

Striking a Harmony: Balancing Environmental Protection and Sustainable Development in a Globalized World

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ABSTRACT

This abstract explores the intricate challenge of achieving a delicate equilibrium between environmental protection and sustainable development within the context of an increasingly interconnected globalized world. As nations strive to address environmental concerns, such as climate change and biodiversity loss, the tension between economic growth and ecological preservation becomes evident. The paper examines key strategies and policy frameworks aimed at reconciling these seemingly conflicting goals. By analyzing case studies and international initiatives, it identifies practical approaches for fostering synergy between environmental protection and sustainable development. The abstract emphasizes the urgency of adopting a holistic perspective that recognizes the interdependence of economic, social, and ecological dimensions to create a harmonious and resilient global future. The environment is not just a physical space; it is a dynamic and interconnected system where ecosystems, biodiversity, climate, and human activities coalesce. Understanding the environment involves recognizing the delicate balance that exists between the natural world and human societies. It entails acknowledging the impact of human actions on the environment and, conversely, the influence of the environment on human well-being.

I CONCEPT OF ENVIRONMENT

The concept of the environment encompasses the complex interplay of living organisms, their surroundings, and the natural systems that sustain life. It extends beyond the immediate surroundings to include the air we breathe, the water we drink, the land we inhabit, and the intricate web of relationships that exist among all living and non-living components.

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Environmental considerations encompass a broad spectrum, ranging from the preservation of ecosystems and biodiversity to the sustainable use of natural resources. Climate change, pollution, deforestation, and loss of habitat are among the challenges that underscore the urgency of responsible environmental stewardship. Addressing these issues requires a holistic approach that involves scientific understanding, policy development, technological innovation, and individual responsibility.

As we navigate the complexities of the modern world, it becomes increasingly clear that the concept of the environment is integral to our collective future. Balancing the needs of the present with the imperative to safeguard the environment for future generations is a defining challenge of our time. In this context, exploring sustainable practices, fostering environmental awareness,

and advocating for policies that promote conservation are essential components of a responsible and harmonious coexistence with our planet.

(a) Functions of the Environment: The environment performs four vital functions-

- it supplies resources: resources here include both renewable and non-renewable resources. Renewable resources are those which can be used without the possibility of the resource becoming depleted or exhausted. That is, a continuous supply of the resource remains available. Examples of renewable resources are the trees in the forests and the fishes in the ocean. Non-renewable resources, on the other hand, are those which get exhausted with extraction and use, for example, fossil fuel.
- it assimilates waste.
- it sustains life by providing genetic and bio diversity.
- it also provides aesthetic services like scenery etc.

The environment is able to perform these functions without any interruption as long as the demand on these functions is within its carrying capacity. This implies that the resource extraction is not above the rate of regeneration of the resource and the wastes generated are within the assimilating capacity of the environment. When this is not so, the environment fails to perform its third and vital function of life sustenance and this results in an environmental crisis. This is the situation today all over the world. The rising population of the developing countries and the affluent consumption and production standards of the developed world have placed a huge

stress on the environment in terms of its first two functions. Many resources have become extinct and the wastes generated are beyond the absorptive capacity of the environment. Absorptive capacity means the ability of the environment to absorb degradation. The result - we are today at the threshold of environmental crisis. The past development has polluted and dried up rivers and other aquifers making water an economic good. Besides, the intensive and extensive extraction of both renewable and non-renewable resources has exhausted some of these vital resources and we are compelled to spend huge amounts on technology and research to explore new resources. Added to these are the health costs of degraded environmental quality - decline in air and water quality (seventy per cent of water in India is polluted) have resulted in increased incidence of respiratory and water-borne diseases. Hence the expenditure on health is also rising. To make matters worse, global environmental issues such as global warming and ozone depletion also contribute to increased financial commitments for the government.

Thus, it is clear that the opportunity costs of negative environmental impacts are high. The biggest question that arises is: are environmental problems new to this century? If so, why? The answer to this question requires some elaboration. In the early days when civilisation just began, or before this phenomenal increase in population, and before countries took to industrialisation, the demand for environmental resources and services was much less than their supply. This meant that pollution was within the absorptive capacity of the environment and the rate of resource extraction was less than the rate of regeneration of these resources. Hence environmental problems did not arise. But with population explosion and with the advent of industrial revolution to meet the growing needs of the expanding population, things changed. The result was that the demand for resources for both production and consumption went beyond the rate of regeneration of the resources; the pressure on the absorptive capacity of the environment increased tremendously - this trend continues even today. Thus, what has happened is a reversal of supply - demand relationship for environmental quality - we are now faced with increased demand for environmental resources and services but their supply is limited due to overuse and misuse. Hence the environmental issues of waste generation and pollution have become critical today.

II STATE OF INDIA'S ENVIRONMENT

India has abundant natural resources in terms of rich quality of soil, hundreds of rivers and tributaries, lush green forests, plenty of mineral deposits beneath the land surface, vast stretch of the Indian Ocean, ranges of mountains, etc. The black soil of the Deccan Plateau is particularly suitable for cultivation of cotton, leading to

concentration of textile industries in this region. The Indo-Gangetic plains — spread from the Arabian Sea to the Bay of Bengal — are one of the most fertile, intensively cultivated and densely populated regions in the world. India's forests, though unevenly distributed, provide green cover for a majority of its population and natural cover for its wildlife. Large deposits of iron-ore, coal and natural gas are found in the country. India accounts for nearly 8 per cent of the world's total iron-ore reserves. Bauxite, copper, chromate, diamonds, gold, lead, lignite, manganese, zinc, uranium, etc. are also available in different parts of the country. However, the developmental activities in India have resulted in pressure on its finite natural resources, besides creating impacts on human health and well-being. The threat to India's environment poses a dichotomy—threat of poverty-induced environmental degradation and, at the same time, threat of pollution from affluence and a rapidly growing industrial sector. Air pollution, water contamination, soil erosion, deforestation and wildlife extinction are some of the most pressing environmental concerns of India. The priority issues identified are (i) land degradation (ii) biodiversity loss (iii) air pollution with special reference to vehicular pollution in urban cities (iv) management of fresh water and (v) solid waste management. Land in India suffers from varying degrees and types of degradation stemming mainly from unstable use and inappropriate management practices.¹

Some of the factors responsible for land degradation are (i) loss of vegetation occurring due to deforestation (ii) unsustainable fuel wood and fodder extraction (iii) shifting cultivation (iv) encroachment into forest lands (v) forest fires and over grazing (vi) non-adoption of adequate soil conservation measures (vii) improper crop rotation (viii) indiscriminate use of agro-chemicals such as fertilisers and pesticides (ix) improper planning and management of irrigation systems (x) extraction of ground water in the competing uses of land for forestry, agriculture, pastures, human settlements and industries exert an enormous pressure on the country's finite land resources. The per capita forest land in the country is only 0.06 hectare against the requirement of 0.47 hectare to meet basic needs, resulting in an excess felling of about 15 million cubic metre forests over the permissible limit. Estimates of soil erosion show that soil is being eroded at a rate of 5.3 billion tonnes a year for the entire excess of the recharge capacity (xi) open access resource and (xii) poverty of the agriculture-dependent people. India supports approximately 17 per cent of the world's human and 20 per cent of livestock population on a mere 2.5 per cent of the world's geographical area. The high density of population and livestock and country as a result of which the country loses 0.8 million tonnes of nitrogen, 1.8 million tonnes of phosphorus and 26.3 million tonnes of potassium every year. According to the Government of India, the quantity of nutrients lost due to erosion each year ranges from 5.8 to 8.4 million tonnes.

In India, air pollution is widespread in urban areas where vehicles are the major contributors and in a few other areas which have a high concentration of industries and thermal power plants. Vehicular emissions are of particular concern since these are ground level sources and, thus, have the maximum impact on the general population. The number of motor vehicles has increased from about 3 lakhs in 1951 to 30 crores in 2019. In 2016, personal transport vehicles (two-wheeled vehicles and cars only) constituted about 85 per cent of the total number of registered vehicles thus contributing significantly to total air pollution load. India is one of the ten most industrialised nations of the world. But this status has brought with it unwanted and unanticipated consequences such as unplanned urbanisation, pollution and the risk of accidents. The CPCB (Central Pollution Control Board) has identified seventeen categories of industries (large and medium scale) as significantly polluting.

The above points highlight the challenges to India's environment. The various measures adopted by the Ministry of Environment and the central and state pollution control boards may not yield reward unless we consciously adopt a path of sustainable development. The concern for future generations alone can make development last forever. Development to enhance our current living styles, without concern for posterity, will deplete resources and degrade environment at a pace that is bound to result in both environmental and economic crisis.

III STRATEGIES FOR SUSTAINABLE DEVELOPMENT

Use of Non-Conventional Sources of Energy: India, as you know, is hugely dependent on thermal and hydro power plants to meet its power needs. Both of these have adverse environmental impacts. Thermal power plants emit large quantities of carbon dioxide which is a greenhouse gas. It also produces fly ash which, if not used properly, can cause pollution of water bodies, land and other components of the environment. Hydroelectric projects inundate forests and interfere with the natural flow of water in catchment areas and the river basins. Wind power and solar rays are good examples of conventional. In recent years, some efforts are being taken to tap these energy resources. Collect the details of one such unit set up in your area if any, and discuss in the class.

LPG, Gobar Gas in Rural Areas: Households in rural areas generally use wood, dung cake or other biomass as fuel. This practice has several adverse implications like deforestation, reduction in green cover, wastage of cattle dung and air pollution. To rectify the situation, subsidised LPG is being provided. In addition, gobar gas plants are being provided through easy loans and subsidy. As far as liquefied petroleum gas (LPG) is concerned, it is a clean fuel — it reduces household pollution to a large extent.

Also, energy wastage is minimised. For the gobar gas plant to function, cattle dung is fed to the plant and gas is produced which is used as fuel while the slurry which is left over is a very good organic fertiliser and soil conditioner. **CNG in Urban Areas:** In Delhi, the use of Compressed Natural Gas (CNG) as fuel in public transport system has significantly lowered air pollution and the air has become cleaner. In the last few years many other Indian cities also began to use CNG. **Wind Power:** In areas where speed of wind is usually high, wind mills can provide electricity without any adverse impact on the environment. Wind turbines move with the wind and electricity is generated. No doubt, the initial cost is high. But the benefits are such that the high cost gets easily absorbed.

IV SOLAR POWER THROUGH PHOTOVOLTAIC CELLS

India is naturally endowed with a large quantity of solar energy in the form of sunlight. We use it in different ways. For example, we dry our clothes, grains, other agricultural products as well as various items made for daily use. We also use sunlight to warm ourselves in winter. Plants use solar energy to perform photosynthesis. Now, with the help of photovoltaic cells, solar energy can be converted into electricity. These cells use special kind of materials to capture solar energy and then convert the energy into electricity. This technology is extremely useful for remote areas and for places where supply of power through grid or power lines is either not possible or proves very costly. This technique is also totally free from pollution. In recent years India is taking efforts to increase the power generation through solar. India is also leading an international body called International Solar Alliance (ISA).

V MINI-HYDEL PLANTS

In mountainous regions, streams can be found almost everywhere. A large percentage of such streams are perennial. Mini-hydel plants use the energy of such streams to move small turbines. The turbines generate electricity which can be used locally. Such power plants are more or less environment-friendly as they do not change the land use pattern in areas where they are located; they generate enough power to meet local demands. This means that they can also do away with the need for large scale transmission towers and cables and avoid transmission loss.

VI TRADITIONAL KNOWLEDGE AND PRACTICES

Traditionally, Indian people have been close to their environment. They have been more a component of the environment and not its controller. If we look back at our agriculture system, healthcare system, housing, transport etc., we find that all practices have been environment friendly. Only recently have we drifted away from the traditional systems and caused large scale damage to the environment and also our rural heritage. Now, it is time to go back. One apt example is in healthcare. India is very much privileged to have about 15,000 species of plants which have medicinal properties. About 8,000 of these are in regular use in various systems of treatment including the folk tradition. With the sudden onslaught of the western system of treatment, we ignored our traditional systems such as Ayurveda, Unani, Tibetan and folk systems. These healthcare systems are in great demand again for treating chronic health problems. Now days every cosmetic produce — hair oil, toothpaste, body lotion, face cream and what not — is herbal in composition. Not only are these products environment friendly, they are relatively free from side effects and do not involve large-scale industrial and chemical processing.

VII BIOCOMPOSTING

In our quest to increase agricultural production during the last five decades or so, we almost totally neglected the use of compost and completely switched over to chemical fertilisers. The result is that large tracts of productive land have been adversely affected, water bodies including ground water system have suffered due to chemical contamination and demand for irrigation has been going up year after year.

Farmers, in large numbers all over the country, have again started using compost made from organic wastes of different types. In certain parts of the country, cattle are maintained only because they produce dung which is an important fertiliser and soil conditioner.

Earthworms can convert organic matter into compost faster than the normal composting process. This process is now being widely used. Indirectly, the civic authorities are benefited too as they have to dispose reduced quantity of waste.

VIII BIOPEST CONTROL

With the advent of green revolution, the entire country entered into a frenzy to use more and more chemical pesticides for higher yield. Soon, the adverse impacts began to show; food products were contaminated, soil, water bodies and even ground water were polluted with pesticides. Even milk, meat and fishes were found to be

contaminated. To meet this challenge, efforts are on to bring in better methods of pest control. One such step is the use of pesticides based on plant products. Neem trees are proving to be quite useful. Several types of pest controlling chemicals have been isolated from neem and these are being used. Mixed cropping and growing different crops in consecutive years on the same land have also helped farmers. In addition, awareness is spreading about various animals and birds which help in controlling pests. For example, snakes are one of the prime group of animals which prey upon rats, mice and various other pests. Similarly, large varieties of birds, for example, owls and peacocks, prey upon vermin and pests. If these are allowed to dwell around the agricultural areas, they can clear large varieties of pests including insects. Lizards are also important in this regard. We need to know their value and save them. Sustainable development has become a catch phrase today. It is 'indeed' a paradigm shifts in development thinking. Though it has been interpreted in a number of ways, adherence to this path ensures lasting development and non-declining welfare for all.

IX CONCLUSION

In conclusion, the intricate relationship between environmental protection and sustainable development underscores the imperative for conscientious global efforts. Our exploration of various environmental challenges and the innovative strategies discussed throughout this article illustrates the pressing need for a harmonious balance between human activities and the preservation of our planet. The 21st century demands a paradigm shift in our approach towards development—one that integrates ecological considerations, embraces technological advancements, and fosters a collective responsibility for the well-being of the environment. As we navigate the complexities ahead, the vision of a sustainable future necessitates collaborative endeavors, informed decision-making, and a steadfast commitment to nurturing a world where environmental integrity and human progress coexist. It is through these collective actions that we can aspire to leave a lasting legacy of stewardship for generations to come.²

REFERENCES

- [1] NCERT, Environment and Sustainable Development, NCERT, Page 163-175.
- [2] Annual Report 2022-23, Ministry of Environment, Forest and Climate Change, Government of India.