

04

Environmental Problems and Sustainable Development

According to the information available so far about the planets that exist in the universe, the most unique planet is the earth. Keeping the Sun as its head, its location and the geological and biological evolution has created a living environment. The biosphere consists of an atmosphere which is formed by the amalgamation of atmosphere, hydrosphere and lithosphere and it has created a conducive environment for the plants and animals in the biosphere.

In recent times the concept of environment has attracted the attention of human society as it has been subjected to various changes mainly due to its effect on the human society. Even though, previously, man has maintained interrelationships with environment they did not influence so much because the environment could bear those changes. Therefore, in order to get a proper understanding of the environment it is quite important to understand the real meaning of the environment, its components and its extent.

Interpretations and views on Environment

We are part of the earth and it is part of us.

The perfumed flowers are our sisters.

The bear, the deer, the great eagle, these are our brothers.

The rocky crests, the dew in the meadow, the body heat of the pony, and man all belong to the same family.

Chief Seattle's Letter - 1854

“The Environment is a blend of external states which influence the existence of living beings.”

Garen Johns - Dictionary of Environmental Science – 1990

“The Environment is the physical, chemical and biological states that exist around a living being.”

- Dictionary of Environment

“The environment of a person is his surroundings. In the same manner the environment of a plant or an animal is also consists of the things that can be found around it.

- Man and the Environment -1998

According to this, environment is a mixture of living and non living things. Accordingly all the animals including humans, plants, living and non living things belong to the environment. All of them have complex and diverse inter relationships between each other. The existence and processes occur by their inter relationships.

Activity 4.1



- Develop a common definition to interpret the environment.
- Prepare a collection of definitions written on environment.

Components which form the environment

Nonliving (Non-biological) Components

This includes atmosphere, hydrosphere, and lithosphere. The atmosphere includes the air on earth, the lithosphere consists of the crust and the outer mantle and the hydrosphere includes the ocean and freshwater. All these components interrelate with plants and other living beings in various ways. Many physical and chemical factors that affect living systems can be seen in these main components. For example, solar radiation, temperature, rainfall, salinity, acidity and bases (PH value), etc.

Living (biological) Components

Living components consist of all the animals including man, plants and micro - organisms. The process that produces food essential for the living components produced using the energy of the sun is known as primary production.

Social Environment

Social environment is a part of non physical environment. Multi ethnic status, religion, castes, heritages, customs, rights, duties, responsibilities, cultures are included in the physical setting of the social environment. This has been developed with the intervention of man.

Environment is the surrounding that we live in. Ancient Greeks referred to the environment as Oikos. They point out that the surroundings that one lives in consist of all the living beings, the interrelationship that exists among them and the physical, chemical and biological operations that contribute to its existence.

Fundamental study of the earth environment reveals that it can be classified as man made environment and social environment. This can be analyzed in another way as physical environment, biological environment and human environment.

Natural Environment

Natural environment is composed of living and non-living components. These things function as natural systems without human influence. It consists of all the plants, animals, rocks, soil, water, air, weather, energy, radiation and electricity as well as natural phenomena that occurs within them.

Community that belongs to the natural environment-



Fig 4.1-A Forest



Fig 4.2- A Mountain Range



Fig 4.3- Animals



Fig 4.4- Plant types



Fig 4.5- Birds

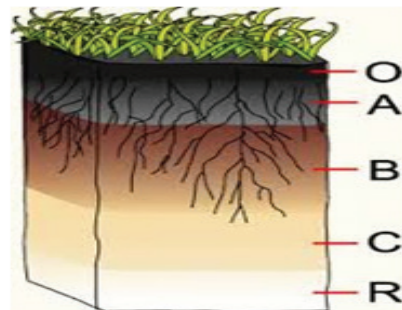


Fig 4.6- A Cross section of soil



Fig 4.7 - A river



Fig 4.8- Sun light

Phenomena that occurs in the natural environment

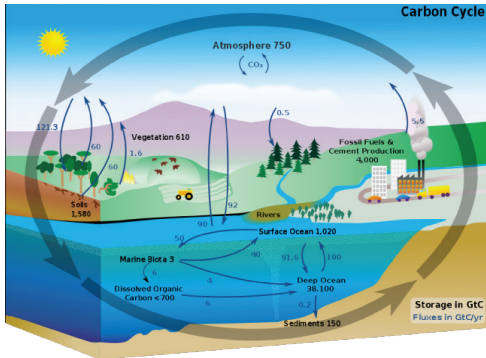


Fig 4.9 - Carbon cycle

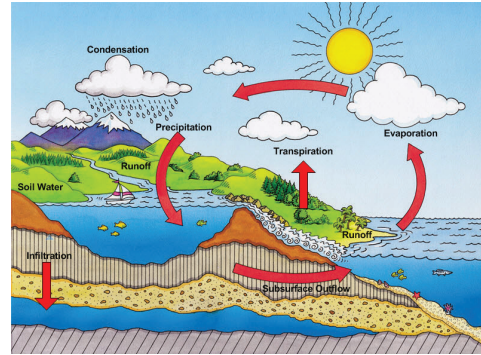


Fig 4.10 - Water cycle



Fig 4.11 - Mineral cycle

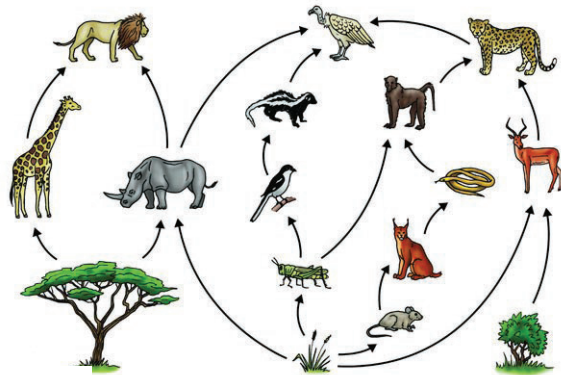


Fig 4.12 - Food chain

Balanced combination of these environmental systems is important for the existence of not only the human species but also for the existence of the entire world.

The environment and man

Man is a part of nature. Man is an internal part of environment. Man is the main component of the living environment which is formed from the physical environment. Therefore, his existence will be established within the environment itself. Man tends to change the environment using his thinking power and his attempt to put this power into practice in the practical world. The result of this is his temptation to change the nature rapidly and this change caused greater influence

on the environmental balance. Wellbeing of nature affects the wellbeing of man. Thus protecting nature is important.

Services obtained from the environment

Life support Services

This includes eternal services like sun light, air, water that we get from the environment. These services are essential for the existence of living beings.

Economic Support Services

This consists of raw materials and energy essential for human existence. Economic support services consist of land, mineral resources, chemical elements, timber, plants and animal foods and drinks, etc., as raw materials where as solar energy, fossil fuel, bio gas, geothermal heat hydroelectricity, wind power as energy Man has made a greater influence on the environment in these sections in order to satisfy his needs.

Waste material absorption services

This is important as a sublime service that we get from the environment. The waste matter collected in the environment through various activities of the animal world and through human economic activities is absorbed by the environment. However, this ability of the environment is lost when the waste matter in the environment gets collected at an intolerable level. Then the environment responds unfavourably. Accordingly, environment is an essential component for human existence and man cannot survive without the environment. Therefore, it is important for man to maintain his economic activities as part of the environment without affecting it.

Man's attempt to change the environment

In the human civilization ancient man had limited capacity to change the environment. He was capable of changing the environment while living in it so that the environment could forebear such changes. Simplicity of man and modest life style were the primary reasons for this. But modern man has been able to use the knowledge, technical and skill proficiency that he possesses to obtain the resources

that he requires and utilizes them for his own benefit. Man has pioneered among other living beings that exist on the earth and he possesses 0.5% of the whole mass of life on earth. Even though this number is comparatively small its effect on earth is great.

With the evolution of the Homo Sapiens, the human environment has been expanding qualitatively and quantitatively into the physical environment and the biological environment causing greater influence on them. At the beginning the influence caused on the environment was quantitatively smaller and hence the natural environment was able to absorb them easily. Therefore it did not influence the balance of the eco system.

By the mid 20th century, population on earth increased greatly. In the same manner the human resource expanded as a result of qualitative development of living conditions. With the change of the environment, natural balance of certain places on earth was subject to change. As a result of this even the balance of the earth, too, was subjected to change. In 2012 the world population reached 7 billion even surpassing the forecast rate of growth. When performing his economic activities natural resources, mineral resources, etc, man has used unlimitedly. Due to this, physical environment is utilized unlimitedly for changes that occur on the natural system of the environment based on the changes that occur in the human environmental systems, specially, colonization agricultural-industrialization, industrialization, urbanization infrastructure facilities and other service requirements. Through the intensification of the changes that take place on the surface of the earth many grave environmental effects or environmental problems and disasters take place.



Fig 4.13 - An occasion which water has been polluted

Environmental Problems

All sorts of destructive conditions make the beautiful earth surface ugly. Its effect can be shown as environmental problems. This is caused by both natural and human activities. Breakdown of the ecological balance caused by this dual action can be considered as environmental problems. Problems created by natural causes affect for a short period of time and stabilizes due to the influence of the biological and physical environmental factors. But changes that take place in the physical environment caused by human action do not stabilize within a short period of time This has become unbearable.

Environmental problems of the Earth can be identified in terms of environmental problems related to hydrosphere, atmosphere, lithosphere and biosphere.

Social influences that take place due to environmental problems

Many environmental problems are caused by the over utilization of environmental resources in an unorganized manner in order to satisfy human needs. Many countries of the world suffer due to this fact. Food and nutritional problems, diseases and health problems, destruction of life and property due to disasters, social and economic degradation, etc., pose serious threat to the wellbeing of the society.

Over consumption of resources can be noticed as the main cause for environmental problems. Developed countries utilize relatively higher level of resource consumption. As a result of this, developing countries are affected unfavourably and are severely affected by many environmental problems. The main reason for this is the fact that resources of the developing countries are directed towards fulfilling the needs of the developed countries. For example, higher percentage of natural and mineral resources found in African, South American, and Asian continents are used for the requirements of developing countries. Due to this fact the resources are depleted rapidly as they tend to limitless mining and quarrying of resources for selling them. Poverty of these countries have been increased as they do not have a fair price for the resources. Due to their poverty, destruction of forests, unsophisticated mining and quarrying and unprotected use of the resources have intensified these problems.

Accordingly, environmental problems have intensified social disparities further and because of that they have been subject to many environmental and social influences.

Activity 4.2



- Explain natural causes that lead to environmental problems.
- Show the bad effects of environmental problems caused by natural factors.
- Write an article to the newspaper on "Social effects created by environmental problems".

Damage caused to the physical environment through natural phenomena

Environmental problems are created by the phenomena that affect the natural balance of the earth sphere. As examples, earth quakes, landslides, volcanoes, wild fire glaziers, floods, droughts, whirlwinds, tsunami can be taken.



Fig 4.14 - Earth quake



Fig 4.15 - Tsunami

Through the environmental problems created by these natural incidents short term disasters take place. A storm damages the natural environment as well as property and when the effect of the storm diminishes its effect also ends. Here the affected trees and plants recover or adapt within a very short period of time. But destroyed property has to be reconstructed.

Activity 4.3



- Prepare an information file on environmental problems created by these natural incidents

Environmental problems created by human

As a result of human activities on the natural environmental systems environmental changes occur subsequently creating many grave environmental problems. Bad effects of these changes have given rise to many severe problems such as global warming, severe changes in the weather patterns, pollution of bio diversity, pollution of air and water, loss of soil fertility, occurrence of acid rains, depletion of the ozone layer, desertification, saltification, spreading diseases, melting glaciers and rising sea level. Actually, even though all these are treated as environmental problems they can also be shown as problems of the human species. The causes of environmental problems are discussed below.

Water Pollution

The specific feature of water is that it can dissolve many substances easily. Therefore water gets easily polluted. During the past 125 years due to human activities water was polluted rapidly. Water is polluted as a result of increasing population, improper disposal of human excretion in an unhygienic manner, releasing harmful materials through industrial waste, destruction of forests, agricultural activities, etc., because of this reason 24% of world population have lost the right to protected water.

Clean water

Clean water means water without acidity or alkaline. Ph. value of pure water is 7.0. Pure water cannot be seen in the natural environment because it becomes acidic by contacting with carbon dioxide found in the air.

Water pollution is the change of natural quality of water or else the change in physical, chemical and biological characteristics of water.

Causes of water pollution

- By industries

As examples paper, paint, garments, tanning leather, mineral oil, rubber, food industry, and iron and steel industry can be identified.

- By agricultural activities

Fertilizer, weedicides, pesticides, insecticides, etc.,

- By natural causes

Volcanic activity, earthquakes, tsunami, landslides, activities of underground mineral materials

- Becoming impure through household consumption and garbage and sewage
- Washing vehicles
- By acid rains
- Nutrients, algae and aquatic plants
- Gem mining, quarrying, building construction, laying oil and water, construction of artificial reservoirs, coal mining
- Salt water inflow
- Military exercises and nuclear experiments carried out at the sea

Problems created by water pollution

- Disturb the functioning of the water cycle
- Spread of diseases and plague caused by drinking polluted water
- Death of aquatic organisms
- Interrupt agricultural activities
- Death of aquatic plants and aquatic community
- Spread of algae and other hostile plants
- Destruction of natural beauty
- High cost borne to obtain pure water

Damages caused to the lithosphere and human influences related to them

Many resources essential for human needs are obtained from the lithosphere. Lithosphere is the earth's outer covering of hard rocks. This consists of rocks, minerals and soil. This part is utilized by man for all sorts of his economic activities. Iron ore, aluminum, titanium, manganese, lead, copper, tin, platinum, uranium, mercury are included in this. Man uses these materials for his industrial requirements. As these minerals are spread unequally they are owned only by few countries.



Fig. 4.16 Iron ore mining



Fig 4.17 Coal mining

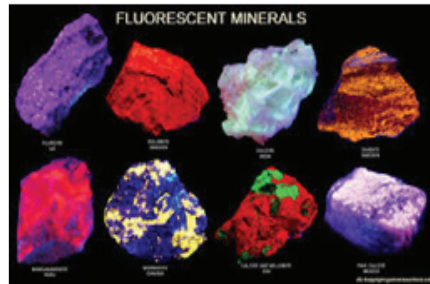


Fig. 4.18 Mining

Since these mineral resources are spread not only on the surface of the earth but it is also found in the interior of the earth it causes much damage to the Lithosphere.



Fig. 4.19 Influences and damages caused by mining

These mineral resources are exhaustible resources because it takes a long span of time for the formation of them. Therefore, they should be utilized economically. Mining should be carried out by causing minimum damage to the lithosphere.

Influences of the damage caused to the lithosphere

- Destruction of natural beauty
- Degradation of soil
- Formation of marginal lands
- Flooding
- Infertility of soil
- Destruction of forest cover
- Spread of infectious diseases
- Destruction of water resources
- Reduction of underground water level

Damages caused as a result of the utilization of land and the human influences towards it

Land utilization demonstrates the changes made to the natural land and for the satisfaction of human needs. Changes made by man to the land is shown in the pictures below.



Fig. 4.20 - Highways



Fig. 4.21 - Factories



Fig. 4.22 - Other activities



Fig. 4.23 - Created environment

Different threats have been posed to the environmental types of system due to the land utilization

Removal of forest cover in this manner for agricultural activities

Out of the 144.8 million km² total land area of the earth only 11% can be cultivated. Much of the land area remains unsuitable for human dwelling and for economic activities. Already a large amount of land area is cleared for cultivation. The main reasons for the removal of this forest cover are preparation of agricultural lands, fulfillment of energy requirements, timber trade, colonization, and construction of industries, mining, construction of roads, development projects, and construction of artificial reservoirs. As examples depletion of forest resource : 85% the in Ivory Coast, 68% in Congo Forests, 95% in Bangladesh and 78% in Sri Lanka Forests have been destroyed.

Harmful effects caused by the depletion of forests

- Supply of oxygen to the atmosphere is obstructed
- Reduce the ability to absorb carbon dioxide
- Drying up of water reserves
- Removal of moisture of the soil
- Increase of floods and landslides
- Infertility of the soil due to deterioration of the physical qualities of the soil
- Loss of dwelling for the living beings
- Decline of the beauty of the environment
- Limitation of the supply of timber, food and medicines
- Destruction of bio-diversity
- Increase of soil erosion
- Increase of global warming
- Lowering of the underground water level
- Desertification

Activity 4.4



- Prepare an information file depletion of biological resources (living resources) and other related sections.
- Suggest measures that can be taken to conserve forest resource.
- Make use of the experiences gained by being sensitive to the environment to develop good values.
- Present your ideas about the measures you can take as a good citizen to minimize environmental problems.

Use of chemicals in agricultural activities

Since Green Revolution with the modernization of agricultural activities which increased the harvest, the use of chemical fertilizer, insecticides, weedicides has given rise to various problems. It changed the local environmental conditions and polluted water. Accordingly, many strategies introduced under Green revolution have contributed to pollute the environment. By 2010, 40% of the responsibility for global warming rests on these influences. As a result of this 23% of fertile land has been deteriorated. (Source: Management of Environmental Resources and Sustainable Development – H.A. Danapala)

Disposal of indecomposable waste matter on land

With the technological development of man plastics and other artificial materials, electronic goods and instruments are produced with the resources available in the environment by changing their characteristics. They reach the market competitively in different shapes. Within a very short period of time they become outdated and are converted into waste. All these matter cannot be easily decomposed through the natural process. The rate of production of these goods is higher than the rate of destroying them and as a result they are added to the physical environment as excess matter. This has become an obstacle to the environmental process and the outcome of it is the pollution of land, water and air. They are very difficult to be recycled.

Deposition of industrial waste

In the process of producing goods and services by man industrial waste is disposed as a byproduct of mineral fuel, remains of minerals, iron and noniron remains, etc.

A part of this waste matter can be recycled where as many cannot be recycled. This has created many problems. The highly critical one out of them is the deposition of nuclear waste. Many problems have been created due to the inclusion of radioactive material in them.



Fig. 4.24 Industrial waste



Fig 4.25 Nuclear waste

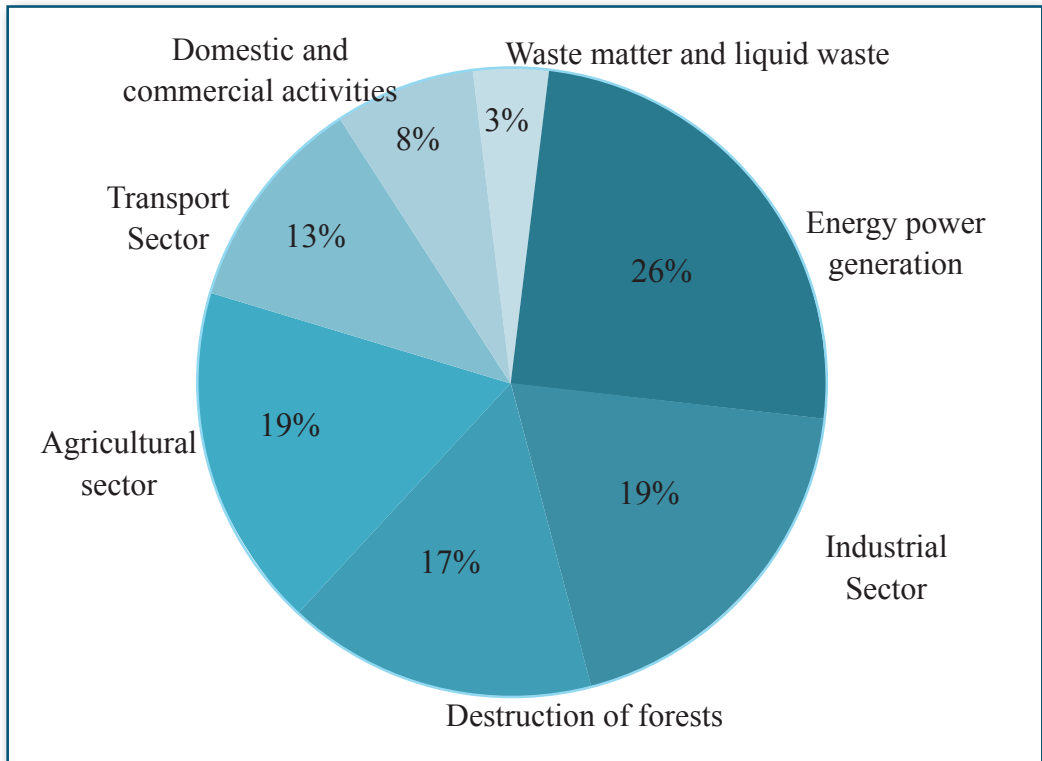


Fig 4.26 Chemical waste

Air Pollution

Changes that take place in the composition of atmosphere can be defined as air pollution. Human activities have been the main cause of it. This disaster began as a result of the new inventions of the Industrial Revolution and Green Revolution. Particularly this was started when man began to use fossil fuel as an energy source. Other than this, sectors such as industrial, agricultural, transport and deforestation have contributed to air pollution.

Air Pollution and Greenhouse air emission



Even though 99.9% of the atmosphere is composed of nitrogen, oxygen and argon rare types of gases such as carbon dioxide, methane, carbon monoxide, nitrogen oxide, and chlorofluorocarbon have contributed to this air pollution. Many of these gases are by products of things produced by man.

Natural causes of air pollution



Fig. 4.27 - Volcanic eruption



Fig. 4.28 - Wild fire



Fig. 4.29 - Sand storms

Air pollution by human activities



Fig. 4.30 - Factories



Fig. 4.31 - Transport activities



Fig. 4.32 - Garbage



Fig 4.33 - Aero planes



Fig 4.34 - Deforestation

Harmful effects of air pollution

- Global warming
- Depletion of ozone layer
- Acid rains
- Sand clouds
- Destruction of bio-diversity and bio production process
- Climatic changes

- Melting snow caps
- Rising sea level
- Spread of diseases and epidemics

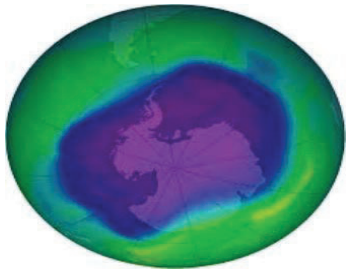


Fig 4.35 - Depletion of ozone layer



Fig 4.36 - Acid rains



Fig 4.37 - Sand storms



Fig 4.38 - Floods



Fig 4.39 - Droughts



Fig 4.40 - Melting snow caps



Fig 4.41 - Diseases

Effects of air pollution on climatic conditions

The natural greenhouse cover has been severely changed due to the manmade greenhouse gases produced and released to the atmosphere as a result of modernization that took place in agricultural, industrial and transport sectors. The increasing concentration of greenhouse gases in this manner has caused global warming. From Industrial Revolution, burning of fossil fuel and deforestation has contributed to increase the concentration of hydrogen to 26%. Due to activities like

agriculture and animal husbandry, methane concentration have also increased as a result of increased bio mass combustion power.

Bad effects of climatic changes

- Rasing average temperature of the world
- Changes in precipitation process
- Marginal occurrences example - lightning storms, tornados, ice rains etc.
- El Nino effect
- Effects of monsoon activities
- Melting snow and ice cover
- Rising sea level
- Decreasing agricultural harvest
- Increasing contageous diseases

Effects on the biological environment and the social environment

Human activities have contributed to remove biological resources from their natural habitats or eliminate them. Through these natural processes, nonliving components have greatly affected plant and animal population. As an example forests, wet lands, bio diversity, oceanic resources including coral reefs have been affected by this. A large number of plants and animal population have been included in the Red Data book due to this reason. Accordingly, while the biological environment directly contributes to the existence of social environment the breakdown of its balance also causes the decline of the social environment.

Effects of damaging the biological environment

- Collapse of the balance of biological environment
- Destruction of endemic plants and animal communities
- Collapse of the functions of the bio systems such as oxygen cycle, carbon cycle, water cycle

- Collapse of food chains and food webs
- Formation of invasive plants and animals

Effects on the social environment

When human activities become complex even the social environment becomes complicated. Complex activities of man have even caused social diversity. Accordingly, role conflicts, functions related to environmental conflicts, socio cultural and moral decline, collapse of family institutions, role of the family becoming complex, changes in social institutions, globalization, changes in economic patterns, technical modernization, etc., have influenced almost all the societies in the world.

Effects of the damage done to social environment

- Collapse of social relationships
- Occurrence of religious and racial/communal conflicts
- Social injustice takes place
- Breakdown of family institutions
- Breakdown of parent children relationships
- Increase of immorality
- Increase of anti-social activities

Responsibilities and duties of the government over environment

It is obvious that all the animal and plant species including human living on earth have no existence without the environment. Therefore, it is important to protect the qualitative and quantitative aspects of environment. Government should follow environmental protection and conservation strategies. Measures that could be taken for this are given below.

- Introducing environment standards, issuing environmental protection license, and carrying out assessment to find environmental impact before commencing large scale development projects according to National Environment Act
- Protecting the environment by taking regionally important decisions regularly considering the requirements of the environment.

- Developing the attitudes of the citizens to abide by the legal frame work related to environment
- Producing environment friendly citizens by introducing awareness raising programmes
- Esitimating environmental cost when doing development projects
- Directing the production and industrial sector of the country towards the concept of green productivity

Responsibilities and duties of citizens regarding environment

- Using environmental resources economically
- Prevention of disposing indecomposable waste
- Recycling waste matter
- Encouraging planting trees around home and its surrounding
- Work with the awareness of the importance of environment
- Raise awareness among others about protecting the environment
- Follow and abide by the environmental laws
- Assisting the institutions affiliated with the environment
- Following an environment friendly life style

Development

Qualitative improvements in the living conditions of man can be defined simply as development. At the beginning, the concept of development was considered to be the economic growth and identified it as an increase in the Gross Domestic Product. However, the concept of development gives priority to raise the living conditions of a country, improvement of welfare services and economic progress.

Evolution of the concept of development

As the modern concept of development is a concept originated in the Western World it is very important to pay attention to several definitions put forward by academics in order to get a thorough understanding of it.

Development occurs with: the reduction and elimination of poverty, inequality and unemployment within a growing economy.

Dudley Seers

"Increase in production and the improvement in the methodology and institutional organizations that contributed to increase the production is development."

Kindal Burg

Development is the upliftment of the quality of life of the world population.

1961 - 70 development decade

United Nations Organization

Economic development of a country should go together with social development.

Social Development should take place in food, nutrition, health, education, housing, social security, clothing, leisure, human freedom etc.

1978 UNESCO Declaration

Development is the process of growth and changes in factors including population, social, cultural and moral aspects.

1981 – 90 Development Decade

The United Nations Organization

Development that meets the needs of the present without compromising the affecting of future generation to meet their own needs is called Sustainable Development.

The Brundtland Commission

According to the above definitions, it is clear that the concept of Development at the beginning tended towards economic development but subsequently it favours the qualitative development in life. It further expands in to a broad concept to include changes that take place in traditions, cultures and moral values. Subsequently, it included concepts like human rights, democracy, politics, nature of institutions and quality of the environment.

Activity 4.5

- Explain the meaning of "Development" based on the definitions given.
- Analyze the reason for the concept of "Development" to change from time to time.

Measurement of Development

Development should be measured in order to consider the economic progress and level achieved by a country, By measuring, it can be determined whether it remains at a higher or lower level. A number of measurements are used to measure it. These measurements have been changed with time.

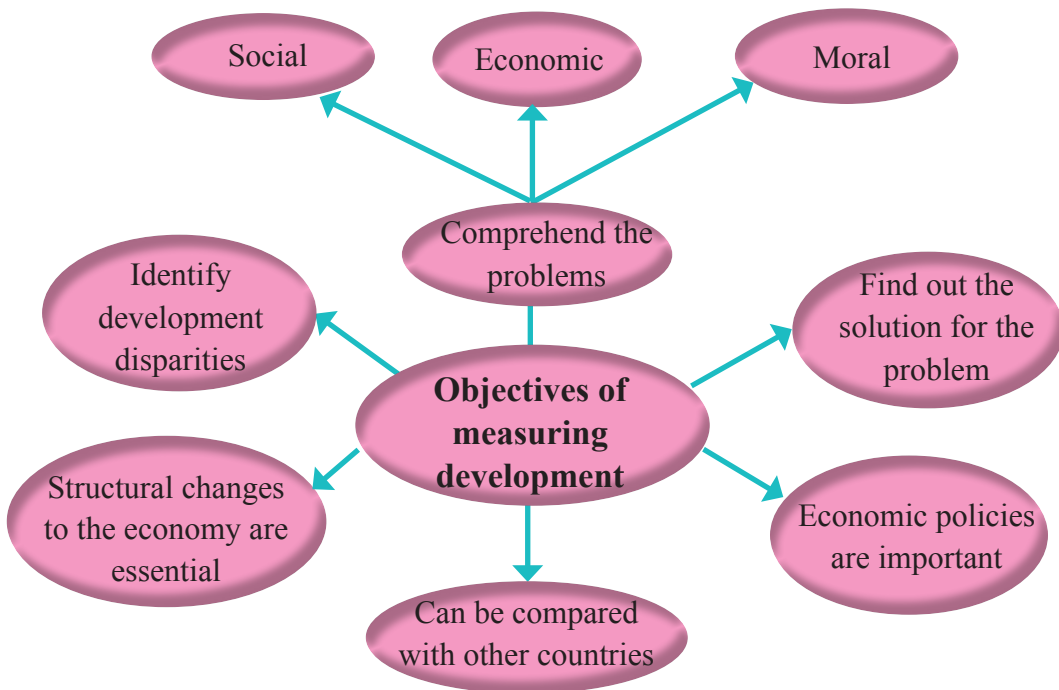


Diagram 4.1

Activity 4.6

- Engage in a brain storming disussion about the intention of measuring the development using the above concept map.

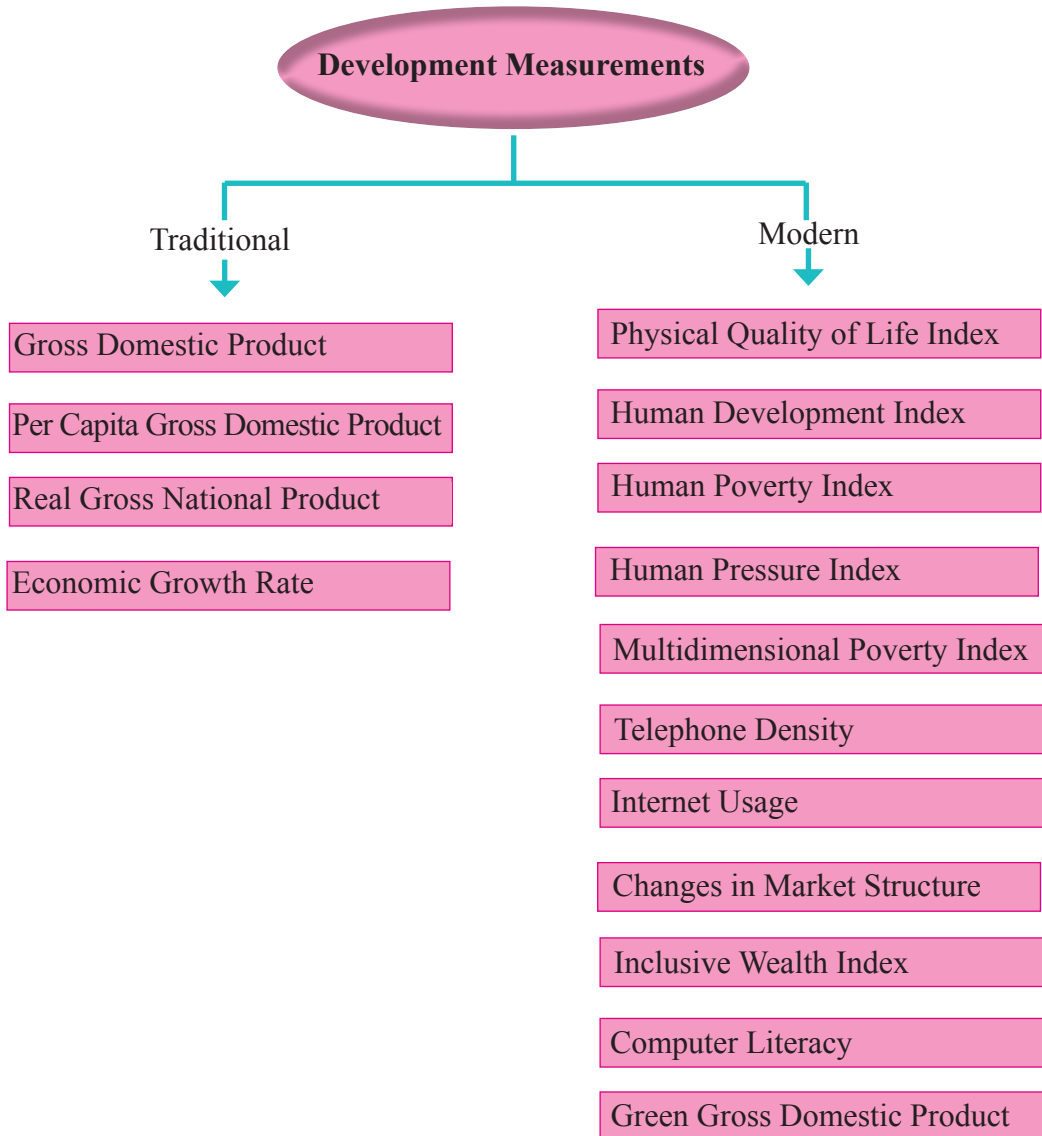


Diagram 4.2

Gross National Product

The total of the value additions of all the goods and services produced in a country within a year after taking Net Foreign Factor Income into consideration is called Gross National Product.

$$\text{Gross National Product} = \text{Gross Domestic Product} + \text{Net Foreign Factor Income}$$

Per Capita Gross National Product

The average amount of the goods and services produced in a country within a year that is held by an adult is called the Per Capita Gross National Product or Per Capita National Income.

$$\text{Per Capita National Product} = \frac{\text{Gross National Product}}{\text{Mid Year Population}}$$

Drawbacks in Per Capita Gross National Product

- Only economic factors are considered
- It does not display social status
- Information on social welfare is not included
- The value of this is divided among persons who do not contribute to production

$$\text{Real National Product} = \frac{\text{Nominal Gross National Product} \times 100}{\text{Implicit Price Index}}$$

Modern Measurement

Physical Quality of Life Index (PQLI)

Three components are used to prepare this index.

Literacy
Life expectancy at birth
Infant Mortality Rate

This index takes values from 0 – 100. This index helps to understand social, cultural, education, nutrition and health aspects of a country.

By this index the nature of social development can be measured. Therefore, the real nature of the development can be identified through this. This is used as a supplement to the Per Capita Income.

Human Development Index

This is a relative measurement which is used for measuring human development. The progress achieved by a country in social and economic components can be measured using this index. It represents human development as higher, medium and lower levels.

This is a composite index which measures the three aspects of human development, namely, healthy living, level of knowledge and living conditions. Following components were used at the beginning for the preparation of this index.

- Life expectancy at birth
- Education
- Per Capita Income adjusted by the purchasing power

But at present a wider concept of education is used instead of literacy. Using this index countries are categorized as very high, moderate and lower level of human development.

HD index of some selected countries

Country	HD index		Place Held	
	2010	2012	2010	2012
Sri Lanka	0.658	0.715	91	92
India	0.519	0.554	119	136
Pakistan	0.490	0.515	125	146
Malaysia	0.744	0.769	57	64
Singapore	0.846	0.895	27	18
USA	0.902	0.937	4	3
Iceland	0.869	0.906	17	13
Sierra Leone	0.317	0.359	158	177

Source: Human Index Report 2010 and 2013

Efficiency of the measurements used to measure development

Drawbacks in Per Capita Gross National Product

- Only economic factors are considered
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Classification of countries according to development

Depending on the level of development using both traditional and modern types of measurements countries are classified as

- Developing Countries
- Developed Countries

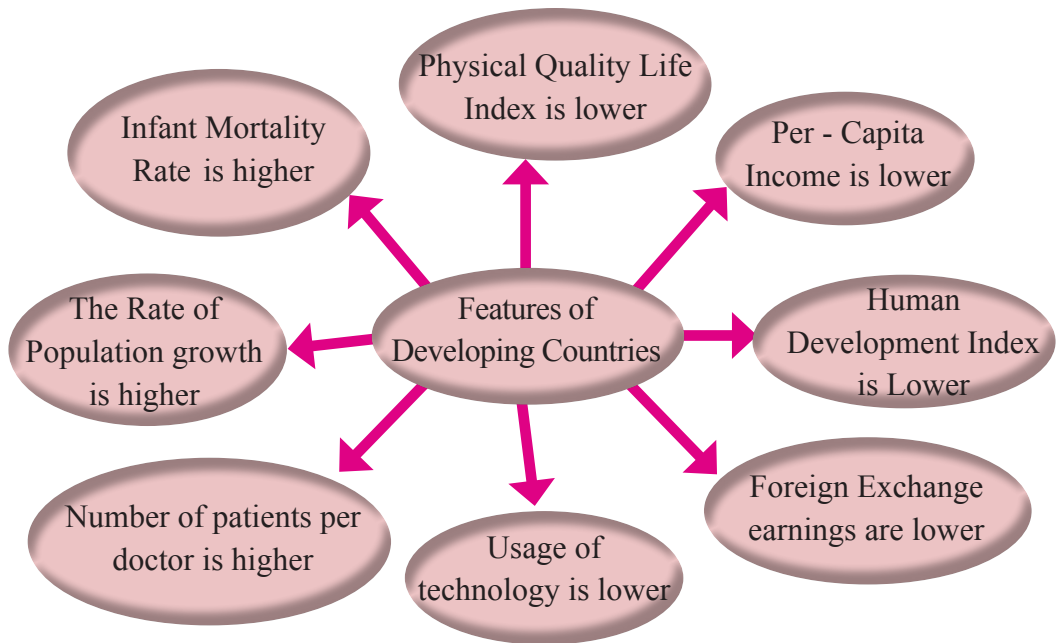


Diagram 4.3

Problems encountered by the developing countries

- Scarcity of Capital
- Price variability in primary goods
- Have to pay higher prices on imports
- Unfavourable balance of payments
- Protectionist policies adopted by developed countries in international trade
Example: tariffs, rationing systems
- Energy crisis
- Brain drain

The reason for the state of poverty prevailing in the developing countries is depicted by the vicious cycle of poverty.

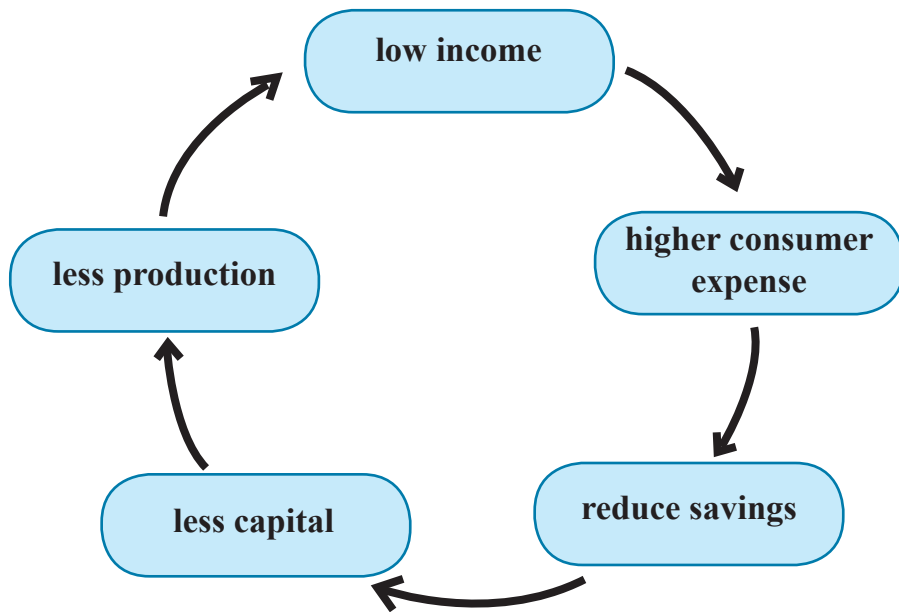


Diagram 4.4

Solutions for the problems faced in the process of development

- Encourage domestic savings
- Diversification of exports
- Search for new markets
- Follow import substitution policies
- Introduce alternative energy sources and use them
- Formation of regional organizations
- Formation of trade agreements with developed countries
- Obtain foreign aids

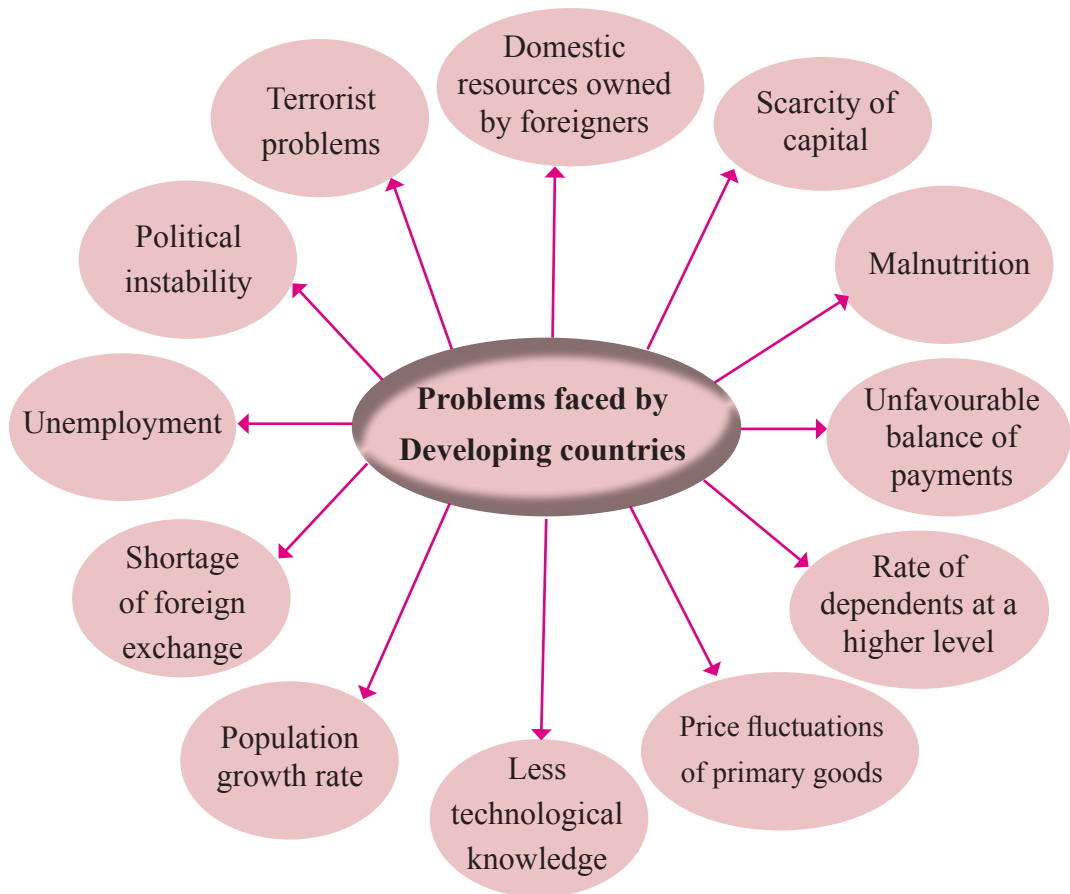


Diagram 4.5

Examples of Developing Countries

- Sierra Leone
- Ethiopia
- Somalia
- India
- Bangladesh

Significance of Sri Lanka as a Developing country

- In relation to the Developing Countries Sri Lanka has a higher level of literacy
- Infant mortality and maternal mortality remain at a lower level
- Life Expectancy remains at a higher level

Measures that have taken by Sri Lanka to overcome development challenges

- Developing tourism
- Encourage local knowledge and domestic investors
- Expand technological knowledge and skills
- Build up political stability
- Encourage domestic savings
- Export diversification
- Develop infrastructure facilities
- Promote export oriented industries
- Convert Sri Lanka into a hub of shipping, education and information technology

Characteristics of Developed Countries

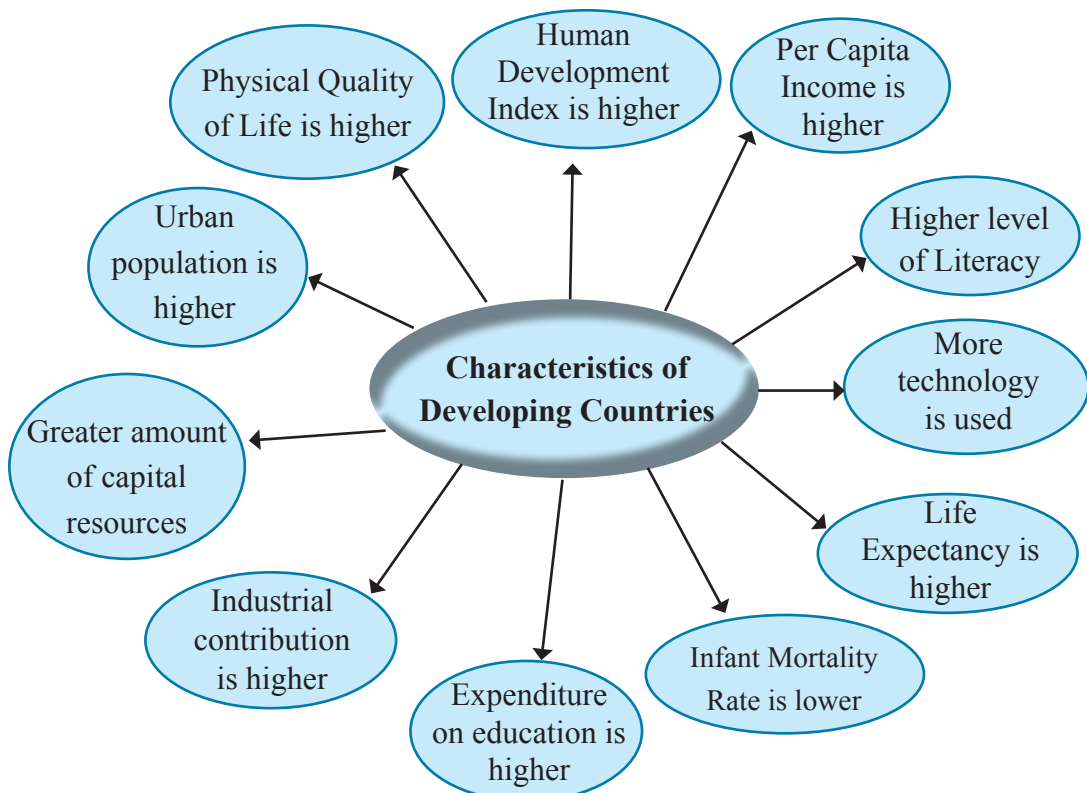


Diagram 4.6

Problems faced by Developed Countries

- Environmental Pollution
- International Terrorism
- Difficulty in obtaining raw materials
- Energy crisis
- Market competition
- Intensifying social problems
- Increasing natural disasters
- Market competition posed by Newly Industrialized Countries

Examples of Developed Countries

- Norway
- Sweden
- Japan
- USA
- Australia
- Canada
- Germany
- France
- Belgium

The Concept of Sustainable Development

The greatest challenge in the concept of development is the fulfillment of human necessities which expand with the increase in population. More resources

have to be used to fulfill needs of the increasing population. The environment has to bear a huge cost resulted by the increase in production and inputs. The environment is put into great risk due to the fact that in the process of development man has completely forgotten the environment as he pay greater attention to fulfill his needs and requirements.

Due to the reasons like excessive mining of resources, moving to alternative resources as a result of by the scarcity of resources, increase of waste matter disposed to the environment, intensification of environmental pollution, etc., we have to face marginal states such as damaging the bio diversity, obstruction of natural process, intensification of natural disasters and increase in global warming.

Even though the concept of development has upgraded the quality of human life through economic development it is revealed that as a whole it has not been able to bring fairness to the world community. Majority of the world population suffers from poverty while destruction and deterioration of the quality of natural resources are taking place. As a result of this, a greater number of people are subject to of unfavourable physical health conditions.

In this manner, changes that cannot be borne by the physical environmental systems should not be brought about for the sake of the quality of human development. The interactions between man and the environment should not be disregarded and we should not leave room for the destruction of resources. It is important to pay attention to prevent depletion of rare and exhaustible (non-renewable) resources. We should also utilize these resources with proper management. Accordingly, man should enter into the development concept in a fair manner that safeguards the existence of the future man in the globe despite the development attempts.

Sustainable development is maintaining the process of development in a higher level that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Evolution of the concept of Sustainable Development

The initiative for the concept of sustainable development was taken with the establishment of the World Environmental Commission in 1983 with the former Prime Minister of Norway Gro Harlem Brundtland as its President. The report by the name “Our Common Future” which was published by this Commission argued that the “Environment and Development” should be integrated. Accordingly, sustainable development is defined as “the development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. It proposed to achieve those goals nationally as well as internationally. This concept has been formally accepted worldwide and the International Conference on Environment and Development held in July 1992 at Riode Janeiro paid more attention to environmental problems. At this conference the agenda for the 21st century was globally accepted. All the nations were expected to carry out strategies endorsed for the Sustainable Development and to fulfill all their tasks and responsibilities.

The United Nations held Millennium Conference in year 2000 and when formulating millennium objectives priority was given to objectives of sustainable development. Progress of the Millennium Objectives of the world was evaluated in 2005. Tewnty years after the first conference, in 2012, a World Conference was held again in Riode Janeiro. It was held “for the renewal of our commitment for a lasting development of our planet and to ensure an economically, socially and environmentally established future for the present and future generations”. Accordingly, it is quite essential not to deviate from the determinations arrived at this conference.

In this manner the United Nations Conference (Rio + 20) determined that it is quite essential to improve lasting development further by uniting all the sectors in its different perspectives including economic, social and environmental sectors and by accepting their interrelationships. Hence, it is admirable that the world community have paid attention to this concept on policy and legal basis

Challenges to overcome when achieving Sustainable Development

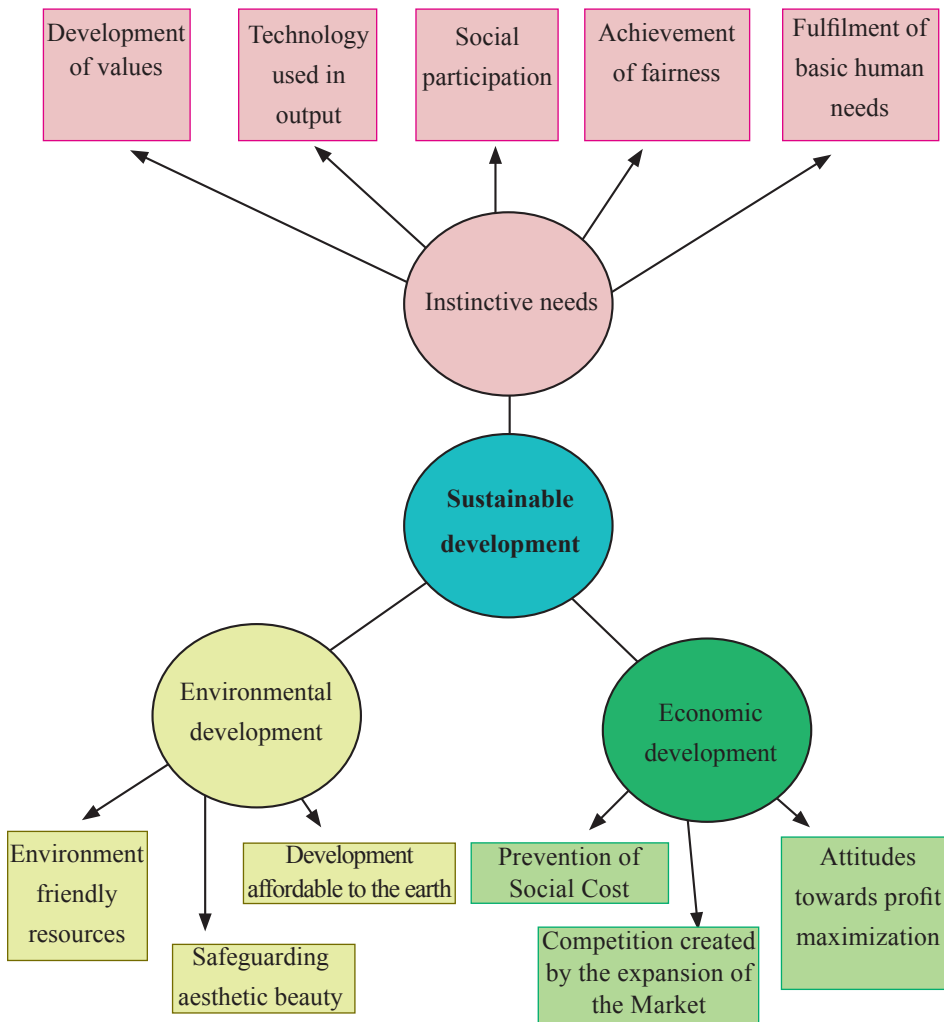


Diagram 4.7

Necessity of Sustainable Development

In the fulfillment of human needs and wants under Sustainable Development, irrespective of considering only economic needs, attention should be paid to both social and environmental development fulfilling human needs and wants.

In the development process it is quite important to be sensitive to the needs of the environment. The social cost of the damage caused to the environment and the loss of natural resources in the process of human development should be

assessed. Since the economic activities which are carried out with the expectation of profit making, affect the entire world population there should be restrictions. It is important to set restrictions on harmful things produced on profit expectation. The balance of social, economic and environmental development should be brought about by carrying out environmental assessments on large scale mining and construction activities, industries and agricultural activities which cause damage to the environment. Therefore, if we are going to have a pure world for our future generation we should utilize resources without exploiting them. The great Indian poet Kalidasa in his text “Kumara Sambhawa” stated that the earth should be utilized in the manner of milking a cow and not by exploitation. Therefore, what is expected by Sustainable Development is the development in that sense. It is, therefore, important to pay attention to the Millennium Goals on Environment and Development.

Measures that should be taken to achieve Sustainable Development

At present many countries in the world have realized the importance of the concept of Sustainable Development. Accordingly, agreements have been reached to guarantee an economically, socially and environmentally Sustainable future not only for our planet but for the future generation as well. Thus it is important to pay attention to Millennium Goals on Sustainable Development.

Main factor that determines development is the availability of resources. It is easier to achieve Sustainable Development by increasing productivity and efficiency of the resources. Here the 3R concept is important as a main approach that can be utilized.

- Reduce
- Reuse
- Recycle

Strategies globally used to increase productivity

- 5S Concept - Productivity Concept
- CP - Cleaner Production Concept
- GP - Green Productivity Concept

- TQM - The Concept of Total Quality Management
- Poka Yoke - Mistake Proofing
- PPP - Producer Pays Principle

Activity 4.7

- Propose measures that you can take at home to act in an environmental friendly manner.
- Out of the proposals you suggested select sections in which you should be more sensitive and put them into practice.
- Take follow up measures in carrying out these tasks.
- Take initiative by your class to carry out environmental protection programmes that can be put into practice in your school.

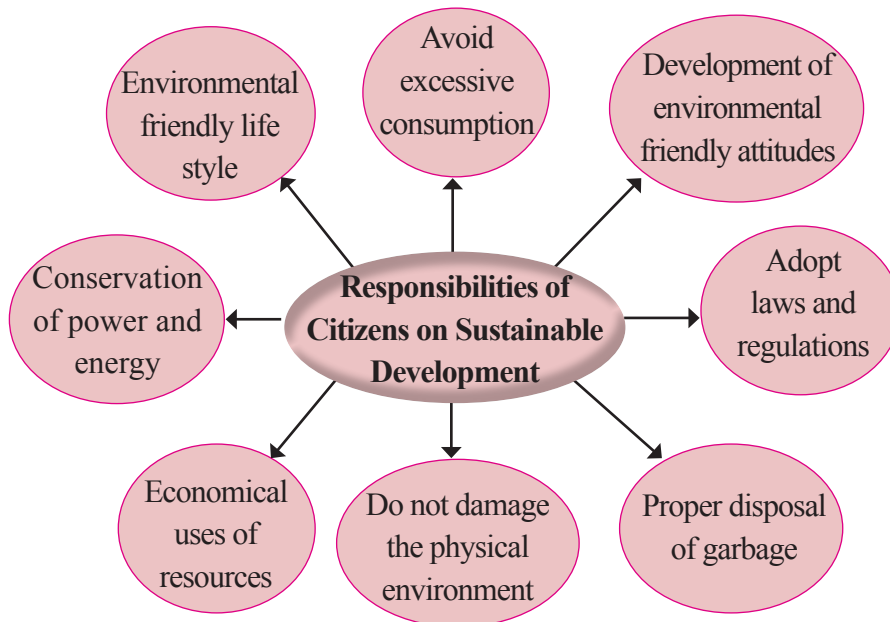


Diagram 4.8

The duty and responsibility of different institutions and organizations about Sustainable Development

The entire economic process of a country is directed and managed by the state or government sector and the private sector. In all these activities it is quite important to pay greater attention to the importance of the environment. Particularly, these institutions should be bound to be sensitive to the damage caused to the environment, monitoring and searching about them, collecting accurate data, informing, and raising awareness of the relevant institutions and sections. Awareness should be raised about the importance of sustainable development through various media. Especially development of environmental friendly attitudes, thinking, behaviour patterns and simple way of living should be established in the education process.

The duty and responsibility of the government about Sustainable Development

The rulers should possess the guidance and dedication necessary for the accomplishment of the concept of Sustainable Development in the State policies and vision. Here it is quite important to adopt a national policy on Sustainable Development. Through this the rulers should be of responsible of strengthening state institutions, raising awareness among them and directing them towards Sustainable Development. All these awareness raising activities should be carried out by the officers of state and state institutions. Further, they should be involved in the enforcement of National Environmental Acts through the relevant institutions and mediation in the administration of justice properly. From time to time important policy decisions should be taken considering the environmental needs locally as well as at national level.

Poverty of the people can be regarded as a major reason for the destruction of the environmental resources. As a result of this, environmental resources are misused and exploited in an unauthorized manner. Measures to alleviate poverty must be followed in order to prevent this. Steps should be taken to minimize the imbalance that prevails in production, distribution and consumption of a country. Investors should be encouraged to wards environmental friendly production and services.

Accordingly, several responsibilities and duties of the government to be fulfilled in order to maintain sustainable development are given below.

- Planning and implementing environmental conservation programmes.
- Encouraging manufacturers of environmental friendly goods and services.
- Educating the public about the importance of consuming environmental friendly goods and services.
- Making and enforcement of laws related to environmental conservation. example- 1980 National Environment Act.
- Environmental Impact Assessment (EIA)
- Environmental Protection License (EPL)
- Introducing environmental standards
- Declaring Environmental Protection Areas (EPA)
- Controlling the emission of green house gases
- Directing people towards environmental friendly life style, limit the excessive consumption of resources.