UNIT 8 GLOBAL AND REGIONAL DIMENSIONS

Structure

8.1 INTRODUCTION

Sustainable development can be best realised by 'A Common Future' or 'Global Sharing' concept. This lays emphasis on the link between economic and environmental development. It is recognised that it is not possible to de-link environment from economic development, inequity in the global economy, military expenditure and human rights abuses. Further, structural inequalities in the global economic system are also responsible for the hindrance in realising the issue of sustainable development in totality. To make the process of sustainable development feasible and operational, it is important to establish a common focus that can integrate the outlook and efforts of various participants in development, worldwide, realising the diversity, in terms of geography, society, economics, level of science and technology (S&T) capabilities and capacities, education standards/levels. It can thus be easily appreciated that the issues to be addressed for attaining sustainable development cannot be generalised. Some or rather most of the issues, need to be addressed on a regional basis first. Once this is done, the regional issues, concerns, solutions can be clubbed together and discussed for global perspective, to take care of global requirements and concerns.

Objectives

After studying this unit you should be able to:

- discuss the regional issues and concerns that impact national development; and
- analyse the global issues and their implications for sustainable development of nations.

8.2 REGIONAL ISSUES

The wide range of environmental challenges faced by different countries, in line with their respective geographical, ecological and climatic features makes country-specific approaches indispensable. Thus, each country must formulate its own approaches, in line with its social and economic priorities, its cultural values, institutions and political structures. Many environmental problems, such as climate change and deforestation, have clear global dimensions. However, as a general rule, the impact of environmental damage is felt at the local, national or regional level. Water shortages and contamination, soil erosion or forest, mangrove or coral reef degradation harm

primarily the local communities who are directly exposed. Even the severity of air pollution is highly variable in different areas of a single city and even more so in an entire country. Accordingly, most indicators of environmental conditions are primarily relevant at the local level. As a result, developing a capacity to monitor environmental conditions, and the impact of degradation on people's lives within a region, forms an important part in the efforts to define a country's sustainable development strategies.

Some of the important region specific issues are discussed below.

8.2.1 Desertification and Droughts

'Desertification' means land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities. It is a gradual process of loss of the vegetative cover and soil productivity. Human activities and climatic variations resulting in droughts and floods are chief causes of this process. Desertification has grave natural consequences; it makes land areas flood prone, prone to salinisation and results in deterioration of the quality of water, silting of rivers, etc. What is alarming is that the land's topsoil, which takes centuries to build up, if mistreated, can be washed away in a few seasons. Human activities that cause desertification are **over-cultivation, overgrazing, deforestation, and poor irrigation practices**.

The measures undertaken to prevent land degradation and restore degraded land are: **improved early warning system and water resource management, sustainable livestock management, aero-seeding, agro forestry ecosystems, afforestation and reforestation by new species and varieties with a capacity to tolerate salinity and/or aridity, and planned human settlements**. A direct cause of misuse of land is poverty, which forces people who depend on land for their livelihoods. They overexploit it for food, energy, housing and source of income.

Desertification is a worldwide problem affecting 250 million people and over 4 billion hectares of land surface. In addition, the livelihood of some one billion people depends on land for their needs and they are among the world's poorest. Though desertification affects Africa the most, it is not a problem confined to that region alone. One quarter of Latin America and the Caribbean is deserts; in Spain, one fifth of the land is at the risk of becoming desert. The growing severity of desertification in the Northern hemisphere is evident from the severe droughts in North America and Southern Europe, China and other countries.

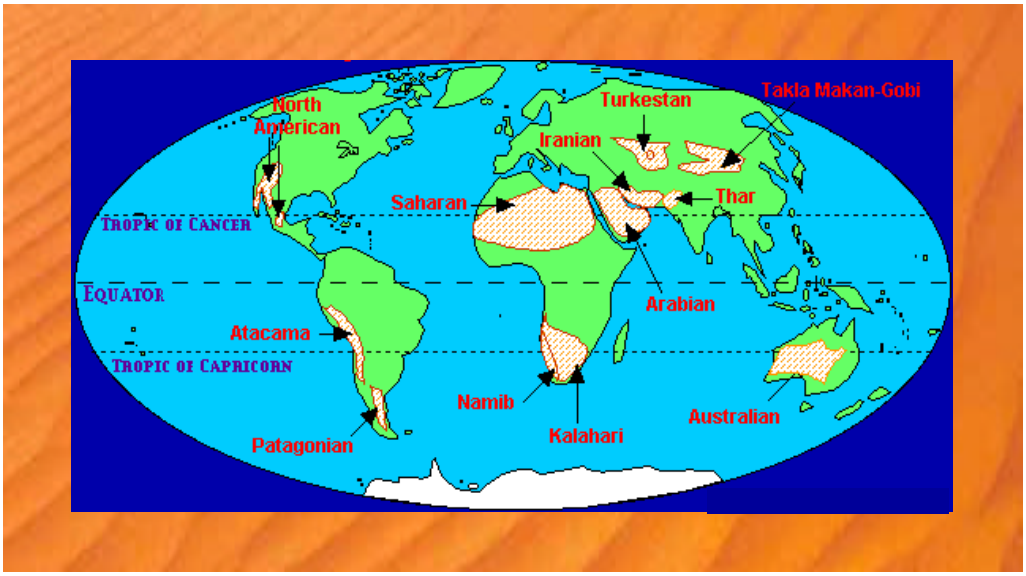

Fig.8.1: Major deserts on the earth
(Source: www.zoomschool.com/ biomes/desert/majordeserts.GIF)

Though a global issue, desertification needs to be addressed and tackled first at the regional level. On a regional basis, the priority in combating desertification should be the implementation of preventive measures for land that is not yet degraded, or slightly degraded. However, the degraded areas should not be neglected. **In combating desertification and drought, the local communities, rural organisations, national governments, non-governmental organisations and regional organisations are required to work in collaboration.**

Programmes aimed at combating these regional issues, in summary, should include the following:

i) Strengthening the knowledge base and developing information and monitoring systems in regions prone to desertification and drought, including the economic and social aspects of the ecosystem.

ii) Combating land degradation through *inter alia* intensified soil conservation, afforestation and reforestation activities.

iii) Developing and strengthening integrated developmental programmes for the eradication of poverty and promotion of alternate livelihood systems in areas prone to desertification.

iv) Developing comprehensive anti-desertification programmes and integrating them in the development plans and national environment planning.

v) Developing comprehensive preparedness and drought relief schemes, including self help arrangements for drought and designing programmes to cope with environmental refugees.

vi) Encouraging and promoting popular participation and environmental education, focusing on desertification control and management of the effects of drought.

Governments at regional level should strengthen the regional programmes and international co-operation. They should establish and/or develop a comprehensive desertification, land degradation prevention programme with a database component incorporating both socio-economic and physical parameters. This would be based on existing facilities and additional facilities such as Geographical Information Systems where necessary. In addition, benchmarks should be set up with indicators to mark the progress in the fight for anti-desertification. Also, the regional governments should develop technical and professional skills of people engaged in monitoring and assessing the issue of desertification and drought, promote involvement of local people particularly women and youth through education and awareness building.

On a global plane, the issue of desertification was first discussed at the UN Conference on Desertification held at Nairobi, Kenya in 1977, but due to lack of support both administratively and financially, attempts to tackle the problem were crippled. The United Nations Conference on Environment and Development (UNCED) recommended the United Nations Convention to Combat Desertification (UNCCD), which was adopted in Paris in 1977. It is the first and only internationally and legally binding framework set up to address desertification issues. The convention is based on the principles of participation, decentralisation – the backbone of good governance. The convention has now more than 180 countries participating giving it a truly global reach.

8.2.2 Floods and Soil Erosion

Mountains and highlands are found in every continent; they cover about a quarter of the Earth's land surface and are home to 10% of the world's people. Another 40% live in adjacent lower watershed areas; thus more than half the global population is directly or indirectly dependent on mountain resources, the foremost being water for drinking and home use, irrigation, hydro power, industry and transportation. The crops

that feed the cities are raised in the valleys and flat river plains, but the fate of the valleys is decided in the hills and mountains where the streams rise. Where the hill slopes and ridges in the upper reaches are covered with trees, the streams flow clearly and steadily and all is well in the valleys below. Where the trees are gone, the soil washes down the slopes to clog the streams and foul the river bottoms thus raising the water level. When it rains in the hills there is no soil left to hold the water resulting in flash floods which in turn sweep down into the valleys resulting in rivers bursting their banks ruining crops and lives, and wash yet more soil away to the sea. The water is wasted and the deserts spread.

The degradation of mountain ecosystems – home and livelihood to millions – threatens to seriously worsen global environmental problems including floods, landslides and famine. While several of the world's mountain areas are in relatively good ecological shape, many face accelerating environmental and cultural decline brought on in part by government and multilateral agency policies too often founded on inadequate research.

People living in the mountain areas worldwide, who are among the poorest of the poor, are extremely rich in environmental understanding. Their opinions and experiences need to be combined with scientific knowledge, together with cultural diversity-a prevailing feature of mountain life, must be considered as complementary to biodiversity if sustainable mountain development is to be achieved. The widespread conflict in mountain regions, including conventional warfare, terrorism, guerrilla insurgency and repression of minority peoples, must be tackled far more vigorously than hitherto.

The management and utilisation of the natural resources of mountains, especially water, must be undertaken in such a way that mountain people share the benefits. Despite the importance of reliable data, hydro-meteorological networks in many countries have declined seriously in the last decades. The development of strategies, techniques and methodologies to acquire these data at local, regional and global scales and the establishment of mechanisms for making these data freely available are vital. Information technology enhances the link between mathematical models and data. In this respect remote sensing based information requires analysis and its translation into hydrological characteristics needs to be carried out.

8.2.3 Rise in Sea Level

Sea levels have fluctuated dramatically in geologic times. It was 2-6 m above the present level during the last interglacial period, 125,000 years ago, but 120 m below present levels during the last Ice Age, 20,000 years ago. In the last 100 years it has increased by 10-25 cm. Sea level could rise 40 to 65 cm by the year 2100, due to predicted greenhouse-gas-induced climate warming. Such a sea level rise would threaten coastal cities, ports, and wetlands with more frequent flooding, enhanced beach erosion, saltwater encroachment into coastal streams and aquifers.

However, future sea level is very difficult to predict, because not enough is known about how the ice sheets in Greenland and Antarctica will react to global warming. Furthermore, local sea level is affected by many regional processes, including tides, ocean currents and geographically varying land movements. These Earth motions are caused by ongoing adjustments of Earth's crust to the removal of the former ice sheets, tectonic deformation, subsidence of river deltas under sediment loads, and extraction of underground water, oil, or natural gas near the coast.

A comparison of the tide-gauge records and radiocarbon-dated geologic data from four widely separated regions, spanning a broad range of geologic settings, indicate modern sea-level trends to be consistently 1-1.8 mm/year higher than those derived from long-term geologic data. This result implies a recent acceleration of sea-level rise relative to the last few thousand years.

The nationwide impacts of sea level rise are:

- Beach Erosion
- Saltwater intrusion resulting in increased salinity
- Floods and flood damages
- Threats to coastal wetlands
- Threats to agriculture

Apart from the above direct effects, there are some indirect effects of sea level rise, which sometimes may be more significant than direct effects in the future.

Though the consequences of sea rise are not alarming presently, the time is ripe for taking adaptive actions as the effects of sea level rise are becoming inevitable because of green house gas emissions, the inertia of the oceans, and the economy's current dependence on fossil fuels. Any corrective action at this stage would be welcome. This includes decision to rebuild after a coastal disaster. Again, society can save money by preparing for sea level rise, but such preparation is impossible without reasonably reliable projections of how much the sea might rise.

8.2.4 Deforestation

The world's forest area has been declining for centuries, though its impact has been understood with concern that the process has accelerated to alarming proportions only in the last half of the 20th century. Since the 1960s there has been a major change in the rate at which tropical forests are being cleared. In contrast, the area of temperate forests in developed countries grew by 0.1 per cent in the 1980s. The Food and Agriculture Organisation (FAO) of the United Nations has estimated that the annual rates of deforestation in developing countries were at 15.5 million hectares for the period 1980-1990 and 13.7 million hectares for 1990-1995. The total forest area lost during the 15-year period was approximately 200 million hectares. The tragedy lies in the fact that most of these deforested lands are not suited for long-term farming or grazing and they quickly degrade once the forest has been cut and burnt. In fact, throughout the tropics, very few of the forested lands that are left have any potential for sustainable agriculture.

Fig.8.2: Deforestation leads to land degradation as well as untold suffering and loss of livelihoods for the poor

It is important to distinguish between the agents of deforestation and its causes. The "agents" are those individuals, corporations, government agencies, or development projects that clear the forests as opposed to the forces that motivate them. There are four aspects of the causes of deforestation:

1. **Predisposing conditions:** These conditions create an environment where deforestation can occur. They are conditions created by society, at times intentionally and at times as the consequence of human activities. They are some of the systemic, most difficult issues that frustrate human progress and sustainable development. Another predisposing condition of deforestation is poverty, particularly in rural areas. Although poverty is not a "cause" of deforestation, it is a condition of life that the majority of people in this world must endure. While greed and power can be the motivations of some groups in society to deforest, survival and the desire to escape from poverty also drives most people towards deforestation.

2. **Direct causes:** These are the most visible, easily identified and readily associated with the agents of deforestation. They are driven by the other less visible, socioeconomic forces — the indirect causes. The direct causes include Commercial Agriculture, Cattle Ranching/Livestock Grazing and Mining and Petroleum Exploration.

3. **Indirect causes:** These include Fiscal and Development Policies, Land Access, Land Tenure and Market Pressures. Often mentioned as causes of deforestation are the demand for forest products and the demand for other goods (mostly food) that are produced on deforested lands (clearly, without any demand there would be no economic reason for cutting down the trees), undervaluation of natural forests, forest exploitation and plantation development in the loss of natural forests.

4. **Social factors:** Faced with political decisions about urban migration, food production, reform, employment generation, national security, economic structural adjustment, and all the other issues that demand their attention; unfortunately, many governments have opted to ignore deforestation.

However, it must be remembered that firewood collection and logging are not direct causes of deforestation. These do produce a change in the composition of the natural forest and can increase the risk of a subsequent transition in favour of other land uses. In some circumstances, deforestation can result when harvesting occurs under very sensitive environmental conditions or when it is very intense over a long period. In the case of tree plantations, replacing the natural forest with plantations results in a loss of natural forest area but it does not cause deforestation because there has been no permanent change in land use.

One of the lessons of the last 30 years in trying to contain deforestation is that the people who are meant to benefit from the forests must be full partners in the process of identifying and implementing solutions.

Interestingly, it may be noted that in some cases, deforestation can be beneficial. Given the right mix of social needs, economic opportunities, and environmental conditions, it can be a rational conversion from one type of land use to a more productive one. The tragedy lies in the fact that most lands that have been deforested in recent decades are not suited for long-term farming or ranching and they quickly degrade once the forest has been cut and burnt. Unlike the fertile soils of temperate latitudes, most tropical forest soils cannot sustain annual cropping. The carrying capacity of the land does not support intensive annual cropping without rapid, irreversible degradation. Similarly, intensive cattle grazing cannot be supported because grasses grown on forest soils do not have the same productivity levels as those on arable soils.

The social consequences of deforestation are many, often with devastating long-term impacts. For "indigenous" communities, the arrival of "civilisation" usually means destruction of their traditional life-style and breakdown of their social institutions. Individual and collective rights to the forest resource have been frequently ignored and indigenous peoples and local communities have typically been excluded from the decisions that directly have impact upon their lives. In many cases, political decision-makers knowingly permit deforestation to continue because it acts as a social and economic safety valve. By giving people free access to forested lands, the pressure is taken off politicians to resolve the more politically sensitive problems that face developing countries, such as land reform, rural development, power-sharing, and so on.

Probably the most serious and most short-sighted consequence of deforestation is the loss of biodiversity. The phrase "loss of biodiversity" masks the fact that the annual destruction of millions of hectares of tropical forests means the extinction of hundreds of species and varieties of plants and animals, many of which have never been catalogued scientifically. In addition, deforestation is an important contributor to global warming. The rate of deforestation can be slowed down considerably and its negative socio economic and environmental impacts minimised. Towards this, the agriculture sector must be challenged to find appropriate solutions.

Any effort to combat deforestation must be based on a complete understanding of who the agents of deforestation are and what its direct and underlying causes are. The circumstances vary from country to county and from region to region. Through improved protection and management of the remaining forests, well-targeted socio economic development programmes and policy/ institutional reforms, deforestation can be brought under control. While forests will continue to be lost for decades to come, it is critically important that the fight against deforestation be done in the most rational way possible. Only then will the long-term benefits to humankind be favourable and the costs to the environment minimal. It is time for all people to renew their commitment to live in harmony with the tropical forests before they are lost forever.

SAQ 1

Discuss the impact of each of the regional issues highlighted in Sec. 8.2 in the context of your region/country. Outline the extent of the problem and the measures being taken at various levels (community, state, national, regional) in your answer along with suggestions for what more needs to be done.

8.3 GLOBAL ISSUES

You have studied in the previous unit about inequitable growth of national economies. In this context, one of the most burning issue is that of the North-South divide

8.3.1 North-South Divide

The 'North' consists of the industrialised, developed and rich countries. There is amongst them growing recognition about the rate at which non-renewable resources are being used up as also of advantages of using renewable resources over non-renewable ones. This 'North' world has just over 20% of the world population but consumes 80% of the world's energy; on the other hand, the 'South', comprising of the developing nations of the world is still struggling to provide for the basic needs of food, water, shelter, clothing, basic education and health for its population. In order to meet their basic and daily requirements, people of the South have to depend on whatever is available in their immediate environment to survive.

The consequences of these conditions include the following:

i) Use of forest wood for fuel.

ii) Landless peasants are pushed into marginal land by land owners or government wanting to increase cash crop production or for some other development or by population pressures, resulting in overuse of marginal land.

iii) Many peasants who are displaced from their land or unable to grow enough food to survive, crowd in congested cities.

iv) Poor people have large families and live in unhealthy conditions.

All the above factors directly or indirectly affect the ecology and environment. In addition, the countries of the 'South' owe to the industrialised world huge debts of the order of $1 trillion, which keep increasing by the day. To meet the debt, these nations due to their inability to purchase and/or adopt new, clean technologies, use manufacturing technologies which adversely affect the environment.

The solution to this problem is easy to formulate but difficult to implement. The countries of the South, especially the poorest among them, urgently need strong and sustained growth to generate and improve their living standards. Apart from having to meet basic needs, more than others, they are facing major environmental problems with fast growing populations and chaotic urban sprawl with all the consequences of pollution, health problems and development of adapted infrastructure, which are more difficult to manage than for the North countries. They need to adopt 'clean' technologies designed specifically to meet their needs for better living standards and quality that do not adversely affect the environment.

Also, the 'North' countries, which consume the lion's share of the fuel and other non-renewable energy sources due to their higher living standards and life-styles, are responsible for the problems facing the planet. Here the solution would lie in questioning and redefining their needs and lifestyles. These countries bear an enormous responsibility and need to show a commitment to reform. Calling for practices to cater to the requirements of sustainable development require painful sacrifice in terms of competitiveness, conversion and changes in behaviour.

The North-South divide issue is thus a problem, which requires a two-fold approach to arrive at a solution. One is the global sharing approach and the other a Science and Technology (S&T) based approach. The solution to this problem cannot be achieved by adopting one of the above methods in isolation; rather, unison of the two methods would be required for addressing the issue of North-South divide related to sustainable development.

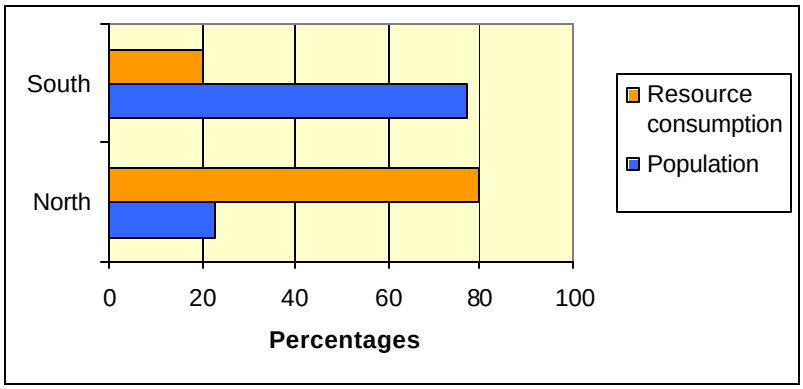

Fig.8.3: Some indicators of the North-South divide

The global sharing method, which encourages the sharing of strategies, responsibilities, experiences and information, related to environment issues would help in attaining the desired results of sustainable development. The sharing needs to be done not only between the governments but also with civil society including private business and NGOs.

The basic role of Science and Technology (S&T) would be manifold, including:

i) Taking real measure of the state and evolution of the environment and report the findings to policy makers and general public.

ii) Formulating possible adaptations and remedies as a basis for sustainable development.

iii) Creating clean technologies.

iv) Creating a general awareness of the need to better integrated research on economic and social science.

The answers, which S&T can bring to environmental problems, are coming increasingly to be judged with reference to the changes they bring in society. They impose choices of governance, the impact on social and economic groups measured in terms of efficiency, spread of costs and social or regional equity.

It is on the basis of this holistic approach that the North-South divide leading to hindrance in sustainable development can be tackled.

8.3.2 Biodiversity

Biodiversity relates to all biological life in the planet and there is an urgent need for the conservation and sustainable use of biological diversity and the fair and equitable sharing of benefits arising from the utilisation of components of genetic resources. Biological resources constitute a capital asset with great promise for yielding sustainable development. Improper and unthoughtful practice mainly from habitat destruction, over harvesting, pollution and the inappropriate introduction of foreign plants and animals, now pose a threat to the biodiversity. Evolutionary processes of survival of growth critically depend upon the availability of diverse-resources, natural and flora and fauna to tide over natural disasters and by providing inbuilt mechanisms of checks and balances. Despite mounting efforts over the past 20 years, the loss of world's biodiversity continues. Thus there remains an urgent need for the conservation and sustainable use of biological diversity.

The threat being posed to diversity needs attention of international bodies and all governments. This would require the following concrete steps :

- Taking decisive action to conserve and maintain genes, species and ecosystems with a view to promote sustainable development.
- Ratifying the Convention on Biological Diversity of the United Nations.
- Undertaking concrete actions for the fair and equitable sharing of the benefits arising from the utilisation of genetic resources.
- Facilitating transfer of technologies including biotechnology for enhancement and proper utilisation of bio-resources to developing countries that are, in any case, the richest reservoirs of bio-resources.
- Respecting, preserving and building upon knowledge, innovations and practices of indigenous and local communities embodying lifestyles that have traditionally been respectful of bio-resources. New systems need to be set up so that the communities get adequate returns, financial and other benefits from the use of their knowledge.

- Providing the necessary support to integrate the conservation of biological diversity and sustainable use of biological resources into national development plans.

- Promoting cooperation among countries across North-South to develop and strengthen national capacity-building, including human resources development and institution-building.

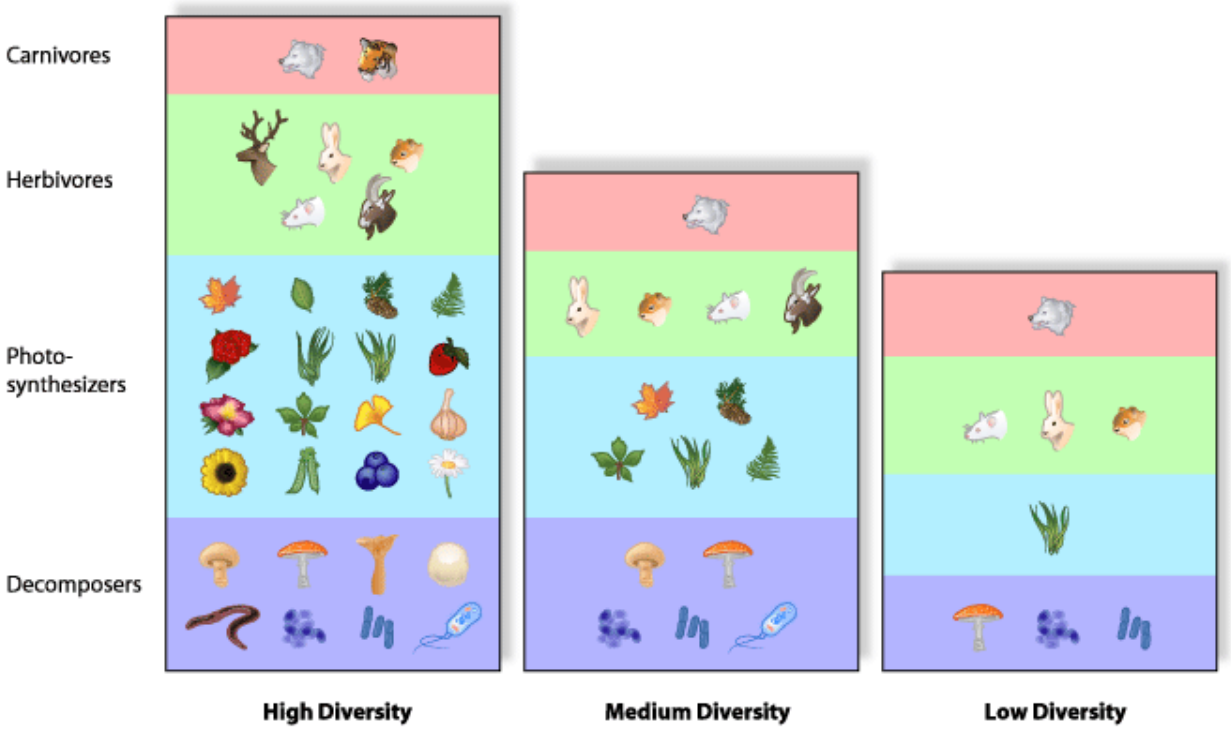

Fig.8.4: Conservation of bio diversity is one of the major concerns today (Source: www.bioteach.ubc.ca/.../ Biodiversity.gif)

The problem of biodiversity can be addressed globally but initiatives and actions at the regional level need to be formulated and implemented more so keeping in mind the fact that the views and approaches of the North and South countries on the related issues would be different. Each region would have its own local knowledge systems and practices to deal with the conservation and sustainable use of biological resources, which have been in practice since several decades. It is required to take stock of the practices region wise and initiate legislative, administrative and policy regime regarding biodiversity in tune with the UN convention, on a national basis. A national action plan on biodiversity needs to be formulated which would consolidate all ongoing efforts at conservation and sustainable use of biological resources including the following:

- Capacity building;
- Bio safety measures;
- Bio safety protocol;
- Biodiversity information network;
- Use of traditional knowledge and benefit sharing; and
- Legislation.

It may not always be possible for the Southern countries to take up such activities individually and there is a need for North-South cooperation and interaction to bridge the gap. This would require working of the governments at the international level with the cooperation of other countries, international bodies like the United Nations,

Non-Governmental Organisations (NGOs), private sector and institution taking into account people, their communities, practices and economic factors.

Implementation of programmes to conserve biological diversity on a global basis needs the following arrangements to be made for implementation:

- Financing and cost evaluation.
- Scientific and technological means.
- Human resource development.

SAQ 2

What are the issues that need to be addressed to overcome the threat to biodiversity?

8.3.3 Climate Change

Climate change is a serious challenge faced by the international community striving towards sustainable development. It has implications for not only health and well being of the earth's ecosystem but also for the economic enterprises and social livelihoods. The current models predict a 0.3 degree Celsius increase per decade in global temperatures over the next century. This is attributed to the increase in the amount of carbon dioxide present in the atmosphere, which has risen by about 25 per cent in the last 150 years. As a global problem, climate change requires a global solution, which can be made possible by research, shared knowledge and engagement of people at all levels. Within climate change, particular attention needs to be paid to the unique challenges facing developing countries. The South is likely to be significantly affected by climate change, yet it typically lacks in the resources needed to adapt to the economic, social and environmental changes expected to occur. Partnership between the North and South countries would give a good understanding of the implications of climate change for these countries and examine how approaches such as the Clean Development Mechanism may be used to meet developing countries' sustainable development objectives.

The negative consequences of global warming are catastrophic. These include:

- Increasing drought and desertification
- Crop failures
- Melting of the polar ice caps
- Coastal flooding
- Displacement of major vegetation regimes
- Coral mortality
- Change in ocean behaviour
- Natural disasters
- Infectious diseases
- Degradation of ecosystems
- Scarcity of food supply
- Rise in sea level

To address the detrimental effects, corrective measures with regard to the following need to be taken:

- Cutting down on carbon mono xide emissions.
- Adopting the 'Clean Development Mechanism' suggested under the Kyoto Protocol.
- Reduc ing green house effect.
- Using cleaner mining technologies that will reduce sulphur dioxide and particulate pollution thereby lowering mining contamination of water and air.

Despite knowing the methods, that can stop climate change, differences in national policy hinder their applications. This is because while governments pursue one set of

objectives through climate negotiations, their finance and trade arms ignore the global environmental implications of their activities. Another area that impedes action is the large amount the governments spend on subsidising energy throughout the world. This subsidy exists for both the North and South countries and discourages economical consumption of energy. Eliminating these subsidies could result in significant reductions in greenhouse gas emission from energy generating and consuming systems.

The framework on which global action on climate change may take place was defined in the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 and later in the Kyoto Protocol. In spite of being a positive step direction it has been made imperfect as some of the world's largest polluters have stayed out of the convention and some among those who have joined have demanded and received changes that have weakened the protocol considerably, resulting in a systematic marginalisation of the core interests of the developing countries.

Concerns have been raised mainly by the Southern countries regarding the direction in which the global climate regime has evolved; these in general relate to four large categories of concern.

- Principle of equity- both inter and intra generational.
- Focus of the regime has become skewed towards minimising the burden of implementation on polluter industries and countries, instead of giving priority to the vulnerabilities of the communities and at greater risk and disadvantage.
- The regime has now distinctly become a system for managing the global carbon trade and has lost sight of its original mandate of stabilising atmospheric greenhouse gas concentrations.
- The most vulnerable communities and countries are those, which are already the poorest and least adapt to these changes.

These concerns can be addressed by:

- The creation of a predictable, implementable and equitable architecture of combating global climate change that can stabilise atmospheric concentrations of greenhouse gases within a specified period of time, while giving all nations a clear indication of their current and future obligations based on their current and future emission.
- Enhancing the capabilities of communities and countries to combat and respond to global climate change, with particular attention to an adaptive capacity that enhances the resilience of the poorest and most vulnerable communities.

Most environmental issues require a long time arrangement. This is particularly true of climate change. The test of any climate regime is not simply what can be done or achieved in a short span of few years but what it is likely to achieve over the coming decades or even centuries. It is therefore very important that the policy architecture constructed is robust enough to stand the political as well as climate tests of time.

SAQ 3

Describe a few corrective steps to address the ill effects of global warming.

8.3.4 Intellectual Property Rights

Intellectual Property Rights (IPR) is the right to protect innovative ideas to make use of and sell a new product or technology. The protection is granted solely to the inventor or corporation, which files a claim on the investors' behalf, for a limited

period of time. This may take the form of patents, trademarks or copyrights. IPRs are legally enforceable but with limited monopoly granted by the state to the inventor. Within the specified time frame for which it is granted, no one else can copy the idea or technology allowing the innovators to commercialise it and recoup any investment on research and its development. Intellectual property has two characteristics in particular which lend it to special legal protection. The first is that it tends to have a high cost of development and the second is that it has low costs of reproduction. For example, it may cost more than a few crores to bring a new drug to the market, yet after the drug is available any good chemist could, through reverse engineering, reproduce it at a fraction of the cost. Similarly, amongst any other product or process of which computer software or a piece of writing are the most easily copied.

The area where IPR requirements are most pronounced can be categorised as:

- Agriculture – Plant varieties including Genetically Modified Organisms (GMOs)
- Manufacturing
- Information products

The debate for the desirability of IPRs continues in terms of welfare of the innovator who deserves right/remuneration for his efforts against the welfare of the society at large, which would benefit from the access to the innovation. The argument for IPR protection is that there would be less innovation without protection as no one would be willing to shell out large amounts of money or even innovate to develop new products/technologies/processes, if their innovation could be immediately copied by others; stronger the IPR protection, the more monitory rewards can be recouped by the innovator and thus more innovation tends to occur.

However, it cannot be overlooked that the overriding needs of the welfare for all rich and poor is to have affordable access to the results of innovation that can lead to sustainable development. It is important to note that while on one hand the financial incentive for innovation is a key justification for IPRs, on the other hand, IPR systems can severely hamper the very innovation they are intended to spur as the sharing and spread of innovative knowledge would get restricted in the hands of only a few who can invest in it.

To bring all the countries at par, the Trade Related Intellectual Property Rights (TRIPs) was formulated in January 1995, under which all member countries must bring their national IPR laws in conformity with certain provisions. However, the provisions in it generated so much controversy and debate that the final agreement states that the conditions "shall be reviewed after every four years from the date of entry into force".

The benefits of IPR protection for the innovator (and country) and lack of it for mankind and sustainable development on a whole needs to be weighed each time the issue crops up and decide accordingly.

8.4 SUMMARY

This unit discusses the impact of regional and global factors on sustainable development.

- The regional issues like desertification and droughts, floods, and soil erosion, rise in sea level and deforestation have assumed significance due to the misuse of the natural resources. The issues, when tackled on a regional basis, would contribute towards achieving sustainable development.

- Among the global factors, in particular, the causes of North-South divide and its effect on efforts at sustainable development are discussed. The detrimental effects are being realised in areas like biodiversity and climate change and steps are being

taken to bridge the gap. It is being realised that corrective steps cannot be taken by any nation or a group of nations in isolation without the consent and participation of other nations as they adversely affect the efforts towards sustainable development. Even the efforts to protect intellectual property generated in related areas are questionable when the areas of sustainable development are addressed worldwide.

8.5 TERMINAL QUESTIONS

1. How does afforestation contribute towards sustainable development?
2. What could be the consequences of global warming and a rise in the sea level?
3. Why is it not advisable to protect intellectual property in areas related to sustainable development?
4. The world is divided into the North and South. What are their opposing viewpoints on issues related to sustainable development?

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