



International Journal of Advanced Research in Arts, Science, Engineering & Management

Volume 10, Issue 4, July 2023



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 6.551

What are the Strategies in Changing Environmental Conditions for Development of Sustainable Environment

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ABSTRACT: Sustainable Development & Environmental Issues in India | RBI Grade-B Main

Achieving economic development is crucial for any country. But is it worth it if it comes at the cost of environmental degradation? We were made aware of the ill-effects of environmental degradation in our high schools. But what about the economic implications of such issues? Or the benefit that sustainable development can offer to any economy?

This article will break down the meaning & function of 'environment', the various environmental issues & concerns India is facing at the moment; and assess the alternative that sustainable development offers.

KEYWORDS: sustainable environment, changing, strategies, development, implications, industrialization

I.INTRODUCTION

Environment: Meaning & Function

The term 'environment' refers to the natural setting in which we live, which is bestowed to us by our ancestors. It encompasses the interaction between biotic (the living components, including plants, animals, birds, etc.) and abiotic components (land, air, water, etc.) that co-exist to form this natural-setting.

The four major functions served by the environment are: supply of resources, sustenance of life, providing aesthetic value, and assimilation of waste generated by various production & consumption activities. [1,2]

Environmental Issues in India

In India, factors like rapid growth of population, urbanization, industrialization, and poverty, among others are responsible for harming the environment. Some of the severe environmental issues prevalent in India are

1. Degrading Air Quality Index
2. Rampant Environmental Degradation
3. Loss of Biodiversity
4. Urbanization in the Himalayas
5. Loss of Resilience in Ecosystems
6. Lack of Waste Management
7. Depletion of Resources (land, air, water)
8. Growing Water Scarcity

There are many more such issues that need to be addressed to maintain a sustainable environment so as to ensure consistent economic development.

Governmental Initiatives to Tackle Environmental Degradation

While the cooperation of every citizen of the country is essential for safeguarding the environment, governments have a huge role to play in helping find solutions to the problems. The government of India has taken various steps to safeguard the environment. Some of them are listed below:

1. Swachh Bharat Mission
2. Green Skill Development Programme



3. Namami Gange Programme
4. Compensatory Afforestation Fund Act (CAMPA)
5. National Mission for Green India
6. National River Conservation Programme
7. Conservation of Natural Resources & Eco-systems

Sustainable Development: Meaning & Features

“Sustainable Development is the development that meets the needs of the present generation without compromising with the needs of future generations.” This definition was put forward by the Brundtland Commission in its report “Our Common Future” in 1987. It calls for a concerted effort to build an inclusive, sustainable, and resilient ecosystem for the people and the planet.[3,4]

The main features of sustainable development include

1. Increase in per capita income
2. Judicious use of natural resources
3. Preserving the resources for future generations

Sustainable Development Goals: The United Nations

As an affirmative action towards tackling the global environmental crisis that involves global warming, climate change, and ozone layer depletion, the United Nations adopted 17 Sustainable Development Goals (SDG) and 169 targets as part of the United Nations 2030 Agenda. The 17 Sustainable Development Goals are:

Goal 1	End poverty in all its forms everywhere
Goal 2	End hunger, achieve food security and improved nutrition, and promote sustainable agriculture
Goal 3	Ensure healthy lives and promote well-being for all at all ages
Goal 4	Ensure inclusive and equitable quality education, and promote lifelong learning opportunities for all
Goal 5	Achieve gender equality and empower all women and girls
Goal 6	Ensure availability and sustainable management of water and sanitation for all
Goal 7	Ensure access to affordable, reliable, sustainable, and modern energy for all
Goal 8	Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all
Goal 9	Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation
Goal 10	Reduce inequality within, and among, countries
Goal 11	Make cities and human settlements inclusive, safe, resilient, and sustainable

Goal 12	Ensure sustainable consumption and production patterns
Goal 13	Take urgent action to combat climate change and its impacts
Goal 14	Conserve and sustainably use the oceans, seas, and marine resources for sustainable development
Goal 15	Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss
Goal 16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable, and inclusive institutions at all levels
Goal 17	Strengthen the means of implementation and revitalize the global partnership for sustainable development

Measures Taken by India To Implement Sustainable Development

NITI (National Institution for Transforming India) Aayog, the newly-formed commission that replaced the 65-year old Planning Commission in India, is entrusted with the task of coordinating SDGs in India.[5,6]

States are also advised to undertake similar mapping, including visioning, planning, budgeting, and developing implementation & monitoring systems for the state-sponsored schemes that are being implemented to fulfill the SDGs.

In addition to that, the Ministry of Statistics & Programme Implementation is engaged in the process of building key indicators to monitor the implementation of SDGs.

Since 2015 (when the United Nations, along with other countries, adopted the SDGs) the Indian government has launched several flagship programs that are at the heart of SDGs. Some of these include Swachh Bharat Mission, Skill India, Make In India, Digital India, etc.

Challenges in Attaining SDGs For India

The four major challenges for attaining SDGs in India are discussed below:

1. **Defining the Key Indicators:** One of the major challenges for India is to devise suitable indicators to effectively assess the progress of SDGs. The key definitions for areas, such as poverty, hunger, safe drinking water, education need to be revised in order to effectively implement the SDGs.
2. **Financing Sustainable Development Goals:** Despite India's best efforts and making poverty alleviation a priority since the Fourth 5-year Plan, India has the highest number of people living below the poverty line. At today's level of investment, there is a huge funding shortfall that hinders the progress of attaining SDGs.[7,8]
3. **Monitoring & Ownership of Implementation Process:** Although NITI Aayog is expected to play an important role in taking ownership of the implementation process, the members of the Aayog have expressed their concerns time and again about the limited manpower they have to handle such a Herculean task.
4. **Measuring the Progress:** The government of India has admitted the non-availability of data, especially from the sub-national areas. Incomplete coverage of administrative data is yet another factor that has hampered the measurement of progress for even the Millennial Development Goals (MDGs) that were the precursor to SDGs.



This is an important area for RBI Grade-B Exam. Carefully go through each of the concepts and develop a thorough understanding of the topic. Questions from topic can also be asked in Essay Writing for RBI Grade-B Main.[9,10]

II.DISCUSSION

Climate change is perhaps the greatest threat to sustainable development of the 21st century, and the global concern about this phenomenon paved the way for the adoption of the Paris Agreement by the COP 21 in December 2015. The changing climate itself; the adaptation to these changes by the people, countries and economic sectors most affected; and the mitigation measures required to reduce, if not arrest global warming and to move towards low-carbon economies have far-reaching implications for economic and social development, for production and consumption patterns and, naturally, for employment, productivity and incomes. The effects of climate change will alter the structure of employment; new jobs and new job families will emerge, others will disappear or become unsustainable, and enterprises must find ways to organize work and production differently. Moreover, the impacts of climate change, and mitigation or adaptation measures that exclude women in decision-making and overall ignore their specific needs, can compound the challenges of achieving gender equality in the world of work. At least half of the global workforce – the equivalent of 1.5 billion people – will be affected by the transition to a greener economy [11,2]. It is against this backdrop that ILO has included a “Green Initiative ” into the suite of seven Centenary Initiatives launched by the Director-General in 2012. The Green Initiative aims to scale up the ILO’s office-wide knowledge, policy advice and tools for managing a just transition to a low-carbon, sustainable future.

The objective of the Green Initiative is to equip the actors of the world of work with the understanding of the challenges and opportunities of the coming transition, and to help them take up the active role they must play in managing this change. It will further build the case that decent work approaches and social dialogue are indispensable for truly transformative change.

To that end, the ILO will continue to strengthen its role as a unique policy reference on the connections between climate change, low-carbon and resource efficient strategies, on the one hand, and employment, social protection, rights, equality and social dialogue on the other. Building on the existing Green Jobs Programme and integrating with ILO country programmes and strategic outcomes, the Green Initiative catalyses the ILO’s work in four broad areas:

- Global level: to boost the ILO’s standing as the global centre of excellence on current and future implications for the world of work, climate change and the transition to a greener economy.
- National level: to enable countries to adopt and implement employment and social policies in support of national commitments on climate change, using the Just Transition policy framework and the related ILO guidance [13,14].
- Sectors and enterprises: to incorporate ILO core values and practical approaches in global, regional, sectoral and industry policy frameworks for environmental sustainability.
- ILO policies and practices: to increase the understanding and use by member states, social partners, relevant UN agencies and international development partners of the importance of employment, social protection and equality in the transition to a greener economy (26).

The ILO Green Jobs programme promotes the “greening” of enterprises, workplace practices and the labour market as a whole. These efforts create decent employment opportunities, enhance resource efficiency and build low-carbon sustainable societies. Green jobs are defined as “decent jobs that contribute to preserve or restore the environment”, be they in traditional sectors such as manufacturing and construction, or in new, emerging green sectors such as renewable energy and energy efficiency. Such jobs help to:

- improve energy and raw materials efficiency;
- limit greenhouse gas emissions;
- minimize waste and pollution;
- protect and restore ecosystems; and
- support adaptation to the effects of climate change.



ILO's work on Green Jobs is guided by the Conclusions concerning achieving decent work, green jobs and sustainable development adopted by the 102nd ILC in 2013 (27), further concretized through the "Guidelines for a just transition towards environmentally sustainable economies and societies for all", adopted in November 2015 by the 325th session of the ILO Governing Body.

ILO's Green Jobs Programme

- provides evidence based policy advice to assess the impact of economic and environmental policies on employment and social outcomes for the formulation and implementation of effective national or sectoral policies that create green jobs, foster social inclusion and improve sustainability;
- builds capacity by providing stakeholders with opportunities to learn about key green jobs concepts, approaches, tools and best practices; [15,16]
- focuses on enterprise and skills development for technical skills, environmental sector employment, green business start-ups, greening enterprises and sectoral interventions in construction, waste, energy, tourism, forestry and agriculture, among others;
- works towards building a broader knowledge base by participating in global policy research and knowledge networks; and
- advocates for the integration of decent work into climate agendas by engaging in dialogues and key negotiation processes [17,18]

The centrality of environmental sustainability for ILO's work is further underlined by the fact that the topic has been proposed as one of the Office's cross-cutting policy drivers for the 2018-19 Programme and Budget.
DWA-SDG Relationship

Sustainable development is only possible with the active engagement of the world of work. The actors in the world of work – governments, workers and employers – can be agents of change, able to develop new ways of working that safeguard the environment for present and future generations, eradicate poverty and promote social justice by fostering sustainable enterprises and creating decent work for all.

Environmental sustainability constitutes one of the three dimensions of sustainable development, and several SDGs are considered primarily "environmental": SDG 11 (human settlements), SDG 12 (sustainable production and consumption), SDG 13 (climate change), SDG 14 (oceans) and SDG 15 (ecosystems). The ILO can contribute in one way or another to the achievement of all those goals, as explained in a recent brochure [19,20] For the purpose of this publication, however, SDG target 8.4 ("improve global resource efficiency in consumption and production, and decouple economic growth from environmental degradation...") appears the most relevant.

Environmental sustainability is a precondition for sustainable development and decent jobs. Progress towards the "SDGs for decent work for all" objective will require societies to move towards sustainable consumption and production patterns that safeguard the natural environment. This explains why environmental sustainability has been proposed as a cross-cutting policy driver; in addition, policy outcomes 4 (Enterprises) and 10 (workers and employers) have explicitly prioritized SDG target 8.4 within their implementation strategies.

Cross-cutting policy drivers

In addition to serving as a cross-cutting policy driver, social dialogue, with the engagement of workers' and employers' organizations at all levels, is considered an essential mechanism for developing strategies that ensure that the transition towards a greener economy is both efficient and equitable. Moreover, the ILO's green jobs programme distinguishes itself from other environmental job creation programmes in that it incorporates all relevant labour standards in its implementation. In so doing, it supports a just transition to a green economy.

As a means of promoting employment and the overall functioning of labour markets in the green economy, the ILO supports the integration of gender equality and non-discrimination into the broader policy agenda (climate-resilient strategies, sustainable growth and poverty reduction). Strategies and approaches to develop the green economy must therefore be fully gender mainstreamed. The connection between gender equality and green jobs is explained in greater



detail in a dedicated ILO brochure (30). The important role of indigenous peoples in this context is also highlighted in an ILO brochure .

Partnerships

The ILO Green Jobs programme has established (or takes part in) a number of multi-agency networks and partnerships , namely

- the Partnership for Action on Green Economy (PAGE)
- the Green Growth Knowledge Platform (GGKP) ,
- the Green Jobs Assessment Institutions Network (GAIN)
- the International Institute for Sustainable Development (IISD)
- development partners supporting the Green Jobs programme include Canada, Finland, Norway
- the UN (though joint UN programmes at the country level)18,19]

ILO Capacity

The ILO Green Jobs programme is coordinated by a relatively small team based at headquarters within the Enterprises Department, and is represented in the various regions by technical specialists working on enterprise development, and by development cooperation experts working for Green Jobs-related projects. In addition, many other ILO specialists and experts, working in areas such as employment policy, employment-intensive investments, enterprise and cooperative development, working conditions, skills development, workers' and employers' activities, and sectoral activities, contribute to ILO's broader work on environmental sustainability.

III.RESULTS

On average, we waste up to 30 gallons of water unknowingly every day. If we keep going at this pace, we'll end up using freshwater resources way faster than anticipated. The current drought in the UK is a clear indication in this regard. Even though it is more of a climate change consequence, it's closely related to environmental sustainability, which means fulfilling the current needs without compromising the needs of future generations.

Three pillars govern sustainability. These include social equity, economic viability, and environmental protection. Similarly, there are six factors involved in this concept, which are climate change, environment, innovation, technology, people, and ethics.[15,16]

Examples of environmental sustainability are all around us. Starting from something as small as throwing waste items in the correct bin to something as major as having a circular supply chain.

Similar to other areas, environmental sustainability also requires legislation, which varies from country to country. In this post, we'll cover all this and more, so let's get started!

As per the United Nations (UN) World Commission on Environment and Development (WCED), environmental sustainability entails living in a way such that future generations have better, or at least equal, natural resources available than the current generations.

Even though there are various minor variations of this concept, it's generally accepted throughout the world. The alternate versions usually are extended definitions that include other perspectives, such as human well-being, a clean and healthy environment, and natural beauty and wildlife protection.

In 1987, the universally accepted and famous sustainability definition provided by the 'Brundtland Commission' in our 'Common Future' was released:

'Meeting the needs of the present without compromising the ability of future generations to meet their own needs.'

Alternate Definition: According to Syed Shameer and Prasad Tollamadugu N.V.K.V in Recent Developments in Applied Microbiology and Biochemistry, environmental sustainability is the rate at which renewable resources are used, pollution happens, and non-renewable resources deplete, so that the natural resources last indefinitely because they are crucial for the survival of living organisms.

The three pillars of sustainability are social equity, economic viability, and environmental protection. Each of these pillars has six broad topics within them.[11,12]



Three pillars of sustainability | Image via EPA

Social equity governs the societal aspect of sustainability. It includes that all members of society throughout the world have fair access to resources and opportunities. In addition to this, it also involves the full participation of everyone in a healthy social life and culture. All in all, it's centered around liveability and viability.

The six topics of social equity include:

- Environmental justice
- Human health
- Participation
- Education
- Resource security
- Sustainable communities

The second pillar of sustainability is economic viability, which involves supporting the economic growth and financial stability of communities and individuals without compromising on their social, environmental, and cultural aspects.

The six topics within economic viability include:

- Jobs
- Incentives
- Supply and demand
- Natural resource accounting
- Costs
- Prices



As the name indicated, the environmental protection pillar of sustainability involves ensuring that the natural environment, including natural resources, air, land, and ecosystems, are healthy, protected, and restored (if necessary).

The six factors within environmental protection are:

- Ecosystem services
- Green engineering and chemistry
- Air quality
- Water quality
- Stressors
- Resource integrity

There are six factors of sustainability: climate change, environment, innovation, technology, people, and ethics.

Climate Change

Climate change tops almost all the sustainability lists as it is one of the biggest challenges faced by our planet today. It started due to the excessive greenhouse gas (GHGs) emissions because of the unsustainable fossil fuel burning and usage for energy purposes.

The current global warming trend is at a rate that hasn't been seen in numerous recent millennia. Scientists believe it is because of the heat-trapping characteristic of GHGs since the mid-19th century.

IV.CONCLUSIONS

Environment

This factor of sustainability is all about protecting our environment by developing sustainable methods to switch from extensive usage of natural resources, such as wood, oil, or water. It's about moderation and reducing our unchecked consumption of natural resources so that they are available for the coming generations. [17,18]

Innovation

Given the current population, and our never-ending requirements, we need innovations to cater to them, without burning through natural resources.

These new developments don't necessarily need to be new or technologically advanced, they can be something as simple as opting for natural materials for construction or using locally sourced materials for manufacturing.

Technology

Innovation and technologies, in most cases, go hand in hand. We can't achieve a truly sustainable planet for the ever-increasing population without developing new renewable technologies and adopting them on a large scale, to cater to the needs of people without polluting the environment and causing further damage to the climate.

An excellent renewable technology example in this regard is Infarm, an agri-tech startup, that saves water, doesn't use chemical pesticides, and reduces transportation while farming through high-capacity indoor farming systems.

People

We, humans, are, unfortunately, instinctively, concerned more about our facilities and comfort than the planet or the environment.



Without changing our daily practices, we can't achieve true sustainability.

The recent heat wave shows that we no longer need to think about our future generations as we, ourselves, are suffering from the consequences of our atrocities on the climate and the planet.

Keeping this in view, to keep Earth liveable, we have to change our lifestyles and learn how to live in a more sustainable and environmentally friendly manner.

Ethics

Ethics is about accountability as an individual and as a part or owner of an organization. Whether it's our professional or personal life, we have to lead it in such a manner that we treat its other inhabitants with respect, be it fellow humans, flora, or wildlife!

On a personal level, following a sustainable diet, doing sustainable fashion, and ensuring minimal usage of fossil fuels and their products are some of the main forms of ethical sustainability.

In terms of business, ensure that you communicate transparently about your business practices and strive to make them more sustainable and environmentally friendly.

How Environmental Sustainability Works

There are numerous different definitions and interpretations of environmental sustainability, which often lead to many questions as to how we should contribute, as individuals and through our businesses, towards the remediation and betterment of the environment.

For example, how shall we change our lifestyles so that they have minimal impact on the environment? Or how shall we do business to ensure it doesn't harm the planet?

Many believe that business can serve as a major force behind bringing positive change. Some say finance and a positive environmental change can go hand in hand if the institutions become sensitive toward the effect of their activities on the planet.

Here are a few ways in which we can sustainably lead our lives so that the planet is conserved for future generations:

- Modifying living conditions by opting for sustainable societies in the form of eco-villages and sustainable cities.
- Promoting business practices that have sustainability at their forefronts, such as sustainable architecture and renewable energy production.
- Innovating and developing new technologies, such as carbon-negative transportation and climate-responsive buildings.
- Opting for a sustainable lifestyle that uses minimal natural resources and doesn't involve a high carbon footprint. [19,20]

What are some Examples of Environmental Sustainability?

Common examples of environmental sustainability include sustainable architecture, sustainable forestry, sustainable construction, efficient waste management, sustainable water management, and sustainable energy sources.

Sustainable Agriculture

Repeated farming of the same crops on the same area of the land reduces the soil quality, which in return, depletes the farmed crop quality. To counter this, farmers often take help from pesticides, herbicides, and fertilizers, that leach into the land or run off into the waterways causing eutrophication.



Sustainable agriculture ensures that the farm produces long-term crops and that the agricultural practices and livestock don't negatively impact the environment.

Common examples of sustainable agriculture include crop rotation, feeding livestock such that it doesn't release high GHGs in its excreta, planting cover crops, permaculture, and improved water management.

Sustainable Forestry

Since 2010, we've lost 4.7 million hectares of net forests per year, which shows we desperately need sustainable forestry.

Sustainable forestry involves maintaining, regenerating, and managing the bio properties of the forests.

Examples of sustainable forestry include planting seedlings in greenhouses and transferring them to forests and thinning existing trees every five years to improve and sustain their strength and growth capability.

Sustainable Construction

According to the Intergovernmental Panel on Climate Change (IPCC), approximately 25% of the global total CO₂ emissions come from the building sector, which clearly shows the need for sustainable construction.

So, what exactly is sustainable construction?!

Sustainable construction means building structures with renewable and recyclable building materials and resources with minimal impact on the environment.

Common and simplest examples of sustainable construction are using locally sourced or natural materials.

Efficient Waste Management

Daily, at least 3.5 million tons of solid waste are generated throughout the world. The majority of this waste is mismanaged and ends up in the oceans, which has had a massive negative impact on the environment for centuries to come.

Sustainable waste management can eliminate this issue. It starts from the very beginning of the lifecycle of a product by ensuring that it is made such that minimal waste is produced, and that this waste is biodegradable.

Packaging is a big factor in this regard, and companies need to ensure that they eliminate plastic from it as much as possible.

Next comes awareness. The general public needs to be aware of how to dispose of the generated waste. This means they should know what to put in the recycling bins, what to compost, and what to avoid buying so that they don't produce non-biodegradable waste.

Sustainable Water Management

Approximately, 1.1 billion people around the world lack access to water, which shows how quickly this essential natural resource is depleting. We need to implement sustainable water management practices in our daily lives and businesses to make sure the situation doesn't further worsen.

It starts from an individual level, such as reducing water wastage by cutting down on shower times or having water-efficient washing machines and dishwashers. Similarly, on an industrial level, water treatment plants can play a major role. Businesses can also take advantage of rainwater through rainwater harvesting systems.[18,19]



Environmentally Friendly Energy Sources

Non-renewable energy sources, AKA, fossil fuels, are one of the biggest contributors to our planet's current miserable situation. We need to switch them with renewable energy production sources so that there's something left for the upcoming generations. The main sources of alternate energy include:

- **Wind Energy:** As the name indicates, wind energy is derived from wind. It is generally cheaper as the only cost involved is that of setting up the windmill.
- **Solar Energy:** Solar energy is the most common source of renewable energy throughout the world. It is used for numerous purposes ranging from generating electricity to a heating source for cooking.
- **Geothermal Energy:** Geothermal energy is the heat produced within the Earth's core, where the temperature reaches around 5000°C. It can be harvested as a renewable heat and electricity source.
- **Hydropower:** Hydropower involves generating energy through falling or fast-running water. It involves producing electricity through dams, reservoirs, waves, and tides.

Environmental Regulations

Ecology, climate, social systems, and business practices vary from country to country, so there isn't a specific mechanism on how environmental sustainability should be practiced. Countries throughout the world have their own policies to incorporate sustainability, which are tied together through goals set forth by international global organizations, such as the Sustainable Development Goals (SDGs) by the UN.

In the US, the Environmental Protection Agency (EPA) makes and enforces environmental laws and regulations. They cover air, water, land, environmental risks, human health, contaminated lands and toxic sites, and chemicals review.

In the EU, environmental protection is governed by the EU environmental policy, whose foundation was laid in Paris in 1972 after the UN conference on the environment. The legal basis of the European environmental policy is in the Treaty on the Functioning of the European Union (TFEU) Article 11 and 191 to 193.

Violations of environmental law throughout the world are considered white-collar crimes, with punishments of fines, probation, jail, or a combination of either two of these or all three. Businesses generally face fines, which may range from thousands to millions of euros.[16,17]

The baseline

Environmental sustainability is the usage of natural resources such that the current needs are fulfilled without compromising that of the future generations. If done correctly, it has the potential to go hand in hand with businesses and improve their finances. [15,16]

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