



Achieving Environmental Sustainability for Future Generations: An Analysis of Sustainable Development Strategies

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Abstract: Sustainable development is a concept that emphasises meeting the needs of the present without compromising the ability of future generations to meet their own needs. It seeks to balance economic, social and environmental goals to create a harmonious and equitable society that preserves natural resources and ecosystems. This paper discusses the importance of sustainable development for environmental protection and the challenges of environmental sustainability. According to the Environment Performance Index (EPI) report published in the year 2022, India secured the lowest rank, while Denmark stood at the first position. This is a clear indication that the people of India need to be conscious of the deteriorating environmental conditions. The paper also examines the role of COVID-19 in achieving the Sustainable Development Goals. The study also examines the importance of community participation and education, awareness in sustainable development efforts. The study concludes with some suggestions for using the Sustainable Development Goals to advance sustainability.

Keywords: sustainable development, future generations, environment, Challenges, awareness.

1. INTRODUCTION :

Sustainable development is a concept that involves the idea of meeting the needs of the present without compromising the ability of future generations to meet their own needs. It entails striking a balance between social, economic, and environmental factors in order to build a long-lasting, peaceful, and equitable society. The World Commission on Environment and Development (WCED) published the Brundtland Report, "Our Common Future," in 1987, which popularised the idea of sustainable development. The report defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Quazi,2001). Implementing laws, plans, and procedures that support social justice, economic growth, and environmental preservation in a balanced and integrated way is a common way to achieve sustainable development. It is now regarded as a tenet by companies, governments, and other organisations that aim to tackle the problems of the twenty-first century in a way that guarantees a higher standard of living for everybody while honouring the limitations of the earth's natural systems. A number of factors contribute to sustainable development, including global cooperation, interconnected goals, and sustainability of the economy, society, and environment (Tiwari and Gupta,2023).

ENVIRONMENTAL PRESERVATION AND SUSTAINABLE DEVELOPMENT:

Understanding that the Earth's ecosystems provide essential services like clean air and water, fertile soil, climate regulation, and habitat for diverse species, environmental preservation refers to the protection and conservation of natural resources, ecosystems, and biodiversity with the aim of maintaining their health, integrity, and sustainability for present and future generations. Environmental preservation's goal is to ensure the sustainability of the Earth's ecosystems and resources for current and future generations. This proactive and preventive approach to environmental management is often seen as environmental preservation. It is Consistent with the principles of sustainable development, striving to balance human needs with the health of the planet to ensure a sustainable and viable future for all living organisms (Wu, et.al., 2022).



Environmental preservation include:

- Conservation of Biodiversity
- Protection of Natural Resources
- Mitigation of Pollution
- Ecosystem Restoration
- Climate Change Mitigation
- Preservation of Wilderness Areas
- Sustainable Agriculture and Fisheries
- Waste Reduction and Recycling
- Environmental Education and Awareness
- International Cooperation:

In the context of protecting the environment, sustainable development is extremely important and has many facets. Global issues such as poverty and marginalisation, joblessness, climate change, conflict and humanitarian assistance, establishing inclusive and peaceful societies, fortifying institutions of governance, and upholding the rule of law are the primary obstacles to sustainable development.

2. REVIEW OF LITERATURE:

Roy, Arijshnu and Permanick (2019) analysed the significance of sustainable development in the context of India. The word sustainable development has gone through many deviations in its demarcations and at present United Nation gives clarification as per 2030 agenda. In their research paper authors also examined the performance of Indian states to achieve sustainable development goals. At the end of the paper steps taken by the Indian government and measures of sustainable development have also been discussed.

Chaudhry, 2019 explored the systematic review of sustainable development initiatives in India. In this study the author has reviewed forty articles related to sustainable development in India. To make the study more authentic the author has used multiple sources such as government websites. The study noticed that there is a dearth of studies that have been conducted on the sustainable development initiatives in India.

A study conducted by Koch and Ahmad, 2018 examined the parameters of inclusiveness, safety and resilience of sustainable cities in India. Ramchndarn et al. 2016, studied scenarios of sustainable development goals in the coastal districts of Tamil Nadu. Author has examined the variables of ground water, fisheries and agriculture. He identified the most vulnerable variables of each district and also suggested the measure to be taken on priority basis.

Kaur and Prashanthi, 2015 investigated the funding problem due to the large scale infrastructure projects related to sustainable development goals. In another study the potential of sustainable mining activities in India and problems and prospects of mining in India discussed by Gupta and Raghuwanshi, 2015.

3. OBJECTIVE OF THE STUDY: The main objective of the study is to analyse the role of sustainable development goals in achieving environmental sustainability.

IMPORTANCE OF SUSTAINABLE DEVELOPMENT FOR PRESERVING THE ENVIRONMENT:

- **Balancing human needs and environmental health:** The goal of sustainable development is to meet current needs without compromising the capacity of future generations to meet their own. This involves striking a balance between environmental health and human needs. Maintaining this equilibrium is essential to prevent environmental degradation brought on by human activity from reaching an unsustainable level (Dogaru, 2013).
- **Preservation of Natural Resources:** In order to avoid resource depletion and overuse, sustainable development places a strong emphasis on the prudent and economical use of natural resources. It promotes actions that preserve biodiversity and the integrity of ecosystems (Dogaru,2013).
- **Mitigating Climate Change:**Climate change, largely driven by human activities, poses a significant threat to the environment. Sustainable development focuses on reducing greenhouse gas emissions, promoting renewable energy sources, and fostering climate-resilient practices to address and mitigate the impacts of climate change (Wu, et.al., 2022).
- **Preserving Biodiversity:** The significance of biodiversity for ecosystem stability and human well-being is acknowledged by sustainable development. It strives to safeguard a variety of species and ecosystems by encouraging conservation initiatives and sustainable land-use practices (Wu, et.al., 2022).
- **Preventing Environmental Degradation:** Deforestation, pollution, and habitat destruction are examples of unsustainable development practices that can cause irreversible environmental degradation. Sustainable development



uses eco-friendly methods and responsible resource management to stop and even reverse this kind of degradation (Wu, et.al., 2022).

- **Promoting Circular Economy:** Sustainable development encourages the adoption of a circular economy, where resources are used efficiently, waste is minimised, and products are designed for reuse and recycling. This approach reduces the environmental impact of production and consumption (Wu, et.al., 2022).
- **Enhancing Resilience to Environmental Changes:** The goal of sustainable development strategies is to increase ecosystems' and communities' resilience so they can adjust to changing environmental conditions. This entails putting into practice sustainable farming methods, conserving water, and creating infrastructure that can withstand the effects of climate change (Dogaru,2013).
- **Ensuring Social Equity:** Social equity and environmental preservation are closely related. By ensuring that the advantages of development are distributed fairly among all facets of society, sustainable development aims to lower the likelihood of environmental injustices and disproportionate effects on marginalised groups (Dogaru,2013).
- **Global Collaboration for Environmental Goals:** Many environmental challenges, such as climate change, air and water pollution, and deforestation, are global in nature. Sustainable development fosters international cooperation and collaboration to address these issues collectively, recognizing that environmental preservation requires coordinated efforts on a global scale (Dogaru,2013).
- **Long-Term Perspective:** Sustainable development recognizes that short-term gains shouldn't come at the expense of the environment's capacity to support life in the future by adopting a long-term perspective. For ecosystems to remain resilient and healthy over time, this viewpoint is essential (Dogaru,2013).

In essence, sustainable development is a framework that combines social, economic, and environmental factors in order to support a resilient and well-rounded approach to human progress. It emphasises the interdependence of these components and the necessity of making morally and responsibly-guided decisions in order to preserve the health of the planet for present and future generations.

ENVIRONMENTAL PERFORMANCE INDEX (EPI): The Environmental Performance Index is a tool developed by the Yale Environmental Law and Policy Center and the International Earth Science Information Network Center at Columbia University, which evaluates the environmental performance of countries based on various indicators, including air quality, water resources, biodiversity and climate change. Rankings may change annually based on updated data and methodology.

ENVIRONMENT PERFORMANCE INDEX (EPI) AND INDIA –A report of EPI published in the year 2024. The EPI provides a quantitative basis for comparing, analysing, and understanding environmental performance for 180 countries.

Table1. 2024 EPI Results

Country	Rank	EPI score
Estonia	1	75.7
Luxembourg	2	75.1
Germany	3	74.5
Finland	4	73.8
Bangladesh	175	28.1
India	176	27.6
Pakistan	179	25.5
Vietnam	180	24.6

Source: EPI,2024.

The results of the EPI, 2024 have been shown in table 1, it can be easily seen that Estonia achieved first rank with the highest EPI score 75.7. While it is very disappointing to see that India stood at 176th rank with a 27.6 EPI score. Thus, it is very clear that India is facing several environmental issues such as bad air quality, water resources, biodiversity loss etc. Environmental issues are one of the primary causes of disease, health issues and long-term livelihood impact. Whereas, the neighbouring countries such as Pakistan and Bangladesh have also deteriorating environmental conditions but according to EPI ranking environmental conditions of Bangladesh is slightly better than India.



SUSTAINABLE DEVELOPMENT GOALS: The Brundtland Commission's recommendations led to the adoption of 17 Sustainable Development Goals (SDG) by the UN in 2015. The 2030 Agenda for Sustainable Development includes the Sustainable Development Goals (SDGs), which are designed to tackle a number of global issues such as poverty, inequality, environmental degradation, climate change, peace, and justice. By 2030, the main goal is to build a more prosperous, equitable, and sustainable world. Every goal has distinct objectives, and advancement toward these objectives is tracked internationally (Chams and Blandon,2019).



COVID-19 AND SUSTAINABLE DEVELOPMENT GOALS: COVID-19 is an infectious disease caused by a newly discovered virus corona. The first time when the World Health Organisation (WHO) came to recognize this deadly virus was the year of 2019 (Agnihotri and Raghunath, 2021). This pandemic had significantly influenced the sustainable development goals. It is observed that in the beginning of the pandemic, some indirect effects of Covid-19 were noticed in two ways. The positive effects include the reduction of noise level and environmental pollution and also the improvement in air quality. While negative effects include waste generation due to the increasing use of plastic and not proper recycling and waste management (Martin et.al., 2022).

CHALLENGES TO ENVIRONMENTAL SUSTAINABILITY:

There are many obstacles to environmental sustainability that come from economic activity, global trends, and human activity. Among all the difficulties, some of the most important ones are resource depletion, waste management, deforestation, pollution, climate change, and biodiversity loss. Climate change, which is fueled by an increase in greenhouse gas emissions from human activities like burning fossil fuels, deforestation, and industrial processes, is arguably the most urgent challenge. Biodiversity is being lost as a result of human activities such as pollution, habitat destruction, deforestation, and climate change. Pollution endangers wildlife, disturbs ecosystems, and has a negative effect on human health. In addition to these difficulties Environmental issues are made worse by ineffective waste management techniques. Governments, corporations, communities, and individuals must all work together to promote sustainable practices, conservation, and other goals in order to effectively address these issues (Arora et. al.,2018).

ROLE OF TECHNOLOGY AND INNOVATION IN ACHIEVING ENVIRONMENTAL SUSTAINABILITY:

Technology and innovation play a crucial role in achieving environmental sustainability by providing solutions to address environmental challenges and promote more sustainable practices. Renewable Energy, Energy Efficiency, Green Transportation, Circular Economy, Precision Agriculture, Waste Management Technologies, Environmental Monitoring, Water Management, Blockchain for Sustainability, Climate Modeling and Prediction, Green Building Technologies are some key ways in which technology and innovation contribute to environmental sustainability. The integration of technology and innovation in various sectors is essential for achieving a more



sustainable future. Collaboration between governments, industries, research institutions, and the public is crucial to harness the full potential of technology for environmental sustainability (Webersik and Wilson, 2009).

IMPORTANCE OF COMMUNITY INVOLVEMENT AND EDUCATION, AWARENESS IN SUSTAINABLE DEVELOPMENT EFFORTS.

Education, awareness, and social responsibility play pivotal roles in fostering a culture of sustainability. By promoting understanding, changing behaviours, and encouraging responsible actions, these elements contribute to the development of a more environmentally conscious society. Here are some key points which describe the importance of their roles (Brown and Lall, 2006).

- **Education:** Education includes three aspects: curriculum integration, environmental literacy and higher education initiatives.
 - **Curriculum Integration:** Integrating sustainability concepts into educational curricula at all levels helps raise awareness and instil a sense of environmental responsibility from an early age. This includes topics related to ecology, conservation, climate change, and sustainable development.
 - **Environmental Literacy:** Promoting environmental literacy ensures that individuals have the knowledge and skills to make informed decisions about their impact on the environment. This can be achieved through formal education programs, workshops, and outreach initiatives.
 - **Higher Education Initiatives:** Universities and educational institutions can lead the way by incorporating sustainability into various disciplines, fostering research on sustainable practices, and promoting environmentally focused degree programs.
- **Awareness:** Awareness campaigns, both online and offline, can educate the public about environmental issues, sustainable practices, and the consequences of unsustainable behaviours. These campaigns can be led by governments, non-profit organisations, and businesses. Media and Community Engagement also play a crucial role in shaping public perceptions and influencing behaviour. Leveraging media channels, including news outlets, documentaries, and social media, helps disseminate information on environmental challenges and solutions. Local initiatives and community-based programs create awareness and build a sense of shared responsibility.
- **Social Responsibility:** Corporate Responsibility, Individual Responsibility and Government Policies play a significant role in influencing environmental sustainability. Encouraging individuals to adopt sustainable habits in their daily lives, such as reducing waste, conserving energy, and choosing environmentally friendly products, fosters a collective sense of responsibility for the environment.
- **Behavioural Change:** behavioural changes include the following aspects:
 - **Incentives and Rewards:** Providing incentives for sustainable behaviours, such as tax benefits, discounts on eco-friendly products, or recognition for environmentally conscious initiatives, can motivate individuals and organisations to adopt more sustainable practices.
 - **Role Modelling:** Influential figures, leaders, and celebrities can serve as role models by publicly embracing and promoting sustainable living. Their actions and endorsements can inspire others to follow suit.
- **Partnerships and Collaboration:** Collaborations between government, businesses, non-profit organisations, and educational institutions can amplify the impact of sustainability initiatives. Collective efforts are often more effective in bringing about positive change. Global challenges like climate change require international cooperation. Encouraging countries to work together on environmental agreements and initiatives promotes a shared sense of responsibility for the planet (Agnihotri, 2024).

Fostering a culture of sustainability requires a multi-faceted approach that engages individuals, communities, businesses, and policymakers. By combining education, awareness, and social responsibility, societies can create a sustainable mindset that leads to positive environmental outcomes.

POLICY IMPLICATIONS AND SUGGESTIONS: From the above discussion, it is clear that broad and coordinated efforts across multiple sectors are needed to achieve the Sustainable Development Goals (SDGs) and maintain environmental sustainability. Here are some suggestions on how to use the SDGs to advance sustainability:

- The government should ensure that economic, social and environmental aspects are integrated into development plans to achieve balance.
- Government should make more efforts to promote the use of renewable energy sources, such as solar, wind, hydro, and geothermal power.



- Local bodies should Implement comprehensive waste management systems that prioritise recycling, composting, and waste-to-energy technologies.
- Production units should Implement comprehensive waste management systems that prioritise recycling, composting, and waste-to-energy technologies.
- People should reduce single-use plastics and minimise waste generation and be aware of recycling, composting, and waste-to-energy technologies.

4. CONCLUSION: At the end we can conclude that the environment is under more stress as a result of economic development, which aims to increase production of goods and services to meet the needs of a growing population. There was a shortage of environmental resources during the early phases of development. The demand for environmental resources is rising globally, but there is a limited supply because of misuse and overuse. The goal of sustainable development is to advance the type of growth that minimises negative effects on the environment and satisfies current needs without jeopardising the ability of future generations to satisfy their own.

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