REDVET - Revista electrónica de Veterinaria - ISSN 1695-7504
Vol 25, No. 1 (2024)
http://www.veterinaria.org
Article Received: 21-03-2024 Revised: 11-04-2024 Accepted : 04-05-2024

Strengthening Global Environmental Governance: Analysing The Role Of International Legal Frameworks In Addressing Pollution And Climate Change

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ABSTRACT
Environmental degradation and climate change includes some major issues that affect sustainable development in India. Policies exist at the legal level regarding the controlling of environmental pollution, however, the problem of enforcement continues. The current paper investigates the efficiency of the Indian environmental legislation and acts such the Environment Protection Act, the Air (Prevention and Control of Pollution) Act, and the Water (Prevention and Control of Pollution) Act. Further, it discusses India's international treaties like the Paris Agreement and measures the extent to which nations are compliant with those undertakings as per the domestic policies. Based on these two investigations of judicial initiatives, policy actions, and governance rules, this investigation highlights enforcement deficiencies and offers suggestions for improving the environmental governance framework. The paper also calls for an integrationist model of regulation where legal instruments that are orthogonal to the principle of sustainable development will be encouraged as well as the participation of the common people so as to support India's sustainable development goals in the face of degraded environmental quality and climate change.

Keywords-Kyoto Protocol, Climate Change, Water pollution, Deforestation, Soil pollution.

1. INTRODUCTION

The rate at which natural environment continues to deteriorate throughout the world, as well as the increasing effects of climate change have warranted profound scrutiny of the existing structure of environmental governance, especially in this context of a rapidly emerging economy like India with high population density and growing industrial expansion resulting in immense pressure on the country's environmental asset that is already burdened by the escalating problems of air and water pollution, loss of forests, declining species diversity, and the rising rate seems to be increasing on daily basis. In the context to India's endeavour's to address these environmental challenges is its legal regime which encompasses an elaborate set of legislation regulation and policies that seek to protect the environment, foster sustainable development, and to ensure compliance with India's international obligations on climate change. However, despite the comprehensive nature of environmental legislation and its idealistic capacity to provide a framework for management of environment within the country, there is a seminal disconnection between the promulgation of their practical implications, political structures, bureaucratic procedures and highly socialised structure of power that defines the measures for environmental management in India.[1] India's environmental legislation is rooted in the Constitution of India which guarantees protection of the environment and forests and wildlife under Article 48A[2] and calls for every citizen to have a duty to protect the environment under Article 51A(g).[3] The most elaborate of all the laws is the Environment (Protection) Act, 1986[4] which is hailed as the charter law of the environment in India empowering the Central Government to regulate industrial operations and even fix environmental standards to protect the ecology of the nation. However, in harmonising the international obligations with domestic legislation in the environmental protection, India faces challenges major to the conflict between economic growth and environmental protection resulting in delayed climate actions, and unclear policy implementation on climate change and sustainable development at national and sub-national levels.

Furthermore, the judiciary has been very active in the protection of the environment with regard to environmental litigation through the PIL process through which citizens and civil society organizations can present legal actions for consideration by the courts, there has been significant achievements on environmental cases which have led to judicial decisions such as M.C Mehta v/s Union of India this matter was regarding the industrial pollution in the Ganga River,[5] The Vellore Citizens Welfare Forum v/s Union of India (1986) this matter was regarding the pollution cased in river

[1] Marie Valencia, "Rate of Environmental Damage Increasing Across the Planet but There Is Still Time to Reverse Worst Impacts if Governments Act Now, UNEP Assessment Says" *United Nations Sustainable Development*, 2016*available at*: https://www.un.org/sustainabledevelopment/blog/2016/05/rate-of-environmental-damage-increasing-across-planet-but-still-time-to-reverse-worst-impacts/ (last visited September 30, 2024).
[2] Constitution of India, art. 48A.
[3] Constitution of India, art. 51A(g).
[4] The Environment (Protection) Act, No. 29 of 1986, India Code (1986).
[5] *M.C. Mehta v. Union of India, (1987) 4 SCC 463.*

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banks,[6] T.N. Godavarman Thirumulpad v/s Union of India was the matter concerning forest conservation[7] and all cases that are enlisted above played a significant role that judiciary has not hesitated to intervene on environmental matters to ensure that government and other players in the society answer for their roles in environmental destruction.

Nevertheless, judiciary has been intervening frequently, however, the actual situation is grim even with having strong and elaborate legal framework to protect environment. India today is living in a worsening environmental condition, air quality of many cities like Delhi is very poor, water sources such as river Yamuna and Ganga are seriously polluted, deforestation continues affecting the bio-diversity and also impacting the climate change; the effectiveness of India's environmental governance structures and calls for honest immediate action. It is also worthy of note that the institutional framework of environmental regulation in India is extremely fragmented by means of numerous laws, regulation and authorities frequently overlapping. For example, pollution control laws are administered and enforced by the CPCB and SPCBs, whose effectiveness in enforcing compliance, levying penalties, as well as enforcing compliance with standard setting procedures is undermined by factors such as inadequate technical skills and expertise, limited fiscal capacity, and political intervention, which significantly which further undermines the efficacy of environmental regulation in the country.

In addition, there is increasing appreciation of the need to harmonise environmental governance with development objectives, especially in the context of the post-2015 development agenda of the United Nations, which is anchored on the Sustainable Development Goals (SDGs); for India, the pursuit of the SDGs will require not only the enhancement of the legal framework for environmental protection, but also the mainstreaming of environmental concerns into development planning across all tiers of government, so to achieve sustainable and inclusive development that will ensure that the environment and human beings are protected.[8] Although India has come a long way in developing legal and policy frameworks for environmental governance, the country still has major challenges in terms of law implementation, institutional capacity, and sustainable development, and as the effects of climate change and environmental degradation intensify, there is a need for a radical overhaul of India's environmental governance system with a view to strengthening regulatory compliance, increasing public participation, and mainstreaming environmental concerns into development agendas in order to enable India to effectively fulfil it's environmental and climate-change obligations and support sustainable development in the long run.[9]

1.2 Aims and Goals of the Paper and International Dimension

The purpose of this paper is to be able to argue on the need to embrace legal systems in addressing problems of the global environment such as pollution and climate change from a global perspective. It is to gauge on its effectiveness and the degree of compliance in the current international and national legal system and for reflecting on how and in what manner the legal system can be enhanced to meet the urgency of environmental issues. The paper will also compare and contrast the concepts of environmental conservation and economic growth and give details of those countries where legal interventions have worked well in this direction. Also, it will examine civil society engagement in demanding improved environmental governance and how the legal system can be used to increase public participation. It is important to consider the global approach of this paper since environmental problems are not limited by state borders. The ecosystems are interrelated and the flow of economic activities is global hence pollution in one region can impact another, climate change is a problem that affects everyone and hence requires a collective effort. Through the analysis of both the international legal instruments and the national legal responses, this paper will provide a comprehensive perspective on how the legal measures can be enhanced in order to address not only the current environmental challenges but also to respond to the climate change and the other environmental changes that are already happening in the world, in order to create the world that is sustainable for all.

2. LITERATURE REVIEW

1. The paper by **O.P. Dwivedi and B. Kishore, "Protecting the Environment from Pollution"** in the article "India's Legal and Institutional Mechanisms: A Review" published in Asian Survey (1982), the author examines the environmental problems in India including air and water pollution, deforestation, and urbanisation. It focuses on the failure to enforce environmental laws and the conflict of authority between the federal and state governments. However, challenges such as bureaucracy, lack of public engagement, and poor implementation of the law affect governance. The authors suggest that these issues require improved coordination, institutional change, and sound land use management.[10]

[6] *Vellore Citizens Welfare Forum v. Union of India, (1996) 5 SCC 647.*
[7] *T.N. Godavarman Thirumulpad v. Union of India, (1997) 2 SCC 267.*
[8] Martin, "The Sustainable Development Agenda" *United Nations Sustainable Developmentavailable at*: https://www.un.org/sustainabledevelopment/development-agenda/ (last visited September 30, 2024).
[9] Nisha Yadav and Fincy Pallissery, "International investments and environmental protection in India - Policy and implementation gaps in mitigating the carbon footprints," 5 *Global Transitions* 217–24 (2023).
[10] O. P. Dwivedi and B. Kishore, "Protecting the Environment from Pollution: A Review of India's Legal and Institutional Mechanisms," 22 *Asian Survey* 894–911 (1982).

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2. The paper by **B. Bowonder and S. S. Arvind "Environmental Regulations and Litigation in India,"** the authors discuss the legal aspects of India, including the Environmental Protection Act that enhances environmental administration through pollution control and environmental management programmes. The authors discuss recent legal precedents that have shaped planning of projects, noting that public interest litigation is on the rise to compel wrongdoers to change. The study also goes further to discuss the need for regulatory reforms such as enhanced implementation of the EIA, introduction of compensation standards and environmental management capacity development. Implications drawn from these cases include the need to enhance the institutionalisation of regulatory mechanisms for better environmental management.[11]

3. The book by **Kanchi Kohli and Manju Menon 'Development of Environmental Regulation in India,'** critically examined about the recommendations from the T S R Subramanian Committee for de-greening of the environmental standards and restricting people's participation under the disguise of economic growth. The authors claim that such recommendations undermine environmental governance and may even contribute to problems of pollution and climate change. They also give a detailed account of the EIA regime in India since its inception in 1994, its contribution towards public involvement and environmental concerns and stress on the need for change that does not erode environmental safeguards.[12]

4. The paper by **Parismita Bhagawati and Paramita Dey, "Environmental Constitutionalism in India: A Review"** published in 2024 in the journal Ecology and Conservation the work critiques India's handling of environmental policies focusing on major issues including weak enforcement and disjointed efforts at the government level. The challenges restrict effective pollution management and sustainable land use practises effectively. The scholars propose urgent reforms in institutions to correct these issues and demand improved teamwork among agencies to efficiently carry out environmental regulations.[13]

3. GLOBAL ENVIRONMENTAL ISSUES

Today, the world has been threatened by several complex environmental issues that are interrelated in the contemporary world. These challenges have been aggravated due to the aspect of industrialization, carrying out of un-sustainable activities and exploitation of natural resources. Among such intensifying international issues, climate change, pollutions, deforestation, species loss, and desertification are among the worst. These environmental crises not only have a balance of ecological systems disturbed but they have put into hazard the lives, the income, and stability of societies across the globe. Thus to solve these problems one has to master the cause and effect and the international implication of each of them.

3.1 The Rising Impact of Climate Change: Melting Glaciers, Rising Sea Levels, and Extreme Weather Events

One of the largest and most pressing questions of the 21st century can be safely referred to as a global climate change. This is because major gases such as carbon dioxide and methane –the two main heat trappers are mostly released through human activities like; using fossils, cutting down trees, industrial processes among others. Through this process these gases trap heat leading to average temperature of the earth rising little by little. The effects of climate change are multiple and are taking place all over the global map. [14] Other of the best-known and most alarming signs of climate change which have been identified in the recent past include glaciers and polar ice caps. The glaciers in Arctic and Antarctic regions have gone on melting at unrelenting rates which has in turn contributed to rise in sea level. The problem is also that it is melting ice not just for animals who lives in cold climate such as polar bears or penguins but also in general.[15] As global warming becomes more and more of an issue, sea levels keep rising and this leads o the gradual submersion of coasts and islands – a problem that is threatening the very existence of such countries as Maldives and Kiribati. In addition, the increasing population density of immense coastal metropolitan areas such as New York, Mumbai, and Tokyo entail potential disasters in flooding with implications for millions of lives.[16] Providing more detail, climate change is also a

[11] B Bowonder and S S Arvind, "Environmental regulations and litigation in India," 4 *Project Appraisal* 182–96 (1989).
[12] Kanchi Kohli and Manju Menon, *Development of Environmental Laws in India* (Cambridge University Press, Cambridge, 2021).
[13] Parismita Bhagawati and Paramita Dey, "Environmental Constitutionalism in India: A Review," 30 *Ecology, Environment and Conservation* 925–9 (2024).
[14] "Global Warming / Climate Change Frequently Asked Questions (FAQ) | EESI,"*available at*: https://www.eesi.org/climate-change-FAQ (last visited September 30, 2024).
[15] "Global Climate Change, Melting Glaciers," *Environment*, 2009*available at*: https://www.nationalgeographic.com/environment/article/big-thaw (last visited September 30, 2024).
[16] "Climate Change: Global Sea Level | NOAA Climate.gov," 2023*available at*: http://www.climate.gov/news-features/understanding-climate/climate-change-global-sea-level (last visited September 30, 2024).

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lead cause for boost in the frequencies and intensities of weather events such as hurricanes, floods, droughts, heat waves among others. They affect crops and lead to famine and huge financial loss. For example the recent disaster that include the bush fires in Australia and California which are resulted from high temperatures and long dry seasons have killed people, displaced others and destroyed properties and ecosystem which play critical role in hosting different species. Moreover, the frequency of heavy downpours and as a result the fre-quent occurrence of floods in many geographic regions has displaced millions of people, and in the least developed countries has result-ed in humanitarian disasters.

3.2 Pollution: Air, Water Soil and Its Global Impact

Environmental pollution in all its manifestation is known to have wide reaching impacts that include negative effects on human health. Fluke and environmental contamination remain high in many regions that pollute the air, water and soil and affect natural ecosystems and resources.

Pollution of the air occurs from the emission of gases from industries, vehicles, power producers especially those using fossil energy sources. The World Health Organization claimed that air pollution is becoming a cause of numerous early deaths from related diseases, including respiratory and cardiovascular diseases. Communities are at high risk since air pollution is relatively high in areas such as Delhi, Beijing, and Mexico City among others. In fact, it helps to bring about climate change mainly because of the large amounts of carbon dioxide and methane that are set free into the environment. Air Pollution is not localized in the surrounding which it occurs; particles such as Particulate Matter (PM) and nitrogen oxides can drift to areas which are very far from the original sources.[17] Another environmental problem concerns water pollution which results from industrial effluent and agricultural, and domestic wastewater. Because pollution also consists of discharges of toxic substances – including heavy metals, pesticides, and plastics into rivers, lakes, and oceans it has caused a disturbance to the river and lakes ecosystems and fertility of the sea. Single Use Plastics has only aggravated this problem because millions of tons of plastics end up in the ocean every year. This has compacted into immense vortices or 'garbage islands', similar to the Great Pacific Garbage Island which is already as large as Texas. Microplastic is consumed by marine animals, and some of it has already gotten into the food chain, causing anxiety in the context of humans' health. It also poses a threat to water sourcing communities obtained water for drinking, farming and sanitation purposes hence causing water hiked and high risk of water borne diseases.[18]

As has been described in the real sense, soil pollution is a silent killer that poses a big threat to food security and ecosystem. The use of chemical fertilizers, pesticide and regular discharge of industrial wastes have therefore contaminated the soils and have reduced the fertility levels of soils thus putting down significant agricultural yields. In many regions of the world, soil health has deteriorated through soil erosion, compaction, reduced organic matter content, and other factors that negatively affect crop production and farm income as well as the world's food supply. Soil pollution affects the environment in many ways by disruption of food chain disturbances hence the absence of plant and animal species that are determine by the heath of the soil. Deforestation, Biodiversity loss, and desertification as the major environmental crises consequently. They are closely connected issues as vandalism of the forests, introduction, and extinction of living creatures and global desertification added up to the global problems. All of these problems are caused by improper use of land and affect the entire world at large in its impacts. According to Hergarten, deforestation relates to the wholesale removal of forest cover mainly resulting from expansion of farming land, logging activities and construction. Topics covered are diverse, as forests affect climate by absorbing CO2 and providing homes for a vast number of species. Though, the increase in measures of deforestation as can be evidenced by the Amazon rainforest is enhancing the emission of carbon and loss of species' diversity. The greatest of all the South American rainforests is the Amazon that is referred to as the lungs of the globe and has badly suffered deforestation in the last few decades mostly due to ranching and soy farming. This occurrence leads to global warming and also endangers indigenous groups of people who directly rely on the forests for their existence and usual living.[19] The loss of species is always attributed to factors such as habitat degradation, pollution and climate change. The high rate of extinction of species has an impact on negatively the ecosystems and reduces the capability of the ecosystems to supply us useful services such as pollination, water purification and regulation of climate. The loss of formats also affects the species themselves, which have value beyond the mere contribution to the beauty of the natural environment; more and more of the plants and animals that people use for food, medicine, or to keep ecosystems running as they should are disappearing. The World Wildlife Fund (WWF) has estimated that annihilation of vertebrates has been averaging at 60 percent in the last forty years, thus strengthening the current extinction scenario.[20]

[17] "Ambient (outdoor) air pollution,"*available at*: https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health (last visited September 30, 2024).
[18] Ranjeet Kumar Mishra et al., "Emerging pollutants of severe environmental concern in water and wastewater: A comprehensive review on current developments and future research," 6 *Water-Energy Nexus* 74–95 (2023).
[19] Hannah Ritchie and Max Roser, "Deforestation and Forest Loss" *Our World in Data* (2023).
[20] Kahrić Adla et al., "Chapter 9 - Degradation of ecosystems and loss of ecosystem services," in J. C. Prata, A. I. Ribeiro, *et al.* (eds.), *One Health* 281–327 (Academic Press, 2022).

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Desertification is the gradual conversion of fertile land into desert base on the effects of drought, deforestation and unsustainable farming. Desertification has major impact on millions of people through loss of farmland that is mostly in the dry and semi-arid regions hence foods scarce regions. The Sahel region in Africa is maybe one of the best examples of how the process of desertification can lead to a continually worsening poverty level and food insecurity situation, coupled with an increased propensity for conflict. When the area of arable land shrinks people experience increased competition of necessities and this results to social strain and people being pushed off their farms.
Climate change, flora and fauna pollution emissions, deforestation, loss of biological diversity and desertification are some of the giant threats facing the global environment in the contemporary society. Solving them calls for a regional policy cooperation, responsible use of land and interlinked international laws as part of the legal framework for the preservation of the environment. The implication of not taking any action is grave, all the same the high impact of these environmental crises can be combatted and efforts towards the achievement of sustainability made.

5. INTERNATIONAL ENVIRONMENTAL LAW REGIMES

With regard to the fact that environmental degradation issues such as pollution, deforestation, loss of biological diversity, climate change among others are on the increase in the global society, it is clear that there should be call for International legal instruments to provide legal principles that would create forum for countries to cooperate, pursue compliance means and implement solutions that relate to issues of environmental nature that transcend national boundaries. In the light of this context, it should be noted that the overall of numerous global treaties and conventions over the years that has laid some structures of what constitutes international environmental governance.[21] They also aimed at – Goals and plans for environmental conservation and sustainable development; Determination of common goals; Setting up of guidelines; Ensuring and promoting the compliance with the set standards and; Co-ordination between the environmental conservation and sustainable development. They include the Paris Agreement signed in 2015,[22] the Kyoto Protocol signed in 1997[23] and the United Nations Framework Convention on Climate Change (UNFCCC)[24] and the Convention on Biological Diversity(CBD).[25] International agreements on global environment are promote and coordinated by some international bodies such as United Nations Environmental Programme (UNEP) and Intergovernmental Panel on Climate Change (IPCC).[26] Nevertheless, there is a basic dichotomy between 'hard' and 'soft' law at the international level, in terms of their enforceability and practical impact.

4.1 Major International Instruments

International environmental agreements and Conventions act as the framework of governing the international environment. They are a sort of contracts between countries that stipulate general objectives and indicators in the sphere of environmental protection; they define legal and organizational conditions for addressing environmental problems that are international in nature. These treaties concern a wide range of issues including climatic change, biological diversity, pollution, and development. Some of the most well known international treaties that have embraced climate change and biodiversity are the Paris Agreement, Kyoto Protocol, and the Convention on Biological Diversity.
These agreements are important in influencing national policies because a host of countries are legally bound to amend the domestic laws with regard to the obligations assumed under these treaties. The issues are global in scope especially those to do with environment such as climate change and endangering species continue to present themselves hence the need for cooperation between countries. Lacking people's cooperation, the actions of states are frequently incapable of addressing the global problems of climate change, pollution, and animal and plant species' disappearance. Some of these international conventions do not only usher predispositions for cooperation but also of the information, funds and expertise required for the proper implementation of environmental policies especially in the third world.[27]

[21] United Nations, "Biodiversity - our strongest natural defense against climate change" *United Nationsavailable at*: https://www.un.org/en/climatechange/science/climate-issues/biodiversity (last visited September 30, 2024).

[22] United Nations, "The Paris Agreement" *United Nationsavailable at*: https://www.un.org/en/climatechange/paris-agreement (last visited September 30, 2024).
[23] Clare Breidenich et al., "The Kyoto Protocol to the United Nations Framework Convention on Climate Change," 92 *American Journal of International Law* 315–31 (1998).
[24] "UN Framework Convention on Climate Change – UNFCCC," *IISD Earth Negotiations Bulletinavailable at*: http://enb.iisd.org/negotiations/un-framework-convention-climate-change-unfccc (last visited September 30, 2024).
[25] Convention on Biological Diversity, 1992.
[26] "IPCC — Intergovernmental Panel on Climate Change,"*available at*: https://www.ipcc.ch/ (last visited September 30, 2024).
[27] "Global Climate Agreements: Successes and Failures | Council on Foreign Relations,"*available at*: https://www.cfr.org/backgrounder/paris-global-climate-change-agreements (last visited September 30, 2024).

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4.2 Mitigation of Climate Change: The Paris Agreement of 2015

The Paris Agreement, confirmed in 2015 during the 21 convened meeting on the Framework Convention on Climate Change (UNFCCC), may be considered one of the most important and comprehensive intergovernmental treaties on climate change. The idea of the Paris Agreement is to avoid the global mean temperature above 2°C above the pre-industrial levels As the specific requirements for the improvement of the agreement's application, it is crucial not to exceed the temperature increase level of 1.5°C. Unlike other climate accords, the Paris Agreement has a system of so-called nationally determined contributions meaning that individual countries set their emission reduction goals themselves. Thus, the Agreement focuses on the long-term objectives at the international level – CO2 emission reduction by 2050 to reach net-zero level and enhanced climate change negative impact the propensity.[28] Paris accord also shifted the nature of climate governance because it offered a new format to design climate measures that is more flexible and inclusive. By letting countries choose their own level of climate change mitigation based on the national conditions and development objectives more nations are likely to commit. Because of that, unlike previous treaties, the Paris Agreement does not set legally binding targets for CO2 emission but uses the system of transparency and peer pressure. They are supposed to submit new reports regularly about their steps, and there is a five-year look back to decide whether the NDCs are adequate to meet the temperature targets.[29]

The strength of the Paris Agreement is that, it has set ambitious targets and it has put power in the hands of developing countries The weakness of the Paris agreement, or the limitation of the Paris Agreement is that compliance and enforcement are lacking due to 'pledge and review' approach where preparation of the targets is non-binding in nature. Furthermore, the funding of climate measures in developing countries has long been a point of contention because developed countries pledged finance for climate change adaptation and mitigation, but the hands turned out to be shallower.

4.3 The Kyoto Protocol and Change Towards Carbon Markets (1997)

The Kyoto Protocol signed in 1997 and came into force in 2005 was the second protocol under UNFCCC which put legal commitments to reduce emission by annex-I parties. The Protocol was grounded in the principle of ''CBDR'' – ''common but differentiated responsibilities and respective capabilities'': all countries are to work on greenhouse gas emissions, yet the developed countries are the ones that are to take the lead as they are the ones who invented the emissions in the first place. Kyoto Protocol called for an average reduction of 5.2 % of greenhouse gas emission, from developed countries overall emission levels of 1990 by the first commitment period, which ended in 2008.[30] When it began to formulate the Kyoto Protocol, one of the major considerations was the use of market instruments to assist nations in achieving their emission targets. They comprised of emissions trading, clean development mechanism (CDM, and joint implementation (JI). The decision-making to establish carbon markets enable them to use emission reduction units which can be a flexibility in the process at a cheaper cost to the countries. The CDM especially allowed developed country Parties to finance the purchase of emission reduction projects in developing countries and get carbon credits in return. It helped both the developed countries fulfill their emission reduction target and enhanced sustainable development and provision of technology in the developing countries.

Nevertheless, the Kyoto Protocol had a number of difficulties on its way to implementation. Other such super powers like the United States never ratified the treaty while some like Canada withdrew from the Protocol on the grounds that the emission cut rate undertakings were perceived to have adverse effects on the economy. Moreover, the developed countries which were directed towards energy consumption under the Protocol but there were other countries like China and India that later became big emitters of energy in the successive years after signing of the treaty. Such restraints reached their climax at the Paris Agreement which supplanted the Kyoto Protocol in terms of setting a legally binding targets in contrast to the NDCs' bottom-up approach.[31]

4.4 The UNFCCC – United Nations Framework Convention on Climate Change

The UNFCCC was agreed at the 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro and is the sole legally binding treaty dealing with climate change. The long-term goal of the Convention is to

[28] "Paris Agreement - an overview | ScienceDirect Topics,"*available at*: https://www.sciencedirect.com/topics/earth-and-planetary-sciences/paris-agreement (last visited September 30, 2024).
[29] "Chapter 1 — Global Warming of 1.5 ºC,"*available at*: https://www.ipcc.ch/sr15/chapter/chapter-1/ (last visited September 30, 2024).

[30] Daniel Bodansky, Jutta Brunnée and Lavanya Rajamani, "Kyoto Protocol," 1st ed. *International Climate Change Law* 160–208 (Oxford University Press, 2017).
[31] Francesco Bassetti, "Success or failure? The Kyoto Protocol's troubled legacy" *Foresight*, 2022*available at*: https://www.climateforesight.eu/articles/success-or-failure-the-kyoto-protocols-troubled-legacy/ (last visited September 30, 2024).

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"prevent dangerous human interference of the climate system, which is interpreted to mean that the concentration of greenhouse gases in the atmosphere needs to be stabilized. The UNFCCC also provides the framework for the subsequent talks to take place, on the basis of the Kyoto Protocol for example as well as the Paris Agreement. Under the UNFCCC, countries are classified into three groups: Annex I for developed countries, Annex II for developed countries with special obligations to assist developing countries and Non Annex for the developing countries. This classification is in line with CBDR or the concept that means developed countries should carry out most of the measures of climate change mitigation while the developing countries should come up with measures that complement the efforts of the developed country.[32]

4.5 Convention on Biological Diversity (CBD)

The Convention on Biological Diversity CBD is another instrument that was adopted at the 1992 Earth Summit, of the United Nations it is international agreement which seeks to encourage conservation of biological, utilization of its components in a sustainable manner and to share fairly and equitably the benefits that arise there from.. The CBD understands that the preservation of biological diversity is a "common concern for mankind" and that which needs international cooperation, direction, and legal regime. The CBD has led to the development of several significant pathways and work plans including the Cartagena Protocol on Biosafety together with the Nagoya Protocol on Access to Benefit-Sharing. CBD has also helped to conserve the areas, advanced proper use of ecosystems, and ensured consideration of the factor of the inclusion of the factor of biodiversity in development of the country. Nevertheless, these actions have not slowed or even halted the loss of global and regional biodiverse, and the global community has failed to realize the goals set out under the CBD's Strategic Plan for Biodiversity 2011-2020.[33]

6. NATIONAL-LEVEL IMPLEMENTATION OF GLOBAL ENVIRONMENTAL FRAMEWORKS: DIFFICULTIES AND THE POSITION OF DEVELOPED AND DEVELOPING COUNTRIES

Challenges, success, and failures of implementing global environmental frameworks at the national level differ substantially across countries depending upon their level of economic development, institutional capacity and, political commitment. Climate change mitigation and pollution: It therefore requires local implementation of international treaties such as the Paris Agreement, Kyoto Protocol and other conventions. But the process has its' challenges. Quite a number of analysts have cited the most compelling issue as that between the international standards and national deeds. These general global paradigms need to be domesticated, a process that may be challenging because very few developed countries are willing to lose control over policy formulation and provide the kind of financial resources that are needed, especially for the developing world, which already has competing development agendas to address. Quite often governments may not have political stability or institutional qualities that enable them to implement policies such as environmental standards.[34] Important goals include economic growth to reduce poverty, improve infrastructure, and increase the provision of basic services – all at the cost of ignoring the environment as beleaguered countries aspired to do under international treaties. For instance, India impressed in Paris as one of the world's largest greenhouse gas emitters and a promoter of renewable energy at the international level; yet its cities struggle with air and water pollution arising from industries and expanding urban development. However, as we shall see both in this paper and in subsequent ones, developed nations, although financially and institutionally in a better position to implement such frameworks, are not bereft of political and economic challenges in doing so.[35] For instance, the USA which has been one of the leading producers of greenhouse gases withdrew from the Paris Agreement during Trump's presidency as part of the political system. On the other hand, the research will refer to successful cases such as Germany to show how nations have incorporated international climate commitments into their legal systems. The strategy commonly known as Energiewende- German Energy Transition policy to lower the reliance on the use of fossil energy and encourage the use of renewable clean energy has been a success in showing the world how nations can transition to green sources of energy for electricity generation without having to compromise the economy. However, such successes are not comparable to those of the other partners.[36] The recent deforestation crisis detected in Brazil and particularly in the Brazilian Amazonian biome evidences the inability of national level of governance to comply with global environmental policies. Contrary to its membership of numerous environmental agreements, Brazil has had difficulties enforcing laws that protect the

[32] "United Nations Framework Convention on Climate Change - Main Page,"*available at*: https://legal.un.org/avl/ha/ccc/ccc.html (last visited September 30, 2024).
[33] Biosafety Unit, "The Convention on Biological Diversity," 2022*available at*: https://www.cbd.int/youth/0003.shtml (last visited September 30, 2024).

[34] Kashif Abbass et al., "A review of the global climate change impacts, adaptation, and sustainable mitigation measures," 29 *Environmental Science and Pollution Research* 42539–59 (2022).
[35] Martin, "Infrastructure and Industrialization" *United Nations Sustainable Developmentavailable at*: https://www.un.org/sustainabledevelopment/infrastructure-industrialization/ (last visited September 30, 2024).
[36] Rudolf Rechsteiner, "German energy transition (Energiewende) and what politicians can learn for environmental and climate policy," 23 *Clean Technologies and Environmental Policy* 305–42 (2021).

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Amazon, thanks to political leadership that favours economic growth at the expense of environmental protection.[37] This example shows exactly how intertwined politics, economy, and environmental conservation are. Moreover, the world environmental movement shows that the developed and the developing nations are different in their capacities and obligations. The affluent nations, which are mainly responsible for greenhouse gas emissions, are supposed to take the lead in emission reduction and make financial contributions towards realizing the environmental goals of developing nations. However, the developing countries especially those from the African, Asian, and the Latin American region assert that their societies are the most exposed to the consequences of climate change although they have least contributed to climate change. For these countries, there is a concern of achieving climate change mitigation within a timeline touching on climate change issues when development issues such as energy, physical infrastructure, and poverty eradication are some of the most pressing global concerns at the same time. Climate finance where developed countries give out funding assistance to developing states is one of the key constructs of international environmental politics. While international treaties tend to dictate that developed country should take an active role in funding adaptation and mitigation to climate change in developing countries, physical transfer of funds does not always meet expectation leaving the implementation of important policies in the environmental niche in the developing world delayed.[38] Likewise, national-level implementation also face jurisdictional conflict within county implementing the program since it may be implemented at the federal and local levels of government but lacks the same coordination mechanism as those identified at the international level. For example, there are existing national level policies on renewable energy and pollution control in India that are also quite strong, but lacks in the State and local levels in their implementation. These jurisdictional issues are not peculiar to developing nations; even in the United States, the environmental policy plays out at the state level; some states adopt quotas for green energy while some others deny the reality of climate change and refuse to play roles that will ensure their respective states honor national commitments to international treaties. Thus, the described paper states that the process of implementing the global environmental frameworks at the national level is rather intricate and comprises several layers to be implemented in different countries. Thus, while some nations have implemented provisions of international legal instruments into national legislations and have made some serious strides toward emissions reductions and pollution mitigation, others encounter formidable challenges such as political opposition and economic constraints, jurisdictional issues, and lack of funds.[39] The developed and the developing world therefore still represent two sides of the same coin in global environmental management, thus the need for more international co-operation, funding, and most importantly expounding on challenges within individual countries while striving towards the common aim of attaining a sustainable common environment.

7. PROPOSALS FOR STRENGTHENING GLOBAL ENVIRONMENTAL GOVERNANCE: RECS, REGS, PARTICIPATION, AND FIRST PEOPLE'S ENGAGEMENT

Enhancing global environmental governance has emerged as an imperative counter measure to increased rate of environmental degradation that affects ecosystems, human beings and future of the planet. The existing international legal developments are important but as evidenced by various examples they lack enforcement mechanisms, effective accountability and address social equity concerns. In order to develop a more efficient and comprehensive structure several proposals are needed starting with enhancing the framework and coverage of international legal instruments. On this account, to maintain and develop interstate cooperation in the existing framework is one of the crucial tasks; And, correspondingly, to encourage stringent mechanisms of new international obligations, with clear, mechanism-specified division of commitments among the countries, especially as concerns the reduction of emissions, the protection of valuable species and habitats, and the effective utilization of resources. Today most international environmental treaties are soft-law that involves commitment through cooperation on the basis of peer pressure, as in the 'Paris Accord'. While this has made participation easier it has also made enforcement a challenge since countries fail to meet their targets with serious repercussions. Thus, the enhancement of international legal systems would need more legal obligations, which put the counties legally obligated to fulfill the environmental commitments, especially in climate change mitigation, reduction of deforestation rates and commitments to the improvement of the standard of pollution control. This may involve setting procedure on how to handle issues of conflict and non- compliance to rules and regulation that would be set and implemented by institutions vested with the task of externalizing countries or sectors that are in a position to violate their obligations.

Also, enhanced compliance and sanction measures are required in order to guarantee the actual implementation of global environmental regimes. Essentially, at the moment there are no well-developed enforcement measures that would allow,

[37] François-Michel Le Tourneau, "Is Brazil now in control of deforestation in the Amazon?" *Cybergeo: European Journal of Geography* (2016).
[38] Philip Kofi Adom, "The socioeconomic impact of climate change in developing countries over the next decades: A literature survey," 10 *Heliyon* e35134 (2024).
[39] Nsenga Ngoy et al., "Coordination mechanisms for COVID-19 in the WHO Regional office for Africa," 22 *BMC Health Services Research* 711 (2022).

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Article Received: 21-03-2024 Revised: 11-04-2024 Accepted : 04-05-2024

for instance, international environmental laws adopted to be effectively implemented or, in some cases, not even implemented at all at the national level. This requires a very effective mechanism of MRV of countries' performance with regard to provisions of environmental enhancements. This system would bring about openness and determinations on how Nations are compliant to standards of environment agreements. Perhaps these national progress could be independently and frequently evaluated by international humanitarian organizations like the United Nations Environment Programme (UNEP) or the Intergovernmental Panel on Climate (IPCC). If the countries do not fulfill those requirements, they should be punished by fines and restricted trade in the nations that cave in the agreements most frequently. Furthermore, tying environmental performance to economic rewards might promote even the improvement of performances, since countries would then have vested self-interests at the outcome to their environmental standards.

However, apart from legal and enforcement approaches, improving cooperation between states and international organizations is the key to effective international environmental management. Climate change, loss of biological diversity and pollution are cross-cutting problems that cannot be solved by any nation on its own. This requires further encouragement of international cooperation between not only developed first world nations and the third world nations, but also productive sharing of resources, technologies and knowledge. currently developed countries boasting technology and financial endowments should contribute more to the developing countries particularly in the areas of renewable energy & end efficient pollution check systems and viable collaboration check systems for climate change. This could be done through Mnuchin's climate finance mechanisms what by developed countries provides money for financing climate change in the developing countries. Further, there is a need for international organizations like the United Nations, the World Bank, and regional institutions to harmonize actions on the environment thus avoiding a proliferation of agendas and to ensure that concerted global institutional actions are taken simultaneously across THS throughout different fora. These organizations should also improve cooperation with civil society, businesses and communities and encourage multi-stakeholder approach to environmental management. Therefore, if the actors that are to be engaged in the decision-making and implementation is expanded to embrace the private sector and NGOs, then, there is a marked enhancement of the concept of global environmental governance as well as a definite advancement in this area.

On a surprisingly neglected area, there should be the component of enhancing utilization of indigenous knowledge in enhancing global environmental governance. The indigenous peoples have had their ways of managing the environment that has enabled them to harmonize with the environment ever since they discovered that they are subjugated slaves to the environment. Regrettably, indigenous knowledge has been excluded from global environmental management in most global policies while privileging scientific-technological discourses. But positive and sustainable practices of agricultural production, forest and water resource conservation and management are some of the priceless asset of indigenous knowledge system that are appropriate for solution of contemporary environmental problems. For instance, traditional fire use native Australian aborigines manage to minimize fire intensity and occurrence of wildfires, and through the technique of crop rotation, indigenous people of the Amazon Basin sustained biodiversities and maintain the soil fertility. Burying these practices within international environmental politics would not only improve the quality of environmental regulation but also protect indigenous people's rights to their land and resources. The following can be done to achieve this,; There should be the establishment of numerous structures in global environmental organizations through which indigenous people and their leaders can participate in decision-making and formulation of polices. Third, the unique need for all environmental treaties and accords must provide for indigenous peoples and acknowledge that their way and input must be recorded and preserved.

Finally, the promotion of vertical coordination in global environmental politics can only be achieved with the additional measures exploring the structural, legal, and social deficiencies of the current environment regime. Thus, we can construct a more cohesive, equitable and adaptive system of governing international relations, capable of responding to diverse multifaceted environmental issues present in the world today – by strengthening commitments through bettering current and future treaties, by improving the ability of the signatory countries to adhere to their commitments through better enforcement and accountability mechanisms, by improving cooperation between nations and the International organizations, implementing traditional Indigenous knowledge into International environmental policies and laws. Sustainability is thus a continuous process, and in the direction that is considered to be right we have to make use of science and technology We also know that for sustainability to be effective it will have to involve increased inter-sectoral and inter-national cooperation. Working together and with improved governance structures, the international community can more effectively protect the planet for this and future generations to embrace sustainable economic prosperity Golsonko 2010.

8. CASE LAWS

Case Name	Jurisdiction	Year	Key Issue	Outcome/Significance
M.C. Mehta v. Union of India (Ganga Pollution Case)[40]	India	1985	Industrial pollution in the Ganges River	The Supreme Court of India ordered the closure and relocation of polluting industries

[40] *Supra Note. 6.*

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Case Name	Jurisdiction	Year	Key Issue	Outcome/Significance
				along the Ganges River, reinforcing the right to a clean environment as part of Article 21.
Vellore Citizens Welfare Forum v. Union of India[41]	India	1996	Pollution caused by tanneries in Tamil Nadu	The Court introduced the "polluter pays" principle and the concept of sustainable development, holding industries responsible for environmental restoration.
Indian Council for Enviro-Legal Action v. Union of India[42]	India	1996	Industrial pollution and hazardous waste	The Court held polluting industries liable for environmental damage and imposed heavy penalties, emphasizing the need for strict environmental compliance.
Massachusetts v. Environmental Protection Agency[43]	United States	2007	Regulation of greenhouse gases	The U.S. Supreme Court ruled that the EPA has the authority to regulate greenhouse gases under the Clean Air Act, marking a significant step in climate change governance.
Chevron v. Natural Resources Defense Council[44]	United States	1984	Interpretation of the Clean Air Act	The U.S. Supreme Court established the "Chevron Deference," giving agencies like the EPA the authority to interpret ambiguous environmental laws, thus shaping environmental policy.
Urgenda Foundation v. State of the Netherlands[45]	Netherlands	2015	Government responsibility in reducing carbon emissions	The Dutch court ordered the government to reduce greenhouse gas emissions by at least 25% by 2020 compared to 1990 levels, setting a global precedent for climate change litigation.

TABLE 1.1 This table includes landmark cases from both India and other nations that have had a significant impact on shaping environmental law and governance.

9. CONCLUSION

The major issues affecting global environmental governance are enormous as climate change, pollution, deforestation, and bio-diversity loss are challenges to ecosystems and human beings. As much as there are international treaties like the stated Paris Agreement, Kyoto Protocol, an the convention on Biological diversity the success of such treaties mainly lie on the response that individual nations give on the national level of governance. The case of the developing nations is different since the governments are struggling to meet the needs of their people while at the same time seeking to protect the environment while the developed nations have to set examples of how to protect the environment through provision of finances and technology to the vulnerable countries. The implementation of environmental pledges represents another weakness; most countries are running late on their global duties because of political, economic, and institutional hindrances. Some of the local regulations and procedures, as well as personnel qualification, have to be improved to increase the effectiveness of the international cooperation and to guarantee that the signed documents are supported by actions. Besides, traditional knowledge in combination with sustainable behavior brings a positive direction for the better performance of the environmental management systems. The continuation of such movement should be accompany by binding obligations with more precise ideas of obligation measures, substantial monitoring and reporting systems of the international legal instruments for the enforcement of rules and the regulations both domestically and internationally. Thus, people around the world must work together globally and locally to reduce environmental decline; developed and developing countries alike must take responsibility for their fair share of diminishing the negative impact of anthropogenic influences on the environment as well as preserving Earth's resources for generations of people yet unborn. The challenge of improving the current state of the global environment requires green technologies and non-exclusionary development and management systems, inclusive governance processes.

[41] *Supra Note. 7.*
[42] *Indian Council for Enviro-Legal Action v. Union of India, (1996) 3 SCC 212.*
[43] *Massachusetts v. Environmental Protection Agency, 549 U.S. 497 (2007).*
[44] *Chevron U.S.A., Inc. v. Natural Resources Defense Council, Inc., 467 U.S. 837 (1984).*
[45] *Urgenda Foundation v. State of the Netherlands, ECLI:NL:HR:2019:2007 (2019).*

REDVET - Revista electrónica de Veterinaria - ISSN 1695-7504
Vol 25, No. 1 (2024)
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