Environmental Law and Policy in Sustainable Development: An Insight

Gagnish Singh Khurana[1]

[1] Environmentalist, Ludhiana, Punjab, India

Int J Health Environ Res 2025;3:32–36.

Address for correspondence Gagnish Singh Khurana, Environmentalist, Ludhiana, Punjab, India (e-mail: gagnishkhurana@gmail.com).

Abstract

The article aims to contribute to the ongoing dialog on sustainable development and its regulation by the environmental law. Sustainable development—"talk of the planet" and "paradigm of the balanced development"—can be aptly described as "*an assurance to the present and bequeath to the future generations*." A review of literature was done on environmental law and sustainable development. The phrase "sustainable development" *emerged in literature as a* result of people becoming more conscious of environmental destruction. It is an international endeavor to resolve a conflict between the environment and the developmental advantages. The oneness of environment and development, which are both pervasive and crucial, is the word's key component. Effective governance of appropriate environmental law plays a key role in regulating the decisions taken for achieving the goals of sustainable development.

Keywords

- environment
- sustainable development
- laws
- policies
- climate change

Introduction

The concept of sustainable development was first introduced in 1969 when the Charter was signed by 33 African nations. It was then brought to light at the Brundtland Report, which was titled "Our Common Future," in 1987 after being considered at the Stockholm Conference in 1972. More than 178 nations ratified it at Rio de Janeiro in 1992 under the name "Agenda 21." It was a comprehensive plan of action to create a worldwide partnership for sustainable development to simultaneously improve human lives and save the environment. As a result of falling short of the goals, the Sustainable Development Goals (SDGs) were introduced in Rio de Janeiro in 2012. The 2030 Agenda for Sustainable Development is centered around 17 SDGs. The article aims to review on sustainable development and its regulation by the environmental law.

Concept and Principles

> The key concepts of sustainable development have a complex point of origin. Ecodevelopment[1] and simultaneous progress in various frameworks for characterization of sustainable development being a common view.[1]

Since its inception in 2015 on an international platform, the idea of sustainable development has baffled environmentalists and development professionals because of its ambiguity. This is because the laws that were in place were human-centric, and there was an urgent need for laws that were based on the environment to prevent the idea of sustainable development from being merely *euphemism* and being overshadowed by harsh development waves.[2] Despite initial difficulties, *countries*[3] have begun incorporating sustainable development into

DOI https://doi.org/10.1055/s-0045-1807734.
ISSN XXXX-XXXX.

Thieme Medical and Scientific Publishers Pvt. Ltd., A-12, 2nd Floor, Sector 2, Noida-201301 UP, India

their constitutional frameworks, and the adjudication process has been underway for the past few decades. *Some higher educational institutions are also promoting equity*[1,4,5] *and sustainable development through their teaching, research, and administration*[6] *with their future focus on including important stakeholders such as students, teaching staff, local communities, and industry partners, whose contributions could provide a more holistic understanding.*[4]

The following principles were extensively addressed at several United Nations (UN) conferences and act as a guide for legislators and courts in achieving the goal of sustainable development:

(1) Intergenerational equity: The principle of intergenerational equity states that every generation holds the Earth in common with members of the present generation and with other generations, past and future. The principle articulates a concept of fairness among generations in the use and conservation of the environment and its natural resources. This principle is the foundation of sustainable development.[6] This concept was first formally recognized in the Brundtland Report (1987) and has been reinforced in various international environmental treaties.[5]

(2) Use and conservation of natural resources: This principle is based on the maximum use of perpetual resources like solar energy, tidal energy, and wind energy.[7] It seconds the maximum production of renewable resources like trees and biomass. It also supports the minimum utilization of nonrenewable resources like fossil fuels, minerals, etc. And finally, it strongly backs the reuse and recycling of nonrenewable resources and waste materials.[7]

(3) Environmental protection: Environmental protection refers to any activity to maintain or restore the quality of the environment by preventing human activity or diverting the natural activity like emission of pollutants, etc. and formulating the proper statutes.[8]

(4) The precautionary principle: The precautionary principle requires that, if there is a strong suspicion that a certain activity may have environmentally harmful consequences, it is better to control that activity now rather than to wait for incontrovertible scientific evidence. This principle is expressed in the Rio Declaration, which stipulates that where there are "threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.[9]

(5) The "polluter pays" principle: Environmental law is founded on the precautionary principle, polluter-pays principle, and intergenerational equity. These principles aim to ensure that development activities do not compromise the ecological balance or the rights of future generations.[10] It is considered to achieve a standard development goal of responsible consumption, thereby incentivizing a cleaner production. The "polluter pays" principle is the commonly accepted practice that those who produce pollution should bear the costs of managing it to prevent damage to human health or the environment.[11]

(6) Principle of liability to help and cooperate: As principle 9 of Rio declaration, "States should cooperate to strengthen endogenous capacity-building for sustainable development by improving scientific understanding through exchanges of scientific and technological knowledge, and by enhancing the development, adaptation, diffusion, and transfer of technologies, including new and innovative technologies" and as per principle 27 of the Rio Declaration, "States and people shall cooperate in good faith and in a spirit of partnership in the fulfillment of the principles embodied in this Declaration and in the further development of international law in the field of sustainable development."[12]

(7) Poverty eradication: It was attributed in the Brundtland Report that the living standards "beyond the basic minimum are not being met especially in the developing countries, which eventually brings more pressure on the existing economic and political systems to eradicate this deficiency through innovations and reforms." It was again stressed in the Johannesburg report in 2002.[13] While the focus of most goals is on present needs, climate change due to expanding human activities makes it problematic to focus on current "needs" without questioning consumption beyond "legitimate aspirations."

(8) Public trust doctrine: The public trust doctrine offers a framework to promote sustainable development and enhance the effectiveness of environmental laws.[14] It primarily rests on the principle that public at large is the beneficiary of the natural resources.[14] The State as a trustee is under a legal duty to protect them and save them to be converted into private ownership.[14]

Environmental Law at Global Level

International environmental law is derived primarily from three sources:

(1) Customary international law
(2) International treaties, bilateral or multilateral agreements
(3) Judicial decisions of international courts with respect to environment

Even though the International Court of Justice (ICJ) was founded in 1945 and was resolving international conflicts, laws were less strict before 1972. Following the Stockholm Conference, a basic framework for environmental issues was established, and between 1972 and 1992, almost 1,100 agreements were made.

The four important environment conventions under which the member states hold conference of parties (COP) are:

(1) UNFCC: United Nations Framework on Climate Change
(2) UNCCD: United Nations Convention to Combat Desertification

(3) CBD: Convention on Biological Diversity
(4) CITES: Convention on International Trade in Endangered Species of Wild Fauna and Flora

Through its decisions, COP, the governing body, facilitates the Convention's implementation. In addition to the decisions required by conventions, it periodically assesses how well they are being implemented and makes additional decisions to support their successful execution.

It also assesses the overall effects and its sustainable use along with the extent to which progress is being made to achieve the objectives of the Conventions. It periodically examines the obligations of parties, that is, the adequacy of their commitments in the light of their National Plans and considers and adopts regular reports on the implementation. The COP also has powers to promote the exchange of information on measures adopted by parties in implementation and its effects.

Additionally, it can create and periodically improve the methods for successful implementation. COP can provide the ICJ with appropriate and accurate criticism because it acts as a watchdog and data analyzer for environmental issues.

According to the United Nations Environment Program (UNEP)-Interpol, there are environmental crimes in addition to international environmental disputes (case studies in this article). These crimes are becoming more common and cost the economy $256 billion a year. They include:

(1) Wildlife crime like hunting, poaching, capturing, etc.
(2) Illegal logging
(3) Illegal mining
(4) Illegal fishing
(5) Pollution like illegal dumping of waste material in other country, illegal production of chlorofluorocarbons and hydrochlorofluorocarbons, and other ozone depleting substances

These crimes are perpetrated by organized crime groups, and the absence of international cooperation and the limited application of the law are causing gaps in their prevention. Enhancing international collaboration, exchanging information, launching coordinated initiatives, and fortifying environmental regulations at all levels can effectively close these gaps. Through training and the creation of enforcement guidelines, UNEP assists governments in establishing a robust legal framework.

Case Studies—International

(1) *Costa Rica V/s. Nicaragua (Certain activates performed by Nicaragua in Border Area): (Polluter pays Principle)*: The case of territory dispute between Costa Rica and Nicaragua over a 3-km area of wetland in Isla Portillos. Costa Rica filed a case against the Republic of Nicaragua in the ICJ in 2010 for illegally entering, occupying, and using Costa Rican territory. The case included allegations of significant harm to protected wetlands and rainforests. Nicaragua's efforts to dig a channel for navigational purposes, which involved clearing trees and other vegetation, gave rise to the environmental damage claim. In response, Nicaragua filed a lawsuit against Costa Rica in 2011, alleging significant environmental harm brought on by Costa Rica's road development along their shared border.[15] The court awarded Nicaragua millions of dollars for the loss or impairment of environmental products and services in the area in question after creating its own methodology for evaluating environmental damage. Nonetheless, the Court granted Costa Rica US$2,708.39 in full compensation for the wetland restoration efforts.

(2) *Hungary V/s. Slovakia (Gabcikovo- Nagymaros Project)*:

This case pertains to a treaty to build a series of hydroelectric dams on River Danube. The ICJ took a serious note of this and referred to both parties, "This need to reconcile economic development with protection of environment is aptly expressed in the concept of sustainable development.[16] For the purpose of the present case, this means the parties together should look afresh at the effects of the environment of the operation of the Gabcikovo power plant…" It was also separately opined by the Vice President of ICJ, "Right to development does not exist in the absolute sense; it is relatively always to its tolerance by the environment. Right to development is clearly part of modern international law—compendiously referred to as sustainable development." Hungary and Slovakia started their negotiations with frequent updates to the court after the court ruled that they must engage in good faith given the current circumstances and take all necessary steps to guarantee the goals are met.[17,18]

Environmental Law at India Level

The Indian Constitution contains specific provisions for the preservation and enhancement of the environment. These clauses were added following the 1972 Stockholm Conference and implemented in 1976 with the 42nd amendment.

(1) The language of Article 48-A, which focuses on environmental protection and enhancements, is also used as a reference by Indian courts in several environmental disputes.
(2) Citizens are obligated to conserve the environment under Article 51A (g). The three lists in Schedule VII clearly define several environmental protection-related topics on which the federal government and the states may enact laws.

Because of this, Indian lawmakers passed several laws pertaining to environmental preservation and set the concept of sustainable development in motion. Several laws affecting and regulating environmental issues were been passed by the Indian Parliament. Economic, social security, and sustainable development were the guiding concepts of all legislative enactments.

The Water (Prevention and Control of Pollution) Act 1974, the Air (Prevention and Control of Pollution) Act 1981, the Environment (Protection) Act 1986, the Act 1972 for Wild Life Protection, the Forest (Conservation) Act 1980, the

Public Liability Insurance Act 1991, the Biological Diversity Act 2002, and the National Green Tribunal Act 2010 are India's primary environmental laws. The Central Pollution Control Board, State Pollution Control Boards, and the Ministry of Environment, Forests, and Climate Change are India's three regulating bodies. The Supreme Court of India, High Courts, and the National Green Tribunal manage dispute resolution.

Few Initiatives to Combat the Imbalance between Global and Indian Sustainable Development

(1) Vellore Citizens Welfare Forum vs Union Of India & Ors on 28 August, 1996:

In this instance, India was the first country to adopt sustainable development concept introduced globally through the Brundtland Report in 1987. In the State of Tamil Nadu, the petitioners had brought a public interest lawsuit to stop the contamination of the River Palar caused by the tanneries' untreated effluent discharge. The Supreme Court ruled that India's environmental law includes the precautionary principle and the polluter pays principle. The court also held that: "*Notwithstanding the economic benefits of leather industry, economic interest cannot be allowed to destroy the ecology, degrade the environment and pose a health hazard to the public at large*." It also held, "*Remediation of the damaged environment is part of the process of 'Sustainable Development' and as such polluter is liable to pay the cost to the individual sufferers as well as the cost of reversing the damaged ecology*."

(2) Narmada Bachao Andolan V/s Union of India:

The question on the court's agenda was whether the Union of India's environmental approval for a dam's construction had been given without a thorough analysis and comprehension of the project's environmental impact. It was also investigated whether the Ministry of Environment's environmental regulations had been broken and, if so, what the consequences of the infractions were from a legal standpoint.

According to the evidence, the government had been extremely concerned about the project's environmental aspects. The Prime Minister handled the issue and granted approval because the Ministries of Water Resources and Environment and Forests had different opinions. According to the government's plan, the court mandated compensatory measures for environmental protection and permitted construction to proceed while the mitigating measures were being implemented. In this Case, it was observed by the Supreme Court that, "*Sustainable Development means what type or extent of development can take place, which can be sustained by nature or ecology with or without mitigation*."

Reality Check of India in Terms of Sustainable Development

In light of recent events in India, the country is far from reaching the SDGs, and the scenario raises serious doubts about the objectives' viability. Here are some shocking and concerning statistics from the Center for Science and Environments:

(1) Air: In India, air pollution causes 12.5% of deaths, including 100,000 children under the age of 5. India is struggling with 0.28 million electric vehicles until May 2019, falling short of the objective of 15 million. The national electric vehicle program has yet to acquire traction.
(2) Water: Stress is present in both surface and submerged sources. There are 86 severely contaminated water bodies. Over the past 7 years, the number of industries that pollute water has significantly increased by 136%. Between 2006 and 2014, the number of deep tube well bores increased by 80%.[19]
(3) Climate change: Despite being a key component of the UN SDGs for 2030, India has failed to identify the indicators, leaving the general public in the dark.[20]
(4) Agriculture: This industry is under a lot of strain since input costs are rising, average cropland is shrinking, irrigation relies on nature, and farming community suicide rates are rising.
(5) Health: The infrastructure for health care is not in a good condition, with only 35% of public health centers open around-the-clock and 26% of medical officer jobs unfilled.
(6) Urban cities: Four years after the introduction of India's ambitious plan to create 100 smart cities in 2015 to 2016, barely 21% of the funds allotted have been used. India will provide 416 million urban dwellers to the global population by 2050, making up 58% of the total. There are 2,613 places in India where living conditions are unsuitable.
(7) Waste management: Almost 79 major protests against unsanitary landfills and dump yards were recorded in 22 states across country in last 3 years. The country recorded 56% increase in number of hazardous waste generating industries between 2009 and 2016 to 2017 and they are also not maintaining waste as per the laws.
(8) Energy[21]: Because of the scarcity of natural gas, gas-based facilities are operating at 24% capacity. Projects using hydropower are only operating at 19% of their potential. India has only achieved 6.3% of its objective in wind and 5.86% in solar energy.
(9) Climate: Between 2010 and 2014, India's greenhouse gas emissions rose by 22%. India continues to suffer from severe weather conditions brought on by global warming, with several states reporting harsh weather responsible for deaths.
(10) Forests: India documented 69,523 forest fire cases after implementing the new forest fire monitoring system, which is 9.5 times more than what was previously recorded.
(11) Wildlife[21]: Nothing substantial has been done to take absolute care of wild life. Incidence of poaching is still happening. Road and train accidents claimed the lives of several forest-dwelling wild animals, every now and then.

(12) Employment: In contrast to another SDG, Decent Work and Economic Growth, India's jobless rate has increased by 1.9 times over the last 2 years.

Conclusion

"Is sustainable development possible?" is the question that continues to be asked. With the carbon dioxide emission bucket filling up faster than anticipated, the global temperature rising earlier than anticipated, the European Union renaming "Climate Change" as "Climate Emergency," the United States avoiding most international commitments while raising awareness among the younger generation, the UN's constant calls, and the growing sense of cooperation among developing and underdeveloped nations, it will undoubtedly be difficult to realize the goal of sustainable development.

Regarding India, it is flourishing and working toward sustainable development, which is becoming more and more crucial. With over 1.2 billion people, India's population is predicted to increase by an additional 300 million over the course of the next two to three decades. Both needs and reliance on the environment are growing. India will undoubtedly have a difficult challenge ahead of them. To prevent the concept of sustainable development from being a simple "oxymoron," India must wake up, involve all sectors, and adopt proactive measures at the grassroots level.

Several flagship policies and programs of Government of India such as Swachh Bharat Mission (SBM), Beti Bachao Beti Padhao (BBBP), Pradhan Mantri Awas Yojana (PMAY), Pradhan Mantri Jan-Dhan Yojana (PMJDY), Deen Dayal Upadhyay Gram Jyoti Yojana (DDUGJY), and Pradhan Mantri Ujjwala Yojana (PMUY) substantially endeavor to achieve sustainable development in India. Thus, India endeavors to be at its best to achieve the target of sustainable development by 2030. To overcome the challenge of lack of resources and various other challenges especially in developing nations, an international collaboration is essential to achieve the goals of sustainable development at global level.[22]

This review emphasis on the crucial need for the substantial contributions required to address the constraints, for upholding the principles and achieving the goals of sustainable development. Effective governance system in collaboration with green innovation, energy-saving technological advancements, and income generation significantly influences the successful implementation of the concepts and principles of environmental law to achieve the objectives of sustainable development.[23]

Conflict of Interest

None declared.

References

1 Purvis B, Mao Y, Robinson D. Three pillars of sustainability: in search of conceptual origins. Sustain Sci 2019;14:681–695

2 Klarin T. The Concept of Sustainable Development: From its Beginning to the Contemporary Issues. Zagreb International Review of Economics & Business 2018;21(01):67–94

3 Avilé LA. Sustainable development and environmental legal protection in the European Union: a model for Mexican courts to follow? Max Law Rev 2014;6(02):251–272

4 Škokić V, Jelić P, Jerković I The role and contribution of sustainable development goals as a transformative framework in higher education: a case study of the University of Split. WORLD 2025; 6(01):22

5 Weiss EB. Our rights and obligations to future generations for the environment. Am J Int Law 1990;84(01):198–207

6 Sorooshian S. The sustainable development goals of the United Nations: a comparative midterm research review. J Clean Prod 2024;453:142272

7 Kuan J, Zhang T. Research on the environmental benefits of marine tidal energy and its impact on regional economic structure. J Sea Res 2024;198:102489

8 Verma A. Law of Environment in India: problems and challenges in its enforcement. Research Ambition An International Multidisciplinary e-J 2021;6(02):17–26

9 Hansson SO. How extreme is the precautionary principle? NanoEthics 2020;14:245–257

10 Madhanraj H. The role of environmental law in sustainable development. Int J Environment Law 2024;2(01):1–5

11 Aragão A. Polluter-pays principle. In: Cremades J, Hermida C, eds. Encyclopedia of Contemporary Constitutionalism. Cham: Springer; 2022

12 French D. Developing states and international environmental law: the importance of differentiated responsibilities. Int Comp Law Q 2000;49(01):35–60

13 Bonnedahl KJ, Heikkurinen P, Paavola J. Strongly sustainable development goals: overcoming distances constraining responsible action. Environ Sci Policy 2022;129:150–158

14 Sanyogita TR. Sustainable development: a comprehensive analysis of public trust doctrine. IJNRD 2024;9(12):C129–C138

15 Schmalenbach K. States responsibility and liability for transboundary environmental harm. In: Gailhofer P, Krebs D, Proelss A, Schmalenbach K, Verheyen R, eds. Corporate Liability for Transboundary Environmental Harm. Cham: Springer; 2023

16 International Court of Justice. Judgment in case concerning the Gabčíkovo-Nagymaros Project. Int Leg Mater. 1998;37(01): 162–242

17 Shanmuganathan D, Warren LM. Status of sustainable development as a principle of national and international law: the Indian approach. J Environ Law 1997;9(02):387–402

18 Peterson MJ. "Narmada Dams Controversy." International Dimensions of Ethics Education in Science and Engineering. 2010. Accessed March 30, 2025 at: www.umass.edu/sts/ethics

19 Jadeja NB, Banerji T, Kapley A, Kumar R. Water pollution in India – current scenario. Water Secur 2022;16:100119

20 Hagen I, Allen S, Bahinipati CS, et al. A reality check for the applicability of comprehensive climate risk assessment and management: experiences from Peru, India and Austria. Clim Risk Manage 2023;41:100534

21 Gupta D, Ghersi F, Vishwanathan SS, Garg A. Achieving sustainable development in India along low carbon pathways: macroeconomic assessment. World Dev 2019;123:104623

22 Rana AK, Kumar N. Current wildlife crime (Indian scenario): major challenges and prevention approaches. Biodivers Conserv 2023;32(05):1473–1491

23 Sustainable Development and Climate Change. Accessed March 30, 2025 at: https://www.indiabudget.gov.in/budget2019-20/economicsurvey/doc/vol2chapter/echap05_vol2.pdf

