UNIT 19 ENVIRONMENT AND SUSTAINABLE HUMAN DEVELOPMENT

Structure

19.0 OBJECTIVES

After reading this unit, you will have an idea of:

- interface between sustainable human development and the environment;
- the trade off between economic growth and sustainable development; and
- global environmental concerns and the choice of partnership in sustaining human development.

19.1 INTRODUCTION

The development theories practised in the 1950's and 1960's overwhelmingly emphasised economic growth, growth of gross national product (GNP). In 1970's the world witnessed growing poverty and the approach followed was basic needs. However, the basic needs approach failed not only because of the selfishness of the privileged few but also due to helplessness of the deprived many. The 1980's have also witnessed selfishness and helplessness, both accumulated by the acute problems of environmental degradation in general and debt, deprivation and growing disparities within the countries in particular. However, in 1990's some hopes are being surfaced on the horizon: more balanced management policies, greater awareness of interdisciplinary linkages, sustainable benefits arising out of technological advances, the role of partnerships, etc. So, the pivot around which the new paradigm revolves is sustainable human development. Human development cannot be propelled by pursuing economic growth alone. Quantity of economic growth is only one dimension of development. Distribution of income, health, education, clean environment and freedom of expression are the most critical dimensions in the development process.

Sustainable development is primarily concerned with the replicable models of material consumption, models that recognises the limitations of the environment. However, sustainable development is not simply a call for environmental protection. It also implies

a new concept of development which provides opportunity for all the people of the world without depleting the world's finite natural resources. So, sustainable development is a process in which economic, fiscal, agriculture, industry and all other policies are taken care of to bring about development that is economically, socially and ecologically sustainable.

Sustainability also requires far-reaching changes at both national and international levels. At the national level, sustainability demands a balance between the compulsions of today and the needs of tomorrow, between private initiative and public action, between individual greed and social compassion. Sustainability also requires a major restructuring of budgetary provisions from military spending and inefficient public investment towards more human investment and environmentally safe technologies. At the international level, sustainable development require a consensus that the world cannot be safe for anyone without hearty co-operation of every one. For this what is needed is a equitable world order by dismantling the present international economic order. The present international order denies more than $ 500 billion of economic opportunities each year to poor nations due to their unequal access to international market (market for good, services and financial capital). In such an unequal world, the concept of one world cannot be realised without global reforms. Without global equity, global sustainability will always remain an elusive concept.

19.2 THE CONCEPT OF SUSTAINABLE HUMAN DEVELOPMENT

Human development as defined in the UNDP's Human Development Report as the enlargement of the range of people's choices. It is an extension of the basic needs approach. (The concept of basic needs approach reminds us that the objective of development effort is to provide all human beings the opportunity for a full life.) Since, some basic interpretations are in terms of commodity bundles or specific needs, human development is trying to get away from this. Human development goes beyond basic needs in a sense that it is concerned with all human beings irrespective of poor and rich within a nation-state and among nation-states.

19.2.1 Components of Human Development Paradigm

There are essentially four components of human development paradigm; equity, sustainability, productivity and empowerment. Since human development paradigm distinguishes from the traditional concept of economic development, each of them needs to be taken care of in its proper prospective. Equity: Since, development is to enlarge people's choices, people must enjoy equitable access to opportunities. However, equity in opportunities need not necessarily result in same choices or same results. Even if, equity in opportunities result in unequal outcomes, equity in access to social, political and economic opportunities is regarded as a basic human right in a human development paradigm. It is based on the assumption that all human beings must be enabled to develop their capabilities to the maximum extent and put those capabilities to the best use in all possible areas.

Sustainability

Sustainability is another essential component of human development paradigm. Sustainability does not mean renewal of natural resources alone, which is only one aspect of sustainable development. It is the sustainability of human development including forms of capital — physical, financial, human and environmental. Putting it differently, it is the human life that must be sustained.

It also does not necessarily require preserving all kinds of capital in its current form. Technological progress undoubtedly create substitutes for some form of capital. And if cost effective substitutes are available, they can be used to sustain human choices. So, what could be sustained is at least the capacity to produce similar level of human well-being.

Sustainability is a dynamic concept focusing sharing of opportunities between present and future generations by ensuring intragenerational and intergenerational equity in

Productivity

Another essential dimension of human development paradigm is productivity. It requires that adequate investments must be made in human resources so as to achieve their potentiality. In fact, many East Asian countries have accelerated their growth through investments in human capital. Japan and Korea could emerge as the efficient exporters of steel products without possessing iron ore is mainly due to their tremendous human resources potential.

Empowerment

The human development paradigm focus on development by the people who must participate in the process which shape their lives. The strategy of prescription for the poor is neither consistent with human dignity nor sustainable over time. That is why human development paradigm envisages full empowerment of the people.

Empowerment means that people must be in a position to exercise choice of their own. It implies a political democracy where people can influence the decision about their lives. It also implies Economic liberalisation so that people are free from excessive controls and regulations. In other words, there must be decentralisation of power so that governance can be brought to the door step of every individual. Against the above discussions it is obvious that human development paradigm welcomes all choices whereas the older concept of basic needs concept is confined to only economic forces.

19.2.2 Concepts and Definitions of Sustainable Human Development

The concept of sustainable human development is that development which lasts for ever. It may be possible that those who enjoy the fruits of development today may be at the cost of making future generations worse-off by degrading the earth's finite resources and the environment. The general principle of sustainable development adopted by the World Commission on Environment and Development (our common future, 1987) is that "Current generations should meet their needs without compromising the ability of future generations to meet their own needs."

The sustainable human development i.e., ensuring that "present needs are met without compromising the ability of future generation to meet their own needs" require deliberate intervention to prevent depletion or degradation of environmental assets so that the resource base and ecological base for human activities may be sustained for ever. Different kinds of environmental assets, the renewable and non-renewable resources and sinks (the kind of actions that can ensure ecological sustainability) are summarised in the following two boxes.

BOX 1

Meeting the needs of the present....

- **Economic Needs:** Includes access to an adequate livelihood or productive assets, also economic security when unemployed, ill, disabled or otherwise unable to secure a livelihood.
- **Social, cultural and health needs:** Includes a shelter which is healthy, safe, affordable and secure, within a neighbourhood with provision for piped water, sanitation, drainage, transport, health care, education and child development. Also a home, workplace and living environment protected from environmental hazards, including chemical pollution. Also important are needs related to people's choice and control including homes and neighbourhoods which they value and where their social and cultural priorities are met.

  Shelter and services must meet the specific needs of children and adults responsible for most child rearing (usually women). Achieving this implies a more equitable distribution of income between nations and in most within nations.
- **Political Needs:** Includes freedom to participate in national and local politics and in decisions regarding management and development of one's home and neighbourhood within a broader framework which ensures respect for civil and political rights and the implementation of environmental legislation.

Source: Mitlin Diana and David Satterthwaite, **"Cities and Sustainable Development"** the background paper to Global Forum '94, Manchester City Council, June, 1994.

BOX 2

...Without compromising the ability of future generations to meet their own needs

- **Minimising use or waste of non renewable resources:** Includes minimising the consumption of fossil fuels in housing, commerce, industry and transport plus substituting renewable sources where feasible. Also, minimising water of scarce mineral resources (reduce use, reuse, recycle, reclaim). There are also cultural, historical and natural assets within cities that are irreplaceable and thus non-renewable for instance, historic districts and parks and natural landscapes which provide space for play, recreation and access to nature.
- **Sustainable use of renewable resources:** Cities drawing on fresh water resources at levels which can be sustained; keeping to a sustainable ecological footprint in terms of land area on which producers and consumers in any city draw for agricultural crops, wood products and biomass fuels.
- **Waste from cities keeping within absorptive capacity of local and global sinks:** Including renewable sinks (e.g., capacity of river to breakdown biodegradable wastes) and non-renewable sinks (for persistent chemicals, includes green house gases, stratospheric ozone depleting chemicals and many pesticides).

Source: Mitlin Diana and David Satterthwaite, "Cities and Sustainable Development" the background paper to Global Forum '94, Manchester City Council, June, 1994.

Taking into account both the development and environment components in sustainable human development, the important criteria for judging sustainable human development could be:

- The quality of life of the inhabitants including existing levels of poverty, social exclusion and integration and socio-political stability;
- The scale and nature of renewable resource use, including the extent to which waste recycling or reuse reduces it;
- The scale and nature of renewable resource use, including provision to ensure sustainable levels of demand; and
- The scale and nature of non-renewable wastes generated by production and consumption activities and the means by which these are disposed off. It also includes the extent to which the wastes affect human health, natural systems and amenities.

However, this definition remains silent about the **constituents of needs** of the present and future generation. This is crucial, primarily, because developing countries in general are not satisfied with their present levels of consumption, while developed countries are not entitled for 85% of the world's income even without reversing the present patterns of consumption. As a matter of fact, the preservation of the global environment raises serious question about the distribution of global income and asset at present.

In fact, what we really need to sustain is human life. Sustaining the physical environment is a means, not an end, like growth of GNP is only a means towards human development. The environmental debate, therefore, must be given a human face to save it from the crises of environmental degradation. In other words, sustainable human development is putting people, not trees at the centre stage of the environmental debate.

The concept of sustainable development implies that each generation must meet its needs without incurring debts that it cannot repay. The word debt includes four dimensions, which are as follows:

1) Avoiding the accumulation of environmental debts by depleting natural resources;
2) Avoiding financial debts by incurring unsustainable borrowing;
3) Avoiding social debts by neglecting investment in human capital; and
4) Avoiding demographic debts by permitting unchecked population growth vis-a-vis urbanisation.

Human development can be sustainable if adequate care has to be taken, of course, through the budgetary policies; in each of these four areas so that it remain balance in each generation. Sustainable development, therefore, requires that it must be different from economic development as well as respectful of the physical environment. And it must translate into human lives. However, preservation of physical environment is only a means towards the end, the end being sustaining human life. Development opportunities and human choices must be present for future generation so that the next generation enjoy at least the level of welfare/well-being enjoyed by our own generation.

Against this backdrop, the concept of sustainable human development should thus focus not only on the future but also on the present. It is ridiculous to worry about unborn generations if the present generation are living below the poverty line. It is neither necessary nor desirable to perpetuate today's inequities, which in fact is neither sustainable nor worth sustaining. So, adequate restructuring of the world's income and consumption patterns is a necessary precondition for any viable strategy for sustainable human development.

Check Your Progress 1

Note: i) Use the space below for your answers.

ii) Check your answers with the model answers given at the end of the unit.

1) What is human development? What are the different components of human development paradigm?

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2) How can we sustain human development?

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3) What are the important yardsticks for measuring a country's level of sustainable human development?

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4) "Sustainable human development not only focus on the future but also on the present." Elucidate.

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19.3 SUSTAINABLE HUMAN DEVELOPMENT AND THE ENVIRONMENT

"Economic development and sound environmental management are complementary aspects of the same agenda. Without adequate environmental protection, development will be undermined; without development, environmental protection will fail" (World Development Report, 1992).

It has already been discussed in section 2 that development is all about well being of people. Improving living standards and levels of health, education and opportunity are the important dimensions of economic development. However, the measure of economic development does not adequately reflect environmental degradation and the consumption of natural resources damaged by economic growth. In fact, it is neither possible nor desirable to give monetary values on all types of environmental damages. Nonetheless,

it is desirable to know how much environmental quality is being given up in the name of development as well as how much development is being up in the name of environmental protection. The World Development Report, 1992 argues that too much of environmental quality is being given up and too much of economic growth may be given up in the future to reap the benefits of both economic development and the environment. In other words, raising economic growth combined with sound environmental management policies can be used for tackling both environment and development problems.

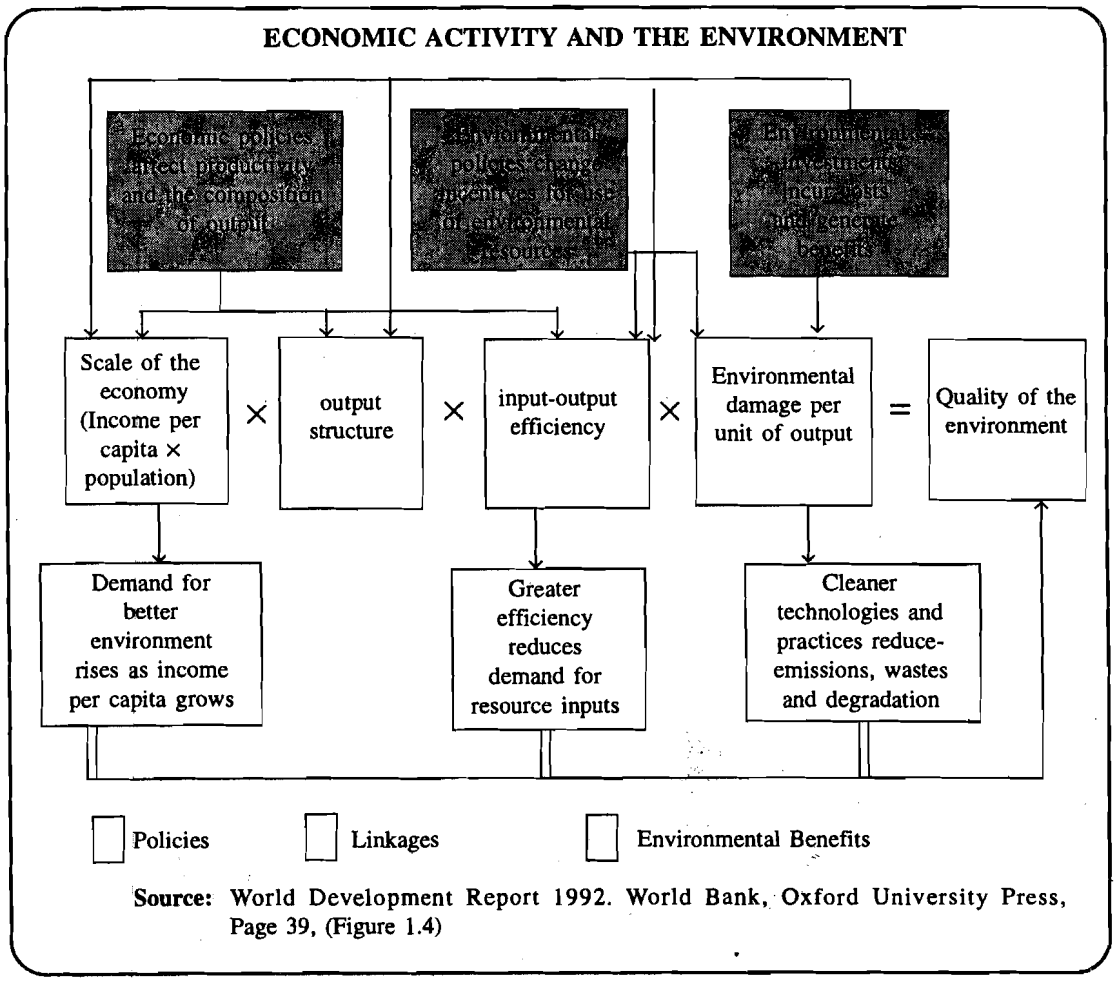
Now, the obvious question comes out is that why some economic activity lead to excessive environmental degradation? One possible answer could be that many natural resources are shared and the net value of many environmental goods and services is not paid for by those who use them. Besides, some natural resources are shared and in most of the cases there is no mechanism for enforcing property rights. Another possible reason could be that in some projects government policies subsidise environmental degradation which can induce more damage that would have been otherwise. One more reason could be that the poor who does not have adequate resources and hence no choice but to degrade natural resources in excess of what is currently needed to sustain.

The most important environmental concern in today's world that **'resources that are regenerative but are under valued'**. For instance, air and water are renewable resources but there is a limit of assimilate emissions and wastes. If pollution exceeds a particular limit, ecosystem can deteriorate rapidly. When fisheries and forests deplete beyond a threshold point, there would be loss of ecosystem and species.

19.3.1 Economic Activity and the Environment

The proposition that higher economic activity inevitably affect the environment adversely is based on the assumption that technology, taxes and environmental investment remain static. As the scale of economic activity increases, there may be a possibility that the earth's **'carrying capacity'** could be exceeded. The dynamic relationship between economic activity and the environment is given in Chart 1.

Chart 1



Source: World Development Report 1992. World Bank, Oxford University Press, Page 39, (Figure 1.4)

In Chart 1 it is clear that the scale of the economy is only of the factors that will determine environmental quality. The important question here is whether the factors that tend to reduce environmental damage per unit of activity can adequately compensate for any negative spill-over of the growth in the scale. The most important factors are:

Structure: Goods and services produced in the economy.

Efficiency: Inputs used per unit of output in the economy.

Substitution: The ability to substitute for those resources that are becoming scarce.

Clean Technologies and Management Practices: The ability to reduce environmental damage per unit of input or output.

Economic policies, environmental policies and environmental investments take cognisance of the individual behaviour in the true value of environmental resources. Economic policies affect the scale, structure and efficiency of production. Which in turn result in positive or negative effects on the environment. Efficiency resulting from economic policies often reduce the land for natural resource inputs. Environmental policies can reinforce efficiency and provide incentives for adopting environment friendly technologies. The environmental policy induced incentives may result in lower quantity of output but will generate benefits that can increase human welfare. As the scale of economy increases, there would be a possibility of increase in demand for cleaner environment, due to available of more resources for investment. Without rational reallocation of investment, the adverse consequences of economic growth is likely to dominate. For instance, increased income allows societies to deliver **public goods** such as health care, education, etc. On the other hand, environment may be worsened as the scale of economy increases. For instance, carbon dioxide emissions, municipal wastes, etc., tend to increase with income. So, what is necessary is introduction of sufficient incentives and disincentives to change the **behaviour** and **attitude** through regulations, charges, reliefs or by other necessary means. Even through, individual costs of changing behaviour are likely to be relatively higher in comparison to individual benefits, due to spill-over effect, it enables all the countries to grow more rapidly with less environmental impact then would have been otherwise.

Environmental degradation has basically three damaging effects. It affects human health adversely, reduces overall efficiency and productivity and involves loss of amenities. The health of people is affected by the contaminated drinking water, polluted air released by cooking fuels, smoke released by hazardous units, burning of woods, etc. We are going to discuss each aspect in a great detail.

Box 3

Concerns in Poor Countries

- Diarrhoes diseases that result from contaminated water kill about 2 million children and cause about 900 million episodes of illness each year.
- Indoor air pollution from burning wood, charcoal and dung endangers the health of 400 million to 700 million people.
- Dust and soot in city can cause between 300,000 and 700,000 premature deaths a year.
- Soil erosion can cause annual economic losses ranging from 0.5 to 1.5 per cent of GNP.
- A quarter of all irrigated land suffers from salinisation.
- Tropical Forests — the primary source of livelihood for about 140 million people are being lost at a rate of 0.9 per cent annually.
- Ozone depletion, loss of bio-diversity and greenhouse effect are increasing at an alarming rate.

Source: "World Development Report, 1992" World Bank, Oxford University Press, Page 44.

19.3.2 Water

Access to safe drinking water is becoming an urgent need in many countries. The problem has been compounded further by acute scarcity of water. The most widespread contamination is fecal contamination (fecal coliform levels), which affect the human health indirectly. Human sewage, industrial effluent, intensive use of chemical fertiliser in agriculture, etc. are the main causes for the inadequate levels of dissolved oxygen which in turn endangers the fish population.

Since, surface water in cities are becoming polluted and costly to purify, ground water turned out to be the potential source of safe drinking water. However, in some areas, ground water too is polluted which is very important to prevent from contamination. Seepage from the improper use and disposal of heavy metals synthetic chemicals and other hazardous wastes are the primary reason for ground water pollution. Sometimes, industrial effluents are also directly discharged into the ground water. In coastal areas, over pumping also results in salinity of water. Lack of sewage system, the improper maintenance of septic tanks, etc. often contaminates the ground water. The use of contaminated waters for drinking and bathing is one of the principal reason for spreading of waterborne disease like typhoid, cholera, etc. It is because of their repercussions on human well being and thus economic development, polluted water supplies poses serious environmental problems.

Effect of Improved Water on Sanitation

Disease	Million of people affected by illness	Median reduction attributable to improvement (percent)
Diarrhoea	900*	22
Roundworm	900	28
Guineaworm	4	76
Schistosomiasis	200	74

* Refers to No. of cases per year

Source: Esrey et al (1990) **"Health Benefits from Improvements in Water supply and sanitation. Survey and Analysis of the literature of selected diseases"** USAID, Water and Sanitation for Health (WASH), Technical report 66, Washington D.C. Also reproduced in **"World Development Report 1992"** World Bank, Oxford University press, Page-49.

The health impact of improvement of water supplies can be perceived from a recent review by the US Agency for International Development (USAID).

The above mentioned review shows that the effects of these improvements are large with medium reductions ranging from 22 per cent in case of diarrhoea to 76 per cent for guineaworm. Besides, improved water supply also affect the mortality and morbidity patterns.

19.3.3 Air Pollution

Air pollution has mainly three man-made sources : energy use, vehicular emissions and industrial production. All these tend to expand exponentially with economic growth unless suitable pollution abatement measures are adopted. The most serious health risks are due to exposure to suspended particulate material (SPM), indoor air pollution and lead. There is an increasing evidence of sickness, morbidity and mortality linked to SPM. At a higher level of SPM, polminary diseases, pneumonia and heart diseases are common, particularly among old people and individuals whose health status is very poor. Even the lower level of SPM can cause respiratory problems.

Indoor air pollution also cause respiratory and other health problems. In poor countries, most of the women and children are exposed to indoor air risks. According to a rough estimate by WHO approximately 400 million to 700 million are exposed to indoor

pollution in developing countries. In highly developed countries, the major indoor air risks are emissions from synthetic materials, resins and radon gas. In poor countries, the problem arises primarily when households cook with wood, straw or dung. In fact, in most of the rural areas, these are the only fuels available or affordable. Bio-mass burning is also linked to deforestation. This in turn is another source of environmental damage. Studies in Nepal and India of non-smoking women who were exposed to bio-mass smoke have found very high levels of chronic respiratory diseases with mortality at an earlier age.

Lead also affect human health through ingestion and inhalation. The most important source is vehicular emissions where lead is used as a fuel additive. The problem has been compounded in towns and cities where the number of vehicles is continuously growing very rapidly. Thus, it is imperative to reduce the lead content of fuels.

Transboundary air pollution harms human health and causes loss of trees and forests. It has been well conceived at various forums that regional agreements for pollution abatement should be established and strengthened. Early warming systems and response mechanisms are needed for production from industrial accidents, natural disasters and destruction of natural resources.

19.3.4 Solid and Hazardous Wastes

Most of the cities in the world generate more solid wastes than they collect or dispose off. Usually, the volume increases with the level of income. Municipal waste services generally consume between 20%-50% of city budgets. Still, much of solid wastes is not renewed. Even if, municipal budget is adequate for collection, safe disposal of collected waste remains a problem. Open dumping, however, remains the principal method of disposal in many developing countries. Improper collection and disposal lead to a number of problems for human health as well as contamination of surface as well as and ground water. Solid wastes dumped in public areas or into waterways results in spread of many diseases. Industrial countries produce approximately 5000 tons of waste for every billion dollars of GDP whereas for many developing countries the total amount could be few hundred tons. The health risks arising from toxic and hazardous wastes vary across countries, of course, it depends upon how they are handled.

Management of hazardous wastes are improving in some countries whereas in many others it is dumped into water or on land-sites without any safeguard. However, the most crucial phenomena in today's world is that the toxic chemical banned in one country as hazardous are deliberately sold to and dumped into other countries, often developing countries. Even though, exposure to toxic and hazardous wastes are primarily local and less important risk compared to air and water pollution, without adequate measure of collection and safeguard disposal, the likely consequences could be too big to solve.

19.3.5 Land and Habitat

Land

Certain kinds of land use can decrease greenhouse sinks and increase atmospheric emissions. In this context, Agenda 21 [1]proposes that appropriate national, administrative social and economic measures to be undertaken and limit greenhouse gas emissions, conserve natural resources which are relevant to atmospheric changes.

Against the backdrop, what is essential is an integrated approach to the planning and management of land resources. Integration means that environmental, social and economic issues should be combined simultaneously. Government should formulate legislation, regulations and economic incentives to encourage sustainable land-use and management of land resources, paying particular emphasis to agricultural land.

Forest

Forest occupy more than 25% of the world's land area. Forests are of three broad types — tropical moist and dry forests, temperate forests and degraded forest. Tropical moist forests are particularly rich in species. Tropical dry forests are not as species rich

[1] The concept of Agenda 21 has been explained at length in the next section.

as tropical moist forests, but they provide important protection against soil erosion. Temperate forests are the lowest bio-diverse of the three. They are the main source of industrial wood. The most serious cause of concern is with the tropical moist forests which are degrading at a rate that threatens the economic and ecological sustainability of the globe.

Forests are not only a source of timber but also a source of social and ecological functions. They provide livelihood strategies for forest dwellers and a habitat for a variety of plants and animals. They protect and enrich soils, regulates the hydrologic cycle, affect climate through evaporation, influence surface and ground water flows and help in stabilising the global environment by neutralising the growth of carbon dioxide. Different kinds of forests serve the above mentioned objectives in various proportions.

The rapid deforestation caused by farmers, logging and mining companies, fuel wood collectors, etc. Pose a serious threat to both development and preservation of the global environment. Deforestation in developing countries, however, is a recent phenomena. Growth of population in rural areas of developing countries often leads to a rising demand for fuel wood. Besides, modernisation of agriculture in some countries results in less demand for labour which in turn releases a sizeable labour force who find new livelihood strategies in forest frontiers.

To support the ecological, economic, social and cultural roles of forest and forest land Agenda 21 calls all countries to strengthen the forest related institutions and professional skills though:

- Promoting the participation of labour unions, rural co-operatives, local communities, indigenous people, youth, women, NGOs, etc. in forest related activities.
- Conducting research on forests, collecting data on forest cover and areas suitable for afforestation and ecological values.
- Supporting and enhancing technology transfer and specialised training.

Biodiversity

Biological diversity (a composite of genetic information, species and ecosystems) provides material wealth in the form of food, clothing, housing, fibre, medicine, inputs into industrial processes, spiritual nourishment, etc. In order to conserve biological diversity, Agenda 21 calls for governments to:

- Early entry into force of the UN convention on Biological Diversity
- Foster traditional methods and knowledge of indigenous people
- Share the benefits of biological resources and biotechnology with developing countries.

Develop national strategies for the conservation of biodiversity and safe transfer of biotechnology.

19.3.6 Atmospheric Changes

Greenhouse Warming

The atmospheric concentration of the gases that cause greenhouse warming have been increasing over the years. Carbon dioxide, the principle component of greenhouse gases, has increased by more than 12 per cent in the past thirty years. This new development is mainly the result of human activities on the earth. Concentration of greenhouse gases in the coming days depend on a number of factors — economic growth, the energy intensity and the chemistry of atmosphere, biosphere and ocean.

The greenhouse effect is a global issue, primarily because all emissions of greenhouse gases affect climate. But then, the conventional cost-benefit measures to tackle the greenhouse effect may be spread unevenly across the countries. As a result, negotiations on any international agreement on greenhouse warming is a difficult process. A host of factors that must be taken into account are the following:

- Climate change will vary across countries. Climate changes will be smaller but more rapid in equatorial zones than in the temperate zones.

- The damaging effects will vary across countries. Some countries may find that their climate is improving and hence gains accrue while others may find that such effects cause substantial losses. Even if the pattern of climate change is similar it may affect countries unequally due to differences in ecology, economic activity, the habitat and other environmental resources.
- The high-income countries have been emitting large amounts of gases for many years and thus contributing a disproportionate share of accumulated gases in the atmosphere. On the other hand, emissions from low income countries, starting from a lower base, are growing more rapidly.
- Measures to reduce emissions are one response to the threat of climate change. Another response could be to seek to adapt by investing in assets that will mitigate the impact of climate change on economic activities. However, the relative costs and benefits varies across countries.
- Some countries are solely dependent on exports of fossil fuels and are likely to suffer from the policies that tend to reduce the world demand.

Despite the above mentioned difficulties, there are various measures that can be adopted at national and international levels to reduce current emissions of greenhouse gases. There are broadly four technological options available for reducing harmful emissions:

1) Changing the fuel by switching to low sulfar coals, oil and gas.
2) Controlling emissions.
3) Using existing fuels more efficiently by adopting high efficiency and low emission technologies.

Ozone Depletion

Ozone depletion is the result of increasing atmospheric concentrations of chlorine originating from CFCs. In the Montreal Protocol, countries agreed to phase out production of CFCs. The consequences of decrease in the protective ozone layer in the long-run will be harmful for health and productivity of marine and terrestrial systems. Atmospheric levels of CFCs are expected to peak around 2000 A.D. The largest ozone impact is over Antarctica where the maximum depletion was deep and extensive (about 50 per cent), since measurement began. The most important consequence of ozone depletion is an increase in solar ultraviolet radiation received at the earth's surface.

In the absence of changes in human behaviour to protect against exposure to the sun's rays, a sustained ozone decrease of 10 per cent would mean an increase of eye damages from cataracts and skin cancers, particularly fair skinned individuals. Besides, continuous exposure to increase levels of ultraviolet radiation can suppress the immune system in people of all skin colours. The health risks could be reduced if people would avoid unnecessary exposure by making small changes in their behaviour.

Impact of UV radiation on plant productivity has also emerged as another cause of concern. Even though some plants have considerable capacity for adoption and repair, there are instances where agricultural crops have shown some inhibition of growth and photosynthesis when plants are exposed to UV radiation. Nevertheless, there are some scope to deal with increased UV radiation through plant breeding. There are also instances where increased UV radiation marine productivity and ecosystem in general.

Check Your Progress 2

Note: i) Use the space below for your answers.

ii) Check your answers with the model answers given at the end of the unit.

1) "Economic activities lead to environmental degradation". Give two reasons in favour of and two against the above argument.

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2) "Environmental degradation affect the mankind adversely". Write down at least two most important mechanisms with respect to each of the aspects mentioned below to make the earth safer in the future.

A) **Water Pollution**

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B) **Air Pollution**

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C) **Solid and Hazardous Waste**

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D) **Land Degradation**

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E) **Deforestation**

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F) **Greenhouse Warming**

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G) **Ozone Depletion**

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19.4 INTERNATIONAL ENVIRONMENT CONCERNS

"International environmental problems are most complicated to solve than national problems for two reasons. First, no single authority can lay down and enforce appropriate policies. Secondly, solutions must accommodate large variations in the balance of benefits and costs to different countries. Some countries may have more pressing local problems and less money for solving them. To secure action, rich countries may sometimes need to pay poor ones" (World Development Report, 1992).

19.4.1 Introduction of International Environment Concerns

At the international level, it is often impossible to rely on a common regulatory framework, economic policy, legal framework and the authoritative powers of a national government. Solutions to international environmental problems therefore rest on collaboration, persuasion and negotiation among sovereign states. Prioritising the issues at the international level is also a highly complex. Since, the costs of doing nothing may be borne by the other nations. Also, the gains may not accrue to those who make a headway in the national policy. There are three main contours which necessitates international solutions:

First, regional problems regarding sharing of common resources, where the action of one country affect the others in the region. The typical problems coming under this category are transboundary pollution including acid rain, management of rivers, seas, etc.

Second, the world shares certain **global commons** where the action of one country affect the action of all other countries. For instance, atmosphere and deep oceans are the global resources. Accumulation of greenhouse gases, ozone layer depletion caused by the emission of CFCs and the like are international problems that affect the global community.

Third, there are resources that belong to one country but have immense value for the international community. They are not necessarily reflected in the market mechanism. Examples of this type are tropical rainforests, specific ecological habitats, individual species, etc.

Since the United Nations Conference on the Human Environment in 1972 in Stockholm, concerns have been growing regarding continuous deterioration of the global environment. As a matter of fact, any disruption of the ecological balance would sterilise the life-sustaining capabilities and eventual economic and ecological disaster. This global environmental deterioration has been attributed primarily to unsustainable patterns of certain kinds of consumption of production, especially in the industrialised nations. In fact, industrialised countries are solely responsible for the largest share of the world's current emission of pollutants including toxic and hazardous wastes.

In the United Nations Conference on Environment and Development (UNCED), member countries argued that poverty and environmental degradation were interrelated and environmental protection in developed countries had to be viewed as an integral part of the development process. This in fact is a logical culmination of the 1987 report of the World Commission on Environment and Development which, recognises that international environmental protection measures have to take into account current global imbalances in production and consumption. In the UNCED member countries agreed that the global character of the environmental problems (climate change, ozone layer depletion, transboundary air, water pollution, contamination of the Oceans and Seas, etc.) necessitated concerned efforts and effective participation of all countries. Indeed, concerted efforts are made in a partnership manner at the international level to the fulfilment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer future.

19.4.2 Agenda 21 and the Rio-Declaration

Agenda 21 — a programme for action for sustainable development internationally, the Rio Declaration on Environment and Development and the statement of principles for sustainable management of forests were adopted by 179 countries at the United National Conference on Environment and Development (UNCED) held in Rio de Janerio, Brazil 3-4, June, 1992. It brought together thousands of business people, environmental and social scientists, educationists, trade unionists, indigenous people, religious leaders, women and youth. The key message from the UNCED were:

- The interdependence between development issues and the environment and
- The need for partnership between different nations and sectors of society to tackle these complex issues.

Agenda 21, one of the major outputs of the Conference, is a logical culmination of several years of intensive work where thousands of people from diverse countries and sectors were participated. Agenda 21 has 40 chapters which are divided into four sections:

- Social and economic dimensions
- Conservation and management of resources for development
- Strengthening the role of major groups and
- Means of implementation

Even though, Agenda 21 is not legally enforceable, it serves as a valuable statement of all the major socio-economic and environmental issues relevant to the achievement of sustainable development. It also deals with the complex and dynamic myriad of linkages between these issues and provides action and partnership between nations as well as sectors.

19.4.3 Can Market Mechanism Solve the Environmental Problem?

As has already been pointed out that the purpose of development policy and environmental policy is to improve the well-being of people. Environmental degradation necessarily occurs when those who decides to use environmental resources ignore or underestimate the costs of environmental damage to society. In fact, market mechanism does recognise the true social value of the environment. Some of the important underlying reasons are as:

- Market does not exist because it is difficult to exclude anybody's right to own or use the environment. Air for instance, market for air does not exist. Even if prices prevail they do not reflect costs to the society. As a result there is too much air pollution.
- Some uses of particular resource are marketable but other not. For instance, tropical rainforests where timber is marketed but watershed is not. In this non-marketable profits are often ignored and other uses are heavily exploited.
- When resources are open to all, they are exploited irrespective of their impact. Deforestation and overfishing are the typical examples of this type of externalities.
- There is often lack of information about environmental affects or low cost availability to the users.

It is because of the externalities associated with the environmental problems, market mechanism seems to be incapable of guiding resource consumption. The plausible way out of this crisis could be by adopting and reinforcing the wheels of partnership.

19.4.4 Multi-Stakeholder Partnership

Partnership has become one of the most crucial word in the debate on sustainable human development. By partnership in this context would imply that: voluntary and mutually beneficial collaboration between one or more parties aimed at developing strategies and solutions to the socio-economic and environmental challenges of sustainable development. The aim has been a total shift from provisions of confrontation, dependence and isolation to positions of mutual agreed interdependence.

Even though there are diverse sectors and types of stake-holders, the document looks at three broad sectors:

- the government
- the voluntary or "not-for-profit" non-governmental sector (NGOs) and
- the corporate or "for-profit" business and industry sector

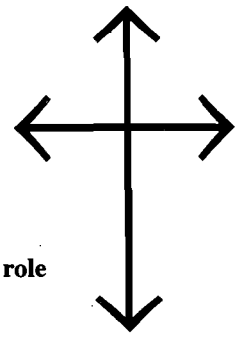
Even though, there are overlaps between these three groups in terms of their roles and responsibilities in public life, they can be uses as a starting point for a fruitful discussion. Each sector has distinct skills and resources which can add value to the other sector in a partnership way.

Agenda 21

Section 1

Social and Economic Dimensions

1. Preamble
2. International cooperation to accelerate sustainable development in developing countries
3. Combating poverty
4. Changing consumption patterns
5. Demographic dynamics and stability
6. Protection and promotion of human health
7. Promotion sustainable human settlement development
8. Integrating environment and development in decision making



Section Three

Strengthening the role of Major-Groups

23. Preamble
24. Women
25. Children and Youth
26. Indigenous people and their communities
27. Non-Governmental Organisation (NGOs)
28. Local authorities
29. Workers and Trade Unions
30. Business and Industry
31. Scientific and Technological community
32. Farmers

Section Four

Means of Implementation

33. Financial resources and mechanisms
34. Transfer of Environmentally sound technology
35. Science for sustainable development
36. Promoting education, public awareness, and tr
37. National mechanisms and international cooperation for capacity building
38. International institutional arrangements
39. International legal instruments
40. Information for decision making

Section Two

Conservation and management of resources for development

9. Protection of the atmosphere
10. Integrated approach to the planning and management of land resources
11. Combating deforestation
12. Managing fragile ecosystems: combating desertification and drought
13. Managing fragile ecosystems: sustainable mountain development
14. Promoting sustainable agricultural and rural development
15. Conservation of biological diversity
16. Environmentally sound management of biotechnology
17. Protection of the Oceans, all kinds of seas including enclosed and semi-enclosed seas and Costal areas
18. Protection of the quality and supply of fresh water resources
19. Environmentally sound management of toxic chemicals
20. Environmentally sound management of hazardous wastes
21. Environmentally sound management of solid wastes and sewage related wastes.
22. Safe and environmentally sound management of radioactive wastes

Business and industry play a critical role in the process of building partnership for sustainable development. The combined social, economic and environmental effect of private enterprises, large and small, formal and informal, transnational and local is very crucial. The business sector generates livelihood strategies, new markets, products and services. Technological progress takes place in this sector because it undertakes risks, it is also a major consumer of natural resources and producer of wastes. So, what is needed is to find our ways and means to optimise the positive effects and minimise the negative effects.

However, in practice the business sector often lacks the following.

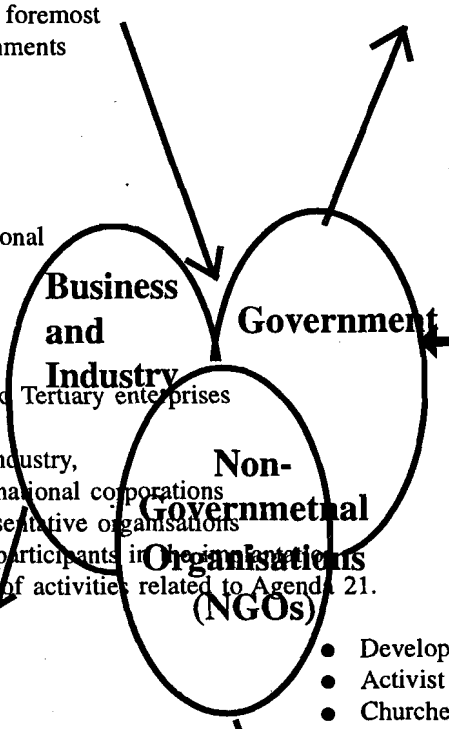
- The appropriate regulatory framework.
- The appropriate environmental, cultural and scientific expertise.
- The co-operation of local communities.

In the work place and market place: During its course of transaction with the employees, customers, suppliers, financiers and environmentalists, it can cooperate to develop cleaner process and products.

Multi-Stakeholder Partnership

Agenda 21 addresses the pressing problems today and so aims at preparing the world for the challenge of the next century. It reflects a global consensus on development and environment co-operation. Its successful implementation is first and foremost responsibility of the governments

- International Governments — Un systems
- Regional Government Grouping
- National Government
- State Government
- Local Self Government



- Transnational and National
- Local and Foreign
- Large and small scale
- Formal and Informal
- Rural and Urban
- Primary, Secondary and Tertiary enterprises

- Academia
- Researchers
- Scientists
- Technologists
- Teachers

Business and Industry, Including transnational corporations and their representative organisations should be full participants in the implementation and evaluation of activities related to Agenda 21.

- Development Organisations
- Activist Group
- Churches
- Indigenous People
- Trade Unions
- Womens Group
- Youth Group

Non-Governmental Organisations play in the shaping and implementation of parliament democracy. Their credibility lies in the and constructive role they play in society and informal organisations, as well as movements should be recognised as the implementation of Agenda 21.

In the research and training field: Business sector can afford partnership with the academician and scientific personnel to develop new technologies, new products and new management systems.

In host communities: It can work with NGOs, local government and the public to add the quality of life investments in human capital.

In the public policy realm: It can collaborate with the government, international organisations, and research institutes to develop appropriate regulatory frameworks to improve its environmental performance with sacrificing its economic performance.

USEFULNESS OF PARTNERSHIP

- It can mobilise diverse skills and resources in a greater amount than otherwise.
- It can address problems in a more integrated, multidisciplinary and comprehensive manner.
- It can eliminate unnecessary duplication of costs and efforts (where there are shortages of financial and human resources)
- It can help traditional organisation to broaden their horizon and to respect each otherwise needs and capabilities.
- It can facilitate dialogue, creativity and mutual trust for conflicting interests.
- Interface between partners can also facilitate the flow of information and transfer of technology.

19.5 LET US SUM UP

After going through this unit, you get an idea of the link between environment and sustainable human development. Human development cannot be taken care of by pursuing economic growth alone. Economic growth is only one dimension of development. Distribution of income, provision of health care, education, safe environment and freedom of impression are the important dimensions in the development process. Sustaining human development therefore is not simply a call for environmental protection but which provides opportunity for all the people of the world to grow without affecting the world's finite natural resources. The general principle of sustainable human development is adopted by the world commission on Environment and Development is that current generations should meet their needs without compromising the ability of future generations to meet their own need. In other words, what we really need to sustain is human life. So, the environment must be given a human face to save it from the crises of environmental degradation.

Sometimes economic activities degrade environment primarily due to lack of interface between what is provided (resources advanced) and what is used. Environmental degradation damages human health, reduces efficiency and productivity and entails loss of opportunity to people. In order to counteract the adverse consequences of economic growth, it is necessary to rationally reallocate investment patterns as well as change the behaviour and attitude through proper incentive and disincentive structures. At the international level, any disruption of the ecological balance would sterilise the life sustaining opportunities and eventual ecological and economic disaster. If the present pattern of environmental degradation will continue, the life cannot be safer for organ without hearty co-operation of every one in the world. In this critical juncture, what we really need is to build up partnership to sustain human life. It implies voluntary co-operation among all the stake-holders in the world. The Rio Declaration is precisely addressing these fundamental issues in a much more scientific way.

19.6 KEY WORDS

Abutement: A measure taken for reducing or eliminating air or noise pollution.

Air pollution: The contamination of the atmosphere with undersirable solids, liquids and gases.

Environment: The region, surroundings or circumstances in which anything exists, everything internal to the organism.

Environmental Impact: Any change in the environment for better or for worse, especially the effects on air, land or water of solid, liquid or gaseous wastes, smells or noise.

Gross National Product (GNP): It is the money value of goods and services produced in a country during a year plus net income from abroad. By economic growth we mean an increase in perception GNP over a long period of time.

Economic Development: It is defined as growth plus qualitative changes in various parameters of life, may be social, political, economic, cultural or religious. Thus, development involves structural changes encompassing institutional transformation including monetisation and modernisation of different sectors of the economy.

Basic Needs: The approach to development aims at achieving the full physical, mental and social development of human personality through a package of measures, and concentrates on the nature of what is provided rather than on income.

Carrying Capacity: It is the maximum capacity of the environment to assimilate all kinds of emissions and wastes. If pollution exceeds the carrying capacity, there would be loss of eco-systems and species.

Ozone: A highly reactive poisonous form of oxygen having chlorine like door detectable by most people at an air concentration as low as 0.02 parts per million. Ozone is produced naturally during lightening storms by the passage of electricity through air. Ozone occurs high in the stratosphere in an 'ozone layer' where it forms and breaks down in an ozone cycle of reaction.

Chlorofluro Carbons: The aerosol propellants, refrigerant fluids and framblowing agents are members of chloroflurocarbons known by a trade name Freon.

Greenhouse effect: The property of selective absorption used in the construction of greenhouses which finds parallel in the general atmosphere, water vapour and carbon dioxide although only a minute fraction of the mass of the atmosphere, exercise considerable influence over the head balance of the atmosphere and ground.

19.7 SOME USEFUL BOOKS

World Development Report, 1992, *Development and the Environment*, World Bank, Oxford University Press.

World *Commission on Environment and Development, 1987, Our Common Future*, New York, Oxford University Press.

Anand Sudhir and Amaritya Sen (1992), "*Sustainable Human Development: Concepts and Priorities*", Human Development Report Office, Occasional paper 8, UNDP, New York.

19.8 ANSWERS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

1) Read Sub-section 19.2 and answer the questions.
2) Read Sub-section 19.2.2 and answer the questions.
3) Read Sub-section 19.2.2 and answer the questions.
4) Read Sub-section 19.2 and answer the questions.

Check Your Progress 2

1) Read Sub-section 19.3.1 and answer the question.
2) a) Read Sub-section 19.3.2 to 19.3.6.