
UNIT 22 DEVELOPMENT AND ENVIRONMENTAL CONCERNS

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22.0 INTRODUCTION

It is now a well known fact that environmental preservation has taken a back seat with the unfolding of developmental initiatives. Development has today become such a dominant idea that anything contrary or appearing to retard the pace of development is considered the most undesirable impediment. For this reason it was not realised for long that environmental preservation and development were not mutually exclusive concerns. In fact environmental problems in developing countries like India are in many ways the result of lack of development. The development here implies disproportionate access/ control over tangible and intangible assets/resources. This disproportionate access and control not only results in marginalisation and consequent deprivation due to class and caste location but also promotes use of resources in such manner as to result in an enviro-development crisis. In other words, inequality and deprivation pushes social groups in exploiting the available environmental resources in their proximity and use them in a manner that the process of erosion of these resources sets in. Thus environmental degradation and lopsided development become the two different sides of the same coin.

The term developing country is used for those countries that borrowed an industry led economic growth model of the Northern industrialised countries. The 'newcomers' were to draw on experiences in previously industrialised countries but faced different conditions and hence were largely unsuccessful (Tornquist,1999).

In order to understand the connection between environmental concerns and development, we will first analyse the dominant concept of development and its implications. Thereafter we will discuss the responses from the mainstream school of thought, that have tried to grapple with the linkage between environmental concerns and developmental issues. Subsequently we will review the response of the reformist school of thought to the relationship between the emergent environment and development, and also examine the critical discourse on the subject.

22.1 UNDERSTANDING DEVELOPMENT AND ENVIRONMENTAL CONCERNS

The history of development in the colonial and postcolonial world unfolded itself in a manner that it accepted the supremacy of enlightenment in thought and practice in both socio-economic and intellectual domains. Partha Chatterjee argues that anti-colonial nationalism in Asia and Africa in general and India in particular accepted unquestionably the superiority of west in the material domain. He writes ‘... the material is the domain ... of the economy and of the statecraft, of science and technology, a domain where west has proved its superiority and the east has succumbed. In this domain the western superiority has to be acknowledged and its accomplishment carefully studied and replicated...’ (‘Nation and Its Fragments: Colonial and Post-colonial Histories’ in *Partha Chatterjee Omnibus*, New Delhi, 1999).

22.2.1 Mainstream View

In India as well as in other countries development was dominantly understood as:

- 1 A mechanistic world view and the emergence of a scientific methodology that had together created a corpus of scientific (natural and social) knowledge and scientific tools and techniques;
- 1 The scientific knowledge and techniques, that would induce, if opted, changes in economy (shift from agriculture to industry based economy);
- 1 The industrial economy which had the potential of creating a strong service sector and was expected to absorb surplus labour freed from agriculture;
- 1 The industrial advancement creating a framework for sustained economic growth; and
- 1 The industrialised economy, supported by democratic state (universal adult franchise) and modernised society (equality between citizens) geared to serve the goal of continuous macro-economic growth synonymous with development.

Evidently universal standard of progress based on a set of values in the social and political field were accepted as the bedrock of development. Translated into practice it meant the adoption of scientific knowledge to bring in industrial growth by displacing traditional agricultural activity.

Though this model gave a particular awareness of backwardness and thus made it lopsided, the ‘universal standards’ themselves and the means to achieve them were never considered fundamentally flawed. Further, the political economy discourses within Liberal Democracy and Marxism, the two major paradigms, also showed that there was no disagreement between them so far as the understanding of the means to achieve economic growth/development was concerned.

This discursive unity reflected a singularity of purpose regarding the strategies and development programmes that were designed from a presupposed objective. The vision of development enshrined in the mainstream school of thought gave rise to the following:

Promoting the replication of history of the western societies in the countries of South. This allowed to it the luxury of considering history of development as unilinear, apolitical and technology-driven, independent of specific socio-political and cultural factors.

Reflecting an ‘elitist and deterministic’ view as far as distribution of economic growth and consequent social relations were concerned, i.e. it assumed that the whole society, irrespective of varying social locations within, would work towards the end objective of development. Hence, energy of the dominant categories as well as ‘backward and gendered mass’ was to be channelised in this particular direction. It was premised, in the words of Partha Chatterjee, on “one rational consciousness and one will – that of the whole. Particular interests needed to be subsumed within the whole and made consistent with the general interest” for the benefit of the whole. (‘Development Planning and Indian State’ in Partha Chatterjee, ed., *State and Politics in India*, Delhi, 1997).

This view promoted development policies which stood in contradiction to the needs and demands of marginalised social categories as is clear from the following table prepared by Robert Chambers:

Interpretation of Development by Professionals [Dominant Social Categories]	Interpretation of Local People [Marginalised Social Categories]
Universal	Local Specific
Simplified	Complex
Reductionist	Holistic
Standardised	Diverse
Physical	Experiential
Quantified	Unquantified
Low Income and hence Poverty	Multi-Dimensional deprivation
Employment	Livelihood

(‘Poverty and Livelihoods: Whose Reality Counts?’ in *Environment and Urbanisation*, Vol. 7 No.1, 1995).

- 1 The liberty of considering a particular section of the people weaker and the other section enlightened. Hence, allowing the latter to chart out a course of progress for the former from their standpoint.

- 1 Ignoring the agency of the subordinate section of the society in the process of development and making them mere instruments in achieving the end objectives defined on their behalf by the dominant social categories. This also disallowed the common people from being in charge of evaluating and controlling the path of development. This made the development prone to control of experts and highly centralised in its approach.
- 1 Envisaging a pattern of economic growth (hence development) that would never take into account the limits to the use of environmental resources. This would promote energy intensive and unsustainable industrialisation and a reckless intervention in the systems of nature.

This model of development has been severely criticised both from within as well as outside the environment and development policy establishment. The response to these criticisms came from institutions as well as independent writers, policy analysts and activists. We will discuss them in the ensuing pages.

22.1.2 Reformist View

The institutional response to a supposedly interconnected crisis of environment and development was articulated in formulations of World Commission on Environment and Development Report (WCED), popularly known as Brundtland Report. This report resulted in a wide debate on the main issues concerning environment and development and finally resulted in the United Nations Conference on Environment and Development (UNCED, 1992 also known as Agenda 21). The report and the subsequent conference have shaped the theory and practice of environment and development in the past decade. The WCED Report discusses four important factors, which contribute to a present day crisis in matters relating to environment. These are: poverty, growth, survival, and economic crisis. (*Our Common Future: Report of the World Commission on Environment and Development*, New York, 1987).

The cause of poverty is traced to several national and international factors. International factors include disadvantageous terms of technological transfer, protectionism, and inadequate financial flow. At the National level poverty is the result of unequal distribution of land and other assets, increasing population, and commercialisation of natural resources (*Ibid*). The Report further points out that economic growth increases total amount of resource use while at the same time also results in increased human intervention in natural cycles besides emphasising on energy intensive growth. While discussing survival the Report points out the vulnerability of human survival due to threats like green house gases, radioactivity, toxic wastes etc. Finally, the Report points out that environmental degradation also results in the slowing down, and often reversal, of economic growth and development leading to economic crisis.

The root cause of the above-discussed problem, according to Report, is

“fragmented nature of institutions and policies” which is not able to integrate production with “resource conservation and enhancement”. Hence, the Report advocates, “sustainable development” (which meets the need of the present generation without compromising with the ability of the natural resource base to meet the demands of the future generations) with the help of “reviving growth”. It also stresses on “changing the quality of growth” (less energy intensive) in order to meet the essential human needs. In the realm of natural resource management, it promotes effective decentralisation of powers for implementing, monitoring and evaluating the developmental projects in order to make such initiatives sustainable and to enable the poor to “achieve sustainable livelihoods”.

Similarly Agenda 21 points out the necessity of achieving sustainable development at every level of society. People’s organisation, women’s group and non-governmental organisations are identified as important source of innovation and action at the local level having a strong interest and proven ability to promote sustainable livelihood. It further asserts that governments in cooperation with Non-Government Organisations (NGOs) should support a community-driven approach to sustainability, which can give communities a large measure of participation in sustainable management and protection of the local natural resources in order to enhance their productive capacity. It stresses on the necessity to take special measures to empower women through full participation in decision making, and of promoting sharing of experience and knowledge between communities (UNCED, 1992).

This Conference triggered a lively debate on the concept of sustainable development which had become a buzzword and was used by authors and critics belonging to all schools of thought almost universally. It was argued that the concept of sustainable development had proven to be quite ambiguous due to its conceptual and ideological similarities with mainstream view. This perhaps was due to the fact that the top priority accorded by the strategic imperatives was for economic growth (“reviving growth”) or development rather than shifting the focus from there and placing it on environment. The goal again remained the same, i.e., rapid industrialisation with modernisation. The assumption again remained the same, that the benefits of growth would trickle down and produce a similar growth in other sectors of the economy, which would absorb the surplus labour through creating non-skilled jobs in abundance. This would in turn tackle the problem of inequality and poverty. (*World Development Report New York, 1990*).

This model of growth is a shift from the earlier model of mixed economy (as far as India is concerned) only to an extent that State’s role in administration and allocation of resources in various sectors of the economy has to be substituted by the market mechanism with the corollary of minimising the resource-base of the State. The State is supposed to lay the market rules, ensure their operation and intervene only in case of their violation or in case of market failure (*Ibid.*). This has also resulted in drastic cuts in social expenditure and has diminished

subsidies. In the context of agriculture and rural development, this model emphasises commercialised and export oriented agriculture economy. Even in the food grain sector, the target, and accordingly, the policies, are designed to meet the food security of the country rather than the food security at the household level, especially of the marginalised social categories.

The WECD report and subsequent other reports provide an insightful diagnosis of the interconnected enviro-development crisis. It is clearly recognised by all the reports that there is a close linkage between poverty and unsustainable use of resources, but when it comes to solutions it does not go much beyond conventional ideas and methods. Moreover as we see the development at the level of praxis we do not find it to be a satisfactory experience. A report prepared by United Nations after the completion of five years of UNCED points out: “Although economic growth – reinforced by globalisation –has allowed some countries to reduce the proportion of people in poverty, for others marginalisation have increased. Too many have seen economic condition worsen and public services deteriorate; the total number of people in the world living in poverty has increased. Income inequalities has increased among countries and also within them, unemployment has worsened in many countries, and the gap between the least developed countries and other countries has grown rapidly in recent years. ...[Besides] the state of global environment has continued to deteriorate and significant environmental problems remain deeply embedded in the socio-economic fabric of countries in all regions” (United Nations, 1997, *Earth Summit +5: Programme for the Further Implementation of Agenda 21*, UN, New York 1997).

The subsequent reports which have come from United Nations and its associated organs are also well researched. But it is interesting to note that researchers, critics, analyst from various schools of thought – all vouch for the same model of development, i.e. “decentralised”, “participatory”, “defined from below”. They try to incorporate solutions always maintaining primacy of democratic rule and free market economy as a precondition for any acceptance of reforms. This results in an increased emphasis both in theory and practice on how to deepen democracy. The assumption in this emphasis is that a vibrant democratic society will create a strong civil society, which will pressurise the governments to perform. However historical experience indicates that democracy does not always result in the growth of vibrant civil society. Tornquist points that an elite led democratisation as seen in Philippines resulted in “boss-rule” at the local level and “personalised populism” at the national level. He cites the case of India and asserts that centralised democracy there coupled with liberalisation has resulted in populist mobilisation on the basis of religious or cultural identities. Similarly, in authoritarian regimes, privatisation and deregulation has “enabled most of the old power- holders to reorganise their network and legalise their virtually private possession of the greater part of the resources they had already earlier controlled”. This is even true of the ‘socialist’ countries like China. (Olle Tornquist, *Politics and Development: A Critical*

22.1.3 Further Views

The mainstream view and the reformist view both have been subjected to scrutiny and both have received indicting criticism with regard to their true intentions in the enviro-development debate. Against the backdrop of such criticism United Nation's Development Programme (UNDP) proposed two closely interrelated policy recommendations – *Sustainable Human Development*, (*World Human Development Report*, New York, 1994) and *Governance for Sustainable Livelihoods: Operational Issues* (UNDP,1998). The former is defined as a programme of development focussed on the “protection of the life opportunities of future generations as well as present generations and respecting the natural systems on which all life depends.” A very important shift here is the recognition that economic growth measured in terms of increased Gross Domestic Produce (GDP) does not amount to sustainable human development ('Reconceptualising Governance: Discussion Paper 2' at <http://www.undp.org/1997>). The latter is a set of practical recommendations for implementing the former. It suggests that sustainable human development and sustainable livelihood can be achieved through articulation of local level needs with the assistance of sustained mobilisation of social capital through distribution or decentralisation of political power to local level constitutional as well as civil society institutions. UNDP defines Sustainable livelihood quite comprehensively taking both income and non-income factors into account: “Sustainable livelihood is the capability of people to make a living and improve their quality of life without jeopardizing the livelihood options of others, either now or in the future. Conceptually, livelihoods connote the means, activities, entitlements and assets by which people make a living. Assets, in this particular context, are defined as not only natural/biological (i.e., land, water, common-property resources, flora, fauna), but also social and political (i.e., community, family, social networks, participation, empowerment, human (i.e., knowledge, creation by skills), and physical (i.e., roads, markets, clinics, schools, bridges). The sustainability of livelihoods becomes a function of how men and women utilize asset portfolios on both a short and long-term basis. Sustainability should be defined in a broad manner and implies: a) The ability to cope with and recover from shocks and stresses; b) Economic effectiveness, or the use of minimal inputs to generate a given amount of outputs; c) Ecological integrity, ensuring that livelihood activities do not irreversibly degrade natural resources within a given ecosystem; and d) Social equity which suggests that promotion of livelihood opportunities for one group should not foreclose options for other groups, either now or in the future” (UNDP, 1998). Here social Capital is distinguished from physical, financial and human capital and refers to cultural, political, educational attributes of a community, which ostensibly allows them to function in a mutually supportive manner. It is assumed that once such capital is open to the use, it can contribute significantly in improving economic performance, especially growth. It also lays emphasis on *confirmation*

or institutionalisation of such rules that have permitted such a change. Market can be a useful ally to sustainable livelihood strategy as far as it allows the “local actors to have more influence over their own affairs”. It is also emphasised that macro level rule and regulation should adjust to development needs defined from below rather than vice-versa thereby giving increased emphasis to civil society institutions and the role of social capital in building these institution.

It is argued that division of labour and pattern of subordination and exploitation is so complex in any developing country in general and India in particular that any simplistic understanding of democracy results in institutions of formal democracy and not substantive democracy. The evidences, at least in theory, suggest that this paradigm of civil society ignores the caste class gender location and assumes citizens to be equal. This seems to be quite a vicious circle because historical evidence suggests that emergence of civil society is closely associated with the “rise of relatively independent socio-economic relations as against the family, the feudal lord and the absolutist state”(Olle Tornquist, *Politics and Development: A Critical Introduction*, New Delhi, 1999). The overwhelming presence of primordial loyalties and consequent economic relations will never allow autonomous civil society to emerge and civil society cannot operate effectively in presence of such social and economic relationship. Further, the argument that markets create an equal opportunity for all depends on the critical assumption that initial distribution of property right is equal. The markets exclude people as producers or sellers if they have no asset or capabilities. Hence social categories lacking in assets, physical and financial, which can be used to earn interest, rent or profit are simply excluded from the market. Their position becomes even more vulnerable in those societies where distribution of capabilities is also unequal (Deepak Nayyar, ‘Economic Development and Political Democracy: Interaction of Economics and Politics in Independent India’ in *Economic and Political Weekly*, December 5, 1998). In such a context no amount of efforts can bring the whole community together in order to function in a mutually supportive manner.

22.2 CRITICAL DISCOURSE

Ever since environment has come centre-stage in the discussions concerning the directions in which the developmental paradigm should be moulded several views have emerged that discard the primacy of humans as the pre-eminent beneficiary of development and the consequent results of development. We have clubbed them together under the appellation Critical Discourse. In the following sub-sections we discuss the four major categories of these views.

22.2.1 Deep Ecology

This school of thought rejects the human centred view of development and supports a discourse which is eco-centred. It suggests a fundamental restructuring in the principles of societal development. It promotes the

ethics of conducting human affairs according to the laws of nature. This school of thought believes that the present crisis in the realm of environment and development is due to support and promotion of ecological policies by mainstream environmental groups whose main aim is to protect those parcels of nature that are useful/necessary for the present well being of humans. This is termed as shallow ecology. Hence the need of the time is to promote value based 'Deep Ecology'.

Deep Ecology is founded on two basic principles: one is that scientific insight into the interrelatedness of all systems of life on Earth is possible; and that the idea of *anthropocentrism* – human-centeredness – is a misguided way of seeing things. Put in other words it argues for equality of all natural things – ecosystems, life and landscape – and agrees that all of them have an intrinsic right to co-exist. This eco-centric attitude is more consistent with the truth about the nature of life on Earth. Instead of regarding humans as something completely unique or chosen by God, they see us as integral threads in the fabric of life. Hence it demands a less aggressive human attitude towards nature. In the words of Naess "Living a simple life, a human will effect the earth minimally: Simple in means, rich in end" (Arne Naess, *Deep Ecology*, 1988 at <http://www.proinco.net/staff/mogens/deepeco/english/>).

The second component of Deep Ecology is what Arne Naess calls the need for human self-realisation. Instead of identifying with our egos or our immediate families, we would learn to identify with trees and animals and plants, indeed the whole ecosphere. This would involve a pretty radical change of consciousness, but it would make our behaviour more consistent with what science tells us is necessary for the well being of life on Earth. The propositions of Deep Ecology have been compared with the dominant worldview in the following table to place them in perspective:

Dominant Worldview	Deep Ecology
Dominance over Nature	Harmony with Nature
Natural Environment as resource for humans	All nature has intrinsic worth/equality of bio-species
Material/economic growth for growing human population	Elegantly simple material needs (material goals serving the larger goal of self-realisation)
Belief in ample resource reserves	Earth "supplies" limited
High Technological progress and solutions	Appropriate technology; non-dominating science
Consumerism	Doing with enough/recycling
National/centralized community	Minority tradition/ bioregion

22.2.2 Social Ecology

Murray Bookchin who is considered as the founder of this school of

thought points out that in order to understand the present day problems-ecological as well as economic and political – we must examine their social causes and remedy them through social methods. He writes: “simply to put society against nature, humanity against the bio-sphere and reason, technology and science against less developed, often primitive forms of human interaction with the natural world allows us to study only the social symptoms rather than the social cause”. The analysis which brings out the social symptoms conceal vast differences, often bitter antagonism that exists between the privileged whites and people of colour, men and women, rich and poor, oppressor and oppressed. (Murray Bookchin, ‘Society and Ecology’ in John Dryzek & David Schlosberg, *Debating the Earth: The Environmental Politics Reader*, Oxford, 1988).

Further it is pointed out “all ecological problems are social problems” (*Ibid*). Hence in order to understand and explain the social facts and social problems, it is also recommended to extend the traditional boundaries of sociology beyond the interface of economy, polity, social structure and culture by incorporating a fifth basic category of ecological infrastructure of human society – that is, soil, water, flora fauna, climate etc. The rationale for this is that the ecological infrastructure powerfully conditions the evolution and direction of human’s economic life, political relations, social structures and ideology. (Ramchandra Guha, 1994, *Social Ecology*, New Delhi, 1994). Such an analysis may provide a clue to the present enviro-development crisis and consequent livelihood constraints on marginalised social categories. The Social Ecologists point out that the present crisis is due to domination within human society and domination of nature by human society. They support remaking of the society by conscious struggle against all forms of domination – within human society and of nature by humans.

22.2.3 Eco-Socialism and Eco-Feminism

The eco-socialist gives attention to political economy aspect of enviro-development crisis. Marx’s analysis of capitalism and his recommendation of ideal communist society, according to eco-socialist, can overcome the present enviro-development crisis. There is however a debate within the school which claims that Marx failed to lay equal emphasis on the appropriation of nature and women’s unpaid labour. The former is termed as second contradiction of capital. As capitalism refuses to take the cost of destruction of the conditions of production into account, its practice leads to an ecological crisis. Eco-Socialism responds to this second crisis in capitalism. (James O’Connor,, 1994, ‘The Second Contradiction of Capitalism’ in *CES/CNS Pamphlet 1*, 1994).

Despite differences between various authors the principle eco-feminist position emanates from the understanding that the institution of patriarchy, coupled with capitalism, deprived women of their control over natural resources. These resources were appropriated for commodity production and maximisation of surplus value. The prescription favoured by Eco-Feminism is gyno-centrism i.e. according centrality to women,

their knowledge and their production and reproduction related activities.

22.3 SUMMARY

We see that both the reformist school as well as the critical school agree that there is a close inter-connection between the crisis of development as well as environmental destruction. The remedy suggested by the reformist school is giving some kind of control for the management of natural resources to the local level people's institutions. There is a call for deepening democracy through creation of a vibrant civil society. On the other hand critical discourse wants a fundamental shift not only in the model(s) of development but also in the attitude of community/individuals towards the use of natural resources.

22.4 EXERCISES

- 1) Is there an inevitable conflict between development and environmental concerns? Discuss and give different views on the subject.
- 2) Write short notes on the following:
 - i) Deep Ecology
 - ii) Social Ecology
 - iii) Eco-Socialism and Eco-Feminism

22.5 SUGGESTED READING

Partha Chatterjee, *Partha Chatterjee Omnibus*, New Delhi, 1999.

Partha Chatterjee, ed., *State and Politics in India*, Delhi, 1997.

Robert Chambers, 'Poverty and Livelihoods: Whose Reality Counts?' in *Environment and Urbanisation*, Vol.7, No.1, 1995.

Our Common Future, Report of the World Commission on Environment and Development, New York, 1987.

World Development Report, World Bank, New York, 1990.

Olle Tornquist, *Politics and Development: A Critical Introduction*, New Delhi, 1999.

Deepak Nayyar, 'Economic Development and Political Democracy: Interaction of Economics and Politics in Independent India' in *Economic and Political Weekly*, December 5, 1998.

UNIT 23 BIODIVERSITY

Structure

- 23.0 Introduction
 - 23.1 Biodiversity: Meaning & Importance
 - 23.2 India's Biodiversity
 - 23.3 Biodiversity Depletion & Conservation
 - 23.4 People's Initiatives
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23.0 INTRODUCTION

An understanding of biodiversity or the diversity of life-forms is central to any programme of ecosystem and environmental studies. India is richly endowed in this biological wealth. The numerous types of plants and animals that survive on Indian sub-continent accord it a special position. It is a unique situation that India is home to genetic, species, and ecosystem biodiversity resulting from diverse kind of landforms and climates providing habitats to life forms. However, it is also correct that excessive human interference in this wealth and a relative ignorance about its value is fast eating into our biological resources. In spite of governmental efforts, biodiversity depletion continues at an alarming rate. In fact biodiversity protection is one of the more important concerns of modern India and a familiarity with basic concepts related with biodiversity, we understand, is of help in this matter.

In this unit, we propose to focus attention on the prominent aspects of biodiversity. Thus issues like definition, distribution and depletion will come under discussion. We also look into the various government policies and legislations aimed at protection of our biological wealth. In addition an attempt is made to explore aspects of public participation in biodiversity management.

23.1 BIODIVERSITY: MEANING & IMPORTANCE

Biodiversity is a combination of two words – biological and diversity, meaning diversity of life forms. It has been used very generally for nature and its biological wealth. Based on this understanding several definitions have also been put forward. Biodiversity is generally defined as the number and variability of all the life forms pertaining to plants, animals and micro-organisms and the ecological complex they inhabit.

The other definition seeks to define biodiversity in terms of three fundamental and hierarchically related levels of biological organisation whereby it is understood in terms of the variability of ecosystems, species and genes. Since biodiversity refers to the entire gamut of life forms, the relationship between plants and animal life as also with other living organisms is also covered under this definition.

Biodiversity has been an important aspect of human existence. “Perhaps the most important value of biodiversity, particularly in a country like India, is that it meets the basic survival needs of a vast number of people. Even today there are any number of traditional communities which depend, wholly or partially, on the surrounding natural resources for their daily needs of food shelter, clothing, household goods, medicines, fertilizers, entertainment etc.” (*Biodiversity*, ed. Kiran B. Chhokar, World Resources Institute, USA & Centre for Environment Education, Ahmedabad, India, published OUP, Delhi, 1997, p.20). Among the other benefits of biodiversity, an important one that comes to our mind relates to the conservation of food chain. We know that each species in a food web is dependent on the other. The loss of any one species therefore, may unleash a chain reaction where many known and unknown life forms would vanish altogether. The importance of bio-diversity in maintaining a food chain in itself speaks a lot about it’s potential. The two documented benefits of biodiversity are:

- 1 Consumptive and productive uses – grains, vegetables, fruits, plants, medicines, timber, oils, forest products, milk products, eggs, the list of items on this account is endless;
- 1 Non consumptive benefit where we have biodiversity’s role in providing raw materials for biotechnology, regulation of water and other nutrient cycles, regulation of climatic conditions, carbon fixation etc.

The economic value of biodiversity is also of great benefit. “Each species is of potential value to humans. So are healthy ecosystems. The global collection of genes, species, habitats and ecosystems is a resource that provides for human needs now, and is essential for human survival in the future. Human depend on other species for all of their food and for many medicines and industrial products.

Up to 80 per cent of the people in developing countries depend on traditional medicine for primary health care, most of which is derived from plants and some from animal and mineral sources. About 20,000 species of plans are used for medicinal purposes in these countries. Nearly one-quarter of all prescription drugs used in the developed world are based on plants, including 21 indispensable mainstream drugs. These include aspirin from the plant *Filipendula ulmaria* and *Quinine* from the bark of several species of the *Cinchona* tree. In addition, plants contain complex chemical structures which may be possible to synthesize in a laboratory, and which might provide important clues for new medicines (ODA 1991). (See box “Indigenous Systems of Medicine”.) Genetic diversity is important in breeding crops and livestock. The loss

of crop species has severe implications for global food security. Crop breeders need a diversity of crop varieties in order to breed new varieties that resist evolving pests and diseases. Many crops have been “rescued” with genetic material from wild relatives or traditional varieties. Sugarcane in India, for example, was prone to the red rot disease which limited its commercial production. Resistance to the disease was acquired from the genes of the wild cane *Saccharum spontaneum* from Indonesia (CSE 1985). Genes from a wild rice from India resurrected rice cultivation in many parts of Asia in the early 1970s. Scientists at the International Rice Research Institute searched 6,723 samples for genes resistant to the widespread grassy stunt virus. They found it only in one – a single sample of *Oryza nivara* collected from eastern UP in 1963. The strain of rice evolved by using that sample is now widely grown all over South and South-east Asia (CSE 1985).

Biodiversity, therefore, represents a “living library of options for adapting to local and global change.” (*Biodiversity, op. cit., pp.20-22*)

Perhaps the most important value of biodiversity is in its providing solutions to many problems of an unforeseen and an undesirable future.

Indigenous Systems of Medicine

Traditional medicine in India has relied heavily on the rich biodiversity of the region. Three traditional systems of medicine are widely prevalent in the country – Ayurveda, Siddha and Unani.

The Ayurvedic system subscribes to the view that there is no plant on the earth which is not a medicine. The story goes that Brahma ordered the sage Jivaka to find a tree or a herb which had no medicinal property. Jivaka wandered for eleven long years in search of such a plant but could not find one. When he returned and informed Brahma of his failure, much of his surprise Brahma recognised him as a great physician !

Ayurveda has given to the world the drug reserpine used a tranquilizer and for the treatment of hypertension, anxiety and schizophrenia. Reserpine is extracted from the forest shrub *Rauvolfia serpentina*.

(*Biodiversity, op. cit. p. 21*)

23.2 INDIA’S BIODIVERSITY

As we discuss India’s biodiversity we become aware of the centrality of Indian situation in the rich biodiversity of the country. The prime reason for such a rich biodiversity has been the peculiarity of Indian landscape that we have discussed in detail in the opening Block. It is notable that a wide variety in physical features and climatic situations has resulted in a diversity of ecological habitats like forests, grasslands, wetlands, coastal and marine ecosystems and desert ecosystems. Various national and

international agencies and conventions have acknowledged India's potential in terms of biodiversity. The two prominent features that emerge are:

- 1 *VAVILOV CENTRE*: India is a Vavilov centre of high crop genetic diversity. This is so named after the Russian agro - botanist N.Y. Vavilov, who identified eight such centres around the world in 1951. He "classified the world's crop producing regions into eight centres of plant origin. Of these areas of crop genetic diversity, India was central to what he called the "Hindustan Centre of Origin". Vavilov's terminology for India was well justified, for this region has produced a significant share of the major crops used the world over. At least 166 species of crops (6.7 per cent of total crop species in the world) and 320 species of wild relatives of cultivated crop species are believed to have originated here".

- 1 *MEGADIVERSITY*: India is one among the seventeen 'megadiversity' countries in the world, a concept which was introduced by R.A. Mittermier and T.B. Vernier. Megadiversity is a much less discussed subject than biodiversity. This term and another term 'Hot Spots' have recently been used by World Bank and other World bodies for species diversity and endemism in the World's selected few rich floral and faunal zones. "Just as the G-7 countries concentrate a major portion of the world's economic wealth, the 17 Megadiversity Countries have within their borders more than two thirds of our planet's biological wealth, its biodiversity," explains Conservation International's President Dr. Russell A. Mittermeier. The Megadiversity concept was created in an attempt to prioritise conservation efforts around the world. More than half of the world's forests have already disappeared, and more are destroyed each year. Thousands of species, most of them unknown to science, are being led to extinction. Filled with the beauty and variety of landscapes, plants, and animals from around the world, this video explains the Megadiversity approach and highlights the biologically remarkable countries. Megadiversity is not only a concept, it is a call for action to ensure the survival of all forms of life on earth. Two spots identified as 'Megadiversity' and 'Hot Spots' in India are North-eastern Himalayas and Western Ghat. But India as a whole has been marked a megadiversity area. Indians are not yet very much conscious and concerned about biodiversity loss and degradation of entire ecosystem. As the conservation need is urgent in the face of depletion India needs a well designed strategy to protect these resources.

The distribution of biodiversity in India is also important. India, which occupies just two percent (2.4%) of the total landmass of the world, harbors a rich biodiversity comprising about 8% of the known biodiversity of the world. For our purposes, a broader picture of bio-diversity distribution will emerge if we divide the distribution in quantitative and geographical terms.

A glance at some of the numerical estimates of the familiar categories of living organisms would gives us some idea of our biodiversity wealth.

India has :

- 1 81,000 species of animals, which includes 50,000 species of insects and 12,000 species of birds; it also has
- 1 45000 species of various other categories of plants that include 15,000 species of flowering plants.

It has to be borne in mind that these figure are based on survey of about 70% of the geographical area of the country the results of which have been recorded. A vast area yet needs to be surveyed and documented. Further, within these species and the figures that we have just mentioned, there are several sub-species which in turn may have countless varieties.

The biodiversity that our country has is widely distributed through its length and breadth. Various attempts have been made to classify them in terms of geographical areas. The most accepted and followed classification is the one developed at Wildlife Institute of India by Rodgers and Panwar (1988). It divides India into 10 bio-geographic regions/zones. These zones reflect major species groupings. In addition, they have a distinct set of physical, climatic and historical conditions. The ten zones are:

- | | |
|--------------------|---------------------|
| 1. Trans Himalayan | 6. Deccan Peninsula |
| 2. Himalayan | 7. Gangetic Plain |
| 3. Indian desert | 8. North-East India |
| 4. Semi arid | 9. Islands |
| 5. Western Ghats | 10. Coasts. |

23.3 BIODIVERSITY DEPLETION & CONSERVATION

In spite of the established benefits of biodiversity, we are faced today with a problem of accelerated depletion of life forms. The main factors of this depletion have been human interventions and habitat destruction, over exploitation for commercial reasons, accidental or deliberate introduction of exotic species, loss of gene flow, outbreak of diseases, increasing pollution (air, water and land), climatic and environmental changes etc. This is in addition to the natural rates of extinction of life forms. The end result has been extinction of many species altogether while still others are threatened. It needs to be pointed out that many species may have been lost without being documented. Another alarming aspect of this problem is that even if all human activities were to cease immediately, species extinction due to impacts that have already taken place would continue for decades. Some instances of biodiversity loss in India, are:

- 1 Many animals have become extinct like cheetah, pink-headed duck while many more are extremely threatened and endangered;

- 1 Among plants, out of 15000-16000 species of flowering plants about 10% have already come under various categories of threatened plants. According to an estimate, out of the 427 endangered species published in the Red Data Books of India, 28 species are supposed to be extinct, 24 endangered, 81 vulnerable 160 are rare while 34 have been insufficiently seen;
- 1 By 1986, India had only 6,15,095 sq. km. of wildlife habitat. Of its original 30,17,009 sq. km wildlife habitat it amounts to a loss of about 80%;
- 1 As discussed above, the study of 'hotspots' shows that out of 18 regions or 'hotspots' that are characterised by high conservation of endemic species and are experiencing unusually rapid rates of habitat modification, two are in India. They are Eastern Himalayas and the Western Ghats;
- 1 The adverse effects of a biotic (devoid of life) pressures on fisheries is very noticeable in the Damodar and Hoogly rivers in West Bengal, Choliyar river near Calicut and Kalu river near Kalyan, Bombay. Abiotic pressures are also responsible for the silting of the Dal lake in Srinagar (Jammu and Kashmir) and the Naini lake in Nainital (U.P.).

The demonstrated and potential benefits of biodiversity make it an imperative to take corrective measures. Conservation efforts are particularly necessary in the wake of loss of life forms on a daily basis. In India, conservation practice based on local knowledge systems and community efforts date back to several centuries. In the modern period scientific agencies have mapped various life forms and prepared a taxonomic database. The Botanical Survey of India, (established in 1980), the Zoological Survey of India (1961), and the National Institute of Oceanography together with various organisations and universities are involved in survey and documentation of life forms. What is needed is a comprehensive strategy to conserve the languishing biodiversity. This can be done in two ways; **Ex-situ conservation** – off site conservation, and **In- situ conservation** – on site conservation.

Ex-situ conservation: refers to conservation of life forms in areas outside their natural habitat. Such a situation may arise when populations of a threatened species become so fragile that its survival may not be possible in the wild, or for reasons of distance, logistics or legality, its conservation in natural habitat is not possible. Ex-situ conservation can be done in different ways :

- a) By establishing zoological parks and botanical gardens;
- b) Through research centres, aquaria and similar institutions; and
- c) By applying in-vitro storage techniques for the conservation of plant biodiversity field gene banks and seed banks;
- d) In case the concerned species shows signs of recovery and propagation at the ex-situ sites, they can be re-introduced in the wilds.

In-situ conservation applies to conservation of the threatened species in their natural habitats. In situ conservation can be carried out in the following areas:

- 1 National Parks and Sanctuaries;
- 1 Reserved and Protected Forests;
- 1 Biosphere Reserves;
- 1 Nature Reserves.

The Government of India has taken a variety of steps to ensure biodiversity conservation. While some of them are directly and specifically targeted at conservation of life forms, other play an incidental role in rehabilitation and propagation of different species and ecosystems. These measures may be listed thus:

- a) Around 4.2% of the total geographical area of the country has been earmarked for Protected Areas, National Parks and Sanctuaries. India has 85 National Parks and 498 wildlife sanctuaries.
- b) Various projects like Project Hangul, Tigers, Lion, Brow-Antlered Deer, Elephant, Crocodile etc. have been launched in protected areas for conservation of threatened species.
- c) To conserve representative ecosystems, ten 'Biosphere Reserves' have been formed. These reserves also serve as laboratories for evolving alternative models of development.
- d) Various programmes and action plans have been launched for scientific management of fragile ecosystems like Wetlands, Mangroves, Coral Reefs, deserts and other areas.
- e) In pursuance of ex-situ conservation, the government has set up several zoological and botanical gardens. There are about 70 Botanic Gardens including 33 university Botanic Gardens. There are also around 275 centres of ex-situ wildlife preservation in the form of zoos, deer parks, safari parks, aquaria etc. A Central Zoo Authority has also been formed.
- f) Several legislations like Wildlife Protection Act, Forest Acts, Environment Protection Act etc. have been enacted to protect and propagate life forms. A list of such acts is being given in the Appendix. A Biodiversity Bill is already under consideration in the Parliament.
- g) Conservation or Biological Diversity (CBD) – India is also a signatory to the International Convention on Biodiversity (CBD) held in 1992. Pursuant to ratification of CBD on 18 February 1994 several steps have been taken. A National Action Plan on biodiversity is under finalization; an Inter-ministerial Task Force on Bio-safety was constituted, and steps to build up a Biodiversity Information Network have been initiated. In addition, consultations with state governments, NGO's, grass root institutions, experts and lawyers are also being

undertaken to evolve a viable methodology for protection of our biodiversity.

The government efforts have to be matched by efforts of the people as a whole. Besides, the government programmes have to be more targeted and focused. Some suggestions are:

- 1 For in-situ conservation, sufficient bio-reserves, bio-parks etc. have to be set up in different agro-ecological and bio-climate regions.
- 1 For ex-situ conservations, there is a need to build more resource centres, conservation parks and germ plasma banks of various kinds.
- 1 There has to be a massive awareness generation and mass mobilisation programme focussing upon the importance of biological wealth. Biodiversity conservation has to be a national effort.
- 1 Research activities pertaining to biodiversity should be given greater attention and survey of hitherto inaccessible areas like the Himalayas, Andaman and Nicobar Islands and Exclusive Economic Zone should be carried out.
- 1 Strict enforcement of rules and regulations particularly in biologically degraded areas are needed.
- 1 Preparing a comprehensive database in the form of a Biodiversity Register is also very important.
- 1 Involvement of tribals, rural communities NGO's and other grass root institutions in species management plans is of great help. Traditional wisdom and community efforts at preservation of biodiversity are now increasingly being applauded. The need is to involve them in a comprehensive way. Some experts have also floated the concept of People's Biodiversity Register (PBR).

23.4 PEOPLE'S INITIATIVES

There are ample examples where people, rural communities, tribals, village folk in association with academician, NGO's researchers and in some cases with government officials have shown remarkable enterprise in management of life-forms. Let us have a look at some of the examples.

- 1) The Bishnoi community spread over Barmer, Jodhpur and Jaisalmer district of Rajasthan have been successfully preserving the Khejri trees, the pea-fowl and certain mammals like the chinkara, nilgai and the black buck. They are enjoined by their religious traditions to preserve nature.
- 2) There are many examples of women involvement in biodiversity preservation from Himachal Pradesh. Women organized into *Mahila Mandals* have successfully protected patches of forest all over Karsog in Mandi district. Similarly Mahila Mandals are protecting forests in Chular valley of Mandi from timber smugglers and sometimes from their own men.

- 3) The Nature Conservation Society (NCS) formed in 1976 by a group of college and university teachers and forest department officials have been successfully involved in research promotion, awareness generation and biological documentation in Palamau Tiger Reserve in Bihar.
- 4) *Navdanya* is a grassroots people's movement for in-situ conservation of genetic resources linked to agricultural crop diversity in the Garhwal- Deccan region.

These are very few examples, to demonstrate people's ability is conserving our biological wealth. The need in to emulate and prorogate such efforts in other parts of the country.

23.5 SUMMARY

Biodiversity depletion is fast assuming alarming proportions in India. In spite of the efforts of the governmental biodiversity conservation programme has not become a success in India. The need therefore is to make our approach much more broad based and involve people's in this important exercise.

23.6 EXERCISES

- 1) What do you understand by Biodiversity?
- 2) What is meant by ex-situ and in-situ conservation? Describe.
- 3) Examine of the importance of biodiversity.

23.7 SUGGESTED READING

A. Kothari, *Conserving Life: Implications of the Biodiversity Convention for India*, Second edition, Kalpavriksh, New Delhi, 1995.

V. Shiva (ed.), *Biodiversity: Social and Ecological Perspectives*. Natraj Publishers, Dehra Dun, in association with World Rainforest Movement, Penang.

E.O. Wilson, (ed.) 1988. *Biodiversity*. National Academy Press, Washington, D.C.

Kiran B. Chhokar (ed.), *Biodiversity*, Centre of Environment Education & World Resources Institute, USA, OUP, Delhi, 1997.

UNIT 24 ENVIRONMENTAL RESOURCES AND PATENTS

Structure

- 24.0 Introduction
- 24.1 Convention of Biodiversity
- 24.2 Trade Related Aspects of Intellectual Property Rights (TRIPS)
- 24.3 Contradictions And Conflicts
- 24.4 Developments in India
- 24.5 Case Studies
- 24.6 An Overview
- 24.7 Exercises
- 24.8 Suggested Reading

24.0 INTRODUCTION

For centuries colonial and neo-colonial powers have freely taken resources and knowledge from the erstwhile-colonised world. Colonial powers extracted environmental resources and indigenous knowledge from the societies of the South and through working on such material, developed new biological forms. They also enforced a system with the help of which benefits from such materials and products were prevented from percolating down to the South. This was done by invoking the protective walls of patents, known appropriately as Intellectual Property Rights (IPR). The patents or IPRs were the instruments that were used to make the exploitation of the environmental resources from underdeveloped or developing regions of the world a one way process. The benefits emanating from this exploitation were barred from reaching the underdeveloped/developing world. Environmental resources and patents thus came to signify a hegemonic relationship in which the true beneficiary was the developed world and the ultimate sufferer was the underdeveloped world.

This unit concerns itself with the troubled relationship between environmental resources and the patent regime. It is important to note that after a long hiatus the South has finally awakened to this discrimination and is now demanding a share in what rightfully belongs to it. Convention of Biodiversity 1992 is one such instrument through which the underdeveloped/developing world expects to correct this disparity. Unfortunately, little more than a year after the CBD was adopted the developed world had propelled a new and stringent IPR regime threatening to subvert the goals laid down in the CBD. The new regime has been named the Trade Related Aspects of Intellectual Property Rights or TRIPS. This name belies the actual content of this regime which encompasses all kinds of IPR and often hardly has anything to do with trade. We thus have two

main international instruments that represent the two main doctrines governing the issue of environmental resources and patents.

Interestingly the two legally binding international agreements are inconsistent and even contradict each other on three major levels namely- i) Objectives, ii) Principles laid down to justify the objectives, and iii) Legal obligations resulting from them. This is likely to have serious national and international ramifications in not too distant a future. The broad background of the debate concerning environmental resources and patents is provided by the above. We propose to discuss in this Unit, the details of this debate and the nature of international instruments central to the issue and their long term impacts.

24.1 CONVENTION OF BIODIVERSITY

Biodiversity (biological diversity) is the word used to describe all living organisms their genetic make up and the communities they form. Global theory views the planet earth as an integrated and interdependent ecosystem. Concerns have been growing amongst scientists, policy makers and public at the accelerating loss of biodiversity resulting from human impact. (Cf., Suzanne Biggs, 'The Biodiversity Convention And Global Sustained Development' in Keily and Marfleet, *Globalisation and the Third World*, London, Routledge, 1998 p.116). International efforts at conserving life forms are not new. " There are over 150 bilateral, multilateral and global treaties on environment." [Register of environment treaties and other agreements in the field of environment, UNEP, Nairobi, May 1991 (Document No UNEP/GC 16/INF 4) cited at Ashish Kothari, 'Politics of Biodiversity Convention', *Economic and Political Weekly*, April 11-18, 1992 p 749]. Many of these deal with various aspects and parts of biodiversity, starting with convention relating to Fauna and Flora in their Natural State, 1933. But most of these were specific and sectoral in nature, and there was a need for a comprehensive treaty. The Convention on Biological Diversity, 1992 (CBD) is a legally binding commitment to stop this destruction and secure the conservation and sustainable use of biological diversity. CBD is a result of prolonged international pressure to respond to the destruction of, and unequal profits derived by the colonial powers from, the biodiversity of the South. After years of debate, the Convention was agreed upon in 1992 at Rio de Janeiro and came into force in 1993.

As felt by many, bio-diversity conservation is today as much political an issue as any other. The core debate is woven around the contentious issue of transfer of biotechnology from North to South on one hand and bio-resources (genetic resources) from South to North on the other. As alleged by the developing world the IPR regimes like TRIPS hamper the former, by laying down strict IPR measures, and encourage the latter by not checking bio-piracy.

Vandana Shiva, a noted activist, has explained contradictions of the crisis at hand in a precise manner thus:, " While the crisis of biodiversity is

focused as an exclusively tropical and third world phenomenon, the thinking and planning of biodiversity conservation is projected as a monopoly of institutes and agencies based in and controlled by the industrial world” (*Biodiversity, Social And Economic Perspectives*, London, p.6).

Both developed and developing nations (more than 150 states) discussed these divisive issues in (Rio de Janeiro in, 1992, and agreed on a convention which recognised the wide ranging implications of biodiversity use and conservation and its ‘ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values’. The CBD opened up new prospects for developing countries in dealing with their resources and it affirmed the sovereign right of nation-states to their own biological resources. The CBD comprises of 31 articles. The first few articles deal with general principles, definitions and objectives and the last few deal with formal details (e.g. structural details of the conference of parties, the secretariat etc), and implementation details. The substantial parts (articles 5 to 17), deal with various aspects of biodiversity such as identification and monitoring, conservation in natural or human modified surroundings, rational or sustainable use, creation of awareness, impact assessment of activities likely to effect biodiversity, access to genetic material, safeguarding of relevant traditional knowledge and practices and exchanges of information and technology between the countries. But unfortunately the convention remains a weak instrument; it instructs the states to bring about certain changes in their laws and in functioning to achieve the Convention’s objectives but neither lays down a specific time frame (like TRIPS does) nor provides a method to do this. It is vague on many important issues and ineffective in implementation which is its biggest drawback. We discuss below some of the specific provisions that relate to environmental resources.

Article 3, of the Convention of Biodiversity says: “states have, in accordance with the Charter of the United Nations and the Principles of International Law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause (harm to) the environment of other states or of areas beyond the limits of national jurisdiction”.

This is considered to be the most important article of CBD, which rejects the ‘common resources’ and ‘common heritage’ argument put forward by the developed world. By using this common heritage argument the former colonial powers have exploited the resources of the colonies for centuries without sharing the benefits. No wonder then that in the negotiations for the convention, countries of the South fought for the deletion of the term ‘common heritage’. They instead pressed for and got accepted the principle of national sovereignty over biological resources. (Cf., Ashish Kothari, ‘Politics of Biodiversity Convention’, *Economic and Political Weekly* April 11-18, 1992, p.751.)

Another Article 8(j) of the Convention of Biodiversity reads:

“Subject to national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider applications with the approval and involvement of the holders of such knowledge, innovation and practices and encourage the equitable sharing of the benefits arising from the utilisation of such knowledge, innovation and practices”.

This Article again stresses that use or exploitation of biological resources including traditional knowledge must give rise to equitable shared benefits. Secondly it also lays emphasis on preserving practices, which is very important for continuation of related lifestyles. Although these formulations are weakly and unclearly worded, they could work for the advantages of developing nations and traditional communities given adequate pressure for strengthening them.

These are some of the Articles, which are central to the subject under discussion here and may also find mention in the ensuing sections. Apart from these, Article 16(2) says: “Access to and transfer of technology to developing countries shall be provided and/or facilitated under fair and most favourable terms, including on concessional and preferential terms where mutually agreed and where necessary, in accordance with the financial mechanism established by Articles 20 and 21”. Similarly Article 16(5) of the CBD also enshrines principles aimed at resolving potential conflicts.

24.2 TRADE RELATED ASPECTS OF INTELLECTUAL PROPERTY RIGHTS (TRIPS)

In 1993 the World Trade Organisation (WTO) gave a package of agreements in which there was one agreement that was called the agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs). The TRIPs agreement sets the minimum standards for patents and other intellectual property rights (IPRs). These standards are applicable on the member countries of the WTO (presently being 148 in number).

The agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs) is the most expansive multilateral agreement on intellectual property to date. The agreement not only aims at protecting intellectual property and rewarding creativity and inventiveness but also makes knowledge a saleable market commodity. Therefore, by implication the environmental resources, especially plants and animals get converted from public assets to private goods. The genesis of this agreement is traceable to the perception of a number of industrialised countries that inadequate patent protection had eroded their advantage in higher technology areas. The TRIPS agreement was pushed through by the developed countries, who were its primary benefactors. The developing countries on the other hand did not give willing consent to TRIPs and relented only on certain conditions.

It is believed that the arm-twisting done by US by imposing many stringent bilateral IPR agreements on a number of nations prior to TRIPS was the real reason for developing countries to agree to TRIPS. It was felt by many nations that a uniform global regime was better than bilateral agreements of the kind US has entered into. TRIPS consist of seven parts namely- Copyrights, Trademarks, Geographical indicators, Industrial designs, Patent, Integrated Circuits and Undisclosed Information. The agreement sets out the minimum protection that must be given for each category of IPR in the domestic laws of each of the WTO members. Each of the major elements to be protected, i.e. subject matter to be protected, the rights to be conferred and permissible exceptions to these rights, have been clearly defined. The emphasis is on the implementation of the clauses of the agreement. The specific features of TRIPs that deal with environmental resources have been discussed below.

The provision of patent protection in TRIPs is given under Article 27. This requires the patents to be granted in all fields of technology for the process and products simultaneously. Thus biological processes and their products both come under the control of a patent regime. There has, however, been one exception made in this patent regime.

Article 27(3)b says that members may exclude from patentability plants and animals other than micro-organisms and essential biological processes for the production of plants and animals other than non-biological and micro-biological processes. However, the members shall provide for the protection of plant varieties either by patents or by an effective *sui-generis* system or by any combination thereof. This provision shall be reviewed four years after the date of entry. This is the most controversial Article in TRIPS related to environmental issues. This Article currently requires all member states to provide protection for intellectual property, either through patents or an 'effective *sui generis* system' or both for plant varieties. No effective definition is given, yet developing countries must put such systems in place if they choose this as an alternative to patenting and if they wish to avoid punitive trade sanctions.

Most developing countries have already taken or are planning to take the *sui-generis* route to compliance, instead of patenting. A number of influential bodies, including the WTO itself, are pushing for a narrowing of *sui-generis* option to one legislative model provided by Union for the Protection of Plant Varieties or UPOV (1978 & 1991). This is unfair and uncalled for. UPOV is not mentioned in the TRIPs agreement whereas the other relevant IPR treaties are. Independent legal and economic experts have reiterated in many fora and publications that UPOV's offering should not be swallowed as an effective *sui generis* system and that there is ample scope for manoeuvre, flexibility and national discretion in interpreting the *sui-generis* option.(Cf., Biodiversity on TRIPS at <http://www.grain.org/publications/issue1-en.cfm>). *Sui generis* protection gives members more flexibility to adapt to particular circumstances arising from the technical characteristics of inventions in the field of plant varieties such as novelty. *Sui generis* effectively means a self-

generated system that is specifically designed to protect specific plant varieties. (Cf., Jayant Bagchi, *World Trade Organization*, Eastern Law House, Calcutta 2000, p. 58).

Another provision that deals with environment related issues is Article 27.2. As stated by Jayashree Watal “TRIPs does deal with the ethical, moral aspects of biotechnology (and other technologies) or biosafety by allowing under Article 27.2 patent exclusions of inventions ‘the prevention within their territory of the commercial exploitation of which is necessary to protect *ordre public* or morality, including to protect human, animal or plant life or health or to avoid serious prejudice to the environment’. Thus while such exclusions can be made, the caveat that the prohibitions of commercial exploitation was necessary would apply. This also means that countries that choose to exercise this option would then forego the benefits of the new innovations: (‘Intellectual property and biotechnology: trade interests of developing countries’ in *International Journal of Biotechnology*, Vol.2, Nos. 1/2/3, 2000, pp.45-46).

Several studies have shown that all bio-technological innovations in the field of agriculture or medicine are based on or developed from bio-resources. Traditional knowledge resources in developing countries are being stolen without any compensation or even acknowledgement. According to certain analysts since micro-organisms are living organisms, their patenting could be the slippery route that could lead to patenting of all life forms. (Cf., Arun Goyal and Noor Mohd, *WTO In The New Millennium*, Delhi, 2001).

24.3 CONTRADICTIONS AND CONFLICTS

The TRIPS agreement seems to further the hypothesis that only the intellectual contributions of the corporate-sponsored scientists need intellectual property protection and compensation. It pays no attention to the fact that there has been an uncompensated free flow of resources and knowledge from the developing countries to the first world especially when knowledge and biological resources are inalienable for most communities living in the third world countries. (Cf., Dr. Vandana Shiva, “Farmers Rights, Biodiversity and International Treaties”, *Economic and Political Weekly*, April 3, 1993). Convention of Biodiversity recognizes this fact and provides protection to these biological resources and knowledge and prevents their exploitation. This difference in approaches and focus of the two agreements gives rise to a host of contradictions. The two legally binding international agreements are inconsistent and even contradict each other as said earlier on three major levels namely,- i) Objectives, ii) Principles, and iii) Legal Obligations. We comment on each in the following paragraphs.

CBD and TRIPS: Conflicting Objectives

CBD strengthens the capacities of the developing countries’ to conserve and use biological diversity on a long-term basis, taking into account all

their rights over those resources including the right to enjoy the benefits of their resource base. However, due of unequal distribution of capital resources and technological prowess between countries rich in biological diversity and those that have well developed economic and legal structures, the South has been consistently exploited. The CBD is designed with the intentions of remedying this anomaly. Thus its unstated objective is also to provide a platform to South from where it can enter the area of environmental resource management on equal footing with North. Those specific steps that have been undertaken in CBD to meet this objective may be described as below:

- 1 Empowering the South to regulate access to its bio-diversity;
- 1 Conditioning access to South's biodiversity by requiring prior informed consent and sharing of benefits;
- 1 Providing for transfer of technology from North to South. [As expressed through Article 16(2)]; and
- 1 Recognising the collective rights of local communities in developing countries who are the source of biodiversity and traditional knowledge and whose role in conservation is now universally acknowledged as of fundamental nature. (Gaia/Grain, 'TRIPS versus CBD, Conflicts between the WTO regime of intellectual property rights and sustainable biodiversity management', *Global Trade and Biodiversity in Conflict* Issue no. 1, April 1998).

The objective of TRIPS is to make available proprietary claims and rights over products and processes. These products/processes may be related with biodiversity or not. The proprietary rights ensured in TRIPS have to benefit the trading and the corporate world and have been so framed as provisions of the TRIPS that they become applicable globally. The legal safeguard intended in TRIPS are likely to guarantee monopoly of the products and processes to the people and groups who establish inventions of new plants and micro-organisms etc. and/or processes related with them.

As stated by Grain, "All member states of CBD and TRIPS agreements face an inescapable problem. Both treaties are legally binding for signatories, but their obligations pull countries in completely different directions. It is likely that a country, which in all good faith seeks to implement community rights, and does so within the CBD framework, could find itself in serious contravention of the TRIPS Agreement" (*Global Trade and Biodiversity in Conflict* Issue no. 1, April 1998). For example Article 16(5) requires states to ensure that such rights (intellectual property) are supportive of and do not run counter to its objectives. Hence if states try to introduce provisions such as fair and equitable transfer they might impede their obligations under TRIPS in pursuance of which they have to incorporate the internationally accepted IPR standards in their domestic laws.

Sovereignty Principle

The provisions of CBD allow different nations to exercise absolute national, sovereign rights over their biological resources. On the contrary TRIPS would subject biological resources to private proprietary control. Obviously there develop contradictions between national sovereign rights and private proprietary controls. It would also imply that countries possess the right to prohibit IPR applicability on life forms. TRIPS, on the other hand would prefer to overlook this sovereign right and would like the provision of IPR on micro-organisms, non-biological and microbiological process, as well as patents and/or *sui generis* protection of plant varieties be made applicable.

Biological Resources and Traditional Knowledge

CBD holds that the use or exploitation of biological resources and traditional indigenous or community knowledge must give rise to equitably shared benefits. But TRIPS contradicts this by laying down that patents must be provided for all fields of technology, therefore the use or exploitation of biological resources must be protected by IPR. (Cf. Ashish Kothari, 'Politics of Biopiracy', *Economic and Political Weekly* April 11-18, 1992 p.751). There is no mechanism for sharing benefits between a patent holder in one country and the donor of material in another country from which the invention is derived. Simply put, CBD gives developing countries a legal basis to demand a share in benefits. TRIPS negate this legal authority (Cf. Gaia/Grain, op. cit.).

Access to Biological and Genetic Resources and Bio-piracy

Under CBD, access to bio resources requires the prior informed consent of the country of origin. It also requires the 'approval and involvement' of local communities. But under TRIPS regime there is no provision requiring prior informed consent for access to biological resources, which may subsequently be protected by IPR. Principle of prior informed consent is expected to diminish the incidence of bio-piracy, although doubts have been raised over its implementation. TRIPS would ignore this authority and thus promote bio-piracy. (Cf. Dan Leskien, "Bio-piracy-Ten Years Post Rio", South-South Bio-piracy Summit Hosted by Bio-watch South Africa, 22-23 August 2002; Johannesburg, South Africa).

Public Interest Vs Private Property

The principles laid down in CBD imply that states should promote the conservation and sustainable use of biodiversity as a common concern of human kind taking into account all rights over biological resources. TRIPS has certain token provisions to protect public health and morality but in actual working the safeguarding of public health, nutrition and public interest in general have been subjected to the private interests of IPR holders. Hence both the agreements differ in emphasis; former lays emphasis on general and community interest whereas the latter strengthens private property and vested interests. In other words the agenda of TRIPS

is to privatize, not protect biodiversity (Cf. Gaia/Grain, op. cit.).

Transfer of Technology and Benefits

The Convention of Biodiversity through Articles 16 to 19 promotes and instructs the member states to facilitate transfer of technology including biotechnology, living organisms and information and distribution of benefits arising thereof. Article 16(5) of CBD clearly lays down that states should ensure that intellectual property rights are supportive of and do not run counter to such objectives. But TRIPS through Articles 26 and 27 [specially 27(3)] seeks to bring even living and biological material under the patent or *sui generis* regime. It hampers the easy and smooth transfer of technology and benefits through sterner IPR instruments. IPRs by nature are exclusive in character i.e. they prevent the use of the object or process by anybody else. If the respective state fails to act under TRIPS, it can be compelled to do it through the Dispute Settlement Mechanism. Hence we see that CBD facilitates transfer of technology whereas TRIPS may hamper this.

24.4 DEVELOPMENTS IN INDIA

In this section we shall discuss the two statutes which have been enacted in India due to obligations under TRIPS and CBD. These two acts shall illustrate how India is coping with contradictory obligations under the two instruments and how far has its approach been successful.

Biodiversity Act, 2002

This Act aims at promoting the conservation and sustainable use of biological resources and the equitable sharing of the benefits arising out of such resources. *The Act provides for the establishment of the National Biodiversity Authority at the Central level, State Biodiversity Boards at the State level and Biodiversity Management Committees at the level of the local self-government in India.*

The CBD stresses on the sovereign rights of the states over its bio-resources and recognises the rights of the communities over the biodiversity related knowledge systems. *Both these principles have not been adequately reiterated in the Act.* Unlike foreign nationals, the citizens and corporations in India are permitted to use country's bio-resources and the traditional knowledge thereof by just taking the permission from the State Biodiversity Boards. This may lead to collusion between Indian Corporations/Citizens and foreign multinational Corporations.

The exclusive jurisdiction to decide access to genetic resources and traditional knowledge rests with the National Biodiversity Authority. It has been criticised on the ground that the authority is neither autonomous nor independent nor democratic.

Although the Act, through Section 3(1), expressly prohibits the obtaining

of any biological resources occurring in India or knowledge associated thereto, value added products have been excluded from this Section. This enables not only Indian industries but also foreign corporations to manufacture and sell many plant-based products, for example *Ayurvedic* medicines, without the permission of the National Biodiversity Authority.

Evidently the Act in it-self is a welcome development but since it suffers from certain basic flaws it would require major restructuring if it were to achieve its objective.

The Protection of Plant Varieties and Farmers Rights Act, 2001

The mandate of the TRIPS Agreement in Article 27(3) b resulted in the passing of this Act. This Act protects genera and species of plant both extant varieties and farmers varieties notified by the Central Government. The criterion of granting protection has been deemed to be novelty, distinctiveness, uniformity and stability. The Act also gives the Central Government power to exclude any genera or species from protection on the ground of public interest. As the Act does not define 'Public Interest' it is opined that this provision gives enormous and unabridged powers to the Government. Again in the case of 'benefit sharing' as required under the CBD, this Act provides that this can happen only if the Central Government notifies this. Considering the level of education and pervasive ignorance, it is highly unlikely that Indian farmers would stake their claim in this regard and avail of this provision.

On the whole it seems to be a half-hearted and piecemeal measure to somehow wriggle out of an international obligation. The *sui generis* regime seems to be weak and impaired by implementation problems. The intention seems to be to fulfill India's obligation without causing any major difference in the ground situation. Although many have criticised this approach we find that this (Act is vague and on the whole vests large powers with the Central Government. Government can, by using the public interest clause, protect many living species and knowledge form being patented which can be an effective method to bypass some of the ill effects of TRIPS and prevent any conflict with principles of CBD.

24.5 CASE STUDIES

In Section 24.3 we have discussed how TRIPS and CBD are contradictory at the level of principles. Here we give a few case studies to show how these instruments are not only contradictory at a theoretical level but even at a practical level they work in conflicting ways.

Neem

Neem (*azadirachta indica*) tree grows widely in India. From a very early time in history the medicinal and curative properties of Neem have been known to Indians. The parts of this tree have also been, similarly used for the purposes of pesticide and also sometimes as fertilizer. Numerous *neem* products have received patents. Several of these have

been granted to Indian companies for a range of products (for example one to Godrej Soaps in 1994). However, the patents which are at the center of a controversy are the ones granted to US company W.R.Grace for extraction and storage processes. Following are the details:

Storage stability- A US patent was granted in 1990 for improving the storage stability of *neem* seed extracts containing *azadarachtin* (a substance obtained from *neem*).

Stable insecticidal composition- In 1994 a US patent was granted for storage of stable insecticidal composition comprising *neem* seed extracts. The main part related to a lasting shelf life of the *azaderachtin* composition.

Oil-extraction- In 1995 the European Patent Office granted a joint Patent to US Department of Agriculture and W.R.Grace for a process to extract oil from the *neem* tree.

The W.R.Grace patents have resulted into a situation of conflict. The Government of India filed a complaint to the US Patent Office accusing the multinational for copying the Indian invention (Cf. Peter Gallagher, *Guide to the WTO Developing Countries*, Hague, 2000, p.297). However in the end, the government withdrew its complaint with regard to the first two patents (first two given above).

In the third case it was a major victory for India. The European Patent Office (EPO) has withdrawn the joint patent granted to W.R.Grace and the U.S. Department of Agriculture. The four-member panel of the EPO upheld the objections by three Indian parties, on the ground of 'lack of novelty' and stated that it amounted to **biopiracy**. It was found that a manufacturer from Delhi, Abhay Pathak who was in the *neem* business for 25 years, had developed a process in 1985, which had astonishing similarities to W.R.Grace. It was also revealed that the controversial patent was one of the 21 *neem* patents granted by EPO since 1989. (Cf. Jayant Bagchi, *World Trade Organization*, Calcutta, 2000 pp 65-66).

This case exhibits how traditional community knowledge is being exploited by multinationals. Medicinal and other qualities of *neem* have been a part of common knowledge and age-old tradition in India. Indian farmers have used *neem* as pesticide since ages. This knowledge is hijacked by the multinationals and used as the basis for further research without any remuneration or even recognition to the indigenous communities (in this case farmers). Pesticides made through such means would then be sold to farmers of the South at inflated prices. Farmers have through trial and error method developed these products over centuries. It must be reminded that a large number of patents are still valid under the IPR regimes and only a few have been cancelled. Such patents are recognised as valid and enforceable under TRIPS and these run counter to the provisions of the CBD.

Phyllanthus Niruri

Western allopathic systems have no medical cure for jaundice or viral

hepatitis. Indian systems of medicine- *Ayurveda*, *Unani* and *Siddha* – and folk traditions have various plants for the treatment of jaundice. *Phyllanthus niruri* is one such medicinal plant used widely in India. It is a part of Ayurvedic system as well as of local and community traditions. The plant is called *Bhudharti* in Sanskrit, *Jar Amla* in Hindi and *Bhuin Amla* in Bengali. (Cf. Mira and Vandana Shiva, *Patents of Phyllanthus Niruri: The plant for Indigenous Medical Cure for Jaundice New Delhi 1995*). The Fox Chase Cancer Centre of Philadelphia, US has applied for a patent of this plant to the European Patent Office for its use in curing hepatitis. The patent claim is for the manufacture of a medicament for treating viral hepatitis B.

This is a clear case of biopiracy. TRIPS provide no check to prevent this. The patent, if granted, would be valid under TRIPS. CBD requires prior informed consent and equitable benefit sharing. Both these principles have been violated in the above case. One can very clearly see that even in their working the two agreements are divergent. It is also evident that under the present patent regime environmental resources are always prone to exploitation.

24.6 AN OVERVIEW

Environmental resources and patents is a modern concern which can only be ignored at the peril of losing precious biological resources and the associated benefits to multi-national corporations and other big players active in the field of ‘bio-piracy’. The two major international agreements, related with the subject of environmental resources, and in operation today are CBD and TRIPS. There are, however, contradictions between the two and the debate on contradictions and conflicts between TRIPS and CBD is not new and has been going on for a number of years. It is not an issue of domestic debate anymore as it has become a subject of international consideration. Many countries are trying to address the conflicts between the two through international channels to devise a solution. Here it would be beneficial to briefly refer to the international deliberations on this issue.

On the question whether or not there is a conflict between the TRIPS agreement and the CBD there are primarily three views and as expected developed and developing states have taken counter positions:

- 1 That there is an inherent conflict between the two instruments is a position taken by India, Kenya, African group and Zambia. (Cf. ‘*The Relationship Between The TRIPS Agreement And The Convention of Biodiversity*’,. Note by The Secretariat WTO, *Journal of Biotechnology No.2, Vol.58A*, 18 June 2002 p2);
- 1 That there is no conflict between the two instruments is a position taken by EC, US, and Japan (*ibid*);
- 1 That there is no inherent conflict but there could be a potential for conflict at the level of implementation is a position advocated by Australia, Czech Republic and Norway (*ibid*).

Similarly there are also different opinions with regard to the solutions. Proponents of the first view hold that Article 27.(3) b. of the TRIPS agreement should be amended so as to oblige all members to make life forms and parts thereof non-patentable. Further there has been a suggestion that patents inconsistent with Article 15 of the CBD may not be granted and such an obligation be incorporated into TRIPS agreement. To support the second view it is stated that governments can implement the two in a mutually supportive way through national legislations. It is further stated that there is no need for amending any of the instruments. With regard to the third view it is stated that solution or remedy lies in finding how TRIPS can be implemented in a way supportive of the CBD (*ibid* pp 3-4).

On the question of the inconsistencies between TRIPS agreement and principles such as prior informed consent and benefit sharing once again developed and developing nations find themselves in opposite camps. India, Brazil, Pakistan and Kenya suggest that in all WTO member states, patent applications should include the following:

- a) Source of any genetic material used;
- b) Any related traditional knowledge used in the invention;
- c) Evidence of prior informed consent from the country of origin; and
- d) Evidence of fair and equitable benefit sharing (Cf. WTO Note, *op.cit.*, p.6).

These suggestions have been strongly contested by the EC and the US. They suggest that these principles shall be implemented by voluntary contracts between the authority competent to grant access to genetic resources and traditional knowledge and those wishing to use such material or knowledge. Here it is submitted that, in the light of biopiracy and problems of jurisdiction, it is highly unlikely that any company or individual would ever voluntarily disclose the source of the genetic material especially when it would lead to additional costs for the seeker and no complementary benefit. The view taken by the developing nations seems to be sound as only a mandatory requirement at the time of seeking patents can be effectively implemented.

Hence we see that consensus on this issue would be very difficult. Considering the deeply entrenched and hostile positions of the developing and the developed world, a viable and practical solution that may be accepted by all the parties is near impossible. Any proposal of giving primacy to one instrument over the other would seem to be highly ambitious and impractical in the present international set up.

By way of conclusion we may suggest below certain long-term approaches which may be taken up by the international community. These have been deliberately termed long term as short-term solutions seem highly unlikely:

- 1 It is now a well recognised fact that bio-piracy is an issue of international significance. Bio-piracy should therefore be addressed by the international community as an issue of immediate attention at all levels- local, national and international. One way of dealing with the matter is to give bio-piracy importance under TRIPS; alternatively a dispute resolution mechanism of the WTO should be created under CBD.
- 1 The other area of importance is that related with traditional knowledge and its protection. New systems for the protection of traditional and local knowledge should be devised. These systems should also be adequately equipped with necessary legal and legislative provisions. Traditional knowledge can be best protected and preserved by recognising it as area of essential merit vis-a-vis innovations. Also, it is necessary to recognise local communities for their innovative work as joint investors, joint breeders, joint authors etc. This might lead to greater sharing of new bio-materials and the recognition to community whose knowledge and resources are being used as raw material.
- 1 At the time of granting patents, information of the source of the genetic material used, prior consent of the country of origin and method for benefit sharing should be made compulsory. The *sui-generis* clause [27(3)b] should be used to protect interests of the third world. Along with this documentation of the traditional knowledge systems and methods should be immediately taken up, as these evidences can prove to be of critical importance at the time of any dispute.

24.7 EXERCISES

- 1) What are the main issues pertaining to the patents of environmental resources? Discuss.
- 2) Examine the main areas of conflict between CBD and TRIPS.
- 3) How has India attempted to address the issues raised in CBD and TRIPS? Describe.
- 4) Write a note on the possible solution to the areas of conflict between CBD and TRIPS.

24.8 SUGGESTED READING

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UNIT 25 ALTERNATIVES

Structure

- 25.0 Introduction
- 25.1 Development – Gandhian Alternatives
- 25.2 Environmental Conservation – Chipko Movement
- 25.3 Summary
- 25.4 Exercises
- 25.5 Suggested Reading

25.0 INTRODUCTION

Development has generally been understood to mean an unfettered march of the material forces to ever escalating heights; always in search of newer areas of progress; and growth of a socio-economic system that is solely guided in its search of fresh pastures by corporeal considerations. Beginning with Industrial Revolution this view of development has dominated the discourse of progress and growth for the past two and a half centuries. In Unit 22 of this Block we have read about environmental concerns occupying a place within this dominant developmental paradigm. The present Unit aims at providing information on the alternative discourse/s to the aforesaid idea of development. We have selected two cases providing alternatives to ‘development’ and ‘environmental conservation’ respectively. The cases have been selected with a view to highlight concrete alternatives and feasible processes of developmental and conservational transitions in India.

25.1 DEVELOPMENT – GANDHIAN ALTERNATIVES

The development priorities of India and their viability began to be considered seriously as a realistic proposition in the foreseeable future by the leadership in national movement in the 1920s. As the prospects of independence became brighter the discussions on developmental model for independent India too became intense and elaborate. There were now two major protagonists – Gandhi and Nehru who supported two different models. While Gandhi was of the firm view that the road to development charted its path through the villages of India, Nehru was a strong votary of modern, industrial model of development. As the most suitable proposition for India, Gandhi believed, the path to progress and development passed through villages. The Gandhian model of development thus steered clear of the modernisation based on the heavy industry mode of development. At first perhaps the Gandhian model would look somewhat anachronistic, but a scrutiny of its underlying tenets would reveal an analytical, organised system at work that clearly provided a viable alternative to the modern industrial mode of

development. In the following passages we discuss its genesis and the main propositions that defined it as an alternative.

The Gandhian model of development is, in its most compact form, discussed in *Hind Swaraj*, a text of seminal significance in so far as outlining the broad contours of Gandhian philosophy of civilization is concerned. *Hind Swaraj*, with its succinct remarks on the Western ideals of techno-modernism and its formulation of the constitutional determinants of *Swaraj* (Indian Home Rule – translated by Gandhiji himself), provides valuable theoretical and methodological insights into Gandhian thought and vision of Indian nation. It is here that one is enabled to look at many of the revealed and hidden concepts of Gandhian thought and action. *Hind Swaraj* also unfolds, among several other notions, Gandhi's precepts of 'true civilisation' and his delineation of the conduct for the polity of nation-India to model itself upon for attaining 'home-rule'. *Hind Swaraj* is not a narrative text, but a critical dialogue addressing problems of understanding and explanation. Unlike the documentary conception of a text, it is an imaginative reconstruction of lived experience which is suggestive of some of the most significant and subtle processes at work in the transformation of Indian society and polity under colonial dispensation.

It signals the need for an alternative approach to development steering past the self-enclosed cosmos of modernism. This approach is a combination of the theoretical framework of *Swaraj* and the practical tenets of a non-violent, self-contained village society. The organising mechanism of this village society within the coordinates of *Swaraj* unravels the principles of governance that can be legitimately termed as Gandhian ideals of development. Here we discuss some of the principal issues of development as recounted in *Hind Swaraj*. Simultaneously we also take recourse to the other Gandhian literature for empirical-analytic purposes. Anthony J. Parel writes: "Modern civilisation forms the broad historical context of *Hind Swaraj*. Its critique of that civilisation is one of its main contributions to modern political thought. In historical terms, it is Gandhi's apprehensions about certain tendencies in modern civilisation that made him the thinker and the political innovator that he is" ('Introduction' in *Hind Swaraj and other Writings*, first South Asian Edition, New Delhi, 1997, xvii).

The views on development as given in *Hind Swaraj* may be outlined briefly as follows. The priority in development work should be given to villages and village industries. Since villages were the sheet anchor of democracy in India, the work of development should begin from there. A different focus, namely on heavy industries and on speedy modernisation of Indian state was fraught with grave and adverse consequences. Since heavy industry was destined to alienate people from their immediate social contexts, a development based on them was more likely to benefit those who possessed wealth and resources ever most unlikely to either part with it or share it with the majority. Gandhi's disapproval of 'modern' and by consequence modern state is nicely explained by Parel thus: "The Reader believes that the adoption of the

modern state is sufficient for achieving self-government. Gandhi disputes this. He believes that the modern state without swaraj as self-rule would only replace the British Raj with an Indian Raj. In *Hind Swaraj*'s striking phrase, such a rule would produce *Englistan* not Hindustan, 'English rule without the Englishman', 'the tiger's nature, but not the tiger' (ch.iv). The tiger is Gandhi's metaphor for the modern state: all tigers seek their prey, and it makes no difference whether the tiger is British or Indian. *Hind Swaraj* offers a greater challenge to the Indian elite aspiring to be the new rulers of India than it does to the old British elite actually ruling India. The point of this greater challenge is one of the lasting lessons of the book" (*Ibid*).

In his editorial in *Harijan* (dated 2.11.1934) Gandhi wrote: "I would categorically state my conviction that the mania for mass-production is responsible for the world crisis. Granting for the moment that machinery may supply all the needs of humanity, still, it would concentrate production in particular areas, so that you would have to go about in a roundabout way to regulate distribution; whereas, if there is production and distribution both in the respective areas where things are required, it is automatically regulated, and there is less chance for fraud, none for speculation.

"You see that these nations (Europe and America) are able to exploit the so-called weaker or unorganised races of the world. Once these races gain an elementary knowledge and decide that they are no more going to be exploited, they will simply be satisfied with what they can provide themselves. Mass-production, then at least where the vital necessities are concerned, will disappear.

"When production and consumption both become localised, the temptation to speed up production, in-definitely and at any price, disappears. All the endless difficulties and problems that our present-day economic system presents, too, would then come to an end".

In Parel's view, "The attitude that *Hind Swaraj* exhibits towards 'machinery' is controversial, to say the least. In the course of time, Gandhi moderated his stand. But even in *Hind Swaraj*, as a close study of the similes he uses for 'machinery' would suggest, his stand is not at all one-sided. True, similes such as 'Upas tree', 'snake-hole', 'whirlwind', 'drift-net' and 'craze' point to the harmful potential of modern technology. But these are not the decisive similes of the book: the decisive simile is 'curable disease'. 'Machinery' no doubt tends to produce cultural diseases; but such diseases need not be fatal, provided a competent doctor (Gandhi himself, presumably) can be found in good time" (*Ibid*).

The doctor in Gandhi was clearly conscious of the disease. As if by way of a prescription he wrote in the *Harijan* (dated 1.9.1946) "I do not believe that industrialization is necessary in any case for any country. It is much less so for India. Indeed, I believe that Independent India can only discharge her duty towards a groaning world by adopting a simple but ennobled life by developing her thousands of cottages and living at

peace with the world. High thinking is inconsistent with complicated material life based on high speed imposed on us by Mammon worship. All the graces of life are possible only when we learn the art of living nobly.

“There may be sensation in living dangerously. We must draw the distinction between living in the face of danger and loving dangerously. A man who dares to live alone in a forest infested by wild beasts and wilder men without a gun and with God as his only Help, lives in the face of danger. A man who lives perpetually in mid-air and dives to the earth below to the admiration of a gaping world lives dangerously. One is purposeful, the other a purposeless life.

“Whether such plain living is possible for an isolated nation, however large geographically and numerically in the face of a world, armed to the teeth, and in the midst of pomp and circumstances, is a question open to the doubt of a sceptic. The answer is straight and simple. If plain life is worth living, then the attempt is worth making, even though only an individual or a group makes the effort.

“At the same time I believe that some key industries are necessary. I do not believe in armchair or armed socialism. I believe in action according to my belief, without waiting for wholesale conversion. Hence, without having to enumerate key industries, I would have State ownership, where a large number of people have to work together. The ownership of the products of their labour, whether skilled or unskilled, will vest in them through the State. But as I can conceive such a State only based on non-violence, I would not dispossess moneyed men by force but would invite their co-operation in the process of conversion to State ownership. There are no *pariahs* of society, whether they are millionaires or paupers. The two are sores of the same disease. And all are men ‘for a’ that’. And I avow this belief in the face of the inhumanities we have witnessed and may still have to witness in India as elsewhere. Let us live in the face of danger”. The alternative to techno-modern development could not be stated better.

HIND SWARAJ

OR

INDIAN HOME RULE

CHAPTER XIX

MACHINERY

Reader: When you speak of driving out Western civilisation, I suppose you will also say that we want no machinery.

Editor: By raising this question, you have opened the wound I have received. When I read Mr. Dutt’s Economic History of India, I wept; and as I think of it again my heart sickens. It is machinery that has impoverished India. It is difficult to measure the harm that Manchester has done to us. It is due to Manchester that Indian handicraft has all but disappeared.

But I make a mistake. How can Manchester be blamed? We wore Manchester cloth and this is why Manchester wove it. I was delighted when I read about the bravery of Bengal. There were no clothmills in that presidency. They were, therefore, able to restore the original hand-weaving occupation. It is true Bengal encourages the mill-industry of Bombay. If Bengal had proclaimed a boycott of *all* machine-made goods, it would have been much better.

Machinery has begun to desolate Europe. Ruination is now knocking at the English gates. Machinery is the chief symbol of modern civilisation; it represents a great sin.

The workers in the mills of Bombay have become slaves. The condition of the women working in the mills is shocking. When there were no mills, these women were not starving. If the machinery craze grows in our country, it will become an unhappy land. It may be considered a heresy, but I am bound to say that it were better for us to send money to Manchester and to use flimsy Manchester cloth than to multiply mills in India. By using Manchester cloth we only waste our money; but by reproducing Manchester in India, we shall keep our money at the prince of our blood, because our very moral being will be sapped, and I call in support of my statement the very mill-hands as witnesses. And those who have amassed wealth out of factories are not likely to be better than rich men. It would be folly to assume that an Indian Rockefeller would be better than the American Rockefeller. Impoverished India can become free, but it will be hard for any India made rich through immorality to regain its freedom. I fear we shall have to admit that moneyed men support British rule; their interest is bound up with its stability. Money renders a man helpless. The other thing which is equally harmful is sexual vice. Both are poison. A snake-bite is a lesser poison than these two, because the former merely destroys the body but the latter destroy body, mind and soul. We need not, therefore, be pleased with the prospect of the growth of the mill-industry.

Reader: Are the mills, then, to be closed down?

Editor: That is difficult. It is no easy task to do away with a thing that is established. We, therefore, say that the non-beginning of a thing is supreme wisdom. We cannot condemn mill-owners; we can but pity them. It would be too much to expect them to give up their mills, but we may implore them not to increase them. If they would be good they would gradually contract their business. They can establish in thousands of households the ancient and sacred handlooms and they can buy out the cloth that may be thus woven. Whether the mill-owners do this or not, people can cease to use machine-made goods.

Reader: You have so far spoken about machine-made cloth, but there are innumerable machine-made things. We have either to import them or to introduce machinery into our country.

Editor: Indeed, our gods even are made in Germany. What need, then, to speak of matches, pins and glassware? My answer can be only one. What did India do before these articles were introduced? Precisely the same should be done today. As long as we cannot make pins without machinery so long will we do without them. The tinsel splendour of glass-ware we will have nothing to do with, and we will make wicks, as of old, with home-grown cotton and use handmade earthen saucers for lamps. So doing, we shall save our eyes and money and support Swadeshi and so shall we attain Home Rule.

It is not to be conceived that all men will do all these things at one time or that some men will give up all machine-made things at once. But, if the thought is sound, we shall always find out what we can give up and gradually cease to use it. What a few may do, others will copy; and the movement will grow like the cocoanut of the mathematical turn. The matter is neither complicated nor difficult. You and I need not wait until we can carry others with us. Those will be the losers who will not do it, and those who will not do it, although they appreciate the truth, will deserve to be called cowards.

Reader: What, then, of the tram-cars and electricity?

Editor: This question is now too late. It signifies nothing. If we are to do without the railways we shall have to do without the tram-cars. Machinery is like a snake-hole which may contain from one to a hundred snakes. Where there is machinery there are large cities; and where there are large cities, there are tram-cars and railways; and there only does one see electric light. English villages do not boast of any of these things. Honest physicians will tell you that where means of artificial locomotion have increased, the health of the people has suffered. I remember that when in a European town there was a scarcity of money, the receipts of the tramway company, of the lawyers and of the doctors went down and people were less unhealthy. I cannot recall a single good point in connection with machinery. Books can be written to demonstrate its evils.

Reader: Is it a good point or a bad one that all you are saying will be printed through machinery?

Editor: This is one of those instances which demonstrate that sometimes poison is used to kill poison. This, then, will not be a good point regarding machinery. As it expires, the machinery, as it were, says to us: "Beware and avoid me. You will derive no benefits from me and the benefit that may accrue from printing will avail only those who are infected with the machinery-craze."

Do not, therefore, forget the main thing. It is necessary to realize that machinery is bad. We shall then be able gradually to do away with it. Nature has not provided any way whereby we may reach a desired goal all of a sudden. If, instead of welcoming machinery as a boon, we should look upon it as an evil, it would ultimately go.

25.2 ENVIRONMENTAL CONSERVATION – CHIPKO MOVEMENT

The conservation practices in India have traditionally been offering alternatives to the modern methods of conservation. These alternatives have also come as a result of misdirected priorities of modern methods and sometimes by way of a protest at the inherent mechanisms of exploitation in ‘modern’ practices. The famous Khejri tree protection movement in Rajasthan about which we have given you information in Unit 16, Block 5 was a movement of the same category. A parallel, if not identical, movement in the same genre has been the Chipko Movement.

The Chipko Movement is often associated with the people of Uttarakhand’s struggle launched in 1970s for the protection of the forests of the region. (Uttarakhand was then a part of the state of Uttar Pradesh). The roots of this movement may, however, be traced to an earlier period and may be related to the pernicious provisions in the Forest Acts of the British restricting the hill community from commonly using the forest resources for various daily purposes. The importance of these resources to the people of the hills of Uttarakhand (Kumaon and Garhwal regions of the Himalaya) has been aptly described thus: “Forest resources are the critical ecological elements in the vulnerable Himalayan ecosystem. The natural broad-leaved and mixed forests have been central in maintaining water and soil stability under conditions of heavy seasonal rainfall. They have also provided the most significant input for sustainable agriculture and animal husbandry in the hills. Undoubtedly, forests provide the material basis for the whole agri-pastoral economy of the hill villages. Green leaves and grass satisfy the fodder requirement of the farm animals whose dung provides the only source of nutrients for food crops. Dry twigs and branches are likewise, the only source of domestic cooking fuel. Agricultural implements and house frames require forest timber. Forests also provide large amounts of fruit, edible nuts, fibres and herbs for local consumption” (Vandana Shiva, Jayanto Bandhyopadhyay, *CHIPKO, India’s Civilisational Response to the Forest Crisis*, INTACH, New Delhi, 1986, p.6).

The genesis of the Chipko Movement may be traced to the changes effected in the management and use of forest resources in the Garhwal region by the English settlers and by the rulers of the hill kingdom. The main stages in which the new measures were implemented were as below:

- 1 In 1850 the forests of the Garhwal region (mainly Tehri Garhwal) were taken by the Britishers on a nominal annual rent;
- 1 In 1864 the British took the forests of the region on a lease of 20 years;
- 1 In 1895 the forests were brought under the control of the local kingdom, the Tehri Garhwal rulers.

All the above were aimed at restricting the villagers from using the forests – restrictions even on their livelihood earnings from the forests and on their sustenance on the forest resources. The early signs of people’s protest against these measures had become evident towards the close of the nineteenth century. At the beginning of the twentieth century the protests had assumed the form of loosely organised resistance. As reported by Sunderlal Bahuguna, the protest of hill people against the forest policy of the rulers of Tehri Garhwal assumed an organised form in 1907 when Kirti Shah, the ruler of Tehri Garhwal, had to intervene personally to quell the people’s anger (cf. ‘Bagi Tehri Ki Ek Jhanki’ in Bhaktdarshan ed. *Suman Smriti Granth*, Silyara, 1976). However “the contradictions between the people’s basic needs and the State’s revenue requirements remained unresolved” and, as described by Vandana Shiva and Jayanto Bandhyopadhyay, “in due course, became sharper. In 1930 the people of Garhwal began the non-cooperation movement, mainly around the issue of forest resources. Satyagraha to resist the new oppressive forest laws was most intense in the Rewain region. A massive protest meeting was organised at Tilari. The King of Tehri was in Europe at that time; in his advance, Dewan Chakradhar Jayal crushed the peaceful satyagraha with armed force. A large number of unarmed satyagrahis were killed and wounded, while many others lost their lives in a desperate attempt to cross the rapids of the Yamuna. While the right of access to forest resources remained a burning issue in the Garhwal Kingdom, the anti-imperialist freedom movement in India invigorated the Garhwali people’s movement for democracy. The Saklana, Badiyargarh, Karakot, Kirtinagar and other regions revolted against the King’s rule in 1947 and declared themselves independent panchayats. Finally on August 1, 1949, the Kingdom of Tehri was liberated from feudal rule and became an integral part of the Union of India and the State of Uttar Pradesh” (*CHIPKO, op.cit*, p.7).

The Chipko Movement of the post-independence period in India thus had a rich legacy of similar forest movements in the region of Garhwal in Himalaya. The immediate event that sparked the Chipko Movement was the stopping of forest felling by a group of peasants in a remote Himalaya village in Gopeshwar. The date generally ascribed to this little incident is 27 March, 1973. The other relevant details of this incident are noted below:

- 1 State forest department, the owner of the area where the incident took place, had auctioned the trees on that area to a sports goods manufacturing concern of Allahabad;
- 1 The peasants of the Mandal village actually embraced the trees physically to prevent their felling. This embrace – Chipko symbolised the union of man with nature. The nature would be defiled only after bringing death to humans who had embraced the trees;
- 1 The term *Chipko* was derived from a poem composed by a folk-poet of the region, Ghan Shyam Taturi. In translation it reads:

Embrace the trees

Save them from being felled;

The property of our hills,

Save them from being looted.

Soon after the successful thwarting of the tree felling in Gopeshwar Sarvodaya Mandal forest, the movement gathered steam. Under the leadership of Sunderlal Bahnguna, who had left his job in a transport company (of that of a booking clerk), a march was organised in the district of Chamoli (the village Gopeshwar was located in the jurisdiction of this district). The movement quickly spread to Uttarkashi and then in the rest of the hilly region.

The Ecological Foundation of Chipko

Both the earlier forest satyagrahas and their contemporary form, the Chipko Movement, have arisen from conflicts over forest resources, and are similar cultural response to forest destruction. What differentiates Chipko from the earlier struggle is its ecological basis. The new concern to save and protect forests through Chipko satyagraha did not arise from a resentment against further encroachment on the people's access to forest resources. It arose from the alarming signals of rapid ecological destabilisation in the hills. Villages that were self-sufficient in food has to resort to food imports as a result of declining food productivity. This in turn was related to the reduction of soil fertility in the forests. Water resources began to dry up as the forests disappeared. The so-called "natural disasters", such as floods and landslides, began to occur in river systems which had hitherto been stable. The Alakananda disaster of July 1970 inundated 1,000 sq.km. of land in the hills and washed away many bridges and roads. In 1977 the Tawaghat tragedy took an even heavier toll. In 1978 the Bhagirathi blockade resulting from a big landslide above Uttarkashi caused massive flood across the entire valley.

The over-exploitation of forest resources and the resulting threat to communities living in the forests have evolved from concerns for distribution of material benefits to concerns for distribution of ecologically-generated material costs. At the first stage, the growth of commercial interests resulted in efforts to exclude competing demands. The beginning of large scale commercial exploitation of India's forest resources created the need for a forest legislation which denied village communities access to forest resources. The forest satyagrahas of the 1930s were a result of the Forest Act of 1927 which denied the people access to biomass for survival while increasing biomass production for industrial and commercial growth. The growth imperative, however, drove production for commercial purposes into the second stage of conflict which is at the ecological level. Scientific and technical knowledge of forestry generated in the existing model of forest management is limited to viewing forests

only as sources of commercial timber. This gives rise to prescriptions for forest management which are manipulations to maximise immediate growth of commercial wood. This is achieved initially by the destruction of other biomass forms that have lower commercial value but may be very important to the people, or have great ecological significance. The silvicultural system of modern forestry embraces prescriptions for destruction of non-commercial biomass forms to ensure the increased production of commercial biomass forms. The encouragement given to replacement of ecological valuable oak forests by commercially valuable conifers is an indicator of this shift. Ultimately, this increase in production may be described as mining of the ecological capital of the forest ecosystem which have evolved over thousands of years.

The contemporary Chipko Movement, which has become a national campaign, is the result of these multidimensional conflicts over forest resources at the scientific, technical, economic, and especially the ecological levels. It is not a limited conflict over the local or non-local distribution of forest resources, such as timber and resin. The Chipko demand at one stage was for a bigger share for the local people in the immediate commercial benefits of an ecologically destructive pattern of forest resource exploitation. It has now evolved to the demand for ecological rehabilitation. Since the Chipko Movement is based upon a perception of forests in their ecological context, it exposes the social and ecological costs of short term growth-oriented forest management. This is clearly seen in the slogan of the Chipko Movement which claims that the main products of the forests are not timber or resin, but soil, water and oxygen. With appropriate social control, the basic biomass needs of food, fuel, fodder, small timber and fertilizer can, in the Chipko vision and the Garhwal practice, be satisfied as positive externalities of biomass production, aimed primarily at soil and water conservation to stabilise the local agri-pastoral economy.

The Chipko Movement has been successful in forcing a ban on commercial green felling in the hills of Uttar Pradesh at altitudes above 1000 metres, in stopping clear-felling in the Western ghats and the Vindhyas, and in generating pressure for a national forest policy which is more sensitive to the people's needs and to the ecological development of the country. Unfortunately, the Chipko Movement has often been naively presented by vested interests as a reflection of a conflict between "development" and "ecological concern", implying that "development" relates to the material and objective bases of life while "ecology" is concerned with non-material and subjective factors such as scenic beauty. The deliberate introduction of this false and dangerous dichotomy between "development" and "ecology" disguises the real dichotomy between ecologically sound development and unsustainable and ecologically destructive economic growth. The latter is always achieved through destruction of life-support systems and material deprivation of

marginal communities. Genuine development can only be based on ecological stability which ensures sustainable supplies of vital resources. Gandhi and later his disciples, Mira Behn and Sarala Behn, clearly described how and why development is not necessarily contradictory to ecological stability. Conflict between exploitative economic growth and ecological movements like Chipko are never an obstacle to the process of development. On the contrary, by constantly keeping ecological stability in focus, they provide the best guarantee for ensuring a stable material basis for life for all.

(Vandana Shiva, Jayanto Bandhyopadhyay, *CHIPKO, India's Civilisational Response to the Forest Crisis*, INTACH, New Delhi, 1986).

“Chipko was representative of a wide spectrum of natural-resource conflicts”, as described by Ramchandra Guha, “that erupted in different parts of India in the 1970s and 1980s: conflicts over access to forests, fish and grazing resources; conflicts over the effects of industrial pollution and mining; and conflicts over the siting of large dams. One can understand each of these conflicts sequentially, as an unfolding of the processes of *Degradation – Shortages – Protest – Controversy (local)– Controversy (national)*. Applying this scheme to Chipko, for instance, we note that deforestation in the hills led on the one hand to shortages of fuel, fodder and small timber for local communities and on the other to shortages of raw material for wood-based industry (with Himalayan timber being especially prized as the only source of softwood in India). When the state inclined markedly in favor of one party to the conflict, namely industry, the other party, i.e. peasants, responded through collective action. Picked up by a press that is amongst the most voluble in the world, the protests then gave shape to a debate on how best the Himalayan forests should be managed – by communities, the state, or private capital; on what species should be planted and protected – conifers, broad-leaved, or exotics; and on what should constitute the forest’s primary product– wood for industry, biomass for villagers, or soil, water and clean air for the community at large. Finally, this region-specific debate led in turn to a national debate on the direction of forest policy in the country as a whole” (*Environmentalism: A Global History*, New Delhi, 2000, p.166).

The great significance of Chipko Movement lies in its being an alternative, people’s initiative. The devastation heaped on the community of hill region by the development agencies alien to the region engendered in the people a sense of indignation the outward manifestation of which was a form of *satyagraha* quite akin to the Gandhian mode of non-violent resistance. As stated by Vandana Shiva and Jayanto Bandhyopadhyay “The Chipko Movement is historically, philosophically and organizationally, an extension of traditional Gandhian satyagrahas. Its special significance is that it is taking place in post-Independence India” (*CHIPKO, op.cit.*, pp.7-8).

25.3 SUMMARY

We have noted the Gandhian model of development and Chipko Movement as two illustrative cases providing alternatives to the so-called mainstream course of development, progress and conservation practices. The alternative from Gandhi was described by him at length in *Hind Swaraj*. It was mainly concerned with the underlying reality of an otherwise dazzling array of triumphs heralded by the machine age. The reality was that industrial model of development had resulted in a lopsided concentration of wealth, in the hands of a few and depriving a large multitude that actually would need it. Gandhi's emphasis on villages as the nodal points of development was in stark contrast to the town-centric industrialisation of the modern paradigm of development. Likewise Chipko Movement was also seen as an extension of Gandhian mode of struggle against the unjust and oppressive regimes that were in reality exploitative in character though outwardly professed commitment to environmental conservation. Chipko Movement's success was in fact the triumph of the people oriented initiatives that provided viable alternatives to the modern development practices.

25.4 EXERCISES

- 1) Discuss the characteristics of Gandhi's non-industrial model of development.
- 2) Describe the genesis and character of Chipko Movement.
- 3) Write notes on the following:
 - i) *Hind Swaraj's* critique of machinery.
 - ii) *Chipko* and its ecological foundation.

25.5 SUGGESTED READING

Anthony J. Parel ed., *Hind Swaraj and Other Writings*, Cambridge Texts in Modern Politics series, editors John Dunn, Geoffrey Hawthorn, First South Asian Edition, New Delhi, 1997.

Ramchandra Guha, *Environmentalism: a Global History*, New Delhi, 2000.

Kamla Chowdhary, *Industrialisation, Survival and Environment: A Dialogue on Development*, The INTACH Environmental Series, 8, New Delhi, 1989.

Vandana Shiva, Jayanto Bandyopadhyay, *CHIPKO: India's Civilisational Response to the Forest Crisis*, The INTACH Environmental Series, 5, New Delhi, 1986.

Ramchandra Guha, *The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalaya*, New Delhi, 1999.

Mohandas Karamchand Gandhi, *India of My Dreams*, compiled by R.K. Prabhu, Ahmedabad, 1947.