
UNIT 1 SUSTAINABLE DEVELOPMENT: AN OVERVIEW

Structure

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1.1 INTRODUCTION

Sustainable development has become a buzzword in different forums, seminars, and workshops. You might have read and heard about this concept. In this unit you will know more about the concept. Sustainable development stands for meeting the needs of present generations without compromising the ability of future generations to meet their own needs. In other words, its a better quality of life for everyone now, and for the generations to come. It offers a vision of progress that integrates immediate and longer term objectives, local and global action. It regards social, economic and environmental issues as inseparable and interdependent components of human progress.

After studying this unit, you should be able to:

- Explain the meaning of sustainable development;
- Describe various components of sustainable development;
- Discuss various indicators of sustainable development; and
- Suggest measures for the promotion of sustainable development.

1.2 SUSTAINABLE DEVELOPMENT: CONCEPT AND DEFINITION

Sustainable development has become a buzzword in different forums, seminars, workshops. It is found much in environmental and economics literature these days. The concern for sustainable development is becoming increasingly louder with the rapidity of economic growth. Around the globe, throughout history, most modern human institutions have evolved in ways that are at best, oblivious, and, at worst, positively hostile to the health of environment. Economic development, till today, is based on two fallacious premises:

- 1) It considers needs of mankind alone and ignores the interdependent ecosystem
- 2) It treats the environment as a commodity.

Human being strives ceaselessly for riches as enslaved and obsessed by technological advancement and by obtaining higher GNP. This obsession has sullied the environment and is tending to ruin the carrying capacity that is, capacity

of the ecosystem to support life of Mother Earth. The land lays scarred and eroded. The waters of rivers, lakes and oceans are contaminated with industrial waste, which is nearly unfit for either industrial use or for human consumption. The air is filled with gaseous and particulate pollutants that are toxic to life. Pesticides used to promote agricultural production and public health has severely poisoned the environment. Each agent of production and consumption regards the disposal cost of waste as zero and uses the environmental sector as long as it permits human being to improve their own welfare. They do not have to pay anything to anybody. The environment is still regarded as common property, each agent acting as if the human being owns it. The reckless use continues, without any heed to the damage inflicted, and causes degraded environmental standards, unhealthy and detrimental to all.

“Our Common Future” marks the beginning of the sustainable development concept that has generated all the literatures. New books on sustainable development have been appearing with increasing rapidity since the United Nations Conference on Environment and Development popularly known as the Earth Summit held in Brazil in 1992. Divergent economic theorists like E. F. Schumacher of Britain, environmentalists like Barry Commoner and Lester R. Brown, population analysts like Paul Ehrlich, politicians like Willy Brandt of Germany and Jimmy Carter of the United States, all played significant roles in formulating ideas.

The era of modernisation has created an atmosphere of excitement of instant economic growth. In fact, all sectors of developing countries seem to be vibrating with economic buoyancy. There is expansion of trade, investment, market, and increase in Gross National product (GNP) productivity, per capita income, profit, efficiency, salary, etc, across the globe. The free trade system could more tellingly be called the free ride system. As the producers do not have to include in their product costs all the indirect costs they cause society. It includes pollution of the land, sea and air, ozone holes, disappearing topsoil, exploding health costs, allergies, global warming, destruction of species, pesticides in food, antibiotic-resistant bacteria, crime, unemployment, escalating social costs, etc. Many of the most common and most damaging products on the market would never be manufactured if they were priced at their real costs to society as a whole. The road to success in global business today is to find a way to pass on as many of your costs as possible to the public, preferably to another country’s public. The most profitable companies at this time are those that are most successful at getting someone else to pay the real costs of their doing business. Present economic process maximises only the profits to the shareholders, while all the other stakeholders are left bearing the costs, such as, cleaning up the environment and dealing with unemployment.

The term, sustainable development, was coined by the Brundtland Commission, which defines sustainable development as development that “*meets the needs of the present without compromising the ability of future generations to meet their own needs*”. Sustainable development is defined as balancing the fulfilment of human needs with the protection of the natural environment so that these needs can be met not only in the present, but in the indefinite future. Sustainable development is a pattern of resource use that aims to meet human needs while preserving the environment. The field of sustainable development is conceptually divided into four general dimensions: social, economic, environmental, and

institutional. The first three dimensions address key principles of sustainability, while the final dimension addresses key institutional policy and capacity issues.

There is, now, a worldwide movement of environmentalism parallel to the more enthusiastic global movement of economic growth. Every section of people around the globe now expresses some amount of concern towards the deterioration of environmental standards. The rise in economic welfare is increasingly accompanied by a considerable decline in the quality of environment and loss of ecological stability. Some groups of environmentalist are very pessimistic while the other group of environmental scientists is very optimistic. But the fact remains that there is acid rain, global warming, the greenhouse effect, erosion and sterility of soil, degradation of land, environmental pollution and ozone layer depletion. There is widespread desertification in one hemisphere and deforestation in another hemisphere of the globe. Deeper and wider concern for environmental degradation springs from two major sources.

- 1) Rise in material production effluents and use of synthetic materials
- 2) Increased demand for environmental goods.

The first refers to the problems of environmental externality and the second, to depletion of natural resources. In addition to the increased supply of economic goods, there is also an increased demand for environmental goods. Environmental goods signify any external environmental conditions that affect human welfare. The following elements are connected with the human welfare

- Absence of all types of pollution
- Availability of clean water and air
- Quality of natural environment (outdoor recreation, etc)
- Quantity of natural environment(forest, wildlife)
- Availability of public utility systems
- Average space availability for inhabitants

In this session you read about the concept of sustainable development, now answer the questions given in *Check Your Progress 1*.

Check Your Progress 1

Note: a) Write your answer in about 50 words.

b) Check your answer with possible answers given at the end of the unit

- 1) What is the need for sustainable development?

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- 2) What do you mean by sustainable development?

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1.3 COMPONENTS OF SUSTAINABLE DEVELOPMENT

In this section you will read about the various components of sustainable development. The three main components of sustainable development discussed here are

- i) Interconnectedness of the system
- ii) Sustainable development path
- iii) Intergenerational approach.

i) Interconnectedness of the System

Traditionally we use numbers to show progress. Employment rose by 0.8 percent in January, or, the economy grew by 2% last year, air pollution has declined by 0.2 per cent, dowry death has increased by 1.3%, etc. However, the traditional numbers only show changes in one part of the community without showing the various links between the community’s economy, society, and environment.

It is as if a community was made of three separate parts:

- i) An economic part
- ii) A social part
- iii) An environmental part.

In this view, the parts do not overlap like the picture below (figure-1)

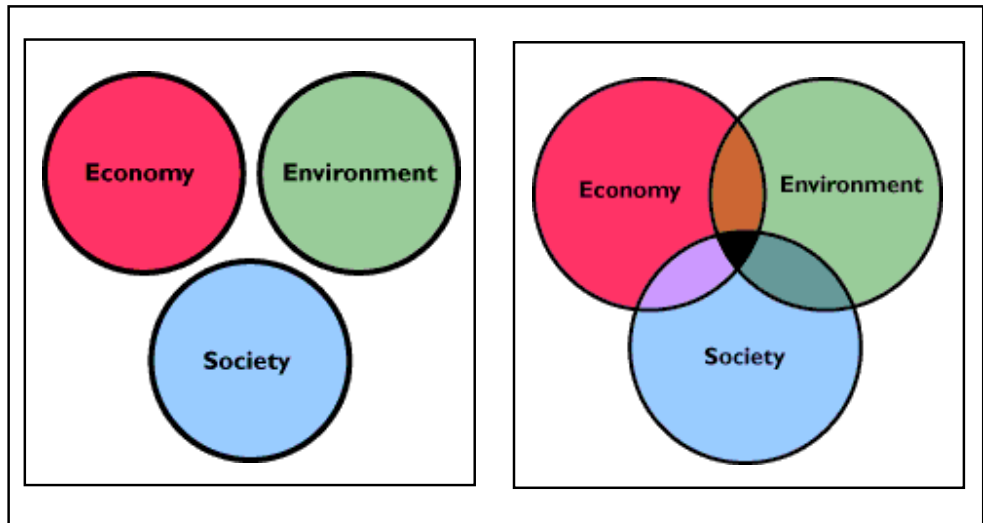


Fig. 1.1: Interconnectedness of the three systems

However, when society, economy, and environment are viewed as separate, unrelated parts of a community, the community’s problems are also viewed as isolated issues. This piecemeal approach has a number of negative side effects. Sustainable development depends on the links between the economy, the environment and the society. Figure-1, above, is frequently used to show the interconnectedness of three systems. Understanding the three parts and their links is the key to understanding sustainability as sustainability is about more than just quality of life. It is about understanding the connections and achieving balance among the social, economic, and environmental pieces of a community.

Sustainable development is a dynamic concept, as a wide array of views fall under its umbrella. There may be as many definitions of sustainability and sustainable development. All the definitions have to do with:

- Living within the limits
- Understanding the interconnections among economy, society, and environment
- Equitable distribution of resources and opportunities.

Sustainable development involves the simultaneous pursuit of economic prosperity, environmental quality and social equity. Sustainable community development is the ability to make development choices which respect the relationship between the three E's, that is economy, ecology, and equity.

- **Economy** - economic activity should serve the common good, be self-renewing and build local assets and self-reliance.
- **Ecology** - humans are part of nature, nature has limits, and communities are responsible for protecting and building natural assets.
- **Equity** - the opportunity for full participation in all activities, access, benefits and decision-making of a society.

Figure 1.2 illustrates all three dimensions of sustainable development. Sustainable development cannot ignore any of the three. If we neglect the social dimension, the development process may be viable, if we disregard the environmental dimension, development process may be equitable and if we pay no heed to the environmental dimension, the development process may be bearable, but not sustainable.

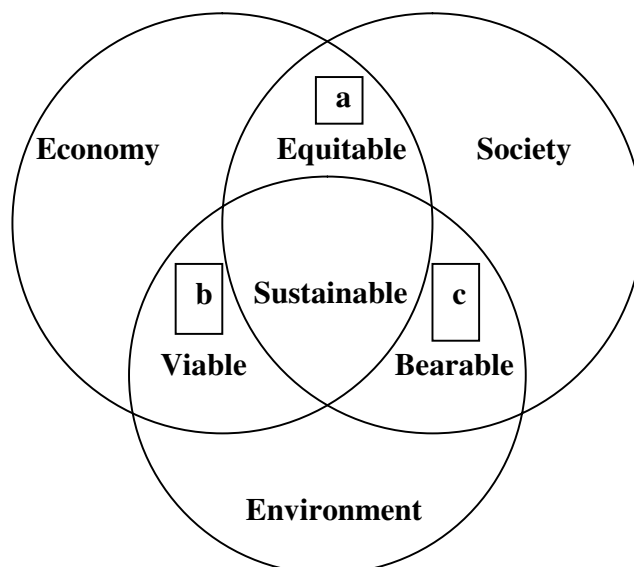


Fig.1.2: Sustainable Development

In other words, the search for equity

- a) Neglects environmental aspects and the search for viability;
- b) Neglects social dimension and the search for bear ability;
- c) Ignores economic efficiency.

Thus, a sustainable development process is that trajectory which is a synergy of efficiency, equity and social acceptability. Sustainable development shows a compassionate concern for the posterity and for the world as a whole. It contends that social development, environmental soundness, and economic growth are not contradictory or incompatible. Healthy environment and good society are, rather, prerequisites for sustainable development. Sustainable development is based on a broader economic system which fulfils inter-generational equity criteria. Its objectives are focused on the future, not the present, quality not quantity, protection not production, conservation not consumption.

ii) The Path of Sustainable Development

Sustainability implies irreversibility in the process of development. It necessitates the maintenance of the level of wellbeing so that it improves, and, at the least, never allows a decline over time. Thus, sustainable development has three interdependent and mutually reinforcing pillars:

- i) Economic development,
- ii) Social development
- iii) Environmental protection.

It does not focus solely on environmental issues. We should differentiate between green development and sustainable development. The proponents of green development prioritise environmental sustainability over economic and cultural considerations. But cultural diversity is as necessary for humankind as biodiversity is for nature. It is one of the roots of development understood not simply in terms of economic growth but also as a means to achieve a satisfactory social, intellectual, emotional, moral and spiritual existence. In this sense, cultural diversity is the fourth policy area of sustainable development. Developing countries are not only rich in biodiversity but also in cultural diversity. In Figure.3 illustrates the path of sustainable development. It shows that Path N is unsustainable and non-survivable. Development path E is efficient but not sustainable. But path S is sustainable. Path E looks more attractive, but Path S is not impressive in the early stage. Path E has a maximum point after which it curls down. But Path-S is slow and steady, having no maximum survival limit.

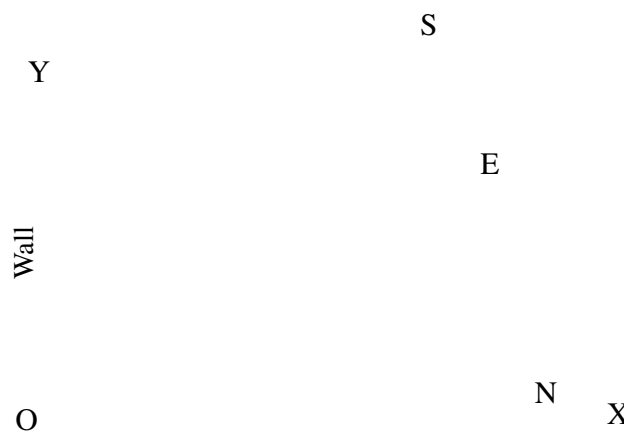


Fig.1.3: Sustainable Development Path

Source: Das (2009) Sustainable Development Path

Sustainability is related to the quality of life in a community. Whether its economic, social, and environmental systems that make up the community and it is providing a healthy, productive, meaningful life for all community, either present or in future. It involves following three questions -

- i) How has your community changed, economically?
- ii) How has your community changed, socially?
- iii) How has your community changed, environmentally?

Thus, the field of sustainable development can be conceptually broken into three constituent parts:

- i) Environmental sustainability
- ii) Economic sustainability
- iii) Socio-political sustainability.

Sustainable development integrates the imperatives of developmental and environmentalism. It highlights the long term doomsday scenario and puts emphasis on economic, social, and ecological integration. It has three objectives.

- i) Economic efficiency
- ii) Social acceptability
- iii) Ecological sustainability.

Sustainability is an issue encompassing all the communities starting from small rural milieu that are fast losing the natural environment on which their livelihoods depend to large metropolitan cities where crime and poverty are decreasing the quality of life. Sustainability does not mean static equilibrium where nothing ever changes. Rather, it does it mean a utopia where nothing bad ever happens. Sustainability is not about maintaining the *status quo* or reaching perfection. It is not a community where nothing ever goes wrong. Sustainability does not mean that businesses never fail, or that people never go hungry, or that pollution never happens. The process of a sustainable development seeks to maintain and improve the economic, environmental and social characteristics of an area. The improvement helps its members so that they can continue to leading healthy, productive, enjoyable lives at present and in future. Sustainability implies that when problems arise, we look for solutions that take into account all three dimensions of the community instead of applying a quick fix in one area that causes problems in another. It is not against growth nor does it imply unlimited growth. Rather, at some point, a sustainable community stops getting larger but continues to change and improve, to develop in ways that enhance the quality of life for all its inhabitants.

iii) Intergenerational Approach

Sustainable development improves the economy without undermining the social or environmental imperatives. Sustainable development focuses on improving our lives without continually increasing the amount of energy and material goods that we consume. A sustainable community does not consume resources energy and raw materials faster than the regenerative capacity of the natural systems. We are currently living unsustainable lives.

Sustainable Development

If we are not careful how we use and dispose of resources, our children, grandchildren and great-grandchildren will have a poorer, more polluted world to live in. A sustainable community interacts with four types of capital:

- i) Natural,
- ii) Human,
- iii) Social,
- iv) Built capital.

All four types of capital need to be cared for. A sustainable community wisely manages all its capital - using and improving the social, natural and built capital in ways that allow that capital to continue to support that community in the future. Sustainability requires that human activity only uses nature's resources at a rate at which they can be replenished naturally. An unsustainable situation occurs when natural capital (the sum total of nature's resources) is used up faster than it can be replenished.

Inherently, the concept of sustainable development is intertwined with the concept of carrying capacity. In fact natural capital, social capital, and economic capital are often complementary. Carrying capacity is the size of the population that can be supported indefinitely upon the available resources and services of supporting natural, social, human, and built capital. Living within the limits of an ecosystem depends on three factors:

- i) The amount of resources available in the ecosystem
- ii) The size of the population, and
- iii) The amount of resources each individual consumes.

Thus, there is urgent need to develop an ecosystem approach, or inter generational approach for the management of natural capital and social capital. Ultimately, an ecosystem approach tends to evolve and change from a consumptive economy to an economy oriented towards conservation, maintenance of capital stock, and recycling of materials. Impoverishment of an ecosystem means the devastation of the entire society that depends upon it. Thus, an ecosystem approach is a compassionate concern for posterity and for the planet as a whole. Dismal economic growth is not enough to bring welfare to mankind. Man is an organic being, whose total development depends, to a large extent, on the non-economic, sociological, psychological factors, and, on a meaningful sustainable balance between him and the environment (social and natural) in which he lives.

There are many contradictions and inconsistencies in the goal of sustainable development. It poses a great dilemma and a great challenge. Confronting the challenge is very costly, but not facing the challenge is really disastrous for the whole society. However, the idea of sustainable development should be less idealistic and more practical. We do not have to choose between an environmentally healthy and economically robust nation. Both are compatible. We can have both. We are intelligent enough have the ability to develop enough new technologies and can change our behaviour enough to confront all the problems facing us, and to create optimal solutions.

1.4 INDICATORS OF SUSTAINABLE DEVELOPMENT

Indicators of sustainable development are more in the nature of indices that reflect the state of overall concepts or social goals such as human development, sustainable development, the quality of life, or socioeconomic welfare. Indicators provide early warnings about non sustainable trends of economic activity and environmental deterioration. They are the ‘nutshell’ indicators favoured by policy makers. Sustainable development indicators proliferated in the wake of the Rio Earth Summit’s call for indicators of sustainable development (United Nations 1994, Agenda 21). Let us discuss a few selected indices of sustainable development.

Important indicators of sustainable development are:

- i) Gross Sustainable Development Product
- ii) Environmental Kuznets Curve
- iii) Social Indicators for Sustainable Development

i) Gross Sustainable Development Product

Among different aggregation methods, green accounting is a common physical or monetary averaging. It is most commonly applied. The concept of Green GDP has been modified as Gross Sustainable Development Product (GSDP), which is defined as the total value of production after giving due care to social capital and natural capital of a region over a specified period of time. It is designed to replace the Gross Development Product (GDP) as the primary indicator of the economic performance of a nation. It takes into account:

- The economic impact/costs of environmental degradation
- Impacts of changes in quality systems on national income and wealth
- Global concerns and their impacts on the economy and ecology and society
- The welfare, economic development, and quality of life of future generations
- Expenditures on pollution abatement and clean-ups
- The status of each resource and the stocks and productive capacities
- The depreciation or appreciation of natural assets
- The ecological processes and biological diversity
- The costs of economic growth, resources uses of present and future generations.

The measurement of GSDP shows that consumption levels can be maintained without depleting and depreciating the quality and quantity of services for the present and future. It indicates the solutions to the problems as well as the directions to take, such as:

- Invest in technology, R and D
- Increase productivity and end-use efficiency

- Modify social services, educational programs
- Slow down or increase economic growth
- Remediate components of major quality systems; and
- Rectify present shortcomings of income and wealth accounts.

The measurement of GSDP also gives a proper and sound signal to the public, government and industry about the rate and direction of economic growth. It identifies environmental, health, and social quality; it identifies sustainable and unsustainable levels of resource and environmental uses; it measures the success or failure of sustainable development policies and practices; and it identifies resource scarcity. The primary goal of a sustainable local community is to meet its basic resource needs in ways that can be continued in the future.

ii) Environmental Kuznets curve

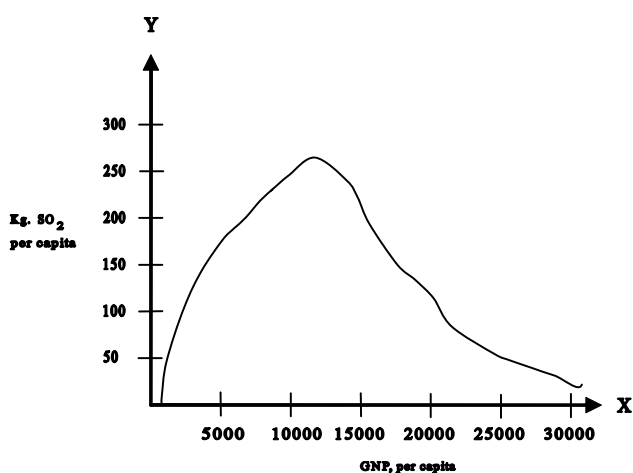
Some forms of pollution appear first to worsen and later to improve as countries' incomes grow. The world's poorest and richest countries have relatively clean environments, while middle-income countries are the most polluted. As of its resemblance to the pattern of inequality and income described by Simon Kuznets (1955) this pattern of pollution and income has been labelled an 'Environmental Kuznets Curve' (EKC). Grossman and Krueger (1995) and the World Bank (1992) first popularised this idea, using a simple empirical approach. Data are regressed on ambient air and water quality in cities worldwide on a polynomial in GDP per capita and other city and country characteristics. Then, plot the fitted values of pollution levels as a function of GDP per capita, and demonstrate that many of the plots appear inverse U-shaped, first rising and then falling. The peaks of these predicted pollution-income paths vary across pollutants, but 'in most cases they come before a country reaches a per capita income of \$8000' in 1985 dollars (Grossman and Krueger, 1995, p. 353). In simple terminology, the EKC shows the relationship between the environmental degradation and the per capita income. The proponents of EKC are of the opinion that in the early stages of economic growth, degradation and pollution increase. But beyond some level of per capita income, the trend reverses, so that at high-income levels, economic growth leads to environmental improvement. This implies the environmental impact indicator is an inverted U shaped function of per capita income.

In the years since these original observations were made, researchers have examined a wide variety of pollutants for evidence of the EKC pattern. It includes automotive lead emissions, deforestation, greenhouse gas emissions, toxic waste, and indoor air pollution. Some investigators have experimented with different econometric approaches, including higher-order polynomials, fixed and random effects, splines, semi- and non-parametric techniques, and different patterns of interactions and exponents. Others have studied different groups of jurisdictions and time periods as well as have added control variables. It includes measures of corruption, democratic freedoms, international trade openness, and even income inequality (bringing the subject full circle back to Kuznets's original idea). However, some generalisations across these approaches emerge. Roughly speaking, pollution involving local externalities begins improving at the lowest income levels. Faecal coli form in water and indoor household air pollution are

examples. For some of these local externalities, pollution appears to decrease steadily with economic growth and we observe no turning point at all. This is not a rejection of the EKC; pollution must have increased at some point in order to decline with income eventually, and there simply is no data from the earlier period. By contrast, pollutants involving much-dispersed externalities tend to have their turning points at the highest incomes or even no turning points at all, as pollution appears to increase steadily with income. Carbon emissions provide one such example. This, too, is not necessarily a rejection of the EKC; the turning points for these pollutants may come at levels of per capita income higher than in today's wealthiest economies.

Another general empirical result is that the turning points for individual pollutants differ across countries. This difference shows up as instability in empirical approaches that estimate one fixed turning point for any given pollutant. Countries that are the first to deal with a pollutant do so at higher income levels than following countries, perhaps because the following countries benefit from the science and engineering lessons of the early movers. Most researchers have been careful to avoid interpreting these reduced-form empirical correlations structurally, and to recognise that economic growth does not automatically cause environmental improvements. All the studies omit country characteristics correlated with income and pollution levels, the most important being environmental regulatory stringency. The EKC pattern does not provide evidence of market failures or efficient policies in rich or poor countries. Rather, there are multiple underlying mechanisms, some of which have begun to be modelled theoretically. An example of EKC of sulphur emission is given below in Figure.4.

Environment Kuznets Curve for Sulfar Emission



Source: <http://www.ecoeco.org/pdf/stern.pdf>

Fig. 1.4:

iii) Social Indicators of Sustainable development

The social indicators of sustainable development as framed by the United Nations Commission on Sustainable Development (CSD) in 1995 are broadly categorised as:

- i) Poverty
- ii) Governance

- iii) Health
- iv) Education
- v) Demography.
- i) **Poverty:** Poverty is considered as one of the key indicators of sustainable development. Nations with a high percentage of people living the poverty line can not sustain their level of development. The sub themes as well as the core and other indicators to be covered in the area of poverty are given in Table 1.1.

Table 1.1: Poverty Indicators for Sustainable Development

Sub Themes	Core Indicators	Other Indicators
Income Poverty	Proportion of population living below poverty line	Proportion of population below \$1 a day
Income Inequality	Ratio of share in national income highest to lowest quintile	—
Sanitation	Proportion of population using an improved sanitation	—
Drinking Water	Proportion of population using an improved water sources	—
Access to Energy	Share of household without electricity or other modern energy services	Percentage of population using solid fuel for cooking
Living Conditions	Proportion of urban population living in slums	

Source: *Indicators of Sustainable Development: Guidelines and Methodologies*, United Nations, New York, 2007

- ii) **Governance:** Governance is the second key indicator of sustainable development. Good governance is an essential element of sustainable development. The sub themes of the governance in sustainable development are corruption and crime. The indicators are given in Table 1.2.

Table 1.2: Governance Indicators for Sustainable Development

Sub Themes	Core Indicators	Other Indicators
Corruption	Percentage of population having paid bribe	—
Income Inequality	Number of international homicides per 1,00,00 population	—

Source: *Indicators of Sustainable Development: Guidelines and Methodologies*, United Nations, New York, 2007

- iii) **Health:** The key indicators of sustainable health care are mortality, health care delivery, nutritional status and health status and risks. The core areas of these health care themes are delineated in Table 1.3.

Table 1.3: Health Indicators for Sustainable Development

Sub Themes	Core Indicators	Other Indicators
Mortality	Under Five Mortality Life Expectancy at Birth	Proportion of population below \$1 a day
Health Care Delivery	Percentage of population with access to primary health care facilities Immunization against child hood diseases	Contraceptive prevalence rate
Nutritional Status	Nutritional status of children	---
Health Status and Risks	Morbidity of major diseases such as HIV/AIDS, malaria, tuberculosis	Prevalence of tobacco use Suicide rate

Source: *Indicators of Sustainable Development: Guidelines and Methodologies*, United Nations, New York, 2007

- iv) **Education:** As far as education is concerned, sustainable education includes educational levels and literacy. The core indicators of education are given in Table 1.4.

Table 1.4: Education Indicators for Sustainable Development

Sub Themes	Core Indicators	Other Indicators
Educational Level	Gross intake ratio to last grade of primary education Net enrolment rate in primary education Adult secondary (tertiary) schooling attainment level	---
Literacy	Adult literacy rate	---

Source: *Indicators of Sustainable Development: Guidelines and Methodologies*, United Nations, New York, 2007

- v) **Demography:** The two vital demographic indicators of sustainable development are population growth and the dependency ratio. The indicators of demographic themes for sustainable development are given in Table 1.5. The high fertility rates and higher dependency ratios retard development. Therefore, sustainable development goals become difficult to attain.

Table 1.5: Demography Indicators for Sustainable Development

Sub Themes	Core Indicators	Other Indicators
Population growth rate	Total Fertility Rate	Ratio local residents to tourists in main tourist regions and destinations
Dependency ratio	Dependency ratio	---

Source: *Indicators of Sustainable Development: Guidelines and Methodologies*, United Nations, New York, 2007

In this session you have read about the indicators of sustainable development, now answer the questions given in *Check Your Progress 2*.

Check Your Progress 2

Note: a) Write your answer in about 50 words.

b) Check your answer with possible answers given at the end of the unit

1) What do you mean by Gross Sustainable Development Product?

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2) What is the Environmental Kuznets Curve?

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1.5 MEASURES TO PROMOTE SUSTAINABLE DEVELOPMENT

Sustainable development is an important development agenda of the 21st century and is one of the vital paradigm shifts in development. Countries have to take appropriate measures for the promotion of sustainable development. The United Nations has emphasised its institutional framework for sustainable development. It has mentioned for its attainment in its institutional framework for sustainable development, that good governance, sound economic policies, social democratic institutions responsible to the needs of the people and improved infrastructure is much needed. Moreover these are also the basis for sustained economic growth, poverty eradication, and employment generation.

Some suggested measures for the promotion of sustainable development follow.

- 1) The conservation of land, water and energy resources is fundamental for the promotion of sustainable development. Appropriate action has to be taken for the conservation of scanty resources. Conservation of resources by the present generation will provide future generation with widest range of possibilities.
- 2) The development of technologies and approaches which will minimise the environmental damages. Such development requires scientific knowledge and continuous investment.
- 3) Political and public support is critical to implement environmental targets.
- 4) Increasing the scope of public participation in environmental issues and, in particular, in planning processes.

- 5) Some countries have initiated good practices which are concomitant with the promotion of sustainable development:
- a) In Brazil, the bio-fuels programme has saved the country \$100 billion in external debt-a fact that makes such fuels attractive in many countries
 - b) In China, the promotion of vehicles that are more efficient.
 - c) In South Africa, the implementation of carbon capture and storage technology brings benefits in terms of technology transfer.

The United Nations has strengthened and integrated the three dimensions of sustainable development policies and programmes, and to promote the full integration of sustainable development objective with social development issues.

In this session you read about measures to promote sustainable development, now answer the questions given in *Check Your Progress 3*.

Check Your Progress 3

- Note:** a) Write your answer in about 50 words.
b) Check your answer with possible answers given at the end of the unit.

1) What are the important measures for the promotion of Sustainable Development?

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2) Write a few good practices for sustainable development?

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1.6 LET US SUM UP

In this unit, we dealt with the definition of economic growth and characteristics of economic development. We discussed the merits and demerits of different measures of economic development. We dealt with the definition and components of sustainable development. We analysed sustainable development path, sustainable community ecosystem approach. We analysed different indicators of sustainable development: Green Economic GDP, Gross Sustainable Development Product, Genuine Progress Indicator and Global Living Planet Index. Finally, we discussed the role of indigenous knowledge in sustainable development.

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1.8 CHECK YOUR PROGRESS - POSSIBLE ANSWER

Check Your Progress 1

1) What is the need for sustainable development?

The need for sustainable development arises for two important reasons. Those are: (i) the current system of development considers development of mankind alone and ignores the interdependent ecosystem; and (ii) it treats environment as a commodity.

2) What do you mean by sustainable development?

According to the Brundtland Commission “Sustainable development” is that which “meets the needs of the present without compromising the ability of future generations to meet their own needs.” It has three components: a) Economy - economic activity should serve the common good, be self-renewing, and build local assets and self-reliance. b) Ecology - humans are part of nature, nature has limits, and communities are responsible for protecting and building natural assets. c) Equity - the opportunity for full participation in all activities, access, benefits, and decision-making of a society. It has three objectives: i. Economic efficiency, ii. Social acceptability, and iii. Ecological sustainability

Check Your Progress 2

1) What do you mean by Gross Sustainable Development Product?

The Gross Sustainable Development Product is the total value of production after giving due care to the social capital and natural capital of a region over a specified period of time.

2) What is the Environmental Kuznets Curve?

In simple terminology, the EKV shows the relationship between the environmental degradation and the per capita income. The proponents of EKV are of the opinion that in the early stages of economic growth, degradation and pollution increases, but beyond some level of per capita income, the trend reverses, so that at high income levels, economic growth leads to environmental improvement. This implies the environmental impact indicator is an inverted U shaped function of per capita income.

Check Your Progress 3

1) What are the important measures for the promotion of sustainable development?

The conservation of land, water and energy resources is fundamental to promotion of sustainable development. Appropriate action has to be taken for the conservation of scanty resources. Development of technologies, which would minimize the environmental damages, such development requires scientific knowledge and continuous investment. Increasing awareness of the public and policy makers on environmental quality and natural resources issues is critical to sustainable development.

2) Write a few good practices for sustainable development.

Some countries have initiated good practices which are concomitant with the promotion of sustainable development:

- a) In Brazil, the bio-fuels programme has saved the country \$100 billion in external debt-a fact that makes such fuels attractive in many countries.
- b) In China, the promotion of vehicles that are more efficient and have similar “footprints” has the potential to address both energy security concerns and infrastructure constraints in a fast growing economy.
- c) In South Africa, the implementation of carbon capture and storage technology brings benefits in terms of technology transfer.