UNIT 2 PARAMETERS OF SUSTAINABLE DEVELOPMENT

Structure

2.1 INTRODUCTION

Parameters of sustainable development refer to the guiding principles that i) help in understanding the concept of sustainable development, ii) point out the problems associated with it and iii) help to take active policy measures based on them. The parameters include **carrying capacity**, **inter and intra-generational equity**, **gender disparity** and **diversity**.

Carrying capacity is defined as 'the number of individuals of a given species that can be sustained indefinitely in a given space'. Carrying capacity of the earth means the ability of the earth to maintain human beings sustainably and indefinitely. Our way of life is directly affected by the carrying capacity of the earth. The needs of human beings may be divided into basic and optional. The basic human needs are air, water, food, clothing and shelter that are supported by the earth. The optional needs offer the choice of a modern lifestyle and mainly comprise of material goods, energy etc. The distribution of the resources to meet the basic and optional needs determines the carrying capacity of the earth. This distribution is largely unequal in today's world. This inequity can be attributed to many things including population, government policies, availability of resources, their processing etc. (This is discussed in detail in unit 7). We influence the carrying capacity by destroying the forests, polluting the rivers, tapping energy sources indiscriminately etc. The access to environmental resources therefore needs to be controlled as suggested by the Brundtland Report which includes the need for 'social equity'. This means that the access to the resources should be made equal among all. However various issues like the expanding industrialisation, globalisation and privatisation pose back new challenges to the concept. Under this changed scenario, the concept is not just definable within the parameters of equity within generations but between generations. We need to conserve and utilise the resources in such a way that the coming generations are not affected adversely.

The importance of women in sustainable development was brought into the forefront in the Earth Summit. When the environment is disturbed, they are the first to notice, but they are the last to be consulted on this issue. The discrimination against women has been detrimental to the overall developmental process. At the grassroots level, the woman is at the pivot of the family. The responsibility of the wellbeing of the family rests with her. If she is neglected and discriminated, then the whole unit collapses.

The diversity that exists in the societies, in the cultural or indigenous knowledge and in the wildlife is extremely high. Management of this diversity is an enormous task. The useful utilisation of the diversity within their niche would ensure sustainable development of these diverse societies.

These fundamental parameters which are indispensable for des igning a sustainable development policy are described and explained in this unit. In Unit 3, we describe the various approaches adopted for sustainable development.

Objectives

After studying this unit, you should be able to:

- explain the concept of carrying capacity of the earth and its relevance to sustainable development;
- define the inter and intra generational equities and their requirement for sustainable development;
- discuss the causes and effects of gender disparity; and
- describe the diversity in social, cultural and wildlife and the need for their conservation for sustainable development.

2.2 CONCEPT OF CARRYING CAPACITY

In ecology, the thumb rule is that of conserving interrelationships. Human activity that threatens the future existence of other species may be an ecological disaster since it would in turn affect other species also. These interrelationships are taken care of within the concept of carrying capacity. **Carrying capacity** is a concept which limits the potential ability of natural resources and species to withstand human intervention. It may be described as a test of the ability of land, water and air to keep itself usable and toxin-free despite pollution and effluent discharges and harmful developments over it.

The famous American wildlife conservation ecologist Aldo Leopold described **'carrying capacity'** in 1933 as a saturation point at which the numbers of a particular species of grazing animals approached the point where grasslands could support no more individuals without a general and continuing decline in the quality of the pasture land. While chemical fertilizers, insecticides and pesticides increase crop yield, their use beyond the carrying capacity of land may destroy crops. This is equally true for the effluent discharges into rivers, ponds and other wetlands. The wetlands sustain life forms and complete ecosystems which in turn support larger ecosystems.

Earth's carrying capacity is threatened by monoculture (cultivation of a single crop variety), pollution, overpopulation, overgrazing, deforestation and urbanisation. These activities may not be unsustainable in themselves but the thin line that separates them from being beneficial to mankind and becoming harmful is the environmental recognition of the concept of carrying capacity. If taken beyond carrying capacity, the activities may prove disastrous.

Carrying capacity also refers to the number of individuals who can be supported in a given area within the limits of natural resources, and without degrading the social, cultural and economic environment for the present and future generations. The carrying capacity for any given area is not fixed. It can be extended to a certain level by improved technology, but mostly it is changed for the worse by pressures which accompany a population increase. As the environment is degraded, carrying capacity actually shrinks, leaving the environment with no ability to support even the number of people who could formerly have lived in the area on a sustainable basis. No population can live beyond the environment's carrying capacity for very long.

The average citizen's 'ecological footprint' is assessed by the demands an individual, endowed with average amounts of resources like land, water, food, fibre, waste assimilation and disposal, puts on the environment. While, for a citizen in a developed country the land requirement ranges from about 10 to 12 acres (which is an area far greater than that taken up by one's residence and place of school or work and other places where he or she is in those countries), for a citizen in a developing country it is

from less than one acre in a sub Saharan country to around three acres in India. A common fallacy is to believe that a rich country can retain the carrying capacity of its resources in maintaining the standards of their living, by transferring these pressures through trans-national businesses to poorer countries. Since everything is related to everything else, ecological destruction in one country manifests in the form of economic impulsions in other countries. The policy formulators have to think in terms of 'carrying capacity' and not land area. For example, effects of unfettered population growth drastically reduce the carrying capacity in the United States (US) as the unregulated businesses do in India.

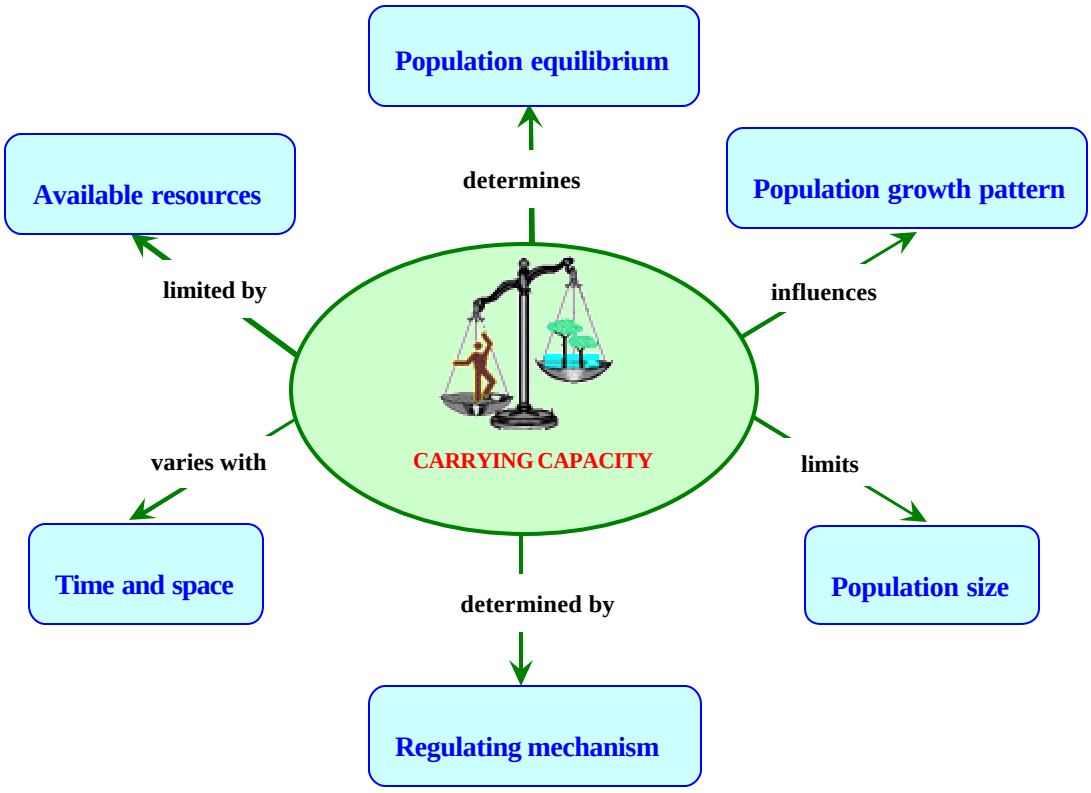


Fig.2.1: Some features of carrying capacity

The table below enumerates the factors that increase carrying capacity and the ones that decrease it.

Table 2.1: Factors that affect carrying capacity

Factors that increase	Factors that decrease
• Decrease in per capita resource use	• Environmental degradation
• Technology advances	• Depletion of non-renewable resources
• Decrease in resource demand	• Extinction of a bio-resource
• Changing environmental factors	• Introduction of a new competitor

You may like to reflect on these ideas before studying further.

SAQ 1

Describe the human activities in your surroundings that affect the carrying capacity of the earth. What measures can you suggest to increase the carrying capacity?

2.3 INTER-GENERATIONAL EQUITY AND JUSTICE (GLOBAL, REGIONAL AND COUNTRY LEVELS)

Intergenerational equity refers to the use of earth's resources between generations in a manner that the present generation does not consume it completely to its exhaustion. Equity is the foundation of sustainability which means fairness and justice to all. It explores whether all people have similar rights, opportunities and access to all forms of community capital. Inter-generational equity has to do with fairness between current and future members of a community. It does not mean that we neglect our current needs, but that we try to achieve a reasonable balance between satisfying our needs now and setting aside enough to provide for needs of the future. The consumerist world generates unsustainable lifestyles. People and nations are not careful about the use of natural resources and disposal of waste. Thus our future generations are likely to have a poorer and more polluted world to live in. Aiming for inter-generational equity means that the policies have to give equal consideration to our immediate needs, our future needs, and the needs of those who would inhabit the world after us.

Intergenerational equity has become integral to international law dealing with environmental protection, resource utilisation and socio-economic development. It contains elements which have inter-temporal implications regarding the utilisation of resources. The fairness in the utilisation of resources between human generations - present and future-also requires that a balance be attained between meeting the consumptive demands of existing societies and ensuring that adequate resources are available for future generations. The inter- temporal aspect of resource distribution and consumption has become an increasingly important issue, especially in view of growing threats of environmental degradation and resource depletion arising out of current consumption patterns and technological advances.

A telling example of neglect of inter-generational equity consideration is that of a small island state in the Pacific, Nauru, which is a close neighbour of big countries like Australia and New Zealand. Nauru had rich phosphates in its soil but could not use it due to lack of knowledge and technology. Australian soil lacked phosphates and due to that its agricultural output was poor. Australian miners signed agreements with the Nauru Government in the decade of seventies, which readily agreed to welcome trade expansion with a rich country. For around a decade the citizens of Nauru got bumper employment and that generation achieved standards of western lifestyles. Once the miners extracted all phosphates out of their soil they left, leaving behind a rich country electronically studded with home equipments but no money and employment for its citizens to move ahead or even maintain their acquired lifestyles. Citizens took to drugs and the mafia ruled.

Intergenerational equity is included in the substantive part of Article 3 of the Climate Change Convention (CCC). It states that ***'Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities***'. However, the lacuna is that the statements do not tell how this is to be done. Changes in life-styles and behaviour different from what presently prevails are required to protect the interests of future generations. No legally binding international instruments suggest how the interests of future generations should be considered, or how the interests of future generations may differ from those of present generations with regard to access and utilisation of natural resources.

A framework for addressing protection of interests of future generations through tripartite principles may be that of 'conservation of options', 'conservation of quality' and 'conservation of access'. This requires a thorough reorientation of legal structures which currently encourage unsustainable resource conversion. Thus inter-generational equity is an ethical principle that restrains the greed of the present generation and suggests long term assessment of natural resources in framing commercial and trade policies.

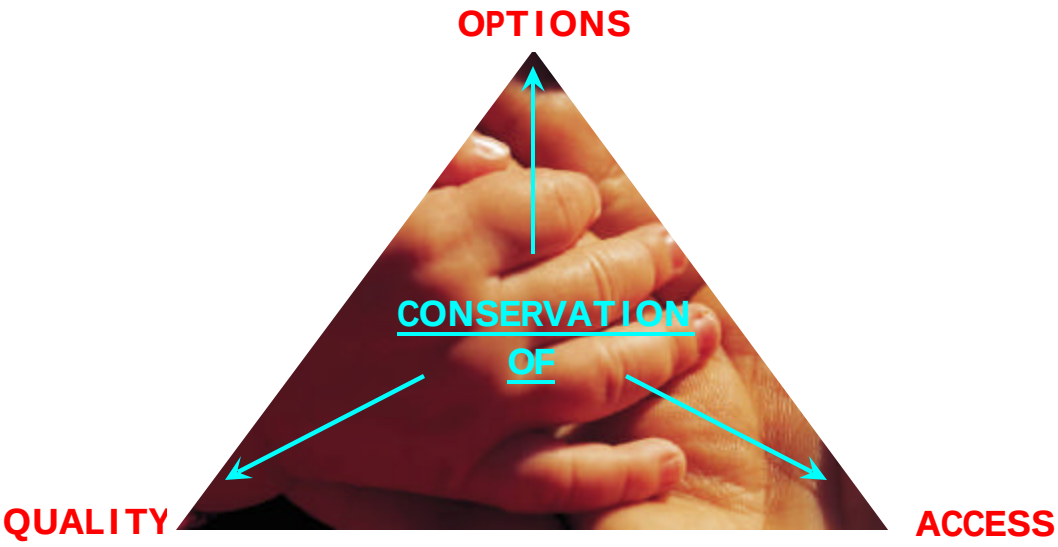


Fig.2.2: A framework for protecting the interests of future generations

2.4 INTRA-GENERATIONAL EQUITY AND JUSTICE (GLOBAL, REGIONAL AND COUNTRY LEVELS)

Another concept of equity in resource use is referred to as 'intra-generational equity', which is fairness in utilisation of resources among human members of present generations, both domestically and globally.

Natural resources are now exploited in unprecedented quantities and rates of consumption are continuing to increase. In relation to their population sizes, the 'Northern' industrialised countries are responsible for a vastly disproportionate amount of the natural resources being consumed or adversely impacted. Issues concerning the access to and consumption of global resources, and responsibility for the resulting environmental degradation and depletion, have become focal points for much current thinking on intergenerational equity and have taken on a distinctly 'North' versus 'South' dimension. A great deal of environmental debate on issues of global scale damage like ozone depletion, global warming, biodiversity, forests and biotechnology has taken on a North-South polarisation.

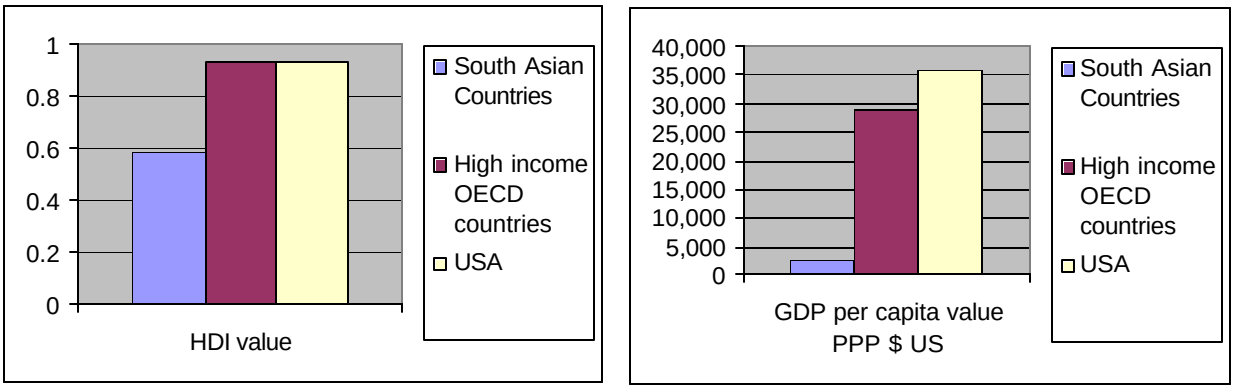
Some developing countries have coined the term 'green imperialism' to refer to the efforts of outside countries to limit the use of their native rain forests, or to ask the countries to forego the advantages of using chlorofluoro carbons (CFCs) when the rest of the world has taken advantage of these for decades. The World Trade Organisation (WTO) backfired at the Seattle Meet in December 1999 and later at the Geneva Conference which indicates that intra generational equity is becoming centre stage in the design of all trade agreements internationally. Globalisation today has to confront the serious challenge of intra-generational equity.

The developing countries have sought to rectify perceived asymmetries in international law regarding resource access, distribution and consumption calling for the creation of a 'New International Economic Order' (NIEO).

Within the South, the key environmental problems are poverty and underdevelopment and other issues directly related to these two phenomena. More recently, developing countries have emphasised the link between Third World poverty, environmental degradation and Northern consumption. For developing countries, resource control and unequal distribution through financial and other structural levers by the 'North' to maintain industrialised countries' lifestyles are perceived as the major sources of the widespread poverty and underdevelopment in the 'South' as well as major contributors to environmental degradation. The developing and the developed countries are on logger heads on what should be solved first; ozone layer depletion or climate change or biodiversity conservation or the asymmetries of the international financial system which have deep ecological linkages with the environmental problems of the South.

The poorest of the sub Saharan countries in Africa have the least Foreign Direct Investment (FDI) but the highest debt servicing liability. The total external debt of developing countries has multiplied in the last two decades from $100 billion to more than $2000 billion in 1994. Developing countries are paying back a much higher amount than what they receive in the form of aid as interest repayments and unequal access to the market. At the turn of the millennium, out of 155 countries, only 30 had annual per capita income growth rates above 3% which is required to double incomes in a generation at constant inequality levels. In 54 countries average incomes fell, and in 71 countries, the annual income growth was less than 3%. The impact of this is that more than 1.2 billion people are struggling to survive on less than $ 1 a day and twice as many on less than $2 a day.

This has also led to vast rural-urban gaps as well as gender disparities. In these poor societies, every day more than 30,000 children die of preventable diseases with simple cures and more than 5, 00,000 women die in pregnancy and childbirth. The health care spending in high income countries is at least 5% of its Gross Domestic Product (GDP) but in poor countries it is less than 2%. The intra-generational disparity in living standards is visible when one looks at the statistics of energy consumption. Canada and USA have the lowest petrol prices but the highest per capita petrol consumption. In India petrol costs four times as much as in USA.



Source: Human Development Report 2004, UNDP

Fig.2.3: The human development index values and GDP per capita value PPP in US dollars for South Asian countries and high income OECD countries. The human development index (HDI) focuses on three measurable dimensions of human development: living a long and healthy life, being educated and having a decent standard of living. Thus it combines measures of life expectancy, school enrolment, literacy and income to allow a broader view of a country's development than does income alone

The high level of consumption in industrialised countries continues to be a major issue in the international fora and their resulting instruments dealing with socio-economic development and environmental protection. In the Principle 8 of the Rio Declaration it was stated *'To achieve sustainable development and a higher quality of life for all people, States should reduce and eliminate unsustainable patterns of production and*

consumption...' Agenda 21 devotes an entire chapter to 'changing consumption patterns'. Section 4.3 of Chapter 4 affirms the perspective of developing countries on the link between environmental degradation, poverty in developing countries and unsustainable consumption in developed countries. It states, *'Poverty and environmental degradation are closely interrelated. While poverty results in certain kinds of environmental stress, the major cause of the continued deterioration of the global environment is the unsustainable pattern of consumption and production, particularly in industrialised countries, which is a matter of grave concern, aggravating poverty and imbalances'*. Despite apparent natural resource wealth, material living standards for the vast majority of people in developing countries continue to be inadequate to meet even the basic human needs. Part of this inadequacy is related to and exacerbated by shifts in resource demand by Northern consumer nations and to international pricing and market controls on refining and distribution inherent in traditional North-South trading relationships.

The legal rights and duties manifest in the international, national and more local aspects of both the two components namely the inter and intra-generational equity. The Brundtland Report recognises that there must be limits on how present needs are met in order to fulfil the parallel objective of leaving sufficient resources for future generations to meet their needs. Article 5 of the International Union of Conservation of Nature and Natural Resources (IUCN) Draft Covenant further articulates the potential conflicts between 'intra' and 'inter' generational equity. It 'qualifies' present generations' use of the environment with the needs of future generations and provides that *'The freedom of action of each generation in regard to the environment is qualified by the needs of future generations'*. This statement implicitly acknowledges that intra- and inter- generational equity may not be inherently compatible. This is also a serious concern as the present resource consumption and production patterns by certain nations or social strata within nations are prejudicing not only environmental quality and socio-economic development prospects for the present generation, but are also unacceptably narrowing the options that will be available to future generations that will require substantial environmental resources to meet their basic needs.

SAQ 2

Outline the options available to the developing countries to bring about intra-generational equity at the global, regional and national levels.

2.5 GENDER DISPARITY

To achieve environmental sustainability, policies have to reduce gender gaps politically, economically and socially so that their access to resources is protected. The Human Development Report (2003) acknowledges that *'gender equality is at the core of whether the goals will be achieved- from improving health and fighting disease to reducing poverty and mitigating hunger, to expanding education and lowering child mortality, to increasing access to safe water, to ensuring environmental sustainability'*.

The mortality rates between men and women reveal the immense disparity that exists between them. Despite their biological advantage women have higher mortality rates especially in South and East Asia. The 'missing women' phenomenon refers to females estimated to have died due to discrimination in access to health and nutrition. Gender discrimination is accompanied by biases against other personal characteristics, including location (rural areas), ethnic background (indigenous minorities) and socio-economic status (poor households). Gender gaps in health and education push them backwards and entrench a patriarchal regime which works against the demands of a sustainable order; although several World Bank studies and research undertaken by independent organisations found that women were perfect agents of change at the grassroots level and are also the carriers of indigenous wisdom.

The three main social movements that emerged in the last three decades are feminism, peace and ecology. Feminism raised some fundamental questions about the mode of production and conditions of work. It emphasised the cultural identities and attacked the oppressive forces of patriarchy. The diversity of women's situations across class, racial and cultural boundaries has not simply enriched these insights but has also contributed to the understanding of the patriarchal system of cash generation policies. Women's traditional life and work brought them closer to useful tasks in the family such as fuel wood collection, cow rearing, herb collection and fetching water from streams and rivers. When environment is destroyed they are the first ones to be affected but they are the last ones to be consulted in policy formulations. The centralised economic planning of projects on the basis of cost-benefit assessment completely bypasses the assessment of the intangibles such as displacement of women and their homes, which constitute the self –sustaining economies.

In India, Gadhchiroli in Maharashtra has been a striking example of the harm inflicted by the developmental policies upon women. Every development project in that area brought a team of outside contractors, engineers and builders who employed local men into construction and reduced women into underpaid labour. However the same group of outsiders raised liquor shops and enticed women into flesh trade, which destroyed the peace, safety and tranquillity of the area. Women who managed the household economy realised that whatever the men folk earned in cash went back to the same nexus of contractors through liquor or other spurious arrangements while their environment was damaged so that household income which they earned in the form of usufruct (nuts, shrubs, grasses and fuel wood) was lost forever. This led them to a violent protest against the developers by breaking their shops and forcing them to withdraw all their developmental projects from their land.

Eco-feminists are emphasising the human development side of new production forces, which restricts the ruthless destruction of forests and wetlands and precious farm animals to slaughterhouses. The eco-feminist movements have been in the forefront of the demand for sustainability. The Green Belt Movement in Africa, Chipko and Appiko (Chipko of the Western Ghats) in India and even the Narmada Bachao Andolan have shown that the requirements of women have not been adequately recognised by the development experts and policy planners.

Fig.2.4: Women have been at the forefront of the Narmada Bachao Andolan led by Medha Patkar

Chipko movement

Chipko is a Hindi word meaning "to hug". The Chipko movement was named after its members who hugged trees to prevent them from being felled by foresters. Although the first Chipko workers were men and women, at odds with official forestry policies and mainly concerned with local employment, more and more women joined the movement when they realized that the recurring floods and landslides from which they were suffering were caused by deforestation. When the Forest Department announced an auction of 2500 trees in the Reni Forest overlooking the Alaknanda River, which had already flooded disastrously, one woman- Gaura Devi- organized the women of her village to protect the trees from the company that won the auction. They physically prevented the tree felling, and thus forced the Uttar Pradesh government to investigate. Two years later, the government placed a 10-year ban on all tree felling in the area. After that, women prevented felling in many other forests all along the Himalayas. They have also set up cooperatives to guard local forests, and to organize fodder production at rates that will not harm the trees. Within the Chipko movement, women have joined in land rotation schemes for fodder collection, helped replant degraded land, and established and run nurseries stocked with species they select.

The loggers in forests, the trawlers in the coastal region and the abattoirs in the village belts have been constantly weaning out the sustainable resource base of women economy of the household, which provides a sustainable shield to the cash economy of the nation. What is required is a balanced coexistence of the two economies and not the uprooting of the soft for the alien mechanised hi-tech development.

SAQ 3

Prepare a case study about the problems of women from the deprived sections in your country/region and movements, if any, to ameliorate them.

2.6 DIVERSITY (SOCIAL, CULTURAL KNOWLEDGE, BIO)

The social and cultural diversity of the world can be judged from the fact that there are around 820 ethnic groups in 160 countries. Around four percent of the indigenous people live in areas that are highly diverse in the composition of their flora and fauna. A community is the custodian of local values in the use of local resources because it knows best the value and the life span of that resource. Once they are displaced, the outsiders bring in their technology for extraction and ruthlessly overuse the precious and limited earth resources. **Preserving indigenous territorial rights thus protects biodiversity and the local culture, including knowledge and resource-management skills with potentially wide application**.

The Earth Summit in 1992 recognised the intrinsic relationship between local communities and environment. Agenda 21 specified that the local communities or natives should be treated as custodians of their environment and natural resources. This led to a task force on indigenous people and the declaration of 1993 as the International Year of the Indigenous People. Subsequently, the World Summit on Sustainable Development at Copenhagen in 1995 brought the social growth of people into the central theme of development. This summit recognised that *'social development is central to the needs and aspirations of people throughout the world and to the responsibilities of governments and all sectors of civil society'*. Therefore, a developmental policy needs to be framed in which the livelihoods of local communities are preserved and they in turn start taking interest in the earth's resources through self regulation. The following combination of factors can help in approaching self-regulation:

- The scale of economy, which would generate organisations harnessing technological potentials, eco-infrastructure, local money, cooperative consumption etc.
- Participatory democracy leading to green municipalism, participatory green city plans, community indicators.
- A green regulatory structure, encouraging bioregionalism, quality and community.
- Green market mechanism for ecological tax system, account money, community currency and green financial infrastructure.
- Knowledge as a regulatory force via resource inventories, eco-accounting, product information and labelling and community indicators.

All these factors work within the parameters of culture. Real citizenship and community life cannot be achieved without a degree of bonding, shared vision and values. Working in the direction of sustainable policies would also bring social solidarity amongst diverse ecosystems. This has been done in the village experiments of Seed in Udaipur in Rajasthan and of Ralegaon Siddhi in Maharashtra. The local community framed their own regulatory mechanisms to preserve their wetlands, land and forests.

Fig.2.5: Community initiatives in many parts of Indi a have helped regenerate resources

We now summarise the contents of the unit.

2.7 SUMMARY

- In this unit, we have discussed the different parameters of sustainable development, i.e., the various indicators that should be taken into account for understanding the concept of sustainable development. We have also discussed the requirements of sustainable development policies. The *Limits to Growth* had warned that natural resources were not for all times to come and would get depleted if this way of life continued.

- The depletion of resources may lead to a general lowering of the standards of living. The tendency to overkill, overuse and overload resources may prove catastrophic to all mankind. The world seems to be heading towards a period of general scarcity which may increase prices of primary commodities, increase poverty and may lead to wars.

- A set of principles forms the basis of sustainable development. These are the principles of carrying capacity, of inter and intra-generational equity, gender disparity and the recognition of diversity. These principles ensure the use of earth's resources for the largest number of people for the longest period of time.

- The politics of sustainable development is not only the politics of global environmental institutions like the United Nations, but also the politics of regional, national and local commitments. As Gro Harlem Brundtland had observed that *'commitments can only be fulfilled in time to secure our future if governments are inspired and pressurized by their citizens'*, stands nonetheless as a rallying cry for political mobilisation and change.

- The slogan of 'think globally and act locally' can be given meaning only if policy makers and citizens are made aware of the intricacies of environmental parameters, developmental relationships and local-global linkages. The parameters refine and objectify the debate on the protection and conservation of environmental resources.

2.8 TERMINAL QUESTIONS

1. What do you understand by carrying capacity?
2. What are the threats to sustainable resource use policies?
3. Can general scarcities be prevented by the principle of carrying capacity?
4. How are the principles of inter-generational equity and intra-generational equity different from each other? Explain.
5. How is equality of women related to sustainable development?

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