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Environmental Law and Sustainable Development: A Comprehensive Legal Study of Frameworks, Enforcement, and Emerging Challenges

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“Sustainable development is the pathway to the future we want for all. It offers a framework to generate economic growth, achieve social justice, exercise environmental stewardships and strengthen governance.”¹

- Ban ki -moon

1. Opening Remark

Introducing the Issue: Environmental Degradation vs. Legal Safeguards

One of the most significant threats to public health, sustainable economic growth, and ecological balance internationally in recent decades has been environmental deterioration. Rapid industrialization, unsustainable resource extraction, and lax enforcement of laws governing the environment are mostly to blame for the escalation of problems like pollution, deforestation, climate change, and biodiversity loss. Despite the development of numerous legal procedures at

¹ MOHD SUFIYAN KHAN, GRUNDNORMS AND GREEN RIGHTS OF ENVIRONMENTAL JURISPRUDENCE 3(The lawgical junction and MJS 2023).

the national, international, and regional levels, there is still a significant disconnect between environmental reality and legal protections.

Legal frameworks frequently discover challenges trying to keep up with changing environmental issues, technological breakthroughs, and international environmental emergencies. The effectiveness, sufficiency, and enforcement of environmental regulation in attaining sustainable development are seriously called into doubt by this discrepancy.

Environmental Law & Sustainable Development

The term "environmental law" refers to an ensemble of legislation, rules, agreements, and accepted practices that are intended to safeguard the environment and develop sustainable development. It covers topics which includes waste management, biodiversity preservation, climate change, forest protection, air and water pollution, and environmental impact assessments. It utilizes a variety of legal sources to control human actions that have an impact on the environment, especially national laws (such as India's Environmental Protection Act, 1986), international treaties (like the Paris Agreement), and court rulings. For the purpose of to prevent economic progress from coming at the expense of environmental degradation, environmental legislation works at both the national and international levels to strike a balance between ecological sustainability and development requirements.

Sustainable development is a broad term to describe policies, projects and investments that provide benefits today without sacrificing environmental, social and personal health in the future. These policies are often described as green because they focus on limiting the impact of development on the environment. However, the benefits of sustainable development are also felt across a wide cross section of human health and well-being, including reductions in pollution- and environment-related disease, improved health outcomes and decreased stress. As the threats of climate change become increasingly important, win-win strategies for mitigation, health improvement and cost savings offer a range of advantages for various stakeholders. For example, greener health care operations can generate patient and worker health benefits while also saving energy, mitigating climate risks and creating long-term cost savings. The World Health Organization is committed to pursuing sustainable development in all its work to help protect the people of tomorrow from the health growing health risks of today.

The goals of this study are to:

- i. Investigate critically the national and international legal frameworks associated with environmental protection.
- ii. Analyze how environmental law relates to sustainable development.
- iii. Examine the judicial sequences, administrative instruments, and enforcement strategies for environmental compliance.
- iv. Examine new issues in climate change, transboundary environmental impacts, and natural resource control.

- v. Make recommendation for new legislation and policy changes to improve environmental governance.

1.1 HISTORICAL DEVELOPMENT OF ENVIRONMENTAL LAW

Protection of environment in Ancient India

In India, the cultural and religious tradition has worry about the preservation and improvement of nation; our nation has realized the connections between environment and human being. Ecological principles or moral code in ancient times can be drawn from the following heads:

1. The cultural, spiritual and religious ethics,
2. Historical analysis of Indian law, and
3. Early and post -independence Legislations².

Industrial revolution

The Industrial Revolution began in Britain in the late 18th century, quickly transforming the nation into the world's leading commercial power. What started in Britain soon spread across Europe and North America. During this period, industries rapidly transitioned from manual labor to machine-based production, fundamentally changing manufacturing processes. This shift enabled mass production, increased efficiency, and accelerated economic growth, laying the foundation for the modern industrialized world³

Rise of global concern

The first ever global assessment of environmental rule of law finds weak enforcement to be a global trend that is exacerbating environmental threats, despite prolific growth in environmental laws and agencies worldwide over the last four decades.

The UN Environment report found that despite a 38-fold increase in environmental laws put in place since 1972, failure to fully implement and enforce these laws is one of the greatest challenges to mitigating climate change, reducing pollution and preventing widespread species and habitat loss. While there are still gaps in many of the laws, the substantial growth of environmental laws has been dramatic.

David Boyd, UN Special Rapporteur on Human Rights and the Environment said, "This compelling new report solves the mystery of why problems such as pollution, declining biodiversity and climate change persist despite the proliferation of environmental laws in recent

² MOHD SUFIYAN KHAN, ENVIRONMENTAL JURISPRUDENCE IN INDIA 15 (The lawgical junction and MJS 2024)

³ Leaf by Greenly, <https://greenly.earth/en-gb/blog/ecology-news/what-was-the-industrial-revolutions-environmental-impact>(last visited Aug.24,2024)

decades. Unless the environmental rule of law is strengthened, even seemingly rigorous rules are destined to fail and the fundamental human right to a healthy environment will go unfulfilled.⁴

1.2 KEY PRINCIPLE OF ENVIRONMENTAL LAW

PRECAUTIONARY PRINCIPLE

The first explicit reference to the principle was included in German law as the ‘*Vorsorgeprinzip*’ (principle connected with the precautionary approach) in the 1970s. A fundamental principle related to the environment that basically emphasizes the need for caution and careful consideration while making policy decisions that may have an adverse impact on the environment and human health. Where there is a potential risk, decision makers are required to mitigate and minimize the harm. The precautionary principle has been incorporated into several international agreements like *Principle 15 of the Rio Declaration on Environment and Development, 1992* and regulations at the state level, and public initiatives pertaining to health. It has been used to address a variety of concerns, of hazardous chemicals, and the regulation of genetically modified organisms. It basically serves as a tool for aiding in decision-making and encourages proactive measures when addressing potential dangers to human health and the environment, especially when there is a lack of scientific assurance.⁵

POLLUTER PAYS PRINCIPLE

The polluter pays principle as we know today was first incorporated in *principle 21 and 22 of the Stockholm Declaration, 1972*. This principle was also introduced in 1972 by the organization for Economic Cooperation and Development (OECD) where the polluter was kept responsible for the pollution. The principle 16 of the Rio Declaration, 1992 also recognized this principle. This principle makes those who cause pollution, environmental damage, or resource depletion responsible for bearing the cost of remediation and compensating for the damage. It is based on the idea that responsibility and accountability for damage to the environment, natural resources, and ecosystem should be carried by those who cause the damage, rather than the taxpayers or the victims⁶.

INTERGENERATIONAL EQUITY PRINCIPLE

⁴ UN environment programme, <https://www.unep.org/resources/assessment/environmental-rule-law-first-global-report> (July.6,2019)

⁵ MOHD SUFIYAN KHAN, GRUNDNORMS AND GREEN RIGHTS OF ENVIRONMENTAL JURISPRUDENCE 10 (The lawgical junction and MJS 2023).

⁶ MOHD SUFIYAN KHAN, GRUNDNORMS AND GREEN RIGHTS OF ENVIRONMENTAL JURISPRUDENCE 13 (The lawgical junction and MJS 2023).

Intergenerational equity refers to equity between generations, which include the needs of the future generation in the design and implementation of current policies. In other words, the moral obligations of the present generation to manage the earth in a manner without jeopardizing the aesthetic and economic welfare of the future generation in advance as an argument in favor of sustainable development and natural resources use.

The idea of inter-generational equity dates as far back as the political philosophy of **Immanuel Kant**, who developed the idea of posterity benefiting from the work of its ancestors. **Edmund Burke** also wrote about the idea of inter-generational partnership.

The Report of a **World Commission on Environment and Development (Brundtland Report,1987)** emphasized the importance of sustainable development, it not only talked about equity for the present but also for future intergenerational equity.⁷

DOCTRINE OF PUBLIC TRUST

As per this doctrine, certain resources like air, sea, water, and forest have such great importance for the people as a whole that it would be unjustified to make them a subject of private ownership. These resources are nature's gift and should be freely available to everyone. The state is the trustee of all natural resources, which are by nature made for public use and enjoyment. It establishes the reasonability of the government to protect certain resources and assets for the greater good of the general public. Due to this concept, the government tends to conserve certain resources of the environment in trust for the general populace, including shorelines, navigable water, and particular fauna. For the benefit of both current and future generations, the government has a duty by law to manage and safeguard these resources

*“Certain natural resources like forest, lakes, rivers, wildlife etc. are means for general importance and cannot be restricted to private ownership. These resources are the gift of nature and the state as a trustee thereof, is duty bound to preserve and protect them....”*⁸

2. THE CONCEPT OF SUSTAINABLE DEVELOPMENT

Sustainable Development is a concept that at its core is revolutionary, yet unfortunately incredibly difficult to pragmatically define. The history behind sustainable development is one that does not stretch far. Tensions that can be found within the concept of sustainable development are

⁷ MOHD SUFIYAN KHAN, GRUNDNORMS AND GREEN RIGHTS OF ENVIRONMENTAL JURISPRUDENCE 23 (The lawgical junction and MJS 2023).

⁸ MOHD SUFIYAN KHAN, GRUNDNORMS AND GREEN RIGHTS OF ENVIRONMENTAL JURISPRUDENCE 17 (The lawgical junction and MJS 2023).

numerous, ranging from its ambiguous and vague definition, to the failure of attaining a universal pragmatic and operational framework. The great challenge that lies ahead with sustainable development is not only the need to educate it to the people, but to first define it in a way people will understand it.⁹

2.1 DEFINING SUSTAINABLE DEVELOPMENT

UN, BRUNDTLAND REPORT (1987), SDGs.

Sustainable development was first defined in the World Commission on Environment and Development's 1987 Brundtland report 'Our common future' as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'. It seeks to reconcile promoting economic prosperity with social inclusion and environmental stewardship, and serves as a basis for all European Union (EU) policies and initiatives. Sustainable development is formally one of the EU's long-term goals under Article 3(3) of the Treaty on European Union. The EU is committed to achieving the 17 sustainable development goals (SDGs) of the United Nations' 2030 Agenda for Sustainable Development, adopted in September 2015. The EU has various policies, strategies and initiatives in place to meet challenges such as tackling climate change, transitioning to a low-carbon economy, fostering innovation and entrepreneurship, and promoting equal opportunities, access to jobs, education and healthcare, and social protection. These include the European Green Deal, the European semester, the circular economy action plan, the environment action programme, the better regulation agenda, the EU cohesion policy and the European Pillar of Social Rights action plan. In 2023, the EU published and presented at the UN its first-ever voluntary review on the implementation of the 2030 Agenda. Beyond its borders, the EU recognizes the links between global challenges and the importance of international cooperation. It played a leading role in shaping the global 2030 Agenda and the SDGs, and is actively involved in forums and initiatives to address challenges such as poverty, hunger, health, education, gender equality, clean water and sanitation. In 2017, the EU adopted the European Consensus on Development, which sets out its policy on development cooperation, and, in 2021, it adopted the Neighborhood, Development and International Cooperation Instrument – Global Europe, its most recent development cooperation instrument. By means of its trade policy, the EU seeks to promote sustainable development in the trade agreements that it signs with partner countries. Eurostat, the EU's statistics office, along with the European Commission, other EU agencies, EU Member States and other stakeholders, has developed a series of indicators to track the EU's progress in meeting the SDGs. The Sustainable Development in the European Union 'report, published annually by Eurostat, compiles and reviews trends in these indicators, allowing EU policies to be evaluated and, where appropriate, adapted¹⁰

⁹ E- INTERNATIONAL RELATION, <https://www.e-ir.info/2011/07/27/the-concept-of-sustainable-development> (last visited July,27,2011).

¹⁰ EUROPEAN UNION, <https://eur-lex.europa.eu/EN/legal-content/glossary/sustainable-development.html>

2.2. THE ROLE OF SUSTAINABILITY IN ENVIRONMENTAL LAW

How Laws Operationalize Sustainability Goals

Laws are essential for translating sustainability objectives into practice by establishing a framework for safeguarding the environment, managing resources, and ensuring social justice. They accomplish this by instituting regulations, defining goals, and offering motivation for sustainable initiatives.

Key methods through which laws put sustainability goals into action:

Creating Environmental Regulations:

Laws impose legal responsibilities on individuals and businesses to safeguard the environment, including regulating pollution, conserving biodiversity, and encouraging sustainable resource utilization.

Defining Targets and Standards:

Legislation typically includes concrete targets and benchmarks for environmental performance, economic development, and social advancement, which provide a quantifiable pathway to achieving sustainability objectives.

Offering Incentives and Penalties:

Laws can provide financial incentives, tax reductions, or additional advantages for engaging in sustainable practices, while also imposing penalties or fines for those that are unsustainable.

Encouraging Sustainable Practices:

Laws can promote sustainable business models, such as supporting renewable energy, circular economy strategies, and responsible consumption and production.

Ensuring Accountability and Openness:

Legislation can mandate that corporations and government bodies disclose their environmental and social performance, thus enhancing accountability and openness in the pursuit of sustainability goals.

Tackling Social and Economic Disparities:

Laws can confront social and economic disparities by advocating fair labor practices, ensuring access to education and healthcare, and alleviating poverty.

Promoting International Collaboration:

Laws can enhance international cooperation by establishing pacts related to climate change, biodiversity preservation, and the trade of sustainable goods.

Supporting Good Governance:

Laws can foster good governance by creating accountable and transparent institutions, ensuring that all stakeholders are involved in the decision-making process.

Encouraging Sustainable Livelihoods:

Laws can aid sustainable livelihoods by promoting practices that harmonize economic growth with environmental conservation, like supporting sustainable farming and fishing practices.

Incorporating Sustainability into Public Procurement:

Legislation can advance sustainability in public procurement by obligating government entities to prioritize sustainable goods and services.

Instances of laws that implement sustainability goals:

Environmental Protection Legislation:

Laws such as the Clean Air Act and the Clean Water Act in the United States, along with similar regulations in other nations, establish pollution limits and require businesses to take steps to protect the environment.

Renewable Energy Requirements:

Laws mandating a certain proportion of electricity to be generated from renewable sources, like wind and solar, encourage the adoption of clean energy technologies.

Carbon Pricing and Emissions Trading Systems:

These strategies incentivize businesses to lower their carbon emissions by imposing a cost on emissions or allowing them to exchange emission permits.

Circular Economy Regulations:

Laws that support the reuse, recycling, and recovery of materials, minimizing waste and fostering sustainable consumption habits.

Regulations for Sustainable Agriculture and Fisheries:

Laws governing pesticide use, promoting sustainable farming methods, and ensuring the responsible management of fishery resources.

Policies for Gender Equality and Social Inclusion:

Laws that champion gender equality in the workplace, guarantee access to education and healthcare, and work to reduce social inequality.

By enacting and enforcing these forms of legislation, governments can successfully implement sustainability objectives and construct a fairer, more sustainable future for everyone.

3. INTERNATIONAL ENVIRONMENTAL LAW FRAMEWORK

Profound environmental changes caused by the increasing scale of human activity have led many observers to conclude that the planet has entered the “Anthropocene”—a geologic era signified by human impact on the biosphere. International environmental law is the set of agreements and principles that reflect the world's collective effort to manage our transition to the Anthropocene by resolving our most serious environmental problems, including climate change, ozone depletion and mass extinction of wildlife. More generally, international environmental law aims to achieve sustainable development—i.e., development that allows people to have a high quality of life today without sacrificing the quality of life of future generations. International environmental law is thus critical both for addressing specific environmental threats and for integrating long-term environmental protection into the global economy.

But not all environmental threats trigger international (as opposed to solely national or local) response. For countries to sacrifice their autonomy, some advantage must be gained in addressing the problem collectively. Typically, countries turn to international cooperation where (1) the environmental impacts are transboundary (such as pollution into the Great Lakes) or global (such as climate change); (2) some international activity contributes to environmental harm, for example, the international trade in elephant ivory or the killing of whales; or (3) international coordination of financial or technical support can catalyze action (for example, for the global conservation of biological diversity). In these circumstances, international cooperation—whether in the form of a binding treaty or a non-binding “soft law” agreement—is necessary for an effective response to the environmental challenge. Throughout most of the last century, international environmental law primarily reflected bilateral or regional disputes over shared resources, such as rivers or lakes that cut across national boundaries. These disputes led to diplomatic tensions that either resulted in an international legal case or were settled through relatively narrow regional or bilateral treaties. The most famous and important of these disputes was the Trail Smelter Arbitration, where Canada was held responsible for air pollution entering the United States.

In recent years, bilateral disputes involving for example Slovakia’s proposed construction of a dam on the Danube River near Hungary, Uruguay’s authorization of two pulp mills that threatened to pollute Argentina, and Australia’s challenge of Japanese whaling operations, highlight the importance of international law in peacefully resolving environmental conflicts between countries.

Such disputes are resolved at the International Court of Justice, the UN Law of the Sea Tribunal or other international tribunals.¹¹

3.1 MAJOR INTERNATIONAL TREATIES AND AGREEMENTS

PARIS AGREEMENT

Climate change is a global emergency that goes beyond national borders. It is an issue that requires international cooperation and coordinated solutions at all levels. To tackle climate change and its negative impacts, world leaders at the UN Climate Change Conference (COP21) in Paris reached a breakthrough on 12 December 2015: the historic Paris Agreement.

The Agreement sets long-term goals to guide all nations to: substantially reduce global greenhouse gas emissions to hold global temperature increase to well below 2°C above pre-industrial levels and pursue efforts to limit it to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change periodically assess the collective progress towards achieving the purpose of this agreement and its long-term goals provide financing to developing countries to mitigate climate change, strengthen resilience and enhance abilities to adapt to climate impacts.

The Agreement is a legally binding international treaty. It entered into force on 4 November 2016. Today, 195 Parties (194 States plus the European Union) have joined the Paris Agreement.

The Agreement includes commitments from all countries to reduce their emissions and work together to adapt to the impacts of climate change, and calls on countries to strengthen their commitments over time. The Agreement provides a pathway for developed nations to assist developing nations in their climate mitigation and adaptation efforts while creating a framework for the transparent monitoring and reporting of countries' climate goals.

The Paris Agreement provides a durable framework guiding the global effort for decades to come. It marks the beginning of a shift towards a net-zero emissions world. Implementation of the Agreement is also essential for the achievement of the Sustainable Development Goals.¹²

KYOTO PROTOCL

The Kyoto Protocol was adopted on December 11, 1997. Due to a complicated ratification process, it came into effect on February 16, 2005. At present, there are 192 Parties involved with the Kyoto Protocol. In summary, the Kyoto Protocol implements the United Nations Framework Convention on Climate Change by requiring industrialized nations and transitioning economies to limit and decrease their greenhouse gas (GHG) emissions according to established individual goals. The

¹¹ AMERICAN BAR ASSOCIATION, http://americanbar.org/groups/public_education/publications/insights-on-law-and-society/volume-19/insights-vol--19---issue-1/international-environmental-law/ (last visited January 05,2021)

¹²UNITED NATION, <https://www.un.org/en/climatechange/paris-agreement>

Convention itself merely requests that these nations create policies and measures for mitigation and provide periodic reports.

The Kyoto Protocol is built upon the principles and rules of the Convention and adheres to its annex-based framework. It imposes obligations only on developed nations, placing a greater responsibility on them under the principle of "common but differentiated responsibilities and respective capabilities," as it acknowledges their significant contribution to the current elevated levels of GHG emissions in the atmosphere.

3.2. THE ROLE OF INTERNATIONAL ORGANIZATION

UNITED NATIONS ENVIRONMENT PROGRAMME

UNEP promotes international environmental legislation and the development of policy tools and guidelines aimed at achieving the sustainable management of the world environment. It helps governments to implement multilateral environmental agreements, and to report on their results. UNEP promotes an adaptive approach that integrates the management of forests, land, freshwater and coastal systems, focusing on sustaining ecosystems to meet future ecological needs, and to enhance human wellbeing. UNEP places particular emphasis on the following ecosystem services: climate regulation; water regulation; natural hazard regulation; energy; freshwater; nutrient cycling; and recreation and ecotourism. UNEP promotes environmentally sustainable water management, regards the unsustainable use of water as one of the most urgent environmental issues, and places a particular focus on shared transboundary waters. UNEP's climate change-related activities have a particular focus on strengthening the capabilities of countries to integrate climate change responses into their national development processes, including through adaptation and mitigation initiatives.

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

There has been much debate about the assessment process of the Intergovernmental Panel on Climate Change (IPCC). Yet two of the most fundamental challenges that directly threaten the ability of the IPCC to fulfill its mandate have been largely neglected so far. Firstly, the magnitude and rapid expansion of the climate change literature makes it increasingly impossible for the IPCC to conduct comprehensive and transparent assessments without major innovations in assessment practices and tools. Secondly, the structure, organization and scientific practices across the social sciences and humanities prohibit systematic learning on climate change solutions and increasingly limit the policy-relevance of IPCC assessments. We highlight the need for responses along three avenues to prepare the IPCC for continued success in the future: 1) IPCC assessments must make better use of big-data methods and available computational power to assess the growing body of literature and ensure comprehensiveness; 2) systematic review practices need to be enshrined into IPCC procedures to ensure adequate focus and transparency in its assessments; 3) a synthetic research culture needs to be established in the social sciences and humanities in order to foster knowledge accumulation and learning on climate solutions in the future. As policymakers become

more interested in understanding solutions, the future prospects of global environmental assessment enterprises will depend heavily on a successful transformation within the social sciences and humanities towards systematic knowledge generation. This article is part of a special issue on solution-oriented Global Environmental Assessments. ¹³

UNITED NATION FRAMEWORK CONVENTION ON CLIMATE CHANGE

The UNFCCC entered into force on 21 March 1994. Today, it has universal membership¹. The 198 countries that have ratified the Convention are called Parties to the Convention. Preventing “dangerous” human interference with the climate system is the ultimate aim of the UNFCCC. This was remarkable for its time. Remember, in 1994, when the UNFCCC took effect, there was less scientific evidence than there is now. The UNFCCC borrowed a very important line from one of the most successful multilateral environmental treaties in history (the Montreal Protocol, in 1987): it bound member states to act in the interests of human safety even in the face of scientific uncertainty.

The ultimate objective of the Convention is to stabilize greenhouse gas concentrations "at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system." It states that "such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner. The idea is that, as they are the source of most past and current greenhouse gas emissions, industrialized countries are expected to do the most to cut emissions on home ground. They are called Annex I countries and belong to the Organization for Economic Cooperation and Development (OECD). They include 12 countries with "economies in transition" from Central and Eastern Europe. Annex I countries were expected by the year 2000 to reduce emissions to 1990 levels. Many of them have taken strong action to do so, and some have already succeeded.¹⁴

4. NATIONAL LEGISLATION: COMPARATIVE ANALYSIS

The creation and enforcement of environmental protection laws differ significantly from one jurisdiction to another, yet there are often shared principles that form the basis of domestic legal systems. A comparative examination of national legislation provides essential insights into how various legal frameworks address environmental issues, reconcile development needs with ecological sustainability, and fulfill international commitments within domestic contexts.

¹³ WORLD FINDING INSTITUTE, <https://www.wri.org/insights/2023-ipcc-ar6-synthesis-report-climate-change-findings> (last visited march 20, 2023)

¹⁴ UNITED NATION CLIMATE CHANGE, <https://unfccc.int/process-and-meetings/what-is-the-united-nations-framework-convention-on-climate-change>

At the heart of this comparative analysis rests the principle of constitutional environmentalism, in which the environment is acknowledged not solely as a matter of statutory regulation but also as a constitutional obligation. In India, this perspective is articulated in **Article 48-A** (Directive Principles of State Policy), which instructs the State to preserve and enhance the environment and to protect the country's forests and wildlife. Concurrently, **Article 51-A(g)** places a fundamental responsibility on every citizen to contribute to the protection and improvement of the natural environment. These constitutional provisions can be enforced judicially through broad interpretations by the Indian judiciary under **Article 21**, which guarantees the right to life and has been interpreted to encompass the right to a healthy environment.

In contrast, nations such as Germany incorporate environmental protection within **Article 20a** of their Basic Law (Grundgesetz), establishing a binding requirement on the State to safeguard natural resources for future generations. Likewise, the **Constitution of South Africa** explicitly ensures the right to an environment that does not adversely affect health or well-being as outlined in Section 24, thus elevating environmental rights to a justiciable status.

India's legislative framework includes several key statutes, notably:

The Environment (Protection) Act, 1986: A thorough piece of legislation that empowers the Central Government with extensive authority to regulate and safeguard the environment.

The Air (Prevention and Control of Pollution) Act, 1981

The Water (Prevention and Control of Pollution) Act, 1974

The Wildlife (Protection) Act, 1972

The Forest (Conservation) Act, 1980

These laws are backed by regulatory bodies such as the **Central Pollution Control Board** and **State Pollution Control Boards**, which are responsible for monitoring, enforcement, and suggesting policy reforms.

When compared to the United States, a similarly complex system of environmental governance can be observed. The **National Environmental Policy Act, 1969**, the **Clean Air Act, 1970**, and the **Clean Water Act, 1972** serve as fundamental legislative tools, enforced by the **Environmental Protection Agency**. A distinguishing characteristic of the U.S. framework is the requirement for **Environmental Impact Assessments (EIAs)** under **NEPA**, which necessitates thorough environmental evaluation prior to initiating any project likely to have significant environmental impacts. India has adopted a comparable process through the **EIA Notification, 2006**, issued under the Environment (Protection) Act, although challenges related to compliance, procedural simplification, and public engagement remain.

Moreover, legal systems in developed countries frequently implement market-based instruments like carbon trading, emission limits, and green taxes, while many developing nations see their environmental legislation still progressing and often facing challenges such as inadequate institutional capacity, enforcement issues, and low levels of public awareness.

The judicial interpretation of environmental laws also shows considerable divergence. In India, the Supreme Court has taken an active role through **Public Interest Litigations**, creating doctrines such as:

Polluter Pays Principle

Precautionary Principle

Public Trust Doctrine

Sustainable Development

These doctrines have become fundamental components of environmental jurisprudence and have been cited in landmark rulings such as Vellore Citizens' **Welfare Forum v. Union of India** and **M.C. Mehta v. Union of India**.

Conversely, the U.S. Supreme Court has generally adopted a more limited stance, often granting deference to the EPA and Congressional intentions, though recent decisions—such as **West Virginia v. EPA** (2022)—have indicated a growing willingness to scrutinize the environmental agencies' regulatory authority.¹⁵

4.1. INDIAN LEGAL FRAMEWORK FOR THE PROTECTION OF ENVIRONMENT

Before India's independence, numerous environmental preservation and protection statutes existed but the actual force came only after the United Nations conference on the Human environment (stockholm,1972) . In India under the influence of Stockholm Declaration, the nation council for environment policy and planning in the Department of science and technology was established. This council later change into a full – grown Ministry of environment and forest in 1985.In 2014, the NDA government change the name and now it is known as the Ministry of environment, forest and climate change which is now the higher administrative body in the state for regulating and ensuring protection, management and improvement of natural environment. After the Stockholm conference, the parliament relating to protection, preservation and improvement of natural environment. The Indian parliament and various state legislatures have enacted numerous laws relating to protection and improvement of natural environment. The consciousness and deliberation for environment covers numerous ecological problems like water pollution, air

¹⁵ WORLD INTELLUTUAL PROPERTY ORGANIZATION,<https://www.wipo.int/publications/en/details.jsp?id=4141&plang=EN>

pollution and soil pollution, urbanization, industrialization, land degradation, diminution of natural resources etc.¹⁶

4.2. CASE STUDIES OF EFFECTIVE NATIONAL LAWS

1. *M.C. Mehta v. Union of India (1987)* (Ganga Water Pollution Case),

A social worker brought a matter to the notice of the court through a public Interest Litigation. He claimed that the tanneries at Jajmau near Kanpur were polluting the water of the Ganga River.

The Hon'ble court ordered:

“For the closer of these tanneries to stop the grave public nuisance caused by them. Further, the court said that the government had not taken any steps to prevent nuisance and water pollution in spite of the duty to implement the provision contained in the water (Prevention and control of pollution) Act, 1974. The court issued appropriate directions for the Ganga 's water from being polluted.”¹⁷

2. *Vellore Citizens Welfare Forum v. Union of India (1996)*

In this case Hon'ble court held that the landmark case concerning pollution from tanneries and industries in Tamil Nadu. The petition highlighted the contamination of the Palar River and its impact on the region's water supply.

The Supreme Court in directed the central government to establish an authority under the Environment Protection Act, applying the precautionary and polluter pays principles. It imposed fines on tanneries, mandated common treatment facilities and ordered the closure of non-compliant units.

The court also affirmed the Tamil Nadu Pollution Control Board's guidelines and directed the formation of a “Green Bench” in the Madras High Court. The case set important precedents for environmental protection and enforcement in India.¹⁸

3. *Indian Council for Enviro-Legal Action v. Union of India (1996)*

In this case Hon'ble court held that the Supreme Court defined the absolute liability standard for environmental harm resulting from hazardous industries. The ruling established the Polluter Pays Principle as a legally enforceable doctrine and required businesses to take responsibility for

¹⁶ MOHD SUFIYAN KHAN, ENVIRONMENTAL JURISPRUDENCE IN INDIA 142 (The lawgical junction and MJS 2024)

¹⁷ AIR 1987 SC 1086.

¹⁸AIR 1996 SC 2715

environmental rehabilitation. This case is considered a significant milestone in integrating environmental accountability into Indian constitutional law.¹⁹

4. *Goa Foundation v. Union of India (2014)*

In this case Hon'ble court held that the all the iron ore and manganese ore leases had expired on 22nd November, 2007 and hence, any mining operation carried out by the mining lease holders after that date was illegal. It was also held that all the mining lease holders had enjoyed a first deemed renewal of the mining lease and for a second renewal an express order was required to be passed in view of and in terms of Section 8(3) of the MMDR Act.²⁰

5. ENVIRONMENTAL IMPACT ASSESSMENT

The role of public participation in environmental impact assessment (EIA) has undergone a major shift in recent years. In the early days of EIA, the main forms of participation were public hearings and other types of consultation where planners could obtain information about public concerns and educate the public about the proposed projects. In most cases, the emphasis was on the latter aspect of the information exchange. The perceived gap between factual and value judgement supported the view that the public could contribute to a subjective evaluation of the project goals, whereas experts would provide the necessary scientific and technical information about potential environmental impacts. Along with fading confidence in neutral scientific knowledge and rationalistic models of planning 1, 2, 3, 4, EIA has lost its credibility as a process driven by experts in which the public can only react to ready-made reports such as environmental impact statements. The emerging view of EIA holds that participation is not just a supplementary part of the assessment; rather EIA is a collective process where different actors—affected citizens, interest groups, authorities, and experts—can deliberate and exchange their views of the goals and their knowledge on the impacts of the proposed developments.²¹

5.1. LEGAL FRAMEWORK FOR ENVIRONMENTAL IMPACT ASSESSMENT

A systematic and comprehensive method of assessing the potential environment effects of ideas for projects, regulations, or activities is known as environmental impact assessment. It is a procedure that aids decisions-make in comprehending the potential environment repercussions of a project, both beneficial and detrimental and it offers data to support decisions and lessen detrimental outcomes.

¹⁹ AIR 1996 SC 1446

²⁰ (2014) 6 SCC 590

²¹ ENVIRONMENTAL IMPACT ASSESSMENT REVIEW,
<https://www.sciencedirect.com/science/article/abs/pii/S0195925500000597>

In *Nuclear Tests case*, this case established the ‘principal of environment impact Assessment and the obligation of states to conduct such assessments for activities that may have transboundary environmental impact.

In the case of *India council for Enviro legal action v. Union of India* the Hon’ble Supreme Court of India held that the projects with probable impact on the environment must undergo a rigorous and complete **Environmental impact assessment** process, and it also mandate public participation into decision – making. It also emphasized the importance of sustainable development.²²

6. NATURAL RESOURCES REGULATION

Natural resources law defines how private property owners may use the environmental resources on their land. Natural resources are those parts of the environment with economic or social value. Natural resources include air, water, timber, minerals on and under the surface, animals, and soil use.

"Natural resources law" is sometimes used interchangeably with "environmental law," but they differ. Natural resources law has to do with how a private owner may use their resources for profit or how the government may use them for the public benefit. Environmental law regulates how that use impacts the environment²³

6.1. THE FOREST RIGHTS ACT,2006

The Parliament enacted Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 for the betterment of the forest dwellers and to secure their inalienable rights which they inherited from forests. The main aim of the act is to:

*“The restitution of deprived forest rights across India, including both individual rights to cultivate land in forest area and community scope and historic opportunity of integrating conservation and livelihood rights of the people.”*²⁴

6.2. THE WILDLIFE PROTECTION AND LAWS IN INDIA

Wild life, which is a part and parcel of our natural environment, constitutes prosperity and capital of the country. It includes undomesticated animals, wild, bird, wild plants flora- fauna, and

²² MOHD SUFIYAN KHAN, GRUNDNORMS AND GREEN RIGHTS OF ENVIRONMENTAL JURISPRUDENCE 52 (The lawgical junction and MJS 2023).

²³ FIND LAW, <https://www.findlaw.com/hirealawyer/choosing-the-right-lawyer/natural-resources-law.html> (last visited sep22,2022)

²⁴ MOHD SUFIYAN KHAN, ENVIRONMENTAL JURISPRUDENCE IN INDIA 146 (The lawgical junction and MJS 2024)

vegetation, etc. However, human being, in the path of advancement and growth and for his self-center ends, is causing much distraction to the forest and wild life. Wild life is God 's gift its decline has an unfavorable consequence of natural environment, and therefore there is an urgent requirement to prevent the Wild life, Hence, in order to preserve and protect the wild life from obliteration, the parliament of Indian passed the wild life (Protection) Act in the year 1972.²⁵

7. ENFORCEMENTS MECHANISMS IN ENVIRONMENTAL LAWS

The Ministry of Environment, Forest and Climate Change is the nodal ministry for enforcing the regulatory framework related to the environment, biodiversity, forests, wildlife and climate change in India. It lays down the general policy framework on environmental issues.

The Central Pollution Control Board (CPCB) is the central authority that frames the standards and implements the regulations relating to industrial pollution, waste management, emissions or effluent standards, etc. across the country with the assistance of the relevant State Pollution Control Boards (SPCBs) and the Union Territory Pollution Control Committee (UTPCCs). The CPCB can issue directions, restrict operations and impose environmental compensation against non-compliant industries.

The SPCBs and UTPCCs are responsible for granting environmental consents to the industries located within their jurisdiction and thus monitoring the operations of the industries on a regular basis. They are the authorities responsible for ensuring proper implementation of the regulations relating to pollution control, waste management, compliance with emission and effluent standards, etc. They have the power to issue directions, closure orders and remediation costs against non-compliant industries.²⁶

7.1. JUDICIAL REMEDIES AND LITIGATION

PUBLIC INTEREST LITIGATION.

As already mentioned earlier, the Indian higher judiciary is not content with its role as a mere arbiter or adjudicator. It has claimed and asserted to play a more activist role to advance the constitution framework for the effective protection and enforcement of fundamental rights. It is in this context that the concept of PIL assumes significance. This new genus of litigation, which has been the handmaiden of judicial activism in India, has metamorphosed the very nature of judicial process. The basic philosophy of PIL in India was inspired by the American judicial experience in the field of public Interest and Social Action Litigation. The phenomenon of PIL in India has been

²⁵ MOHD SUFIYAN KHAN, ENVIRONMENTAL JURISPRUDENCE IN INDIA 148 (The lawgical junction and MJS 2024)

²⁶ LEXOLOGY, <https://www.lexology.com/library/detail.aspx?g=ee60c873-1bd3-494e-826c-0619b0438d90> (last visited oct 1,2022)

build and shaped mainly by activist judges such as *a Krishna Iyer and P.N Bhagwati* who have been the main architect of PIL movement in the country.

It may be noted that it was *Justice Krishna Iyer* who first inducted the concept of PIL, into the Indian judicial ethos in 1976. This is evident from his observation in *Mumbai Kamgar Sabha v. Abdul Bhai*.²⁷

7.2 LANDMARK JUDGEMENT.

1. M.C. Mehta v. Union of India, 1997

The Hon'ble Indian supreme court in. *M.C. Mehta v. Union of India*, (oleum Gas leakage or Shriram Food and Fertilizer Industry case) declared that:

*“We have to develop our own law and if we find that it is necessary to construct a new principal of liability to deal with unusual situation. on account of hazardous or inherently dangerous industry we should not hesitate to evolve principal of liability through such principal might have been evolved in England.”*²⁸

2. M.C. Mehta v. Union of India (1987) (Ganga Water Pollution Case),

A social worker brought a matter to the notice of the court through a public Interest Litigation. He claimed that the tanneries at Jajmau near Kanpur were polluting the water of the Ganga River.

The Hon'ble court ordered:

*“For the closer of these tanneries to stop the grave public nuisance caused by them. Further, the court said that the government had not taken any steps to prevent nuisance and water pollution in spite of the duty to implement the provision contained in the water (Prevention and control of pollution) Act, 1974. The court issued appropriate directions for the Ganga 's water from being polluted.”*²⁹

3. Vellore Citizens Welfare Forum v. Union of India (1996)

In this case Hon'ble court held that the landmark case concerning pollution from tanneries and industries in Tamil Nadu. The petition highlighted the contamination of the Palar River and its impact on the region's water supply.

The Supreme Court in directed the central government to establish an authority under the Environment Protection Act, applying the precautionary and polluter pays principles. It imposed

²⁷ MOHD SUFIYAN KHAN, ENVIRONMENTAL JURISPRUDENCE IN INDIA 126(The lawgical junction and MJS 2024)

²⁸ AIR 1997 SC 734; (1997) 2 SCC 353

²⁹ AIR 1987 SC 1086

finances on tanneries, mandated common treatment facilities and ordered the closure of non-compliant units.

The court also affirmed the Tamil Nadu Pollution Control Board's guidelines and directed the formation of a "Green Bench" in the Madras High Court. The case set important precedents for environmental protection and enforcement in India.³⁰

4. Indian Council for Enviro-Legal Action v. Union of India (1996)

In this case Hon'ble court held that the Supreme Court defined the absolute liability standard for environmental harm resulting from hazardous industries. The ruling established the Polluter Pays Principle as a legally enforceable doctrine and required businesses to take responsibility for environmental rehabilitation. This case is considered a significant milestone in integrating environmental accountability into Indian constitutional law³¹.

5. Goa Foundation v. Union of India (2014)

In this case Hon'ble court held that all the iron ore and manganese ore leases had expired on 22nd November, 2007 and hence, any mining operation carried out by the mining lease holders after that date was illegal. It was also held that all the mining lease holders had enjoyed a first deemed renewal of the mining lease and for a second renewal an express order was required to be passed in view of and in terms of Section 8(3) of the MMDR Act³²

8. FUTURE DIRECTIONS IN ENVIRONMENTAL LAW AND POLICY

8.1 INTEGRATING SUSTAINABLE DEVELOPMENT GOALS (SDGS)

The Sustainable Development Goals (SDGs) of the UN are closely linked to the future of environmental law, especially:

- a) SDG 13: Addressing Climate Change
- b) SDG 14: Submerged Life
- c) SDG 15: Terrestrial Life

Future laws must do the following to bring legal systems into line with these global goals:

- a) Require national environmental planning to adhere to the SDGs.
- b) Make it mandatory for Environmental Impact Assessments (EIAs) to take SDG indicators into account.

³⁰ AIR 1996 SC 2715

³¹ AIR 1996 SC 1446

³² (2014) 46 SCC 590

- c) Encourage cross-sectoral and intermenstrual cooperation for sustainability.

For instance, the European Union has started incorporating SDG performance targets into regulatory assessments and environmental laws.

8.2. LEGAL RECOGNITION OF ENVIRONMENTAL RIGHTS

A healthy environment is more likely to be seen as a basic human right in future policy frameworks.

- a) Constitutions in nations including **Ecuador, France, and Colombia** have acknowledged the "**Right to Nature**" or "**Right to a Clean Environment.**"
- b) Access to a sustainable, healthy, and clean environment was proclaimed a fundamental human right by the UN General Assembly in 2022.

Article 21 jurisprudence may be further strengthened or explicit constitutional amendments may be pursued by India and comparable nations.

8.3. STRENGTHENING ENVIRONMENTAL GOVERNANCE

The effectiveness of environmental law depends not just on rules, but on the institutions that enforce them.

Key proposals for future governance include:

- a) Establishment of dedicated Environmental Courts or Green Tribunals in more jurisdictions.
- b) Enhanced decentralization of environmental governance to local bodies and communities.
- c) Development of real-time environmental compliance systems using remote sensing, AI, and IT technologies.

8.4. ADDRESSING EMERGING ENVIRONMENTAL CHALLENGES

Legal frameworks must be updated to handle emerging challenges when environmental dangers change, including:

- a) International legal procedures are required to safeguard climate refugees in the context of climate migration and displacement.
- b) More robust international agreements and national prohibitions on plastic and e-waste pollution.
- c) Synthetic biology and geoengineering: new legal frameworks to handle high-risk, unpredictable technology.³³

³³ United Nations (2022). Declaration on the Right to a Healthy Environment, <https://news.un.org/en/story/2022/07/1123482>.

9. CONCLUSION

9.1 RECAP AND KEY FINDINGS

Having an emphasis on the development, tenets, and efficacy of both national and international legal frameworks, this study has examined the complex relationship between environmental law and sustainable development. Through environmental impact assessments, natural resource management, and climate change law, it has examined how laws try to operationalize sustainability. It has also looked at how courts, green tribunals, and public engagement shape enforcement mechanisms.

Foundational principles including the Polluter Pays Principle, Precautionary Principle, and Sustainable Development have been established by landmark court interventions, especially in India, such as the M.C. Mehta series, Godavarman, and Vellore cases. Global collaboration has been made possible by international agreements such as the Paris Agreement and the Kyoto Protocol, although implementation is still inconsistent.

9.2 SUGGESTED REFORMS AND POLICY SHIFTS

The following changes are suggested in order to close this gap and ensure that environmental governance is future-proof:

- a) **Codify Environmental Law:** To assure consistency and combine disparate laws, create a single Environment Code.
- b) **Acknowledge Environmental Rights Legally:** Make the right to a healthy environment a clear and essential one.
- c) **Strengthen Regulatory Institutions:** Increase the autonomy, capacity, and power of organizations such as EIA Appraisal Committees, Pollution Control Boards, and the National Green Tribunal.
- d) **Adopt Technology-Enabled Enforcement:** For compliance inspections, use remote sensing, AI-based risk alarms, and real-time monitoring.
- e) **Boost Public Involvement:** Establish channels for local environmental monitoring, online environmental complaints, and community involvement.
- f) **Integrate SDGs and Climate Resilience into Law:** Include SDG indicators, circular economy concepts, and climate adaptation in environmental decision-making.