In precipitations there are different surfaces. Air which is moving upward is chilled by the adiabatic process, which leads eventually, to precipitation. Air can move upward in four ways. Precipitation

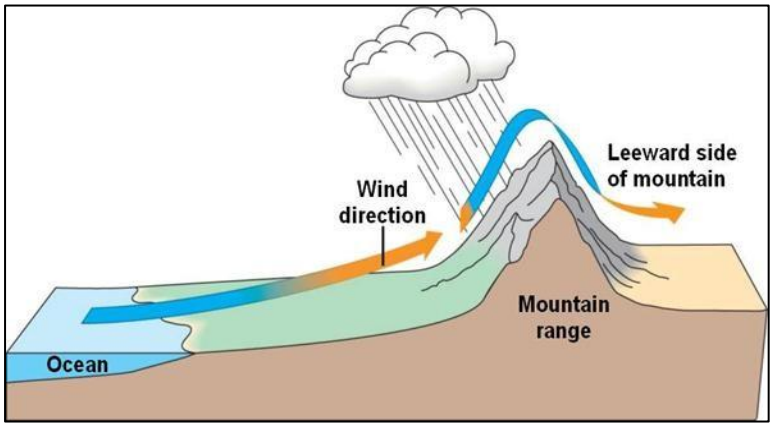
1. **Convective.**
2. **Orographic.**
3. **Frontal.**
4. **Convergent.**

Convective Lifting precipitation is generally more intense, and of shorter duration, than other forms precipitation. Convective clouds, e.g. cumulonimbus and cumulus.



Convection occurs when the surface with unstable or moist atmosphere, becomes heated more than its surroundings, leading to significant evaporation. Convective precipitation falls over an area for a relatively short time; convective clouds have limited horizontal extent. Most precipitation in the tropics appears to be convective; caused thunderstorms. Unstable air – Warm, moist, and heated by the surface- can produce abundant convective precipitation.

Topic – 68: Orographic Lifting Precipitation:

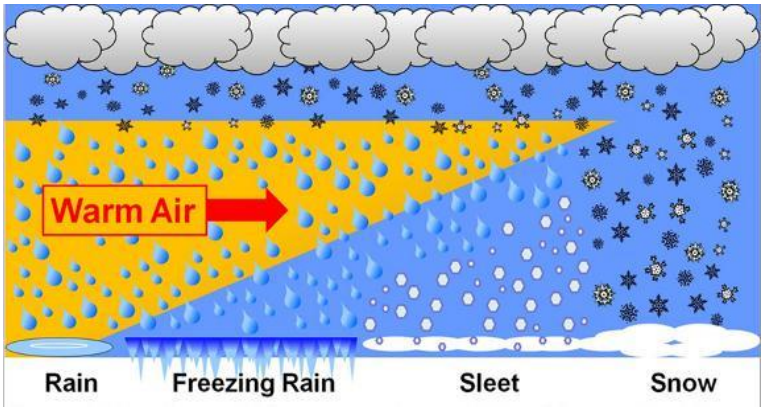


Orographic Lifting Precipitation occurs when moist air is forced upwards over rising terrain, such as a mountain. Orographic rainfall is caused when masses of air forced up the side of large mountain. The lift of the air results in adiabatic cooling, and ultimately condensation and precipitation. As the air rises and cools, orographic clouds form and serve as the source of the precipitation, most of which falls upwind of the mountain ridge. Some also falls a short distance downwind of the ridge and is sometimes called spillover. On the lee side of the mountain range, rainfall is usually low, and the area is said to be in a rain shadow. Very heavy precipitation typically occurs upwind of a prominent mountain range that is oriented across a prevailing wind from a warm ocean.

Topic – 70: Frontal lifting precipitation:

The air to be forced upward is through the movement of air masses and their interaction with one another. This process is occurring as spiral circulation of air. In Warm fronts, air pushes the cold air

mass. The warm air over rides the cooler air and moves upward. Warm fronts are followed by extended periods of light rain and drizzle.

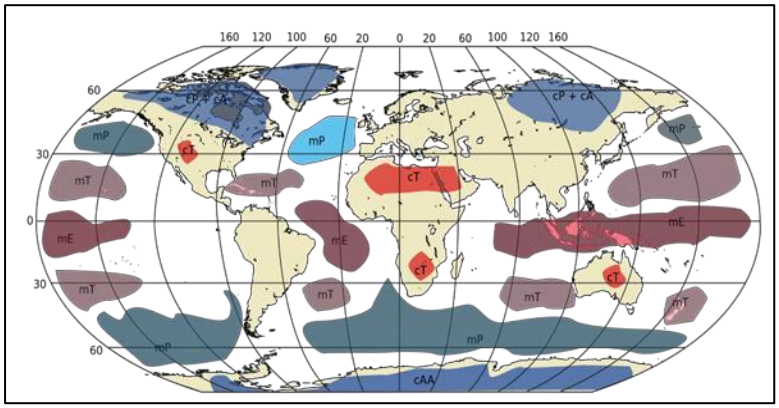


Cold fronts occur when a mass of cooler air capture a mass of warm air, since cold air is more dense than warm air. The rain duration is shorter, and more intense, than that which warm fronts. Convergent Lifting Precipitation is an atmospheric condition that exists when there is a horizontal net inflow of air into a region. When air converges along the earth's surface, it is forced to rise. Large scale convergence can lift a layer of air hundreds of kilometers across.

Lesson No. 19 **Lesson No. 28**

Air Masses

Topic – 71:



In meteorology, an air mass is a volume of air defined by its temperature and water vapor content. Air masses cover many hundreds or thousands of square kilometers. An air mass adopts the characteristics of the surface below them. They are classified according to latitude and their continental or maritime source regions. When masses of air with different density (moisture and temperature) meet, they represent the true characters of the source region.

Topic – 72:

Types of Air masses:

Air masses are categorized on the basis of their source of origin and are named on the basis of characteristics of local region where they are developed.

1. **Continental polar air mass:**

   Cold and dry air masses that originate over landmass are called continental polar mass and are indicated by CP. The air masses generated in Green land or at Antarctic region are the best examples of CP air mass.

2. **Maritime Polar air mass:**

   Cold and moist air masses that originate over water are called maritime polar mass and are presented by MP. The air mass of Arctic region, pacific and Atlantic Ocean are the best example. An air mass adopts the characteristics of the surface below them. They are classified according to latitude and their continental or maritime source regions.

3. **Continental tropical air mass:**

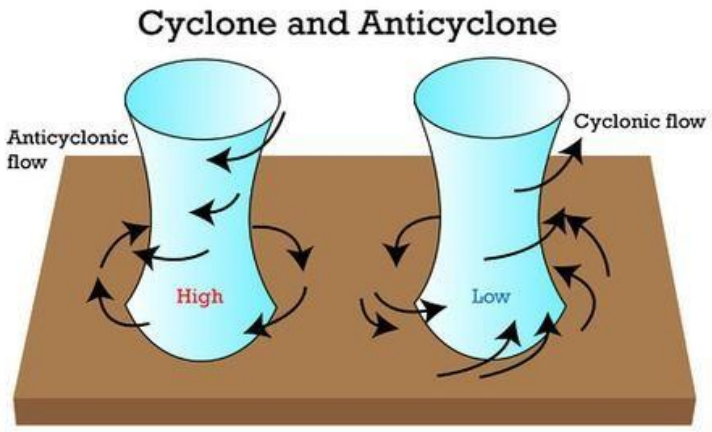
The Warm and dry air mass originating over land mass in tropics. These are represented by CT. for example, the air masses of North America and India.

4. **Maritime tropical air mass:**

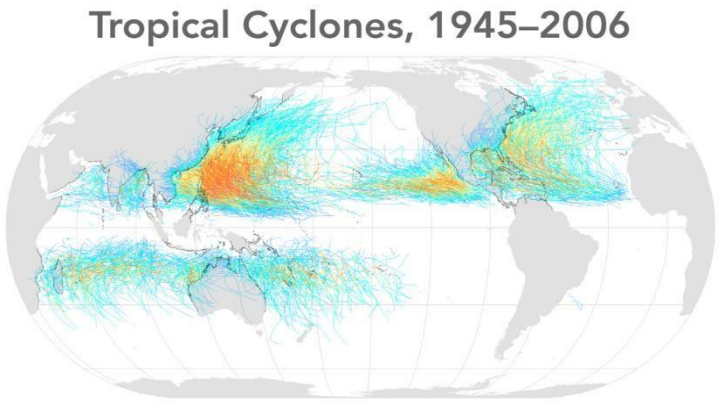
   The Warm and humid air mass originating over water in tropical regions and these are indicated by MT. for example, the air masses of Indian Ocean.

Topic – 73: Cyclones:

Air masses are set in motion by wind systems-typically masses of air moving in a spiral motion. Air can spiral inward and converge in a cyclone, or spiral outward and diverge in an anticyclone.

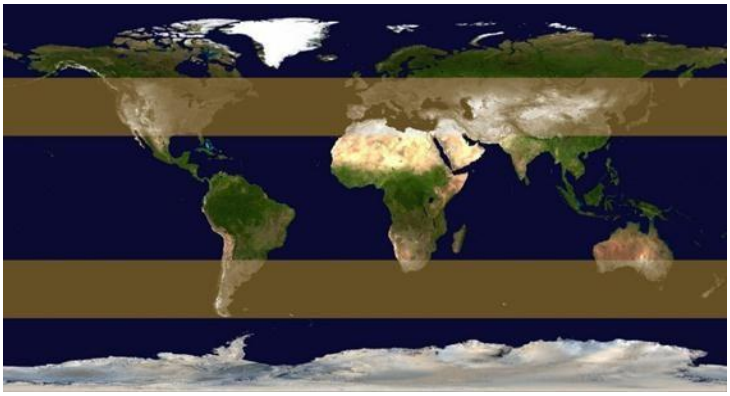


A cyclone is more or less circular area of low atmospheric pressure in which the wind blows counterclockwise in the northern hemisphere. A typical cyclone is a large whirling mass of air ranging 500-100 miles or more in diameter and with a velocity of 300miles/hr. It is the reverse process of cyclones. Air moves away from the center due to the high pressure in center than surrounding.

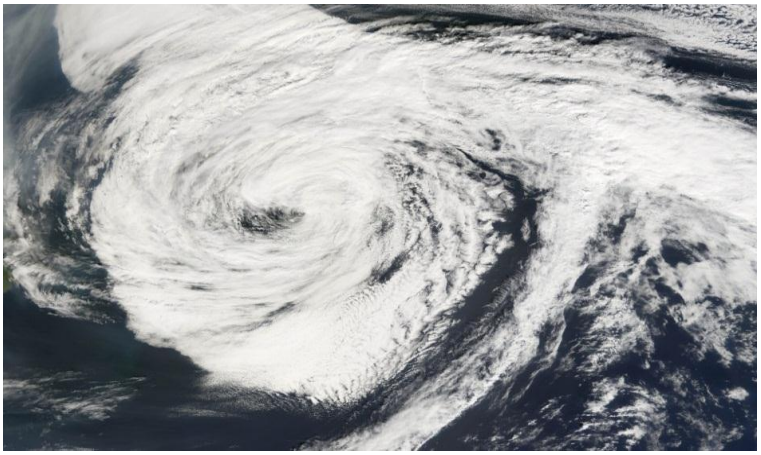


The most serious effect of tropical cyclone is coastal destruction by storm waves and very high tides. The high wind creates damaging surf and push water towards the coast.

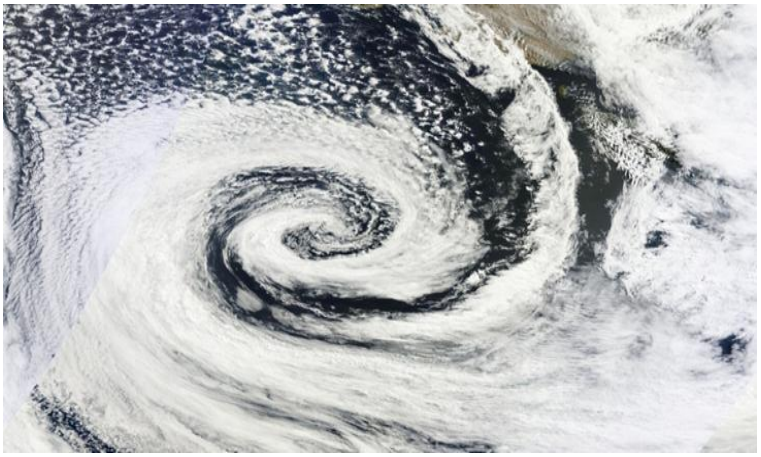
Topic – 74: Extra Tropical Cyclones: **Lesson No. 28**



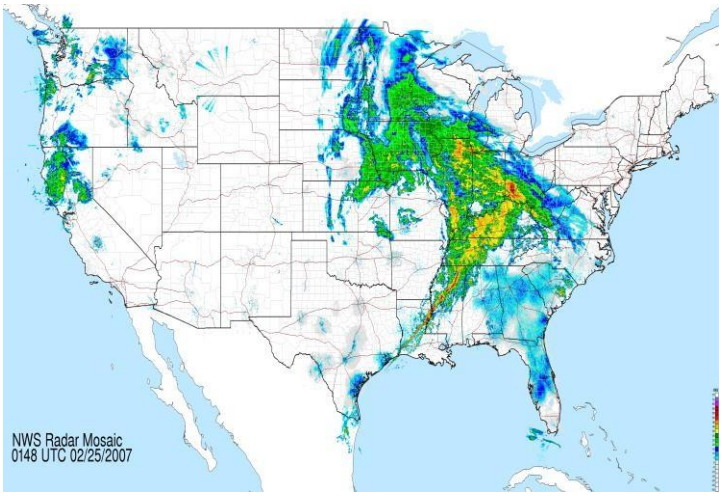
Extra tropical cyclones, mid-latitude cyclone or wave cyclones, phenomenon which drive the weather over much of the Earth. The cloudiness, mild showers to heavy gales and thunderstorm are main characters. Approximate areas of extra tropical cyclone formation worldwide.



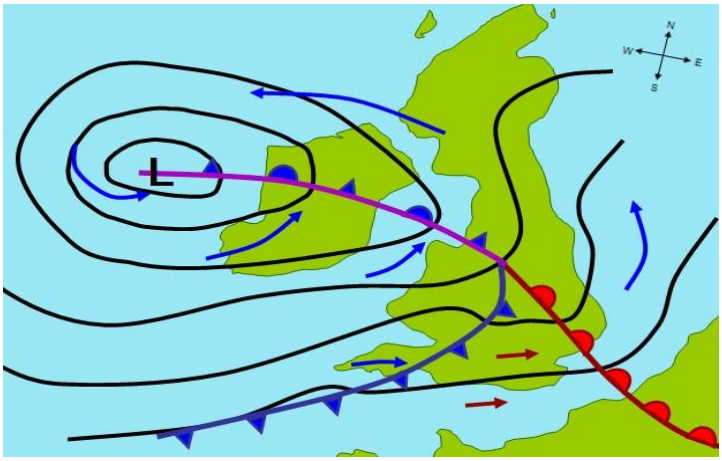
Hurricane Florence in the north Atlantic after completing its transition to an extra tropical cyclone from a hurricane.



A clockwise spinning Extra tropical cyclone off southern Australia, in the southern hemisphere.



A February 24, 2007 radar image of a large extra tropical cyclonic storm system at its peak over the central United States.



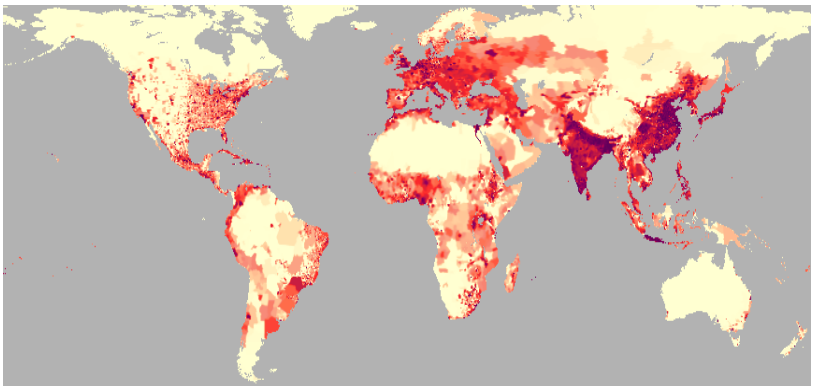
The blue and red arrows between isobars indicate the direction of the wind and its relative temperature, while the "L" symbol denotes the center of the "low". Note the occluded cold and warm frontal.

Lesson No. 20

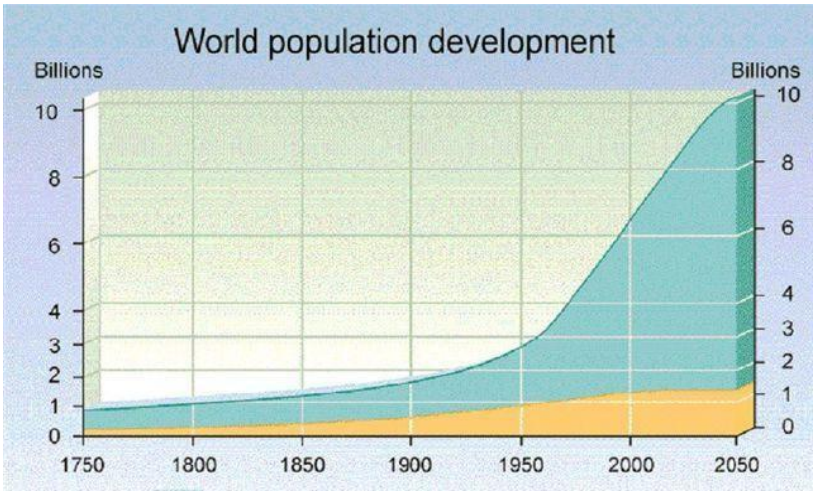
World's Population and Settlements

Topic – 75:

A population is a summation of all the organisms of the same group or species, which live in a particular geographical area, and have the capability of interbreeding. In ecology, the population of a certain species in a certain area is estimated using the Lincoln Index. Human population has grown very slowly for most of its existence on earth. Scientists currently estimate that modern human beings (Homo sapiens) evolved roughly 130,000 to 160,000 years ago. Many threats, from diseases to climate fluctuations, kept life expectancy short and death rates high in pre-industrial society, so it took until 1804 for the human population to reach one billion. From that point forward, however, population growth accelerated very quickly. The Earth's Human population at the beginning of the twentieth century stood at about 1.5 billion. By the end of that century, it exceeded 6 billion. The following figure shows the distribution of human population on the earth.

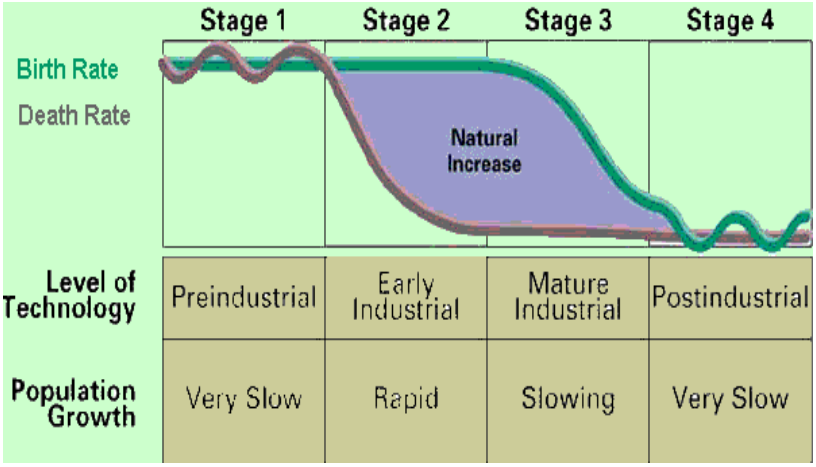


As of 2013, the human population is around 7 billion people, and it has taken many years for the population to grow to this size. Over this long amount of time, some periods have had slow growth while others have had more rapid growth. Due to these fluctuations and how large the human population has become; scientists have begun to investigate the growth of the human population.



Demography is the study of the size, density and distribution of the human population in a specific region with respect to spatial and temporal variation. This area of study takes into account birth rates, death rates, age distribution and any other factors that influence the size and growth of a population.

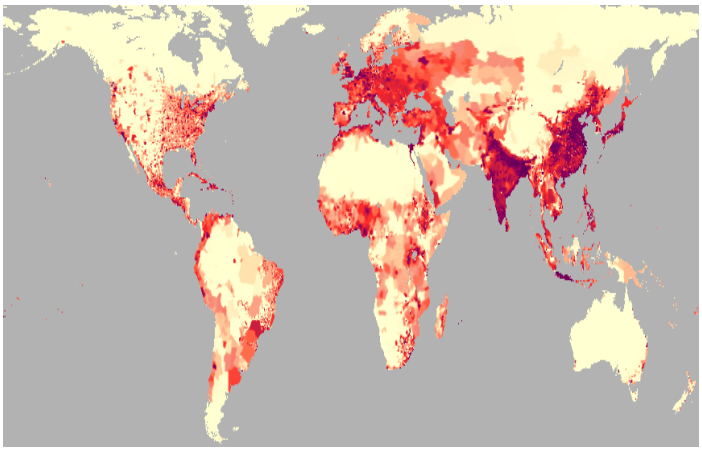
Demographers have identified three distinct periods of human population growth that help explained the history of how our population has changed.



The focus of the study of the population geography is on the spatial aspects of demography. Demographic issues and problems vary not only region to region but country to country.

Topic – 76: Human Population:

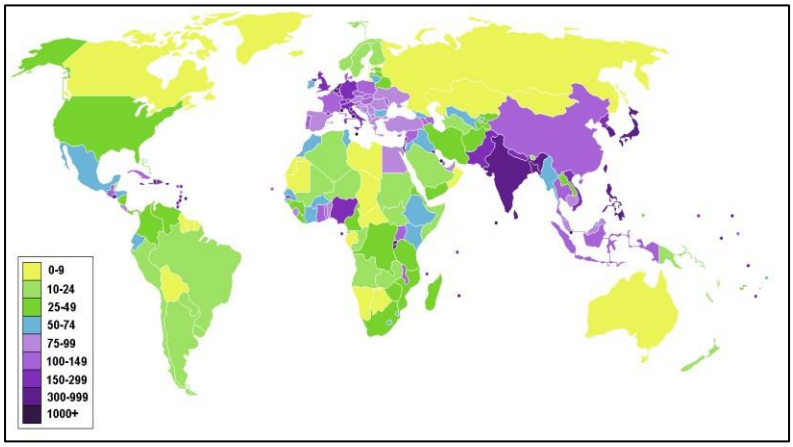
In northern hemisphere one-third of the total land is covered with water and on southern hemisphere two-third of the total is covered with water. That is the reason that population is more in the northern hemisphere. The world's largest concentrations of human population are all found on the same land mass: Eurasia. The overwhelming majority of the world's population inhabits the northern hemisphere.



The Japan, a small island country, has a population of over 127 million. Its population concentrated as China and India; farmlands are limited because of its mountainous character.

Topic – 78: Density of the population:

The density of population is the measurement of the number of people per square kilometer. Population density (people per sq. km) in South Asia was last measured at 350.18 in 2013. It varies from one region to other and mainly is controlled by the available natural resources and the personal skills and technological development of a region. The extent of urbanization and the population explosion can be investigated on the basis of density of population. In developed places most of the people are living in urban areas while in developing places most of the people are in rural areas.



Types of population density:

Population density can be categorized in to following classes:

Arithmetic Density:

It is the actual density of population. It is actual piece of land where human habitation exists. When one discusses about this kind of density then the water body is excluded.

Agriculture density:

It is type of physiological density. When we discuss about this type of density then it describes the available cultivable land of a country and is divided by the total number of farmers. The available

statistical data shows that India has agriculture density than all over the world. The barren land and the desert land are excluded when this type of density is calculated.

Economic Density:

In this type of density, all the economically fertile land is discussed. It includes all the type of productive land like, plain areas, water channel through which trade is possible and the mountainous areas are also discussed because these provide the essential minerals which play a significant role in the production of a country.

Physiological Density:

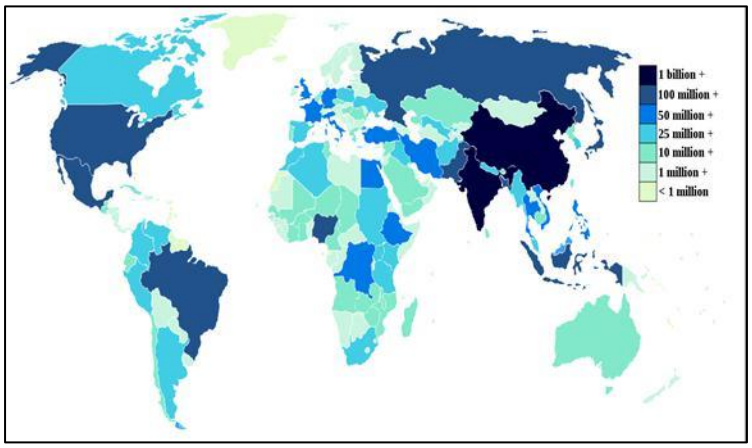
It is similar to the agricultural density but there is a little difference between both of these densities. When we discuss physiological density then all the arable land is discussed but in the context of agricultural density only the crop cultivated area is discussed.

Pakistan ranks number 6 in the list of countries by population. The population density in Pakistan is 233 people per Km2. 37% of the population is urban. The most densely populated areas of Pakistan are Punjab and Sindh.

Lesson No. 21

World Population

Topic – 79:



In 1820 the total population of the world was 1 billion. In 1930 it was 2 billion. In 1970, s it becomes 3 billion. In 1999 it was 6 billion. So, the most increase in population was in 20^{the} century. World population refers to the total number of living humans on Earth. According to the estimate by the United Nations Population Fund, the world population reached 7 billion on October 31, 2011.

World population (millions)

#	Top ten most populous countries	1990	2008	2025*
1	China	1,141	1,333	1,458
2	India	849	1,140	1,398
3	United States	250	304	352
4	Indonesia	178	228	273
5	Brazil	150	192	223
6	Pakistan	108	166	226
7	Bangladesh	116	160	198
8	Nigeria	94	151	208
9	Russia	149	143	137
10	Japan	124	128	126

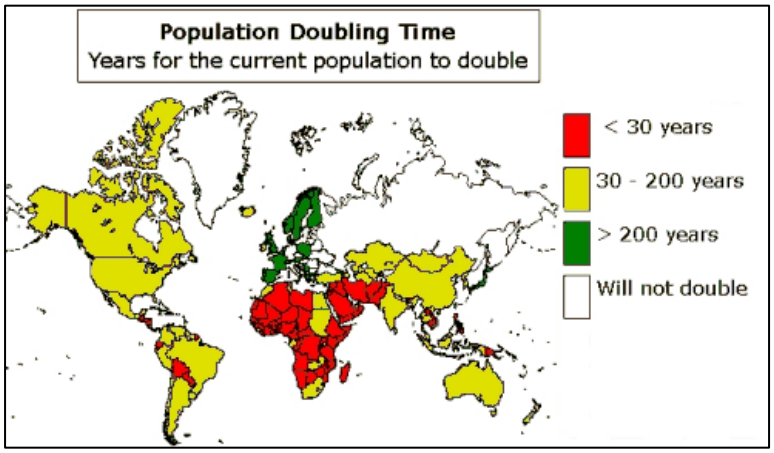
The following figure shows the top ten populous countries in millions. And most of these belong to Asia and most of them are under develop countries. The highest growth rates – global population increases above 1.8% per year – in 1950s. The global growth rate peaked at 2.2% in 1963, and has declined to 1.1% as of 2012.

Topic 81: Population Growth:

Population growth is the increase in the number of individuals in a population. The population growth rate is the rate at which the number of individuals in a population increases in a given time. It is controlled by the density of the growth. The last 100 years have seen a rapid increase in population due to medical advances and massive increase in agricultural productivity made possible by the Green Revolution. The pre-agricultural period is the first period of human population

growth. This period is considered anything before 10,000 years ago. During the pre-agricultural period, human population growth was very slow, and it took tens of thousands of years for the human population to double. The agricultural period is the second period of human population growth. This period ranges from 10,000 years ago to about 1,000 years ago. During this time period, the human population started to grow more rapidly due to advances in agriculture. It was during this time that plants and animals were domesticated for farming. There were also advances in irrigation and plowing techniques that increased overall crop yield. As a result of increased food availability and more nutritious food, the human population grew faster than ever. The industrial period was the third period of human population growth. This period is from 1,000 years ago to current day and is characterized by advances in technology. Although there were advances in technology during the early part of this period, it wasn't until the Industrial Revolution in the 1800s that the advances in technology started to have a profound influence on the human population. The majority of world population growth today is occurring in less developed countries.

Topic – 82: Population Growth rate:



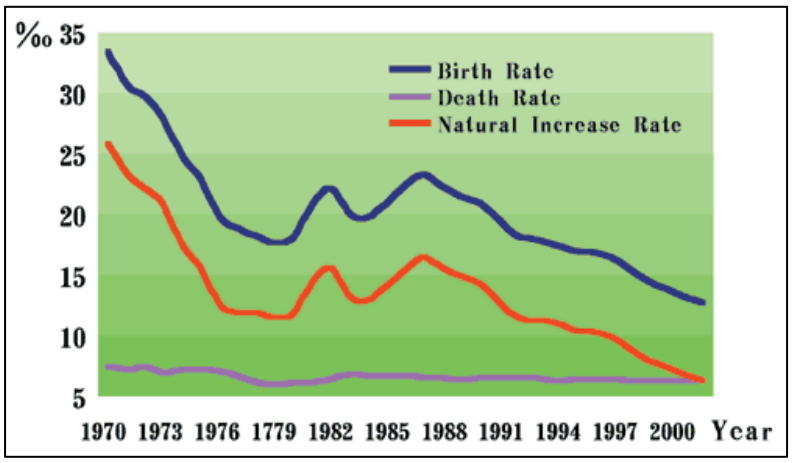
In population growth two areas are very important linear growth rate and the exponential growth rate. In linear growth rate there is a uniform growth rate but in exponential growth rate profit is also included and the world's growth rate is in exponential.

The time required for a population of a country or region to become double is called the doubling time of that country.

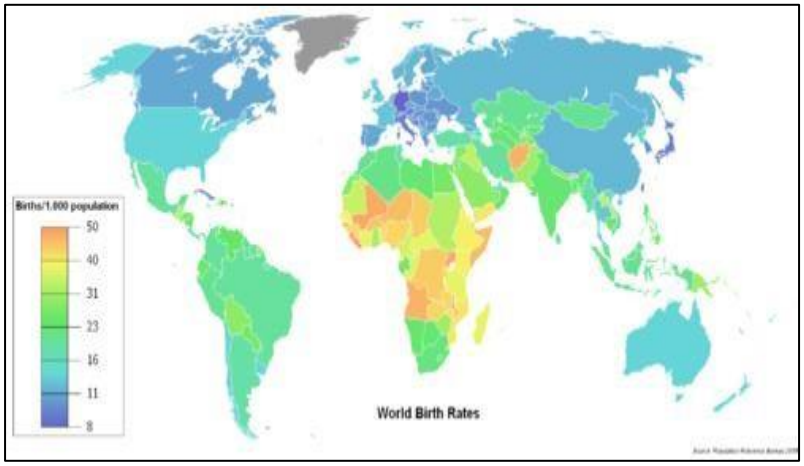
Topic – 83: Demographic characteristics of population:

Total annual births were highest in the late 1980s at about 139 million, and are now expected to remain essentially constant at their 2011 level of 135 million in the world population. The CIA World Fact book gives the world annual birth rate as 1.89%, mortality rate as 0.79 and growth rate

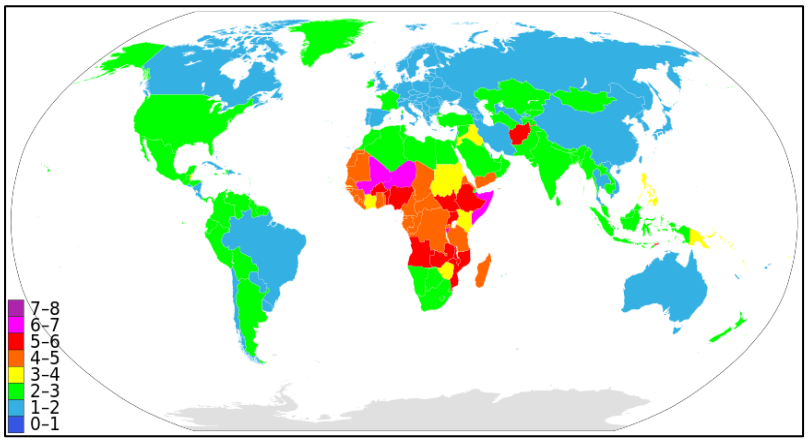
as 1.096%. In the world population the deaths number 56 million per year, and are expected to increase in the world human population is 80 million per year.



Crude birth rate defines the number of births of a region and is discussed in the context of total number of births and is divided by total population is multiplied by 1000. It is called crude birth because there is no differentiation is made between the born child either he is boy or she is girl.



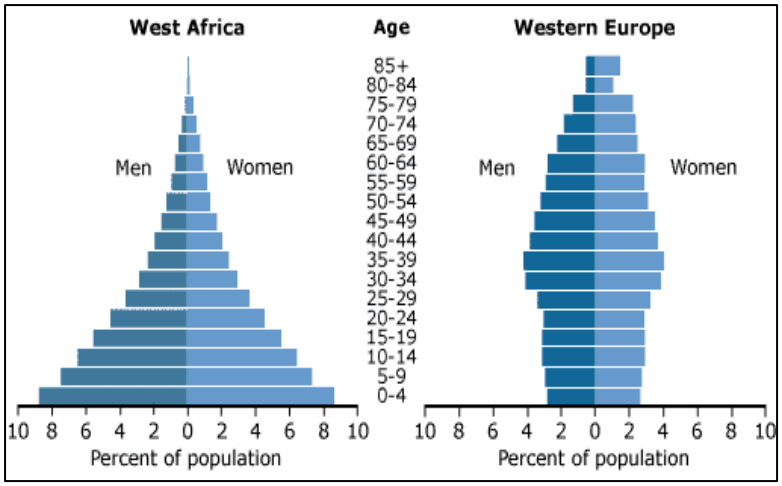
The total fertility rate (TFR), sometimes also called the fertility rate, period total fertility rate (PTFR) or total period fertility rate (TPFR) of a population is the average number of children that would be born to a woman over her lifetime during the age of 15_49. A world map showing global variations in fertility rate per woman, according to the CIA World Fact book's 2013 data.



The infant mortality rate (IMR) is the number of deaths of infants under one year old per 1,000 live births. This rate is often used as an indicator of the level of health in a country. The infant mortality rate of the world is 49.4 according to the United Nations and 42.09 according to the CIA World Fact book. It is also high in the less developed countries as compared to the developed countries of the

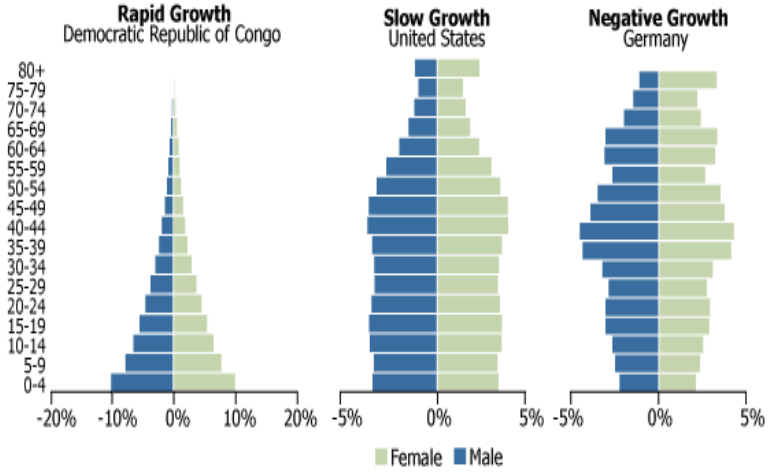
world. Many children die before reaching their first birth day, so high Crude Death Rates tend to reflect high Infant Mortality Rate.

Topic – 84: Population Structure:



The composition or structure of a population is its makeup in terms of age, male-female ratio, and other properties as marital status and education. The following figure shows the example of the population structure

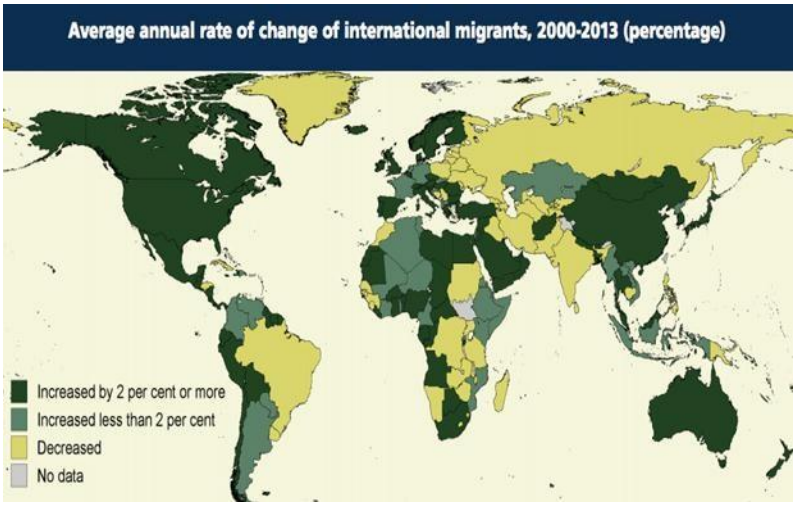
Now let us see the difference between the population structure of the developed and developing countries.



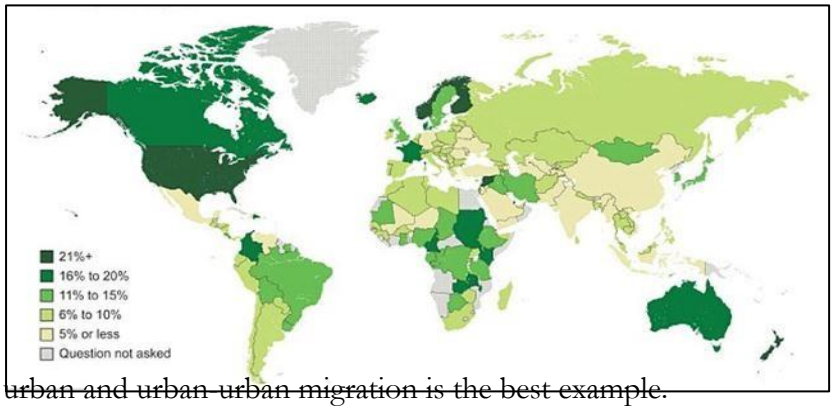
Lesson No. 22

Migration

Topic – 85:



Migration is one of the factors behind the change of population. Migration (human) is the movement of people from one place in the world to another for the purpose of taking up permanent or semi-permanent residence, usually across a political boundary. It may be permanent, temporary, seasonal, periodic and cyclic in nature. It is not necessary to shift out of the political boundaries of the state. Population growth involves not only natural increase but also the immigration of outsides. In some countries beside negative population growth, these immigrants create positive balance.



Internal migration includes the mobility of the people from the place of their residence to the other place for the purpose of better living standard but the migrants do not cross the geographical boundaries. Rural-urban and urban-urban migration is the best example.

External migration is the mobility of people out of the political border. While migration on the basis of will are, forced migration and voluntary migration. In forced migration the migrants are forced either by the severe weather condition or political disturbance or the violent activities, these factors

compel them to leave their home land. While in voluntary migration people leave their place of origin according to their own wills for the purpose of better life opportunities.

Lesson No. 23

Human Settlements

Topics - 87:

A settlement, locality or populated place is a community in which people live. A settlement can range in size from a small number of dwellings to the largest of cities with surrounding urbanized areas. Settlements may include hamlets villages, towns and cities.

Hamlets are tiny settlements - they are just a collection of houses, perhaps centered around a few farms and maybe without even a shop.

Villages are small settlements - several hundred people live in them and they have: a few shops, a place of worship and maybe a school too;

Towns are medium-sized settlements - thousands of people live in them and they have a shopping Centre and factories;

Topic – 88: Types of the settlement:

In geography, statistics and archaeology, a settlement is a locality or populated place or a community in which people live. Cities are large settlements –they usually have lots of services and sometimes a cathedral too (megacities have over 10 million people).

A megacity is usually defined as a metropolitan area with a total population in excess of ten million people. A megacity can be a single metropolitan area or two or more metropolitan areas. Here we have more cities as compared to the city life. In 2015, there are 35 megacities, Chennai being the latest. The largest of these are the metropolitan areas of Tokyo and Jakarta the conurbation each of these having a population of over 30 million inhabitants. Tokyo is the largest metropolitan area, while Shanghai is the largest city proper. Following is the diagram of Mount Fuji as seen Civic Center, Tokyo.

A conurbation is a region comprising a number of cities, large towns, and other urban areas that, through population growth and physical expansion, have merged to form one continuous urban and industrially developed area. In most cases, a conurbation is a polycentric urban agglomeration, in which transportation has developed to link areas to create a single urban labor market or travel to work area.

Sometimes human settlements are controlled by type of their formation. There are various types and let us discuss them.

Topic – 89

Dispersed Settlement:

If the number of villages is less than half the number of hamlets, the settlement is regarded as dispersed. The inhabitants of dispersed settlements live in isolated dwellings scattered in the

cultivated fields. Individualism, sentiments of living freely, custom of. marriage relations are conducive to such settlements.

Topic – 90

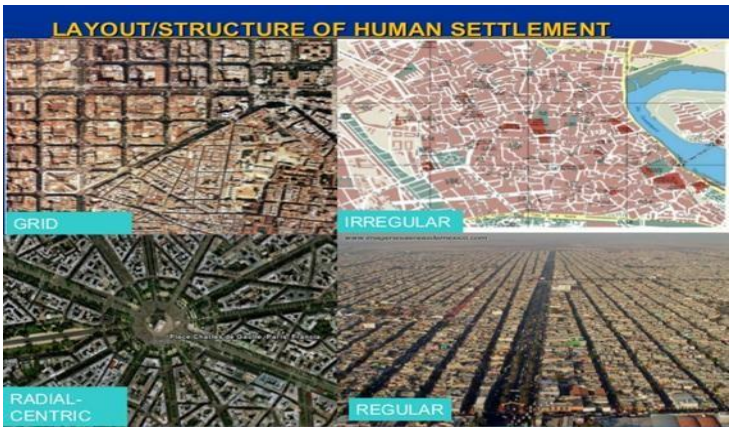
Nucleated Settlement:

In this type of settlement the houses, even most farmhouses within the entire associated area of land, such as a parish, cluster around a central church which is close to the village green. Other focal points can be substituted depending on cultures and location, such as a commercial square, circus, crescent, a railway station, park or a sports stadium.

Linear Settlement:

Linear settlement is a (normally small to medium-sized) settlement or group of buildings that is formed in a long line. Many follow a transport route, such as a road, river, or canal, though some form due to physical restrictions, such coastlines, mountains, hills or valleys.

The grid plan or grid street plan is a type of city plan in which streets run at right angles to each other, forming a grid. It is a method of land measurement.



Unplanned settlements and areas where housing is not in compliance with current planning and building regulations (unauthorized housing)

A formal settlement is a located area for housing which has amenities such as electricity and sanitation added to it.

Lesson No. 24

Urbanization – 1

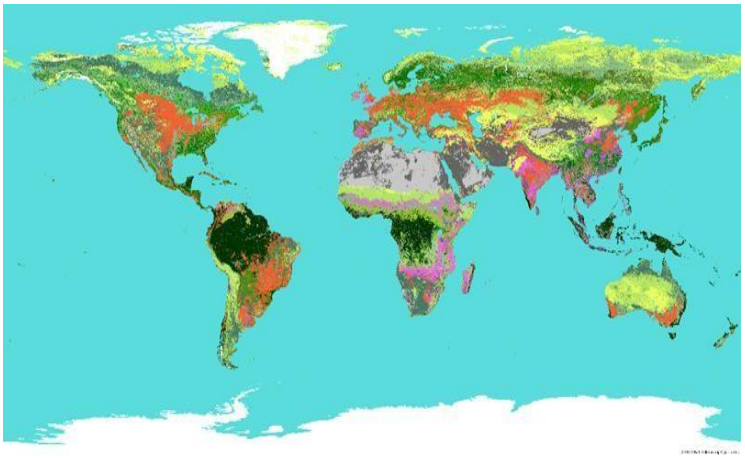
Topic – 91:

Urbanization is a population shift from rural to urban areas, "the slow but sure increase in the percentage of people living in urban areas", and the ways in which each civilization adapts to the change. Urbanization has different functions in developed and in developing countries as countries are controlled by either: Commercialization, Industrial production or Trade centers.

It reflects that cities functions can be different due to difference or change in economy. City development and development of various areas within the city depend on the major function of the city. Within city, there are different areas marked for multiple activities i.e. some areas are marked as residential areas, whereas some are labeled as commercial areas. At times there are certain areas marked for social activities. In short land actions are depended upon human activities and requirements. The dominant function in different cities varies. Major function of the cities changes with time. For example: London is known for its functions as financial centers, Lahore is attempting to be a services city or New Castle was famous for coal mines but now have heavy industries.

Land Use and Land Cover

"Land cover indicates the physical land type such as forest or open water whereas land use documents how people are using the land". Continental surface changes with time as well. This is at times due to expansion of land use. Land use refers to nature-controlled areas.



In the above diagram, different colors represent various forms of land cover land use. Yellow represents agriculture area whereas green and dark green represents pastures and forests. All these are nature-controlled areas and called land covers. On the other hand, due to certain human activities these areas are changed into land covers by making housing schemes, industries, sub urban areas etc. Land use is due to human

controlled activities and functions. For example, Malaysia planned to have development as per international standards till 2020. Instead of affecting their agriculture areas, they worked on the development of barren land and bring it in use by the establishment of residential areas, hospitals, industries etc.

Topic – 92

City Functions

City functions are different in developed and developing countries due to their functionalities. Developed countries usually focus on services whereas developed countries are either production based on Engro-based activities. Some of the city functions are as follows which influence urbanization:

- Selling goods and services
- Providing jobs
- Administration
- Entertainment centers
- Cultural centers
- Religious centers
- Transport hub
- Residential areas
- Special public services

CBD: Central Business Districts. Central area of the city, form where city originally started it usually has a lot of services and is:

- Most accessible area
- Centrally located with easy access to motor way etc.
- Metro routes

Urban places / areas are usually densely populated areas. They can be small or big or at times called hyper city controlled by urban activities.

Open Space

- There are large areas of open spaces included the parks and lakes and large playing areas.
- Scattered around the city to give service to the population of various residential area.

Topic – 93:

City Suburbs

- Expensive residential housing areas, comprises of semidetached and detached housing where people can afford more land for gardens and bigger houses.
- It has better facilities and away from the crowd.
- Less pollution (noise etc.)

Terraced Housing

- Just outside of the inner city, tends to be another area of los cost residential area.
- They have very small houses with no gardens.
- This area belongs to worker class who tend to stay close to their work place.

Inner City

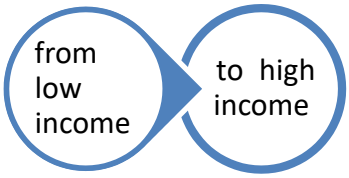
- This area is outside CBD.
- This is the mixture of old industrial housing and industry.
- This is the second circle of the city belongs to CBD.

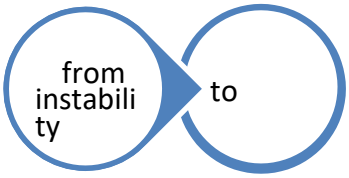
CBD

- centrally located
- origin of the city
- Crowded and land is usually expensive.

Factors behind movement of the people within country and between countries are the same for developed and developing world. In the developed world 90% of the population belongs to urban area and 10% belong to the rural area which reflects that the migration percentage is low. Whereas, in developing countries, migration within the country is high from rural to urban area. For example, in Pakistan 37% population belongs to urban are and the remaining is from rural are.

Major reasons behind this movement are:





stability

Or

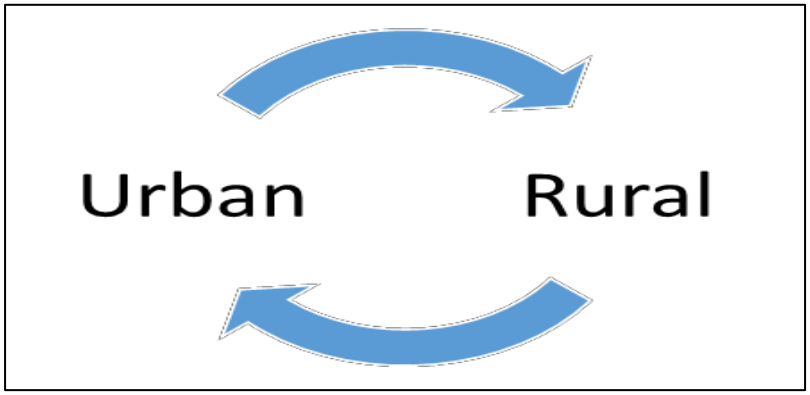
Major factors influence this movement from one place to another are:

- Education
- Entertainment
- Parks
- Information flow
- Employment
- Economic condition

Lesson No. 25

Issues and problems of urbanization

Topic – 94



Movements of people are as follows:

In developed countries people move from urban to open space to avoid crowd, over populated areas, noise pollution etc. This type of movement is called de-urbanization. Majority of movement is from rural to urban areas and is known as urbanization. There are issues and problems of the urbanization.

- Traffic flow
- Air pollution
- Smog
- Water pollution
- Urban diseases
- Urban crime

Topic – 95:

In the urban society most of the population belongs to the education. The main is that people from neighboring cities or countries come for the purpose of education. Secondly the most important dominant area is employment. So, in both the areas ratio of young people is more as compared to others. The growth rate of Pakistan is 1.8 but if we see the growth rate of Karachi or Lahore it is 4 more than the countries growth rate.

Traffic flow

The increase in the traffic flow is due to people migrating from neighboring areas. The service areas of the city have increased traffic flow day by day. This results in small hazards such as traffic accidents which kill 1.2 million people per year. Pedestrian and vehicle movement networks in cities are a

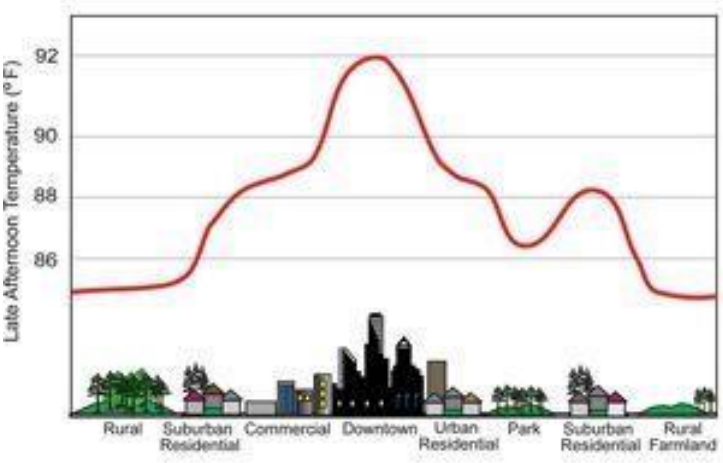
central concern of urban areas.

Urban Air pollutants

When we are dealing with the traffic flow and the industrial establishment in the urban area's pollutants are developed due to these two sources. Pollutants are in the form of nocks, cocks and socks meaning Sulphur dioxide, carbon dioxide, carbon monoxide and nitrogen oxide. These are actually the greenhouse gases find in the air which results in the rise of temperature in these areas. High concentrations of suspended particulates adversely affect human health, provoking a wide range of respiratory diseases and exacerbating heart disease and other conditions

Topic 96
Urban Dust Dome

The dome-shaped formation of stagnant and polluted air above a city is known as a dust dome. The urban heat island which causes a city to heat up, caps the dust and other particulates at a low level in the atmosphere. If there is not a strong enough wind, then this dome that is created remains intact and causes that heated up air within the urban heat islands. Though if the wind does blow strong enough, then this dome is blown downwind causing it to move out of the city. Industrial machinery and furnaces, manufacturing complexes, cars, and even air conditioners heat up the city's air; building materials such as concrete, asphalt, and brick retain and radiate that heat well into the night. The large number of windows and other reflective surfaces serve to trap heat, and the lack of areas of open water sustains it.



Temperature Inversion

Temperature inversion is the condition in which the temperature of the atmosphere increases with altitude in contrast to the normal decrease with altitude. When temperature inversion occurs, cold air underlies warmer air at higher altitudes.

Topic – 97

Today world is facing the phenomena of climate change, it is a process of where we have the change of climatic condition of the globe and recent trend is call the global warming trend, this is the part of change in climate.

Climate change

Climate change, also called global warming, refers to the rise in average surface temperatures on Earth. An overwhelming scientific consensus maintains that climate change is due primarily to the human use of fossil fuels, which releases carbon dioxide and other greenhouse gases into the air. Climate change is a global phenomenon, but a deeply local issue. Urban areas contribute to climate change through resources use in urban activities.

Industrial water pollution

Industrial water pollution is caused by the discharge of harmful chemicals and compounds into water, which makes it unsuitable for drinking and other purposes. Although 70% of the Earth is covered by water, only water bodies like lakes, ponds, rivers, reservoirs, and streams provide us with fresh water, and so, keeping them clean is an issue of survival not only for humans but for all other forms of life.

The above figure shows the max areas having industrial water pollution and these are the regions where we have developed or manufacturing areas. Much of the manufacturing belongs to middle latitude because of moderate temperature and more working hours in these areas. These areas are producing maximum amount of the liquid and solid waste because of industry present.

Most industries in the country are located in or around major cities and a recognized as key sources of increasing pollution in natural streams, rivers, as well as the Arabian Sea through discharging toxic water. The contamination of shallow groundwater near industrial plants has been an area of concern as groundwater pollution is often permanent and it may take 100s or even 1000s of years for pollutants such as toxic metals from the tanneries to be flushed out of a contaminated aquifer.

In Pakistan, only 1% of wastewater is treated before being discharged directly into rivers and drains. For example, in NWFP, 80,000 m3 of industrial effluents containing a very high level of pollutants are discharged every day into the river Kabul causing observable incident of skin diseases, decrease in agricultural productivity and decrease in fish population.

Topic 98

Urban Solid and liquid wastes

Greater the society population and material wealth, the greater the amount and variety of its garbage and solid waste will be. So developed country of the late 20 century are increasingly discovering that their material wealth and technological achievements are submerging them in a volume and variety of waste solid and liquid harmful and toxic. In north America it produces rubbish and garbage at a state of 200 million tons per years or about 1.6 kilogram per person per day. So, this is actually tragedy of the developed world and also the tragedy of developing world where industrial establishment is more with the passage of time.

Urban diseases due to water pollution

When water polluted from various sources is accumulated at a certain place, many mosquitoes, flies and insects are produced which cause malaria, Phil aria, dengue, yellow fever encephalitis and many other infectious diseases.

Ocean Dumping

Ocean dumping is the most toxic waste material dumped into the oceans includes dredging material, industrial waste, sewage sludge and radioactive waste. Over the past 150 years, all types of wastes have been ocean dumped. These include sewage (treated and untreated), industrial waste, military wastes (munitions and chemicals), entire ships, trash, garbage, dredged material, construction debris, and radioactive wastes (both high- and low-level). It is important to note that significant amount of wastes enter the ocean through river, atmospheric, and pipeline discharge; construction; offshore mining; oil and gas exploration; and shipboard waste disposal. Unfortunately, the ocean has become the ultimate dumping ground for civilization.

Lesson No. 26

Energy Resources– 01

Topic – 99:

"Energy Resources" is about ways of getting energy so we can generate electrical power. The world energy resources can be divided into non-renewable and renewable resources. A nonrenewable resource is a natural resource that cannot be re-made or re-grown at a scale comparable to its consumption like nuclear resources, coal, petroleum and natural gas. Renewable resources are natural resources that can be replenished in a short period of time like solar, geothermal, wind and biomass.

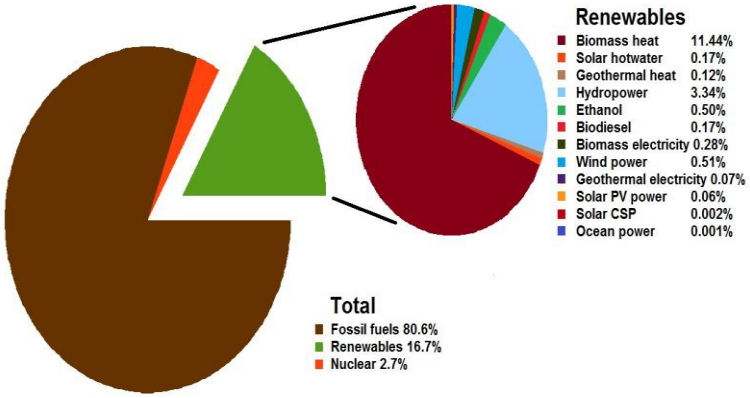
Topic – 100:

Fossil fuels

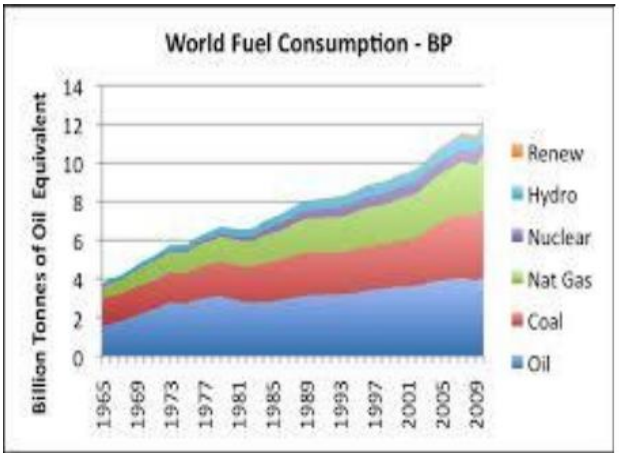
Fossil fuels are formed by natural processes as decomposition of buries dead organisms. The age of the organisms and their resulting fossil fuels is millions of years, sometimes exceed 650 may. Fossil fuel is a general term for buried combustible geologic deposits of organic materials, formed from decayed plants and animals that have been converted to crude oil, coal, natural gas, or heavy oils by exposure to heat and

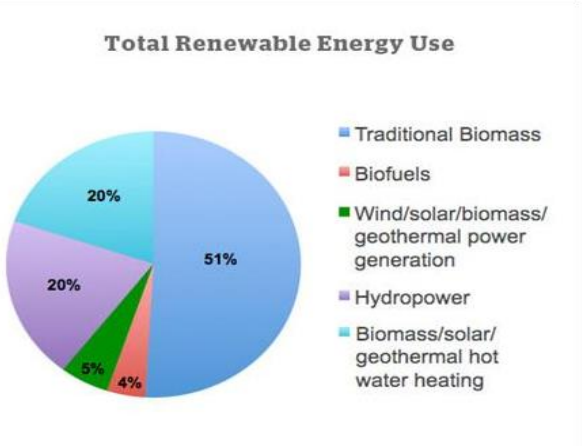
pressure in the earth's crust over hundreds of millions of years. Fossil fuel energy consumption (% of total) in Pakistan was last measured at 60.89 in 2011.

Comparison of Non- renewable and Renewable Resources

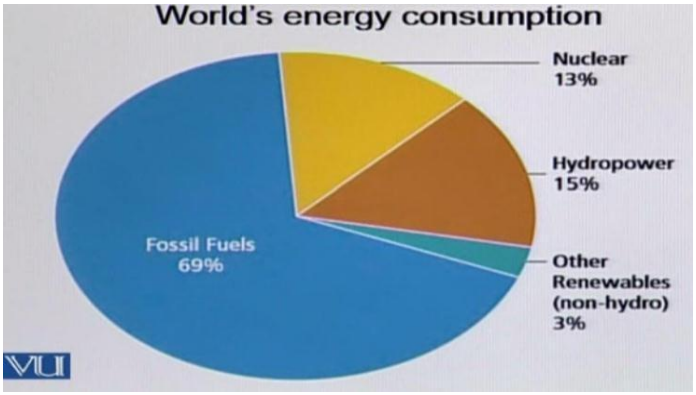


World fuel consumption and Total renewable energy use



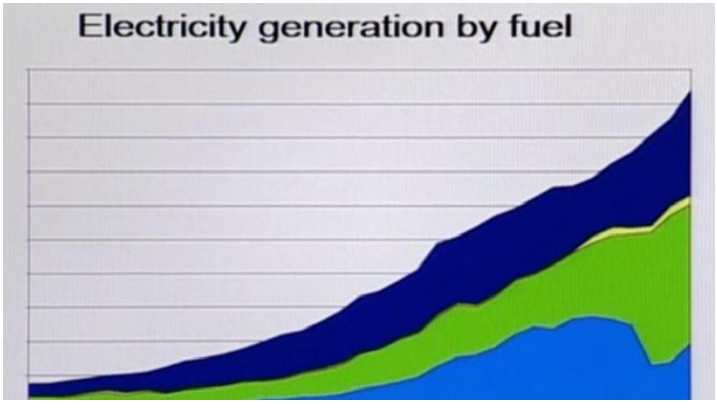


World energy consumption



Topic – 101: Energy Resources-02:

The consumption of fuel in the developing countries are less as compared to the developed countries. In developed countries the consumption of fuel is more like Canada and America is on one number which uses the max quantity of fuel. When we compare these countries with India, china
and Pakistan there is a big difference here the per capita consumption is much less.



The above graph shows the certain rise in different color with passage of time, the flow is rising gradually. The blue shows coal, green shows oil and gas and light blue show water. So, in electricity generation these three fuels are being used worldwide and the yellow color is control by the nuclear power. Nuclear power in electricity generation is playing a minor role. With the passage so time

rise among the consumption of fuel is increasing. Farmers in developing countries relay on their own physical energy or energy of animals to plough or tend the field. in contrast the developed agriculture countries are consuming more fuel energy through use of trucker's automatic loaders and combine harvesters. Addition energy is required to develop fertilizers and pesticides widely used in industrialized agriculture. World energy consumption has increased every year since 1989 from 2004 to onwards. For example, energy consumption increased worldwide by about 3.4 %, the increase is not however evenly distributed around the world. China has nearly doubled its energy consumption in the past decade. Similarly, India has increased its consumption 50% more than it did in last 1990s by contrast USA use about 6% more energy as before and japan use only 2.5% more. Pakistan is one of the richest countries of the world in terms of natural resources with gigantic reserves of coal, gas, gemstones, copper and gold.

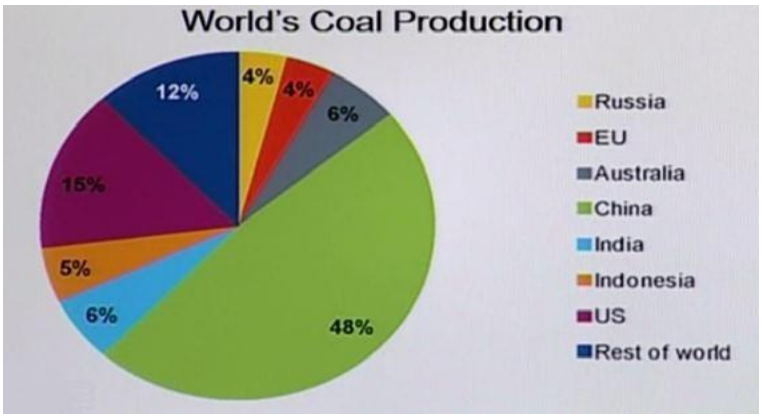
Lesson No.27

Energy Resources-02

Topic – 102

Non-renewable resources

Non-renamable resources is a resource that does not renew itself at a sufficient rate for sustainable economy. An example is carbon-based, organically-derived fuel. The original organic material, with the aid of heat and pressure becomes a fuel such as fossil fuels (coal, petroleum, natural gas) are all non- renewable resources. It is extracted by the humans only where geological processes such as heat, pressure, organic activity, weathering and other processes are existed enough to become economically viable to extract. These processes generally take from tens of thousands of millions of the years through tectonic plates, tectonic subsidence and crustal recycling.



Coal is the most abundant fossil fuel that launched the industrial revolution and has continued to grow in use;
coat is the fastest growing fossil fuel. fossil fuel energy consumption (% of total) in Pakistan was last measured at 60.89 in 2011, its highest value over the past 40 years was 63.39 in 2007, while its lowest value was 35.29 in 1972, according to the world bank. fossil fuel comprises coal, oil, petroleum, and natural gas products.

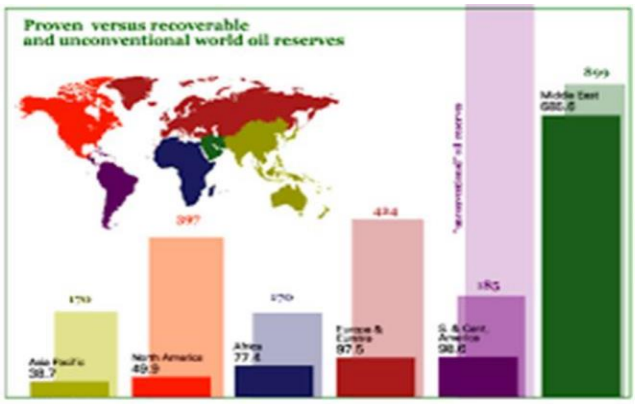
Extraction of coal

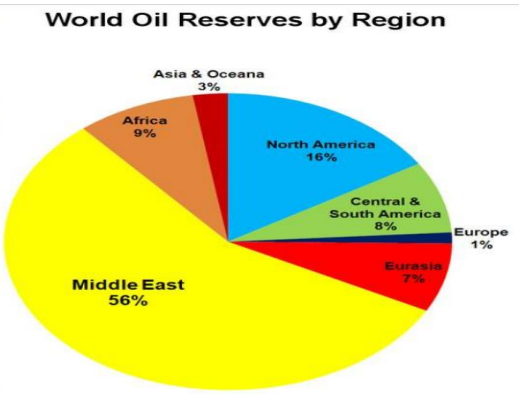
Surface mining and deep underground mining are the two basic methods of mining. The choice of mining method depends primarily on depth of burial, density of the overburden and thickness of the coal seam. Seams relatively close to the surface, at depths less than approximately 180 ft (50 m), are usually surface mined.

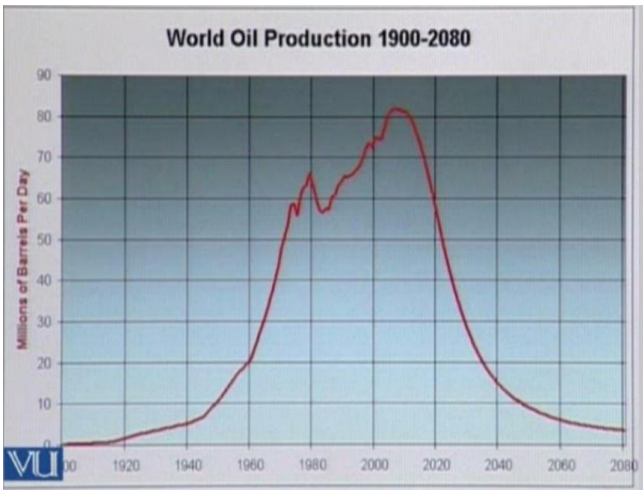
China which already has many of the worlds most polluted cities, was in 2007 building two coal fired plants every week. Coal triggered global warming concerns and other pollutants. According to the international energy agency the proven reserves of coal are around 909 billion tones', which could sustain the current production rate for 155 years.

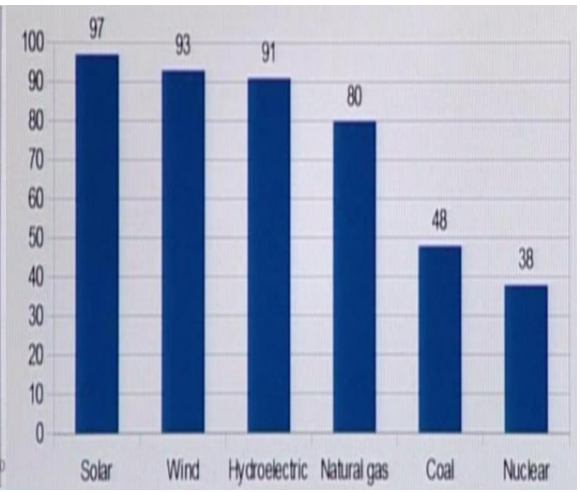
Topic – 142: Energy Resources-04:

Sustainability environmental concerns related to global warming and sustainability are expected to move the world's energy consumption away from fossil fuels.









The economic pressure through less carbon emissions and green taxation, some countries are taking action as a result of the Kyoto protocol and further steps in this direction are proposed. The European commission has proposed that the energy policy of the European union set abiding target of increasing the level of renewable energy in the EU's from 7% in 2007 to 20% by 2020.

Topic – 103

Renewable resources

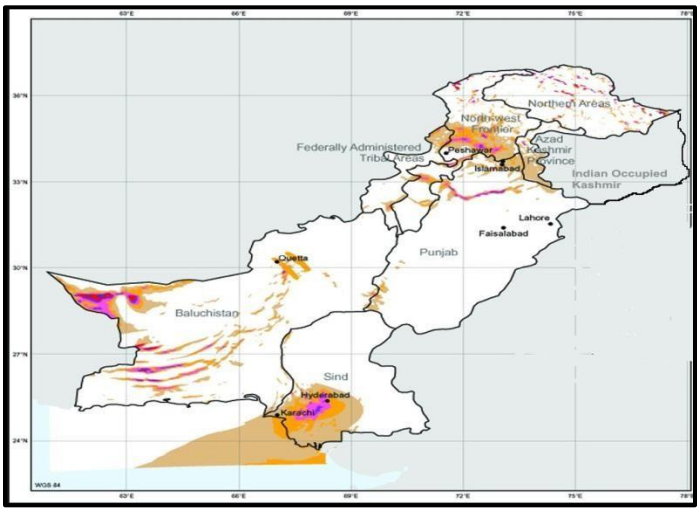
Renewable resources unlike non-renewable resources, which are eventually depleted, a simple comparison is a coal mine which once has been exhausted is gone. Renewable energy is generally defined as energy that comes from resources which are naturally available such as sunlight, wind, rain, tides, waves and geothermal heat.

Wind power tis extraction from the air flow using wind turbines to produce mechanical or electrical power. Windmills are used for their mechanical power. Wind power as an alternative to fossil fuels. Wind power is a renewable, widely distributed, clean, no greenhouse gas emissions during operation and uses little land. Far less problematic than those of non-renewable power sources.

The Gansu wind farm in China is a group of large wind farms under construction in western Gansu province in China. It is scheduled to have the highest power output in the world.

Wind power in Pakistan

In Pakistan where three regions are very important in wind power the southern part of Sindh where the wind comes during the summer from the southern side of Sindh. The second most regions are in Baluchistan winds come from the western side of Baluchistan and the third important region is the northern side of Pakistan which includes area of Khyber Pashtun khan, the Punjab and Gilgit Baltistan.



Hydroelectricity is the tern referring to electricity generated by hydropower; the production of electrical power through the use of the gravitational force of falling or flowing water. It is the most widely used form of renewable energy, accounting for16 % of global electricity generation production in 2010. Hydro power is the produced in 150 countries, with the Asia pacific region generating 32 % of global hydropower in 2010. In the budget 2013-14: RS 57.840 billion was allocated for water resources development in Pakistan.

Renewable energy replaces conventional fuels in four district areas: electricity generation, air and water heating/cooling, motor fuels and rural energy services.

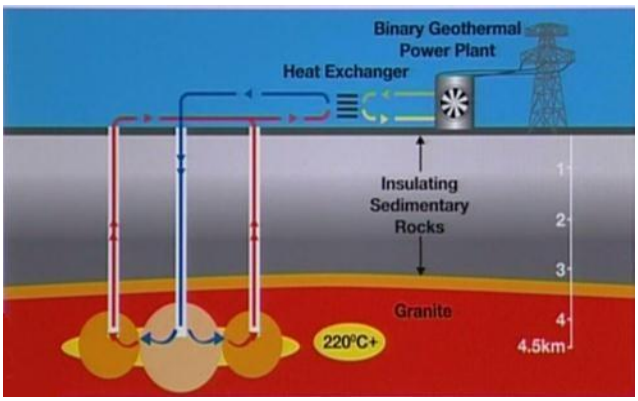
Topic – 104
Biomass

Biomass is a biological material derived from living organisms. In context of biomass as a resource for making energy, it refers to plants or plant-based materials. As an energy source, biomass can either be used indirectly to produce heat or indirectly after converting it to various forms of biofuels. Wood remain the largest biomass energy source include forest residues and even municipal solid waste. Industrial biomass can be grown from numerous types of plants, including corn, poplar, willow, sorghum, sugarcane, bamboo and a variety of tree species, ranging from eucalyptus to palm oil. Biomass is the oldest fuel known to humans consists of such material as fast-growing plants and crop waste and wood chips, animal waste and wood. Biomass contains chemical energy which comes from sun radiant energy which photosynthesis organism use to form organic molecule. Biomass is renewable form of energy when use no faster than it is produce. Deforestation and desertification can result when biomass is over used. Biomass cannot replace fossil fuel. The entire photosynthesis production of the continual amount to only half of our current energy use and that mean devoting it no other use include paper food or construction material. Biomass fuel which can be solid liquid gas is burned to release energy. Solid biomass such as wood is burn directly to obtain energy.

Biomass energy can be used in those areas where we have sugarcane production. Mostly in south Asia and Second area is Brazil where sugarcane is found. The biomass used for electricity generation varies by region. Agricultural waste is common in Mauritius (sugar cane residue) and Southeast Asia (rice husks). Conversion of biomass to biofuel can be achieved by different methods which are broadly classified into: thermal, chemical and biochemical methods

Topic – 105: Energy Resources-07:

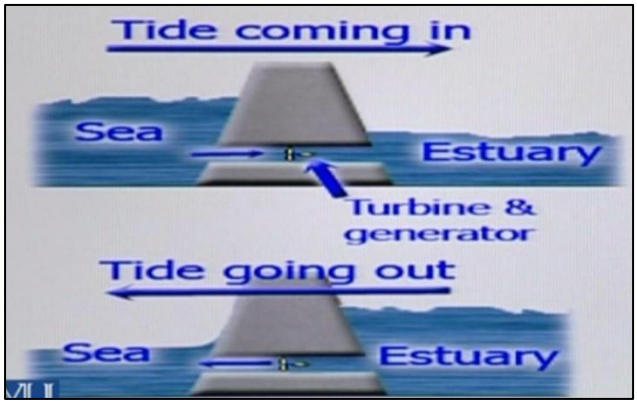
Geothermal energy

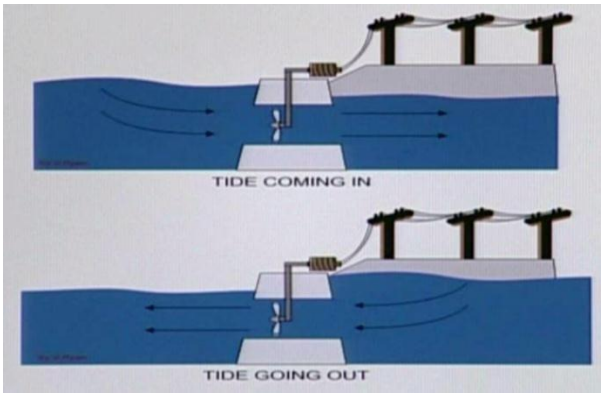


Geothermal energy is the heat from the Earth. Its clean and sustainable resources of geothermal energy range from the shallow ground to hot water. Hot rock found a few miles beneath the earth's surface and down even deeper to the extremely high temperatures of molten rock called magma.

Natural heat with in the earth arises from the ancient heat with in the earth core, fiction where the continental plates collide with one another and from the decay of radioactive elements. The amount of geothermal energy is enormous.

Special turbines and other technologies can capture the power of waves and tides and convert it into clean, pollution-free electricity. Water turbines were developed in the 19^{the} century and were widely used for industrial power prior to electrical grids. Now they are mostly used for electric power generation. Water turbines are mostly found in dams to generate electric power from water kinetic energy.





Like other renewable resources both wave and tidal energy are variable in nature. Waves are produced by winds blowing across the surface of the ocean.

Energy conservation

Topic – 106:

Conservation is the protection, preservation, management or restoration of wildlife and of natural resources such as forests, soil and water. A green vehicle is a road motor vehicle that produces less harmful impacts to the environment than comparable conventional vehicles running on gasoline or diesel. Solar vehicles:
vehicle pollutants have been linked to human ill health including the incidence of respiratory, cardio disease and lung cancer. A report estimated that 24,000 people die prematurely each year in the UK.

Human powered transport includes walking, bicycles, boats and other environmentally friendly ways

A green hybrid vehicle: Hybrid taxi fleet operators in New York have also reported that reduced fuel consumption saves them thousands of dollars per year. Energy conservation also refers to reuse and recycle of energy available in the given environment, as gray water can be used for kitchen garden and watering of plants.

Energy conservation refers to reducing consumption through using less of an energy service. Energy conservation differs from efficient energy use, which refers to using less energy for constant services.

Lesson No. 28

Environmental hazards and disasters– 01

Topic – 108:

Environmental Hazards

Environmental hazard is the state of events which has the potential to threaten the surrounding natural environment and adversely affect people's health. Hazards is natural or man-induced processes or event that cause potential losses to human lives, property damage, disruption to normal activities and essential functions of the community and damage to the environment. Once a hazard becomes "active", it can create an emergency situation. A hazard situation that has come to pass is called an incident. The environment provides resources (water, air, mineral and wood), i.e. opportunity, to human beings. However, when the disequilibrium of the nature exceeds the threshold of its natural fluctuation, it can trigger the occurrence of extreme environmental events, hazards or disasters.

Topic – 109:

Disaster

A disaster is serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses. The impact of disaster exceeds the ability of the affected community or society to cope using its own resources. In contemporary academia, disasters are seen as the consequence of inappropriately managed risk. These risks are the products of a combination of both hazards and vulnerability. Hazards that strike in areas with low vulnerability will never become disasters, as is the case in uninhabited regions.

The losses due to natural hazards are 20 times greater (as a percentage of GDP) in developing countries than in industrialized countries.

Topic – 110: Environmental Hazards and disasters-02:

Natural hazards

Hazards encompass geological and meteorological phenomena such as earthquakes, coastal erosion, volcanic eruption, cyclonic storms and drought. Natural events, those originating from extreme and/or common physical processes, are referred to as natural hazards. Earthquakes, volcanic

eruptions, floods, hurricanes, tsunamis, blizzards, and tornadoes that originate in the lithosphere, hydrosphere, or atmosphere are some examples of natural hazards. Natural hazards can be further

categorized into hydro-meteorological or atmospheric hazards (typically weather-related) such as floods, droughts, forest fires, and tornadoes, and geophysical or geologic hazards such as earthquakes, tsunamis, and volcanic eruptions.

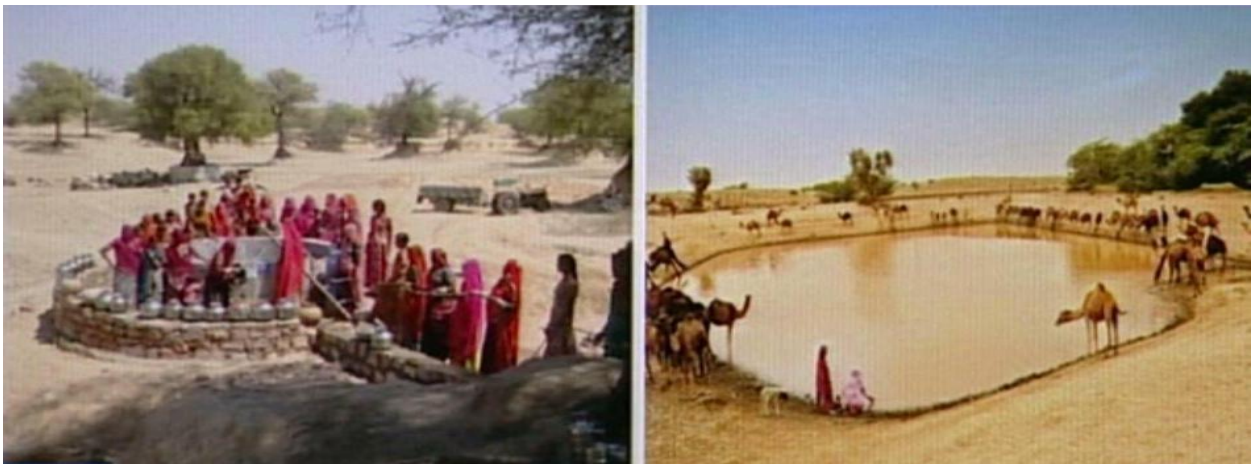
Topic – 111
Biological hazards

Biological hazards can refer to a diverse array of disease and infestation. Hazards that originate for biological reasons (e.g., epidemics) are called biological hazards or biohazards. Sources of biological hazards include bacteria, viruses, medical wastes, insects, plants, birds, animals, and humans. These sources can cause a variety of health effects ranging from skin irritation, allergies, and infections (e.g., AIDS and tuberculosis) to deaths. Biological hazards are often divided into two categories: pathogens and toxins. Pathogens are organisms that spread disease and may include anthrax, smallpox, influenza, plague, hemorrhagic fever, and rickettsia, while toxins are poisons created by plants and animals. While pathogens could kill many people, toxins are not likely to do so. For example, the 1918 Spanish influenza pandemic killed more people in the United States than had died in combat in World War I. In recent years, public health officials have been very much concerned with several diseases (e.g., foot-and-mouth disease, HIV/AIDS, the hantaviruses, severe acute respiratory syndrome (SARS), the West Nile virus, dengue fever and the Avian "bird" flu) associated with biological hazards.

Other natural hazards such as floods and wild fires can result from a combination of geological, hydrological and climatic factors. The global climate risk index 1993-2012 has ranked Pakistan as the 12^{the} most affected by extreme weather events. The temperature increase will result in more heat waves and will also affect the country's water demand.

Topic – 112: Environmental Hazards and disasters-03:

Pakistan has witnessed a 0.76 C rise in temperature during the last 40 years, but more disturbing is that the mountainous areas of Gilgit- Baltistan and Chitral have increase of 1.5 C during the same time period. More than 40% of the population in Pakistan is at risk of natural disasters such as droughts, floods and cyclones.



In Pakistan 40 % of total area is covered with plains and deserts. Deserts are 9 to 10 of total area of Pakistan it includes cholis tan, thar- parker and thali. The main issue of this type of land is water. Lack of clean water, due to which human as well as animals suffers.

An avalanche (also called a snow slide or snow slip) is a rapid flow of snow down a sloping surface. Avalanches are typically triggered in a starting zone from a mechanical failure in the snowpack (slab avalanche) when the forces on the snow exceed its strength but sometimes only with gradually widening (loose snow avalanche). Avalanches to rise in temperatures in the northern area and warned that the late spell of snowfall coupled with increased temperatures might increase the chance of avalanches in northern Pakistan. While avalanches are sudden, the warning signs are almost always numerous before they let loose. Yet in 90 percent of avalanche incidents, the snow slides are triggered by the victim or someone in the victim's party. Avalanches kill more than 150 people worldwide each year. Most are snowmobilers, skiers, and snowboarder.

Topic – 113: Environmental Hazards and disasters-03:

Flood

A flood is an overflow of water that submerges land which is usually dry. Flooding may occur as an overflow of water from water bodies such as a river or lake. Floods can also occur in rivers when the flow rate exceeds the capacity of the river channel, particularly at bends or meanders in the waterway. Floods often cause damage to homes and businesses. Some floods as flash floods can develop in just a few minutes and without a visible sign of rain. Additionally, floods can be local impacting a neighborhood or community, or very large, affecting entire river basins. In 2003, Sindh province was badly affected when above normal monsoon rainfall caused flooding in the province; urban flooding also hit Karachi where two days of rainfall of 284.5 mm occurred. In September 2014, due to massive rain in the northern areas as well as Azad Kashmir and in Punjab constituted flood situation in river Chenab and river Jhelum. An estimated 0.75 million people in Pakistan are badly affected by floods each year resulting an annual loss of almost 15 to the country's GDP, which is US$ 2.7 billion.

A hurricane is a huge storm! It can be up to 600 miles across and have strong winds spiraling inward and upward at speeds of 75 to 200 mph. Each hurricane usually lasts for over a week, moving 10-20 miles per hour over the open ocean. Hurricanes gather heat and energy through contact with warm ocean waters. Evaporation from the seawater increases their power. Hurricanes rotate in a counter-clockwise direction around an "eye" in the Northern Hemisphere and clockwise direction in the Southern Hemisphere. The center of the storm or "eye" is the calmest part. It has only light winds and fair weather.

Tropical Cyclones are low pressure systems that form over warm tropical waters and have gale force winds (sustained winds of 63 km/h or greater and gusts in excess of 90 km/h) near the center. Technically they are defined as a non-frontal low-pressure system of synoptic scale developing over warm waters having organized convection and a maximum mean wind speed of 34 knots or greater extending more than half-way around near the center and persisting for at least six hours.

