

Environmental Justice and Climate Accountability: A Comparative Legal Analysis of Environmental Protection, Vulnerable Communities and Climate Governance in India and the United States

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ABSTRACT

Environmental degradation and climate change have emerged as major legal and governance challenges, particularly for communities that experience disproportionate environmental burdens. Environmental justice seeks to address the unequal distribution of environmental risks, benefits, and decision-making opportunities. This article comparatively examines the legal approaches to environmental justice and climate accountability in India and the United States. It focuses on constitutional and statutory environmental protections, regulatory institutions, environmental impact assessment, public participation, climate litigation, governmental responsibility, and remedies available to affected communities. In India, environmental protection has developed significantly through constitutional interpretation, public interest litigation, principles such as sustainable development, the precautionary principle and the polluter pays principle, as well as specialized environmental adjudication. In the United States, environmental protection operates through a combination of federal environmental statutes, administrative regulation, judicial review, and environmental-justice initiatives. The article argues that despite substantial differences between the two legal systems, both jurisdictions face challenges concerning implementation, accountability, unequal environmental burdens, and access to effective remedies. It proposes a comparative framework emphasizing stronger community participation, transparent environmental decision-making, improved regulatory enforcement, climate-sensitive environmental assessment, and accessible legal remedies. The article concludes that environmental law must increasingly move beyond pollution control toward a rights-based and justice-oriented framework capable of protecting vulnerable communities and future generations.

Keywords: Environmental Law; Environmental Justice; Climate Change; Climate Accountability; Sustainable Development; Public Interest Litigation; Environmental Protection; Comparative Law.

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1. Introduction

Environmental degradation has become one of the most important legal, social, economic, and governance challenges of the twenty-first century. Industrialization, urbanization, infrastructure development, intensive resource extraction, deforestation, pollution, biodiversity loss, water scarcity, waste generation, and climate change have created complex environmental problems that cannot be addressed through conventional regulatory mechanisms alone. The contemporary environmental crisis is also increasingly understood as a crisis of justice because environmental risks and environmental benefits are not distributed equally among individuals and communities.

A major industrial project, for example, may generate employment, electricity, infrastructure, and economic growth for a region while simultaneously exposing a relatively small community to air pollution, water contamination, displacement, ecological degradation, or loss of traditional livelihoods. Similarly, climate change produces global consequences, but its immediate effects can be particularly severe for communities that have fewer financial and institutional resources to adapt. The legal question therefore extends beyond whether pollution is prohibited. It also concerns who bears environmental risks, who receives environmental benefits, who participates in environmental decision-making, and who has access to effective remedies when environmental harm occurs.

This has led to the emergence of **environmental justice** as an important concept in contemporary environmental law. Environmental justice seeks to connect environmental protection with fairness, equality, participation, recognition, and accountability. It challenges legal systems to consider not only the ecological consequences of environmental decisions but also their social distribution.

The comparison between India and the United States is particularly significant in this context. India has developed a substantial body of environmental jurisprudence through constitutional interpretation, public interest litigation, statutory regulation, and specialized environmental adjudication. Indian courts have interpreted environmental protection in connection with constitutional rights and have relied upon principles including sustainable development, precaution, polluter pays, and public trust.

The United States has developed a highly institutionalized environmental regulatory structure based on federal statutes, administrative agencies, state-level regulation, and judicial review. Environmental justice has become an important component of this framework, particularly in relation to communities experiencing disproportionate environmental burdens. U.S. environmental governance has also placed increasing emphasis on meaningful community engagement. The EPA's current public-participation guidance describes participation as an ongoing process through which affected stakeholders can influence decisions rather than merely attend a single public hearing.

Despite their differences, both jurisdictions face common challenges. These include regulatory enforcement, unequal environmental burdens, community participation, corporate responsibility, environmental information, climate accountability, and access to justice.

This article therefore examines environmental justice and climate accountability through a comparative India-USA framework. It argues that effective environmental governance requires a transition from a narrow pollution-control model toward a broader legal framework based on rights, accountability, participation, ecological protection, and social justice.

2. Concept of Environmental Justice

Environmental justice represents an important evolution in the philosophy of environmental law. Traditional environmental regulation primarily focused on controlling pollutants, protecting natural resources, establishing environmental standards, and regulating activities

that could cause ecological harm. Environmental justice expands this approach by asking a further question: **Who is affected by environmental decisions, and are those effects distributed fairly?**

At its core, environmental justice concerns the relationship between environmental protection and social equality. Environmental risks may be geographically concentrated in particular communities, while the economic benefits associated with the activity responsible for those risks may be distributed much more widely. A factory, waste-disposal facility, mining operation, power plant, highway, or industrial corridor may therefore create a situation in which a particular community carries a disproportionate share of environmental costs.

Environmental justice contains several interconnected dimensions. The first is **distributive justice**, which concerns the fair distribution of environmental benefits and burdens. It asks whether particular groups are exposed to pollution, hazardous substances, ecological destruction, or climate risks at disproportionately high levels. The second is **procedural justice**, which concerns participation. Communities affected by environmental decisions should have meaningful opportunities to understand proposed activities, express their concerns, provide information, challenge decisions, and influence outcomes. The third dimension is **recognition**, which requires legal and institutional decision-makers to acknowledge the distinctive circumstances, cultural relationships, vulnerabilities, and experiences of affected communities. The fourth is **corrective justice**, which concerns remedies when environmental harm has already occurred.

The U.S. environmental-justice framework illustrates these dimensions particularly clearly. U.S. federal materials describe environmental justice in terms of fair treatment and meaningful involvement and emphasize that affected communities should have opportunities to participate and that their contributions should be capable of influencing regulatory decisions. The concept is equally relevant to India, although its development has taken a somewhat different legal path. Indian environmental jurisprudence has often approached environmental inequality through constitutional rights, public interest litigation, protection of livelihoods, access to justice, and principles of sustainable development. Environmental justice in India therefore has an important connection with constitutional guarantees and the broader concept of social justice.

Environmental justice also has an important climate dimension. Climate change can intensify existing inequalities because communities with limited resources may have fewer opportunities to relocate, adapt infrastructure, secure alternative livelihoods, or recover from environmental disasters. Climate justice therefore requires legal systems to examine both the causes and consequences of environmental harm.

Ultimately, environmental justice changes the central question of environmental regulation. Instead of asking only whether an activity satisfies an environmental standard, the legal system must also ask whether the decision-making process was fair, whether vulnerable communities were adequately protected, whether environmental information was accessible, and whether those responsible for environmental harm can be held accountable.

3. Environmental Protection and Constitutional Rights in India

The development of environmental law in India cannot be understood without examining the Constitution. Although the Indian Constitution was not originally framed as a comprehensive environmental rights instrument, constitutional provisions have provided a powerful foundation for environmental protection. Through legislative action and judicial interpretation, environmental concerns have gradually become connected with fundamental rights, directive principles, fundamental duties, and the broader constitutional commitment to social justice.

Article 21, which protects the right to life and personal liberty, has played a particularly important role. Indian courts have interpreted the right to life broadly, recognizing that meaningful enjoyment of life requires conditions that are compatible with human dignity. Environmental quality has consequently been connected with constitutional protection. The constitutional environmental framework is further supported by Article 48A, which directs the State to protect and improve the environment and safeguard forests and wildlife, and Article 51A(g), which recognizes a fundamental duty relating to protection of the natural environment.

This constitutional architecture has enabled environmental disputes to enter the judicial system through public interest litigation. The development of PIL has been particularly important because environmental harm frequently affects communities that may lack the financial resources or institutional capacity to initiate conventional litigation. By relaxing traditional rules of standing in appropriate cases, constitutional courts have enabled public-spirited individuals, organizations, and affected communities to raise broader environmental concerns.

The judiciary has consequently become an important participant in environmental governance. Indian courts have developed principles such as sustainable development, precaution, polluter pays, and public trust and have used them in evaluating governmental and private activities affecting the environment. The judicial approach has also emphasized the relationship between environmental protection and human welfare.

However, constitutional environmentalism also presents important institutional questions. Courts possess the authority to interpret constitutional rights, but they do not have the same technical capacity as environmental regulators, scientists, and specialized agencies to continuously monitor ecological conditions. Excessive judicial intervention may therefore create concerns regarding institutional competence, policy choices, and separation of powers.

At the same time, judicial review remains essential when administrative authorities fail to enforce environmental law or when decision-making violates constitutional standards. The challenge is therefore not to choose between judicial intervention and administrative regulation but to establish an institutional balance in which courts ensure legality, fairness, constitutional protection, and accountability while technical agencies perform their specialized regulatory functions.

The Indian constitutional framework consequently demonstrates the potential of environmental law to develop beyond conventional statutory regulation. Environmental protection can become connected with dignity, livelihood, equality, health, and social justice. This constitutionalization of environmental concerns provides an important foundation for environmental justice, particularly when environmental harm disproportionately affects communities with limited political and economic power.

4. Statutory Environmental Framework in India

Constitutional principles provide an important foundation for environmental protection in India, but effective environmental governance depends heavily upon statutory and regulatory institutions. Over several decades, India has developed a broad legislative framework addressing pollution, environmental protection, forests, biodiversity, hazardous substances, environmental assessment, and environmental disputes. The statutory framework reflects the increasing recognition that environmental protection requires regulation of both individual pollutants and broader ecological systems.

Among the most significant legislative developments is the **Environment (Protection) Act, 1986**, which provides a broad framework for the protection and improvement of the environment and gives the central government extensive regulatory powers. The legislation emerged within a period when environmental governance was becoming increasingly

institutionalized and when the need for a comprehensive environmental framework was becoming apparent. Its broad structure allows environmental authorities to address different forms of environmental harm through standards, notifications, rules, restrictions, and regulatory measures.

The **Water (Prevention and Control of Pollution) Act, 1974** represents an earlier stage in the development of environmental regulation. It established mechanisms for preventing and controlling water pollution and contributed to the institutional development of pollution-control authorities. The **Air (Prevention and Control of Pollution) Act, 1981** similarly created a statutory framework for addressing air pollution.

India has also developed legislation and regulatory mechanisms relating to forests, biodiversity, hazardous substances, waste management, environmental impact assessment, and ecological conservation. These laws collectively demonstrate a movement from sector-specific pollution control toward a more comprehensive environmental governance system.

Another important institutional development is the **National Green Tribunal**, established under the National Green Tribunal Act, 2010. The Tribunal was created to provide specialized adjudication for environmental disputes and to facilitate effective and expeditious resolution of environmental cases. Its existence reflects recognition that environmental disputes often require specialized scientific and technical understanding in addition to traditional legal analysis.

However, the existence of extensive legislation does not automatically guarantee environmental protection. Implementation depends upon regulatory capacity, monitoring, scientific expertise, transparency, coordination between institutions, and effective enforcement. Delays in environmental decision-making may reduce the effectiveness of regulatory remedies, while inadequate monitoring may allow environmental violations to continue.

The statutory framework also faces the challenge of integrating climate change into conventional environmental decision-making. A project may comply with traditional pollution standards while nevertheless contributing significantly to greenhouse-gas emissions or increasing vulnerability to future climate impacts. This suggests that environmental regulation must increasingly incorporate cumulative impacts and climate-risk assessment.

India's statutory framework therefore provides an important foundation, but its future effectiveness will depend upon institutional implementation and integration of environmental justice considerations. Environmental regulation should not merely determine whether legal standards have technically been satisfied. It should also examine who is exposed to environmental risks, whether communities have participated meaningfully, whether information is accessible, and whether effective remedies exist when environmental harm occurs.

5. Environmental Principles in Indian Jurisprudence

The development of Indian environmental law has been strongly influenced by judicially articulated principles. These principles have allowed courts to interpret environmental legislation and constitutional provisions in a manner that responds to complex ecological problems. Among the most significant are sustainable development, the precautionary principle, the polluter pays principle, and the public trust doctrine. Together, these principles have transformed environmental law from a collection of regulatory rules into a broader framework of environmental governance and accountability.

The **sustainable development principle** seeks to reconcile environmental protection with economic and social development. Development is necessary for improving living standards, reducing poverty, creating employment, and expanding infrastructure. At the same time, uncontrolled development can destroy ecological resources and undermine the interests of

future generations. Sustainable development therefore requires decision-makers to consider both immediate developmental objectives and long-term ecological consequences. In environmental litigation, the principle has been used to examine whether development projects have adequately accounted for environmental consequences.

The **precautionary principle** addresses situations where environmental harm may be serious or irreversible but scientific information is incomplete. Environmental decision-makers cannot always wait for absolute scientific certainty before acting. If a proposed activity presents substantial environmental risks, uncertainty should not automatically become a justification for permitting potentially irreversible harm. The precautionary principle therefore encourages preventive decision-making.

The **polluter pays principle** focuses on responsibility for environmental harm. Its underlying idea is that the economic costs associated with pollution should not simply be transferred to the public. Those responsible for environmental damage may be required to bear appropriate costs associated with prevention, remediation, restoration, and compensation. The principle therefore serves both corrective and preventive functions.

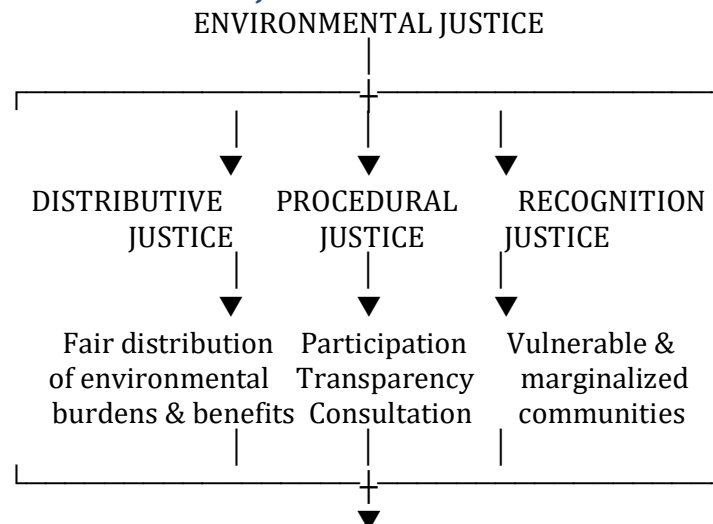
The **public trust doctrine** provides another important dimension. Certain natural resources, such as rivers, forests, water bodies, and ecological resources, possess public significance that may limit the government's ability to treat them as ordinary commercial property. The State is understood as having responsibilities toward present and future members of society.

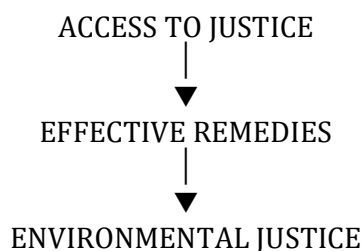
These principles are particularly important for environmental justice because they introduce ethical and distributional considerations into environmental decision-making. Sustainable development raises questions concerning intergenerational fairness. Precaution protects communities from uncertain but potentially serious risks. Polluter pays addresses accountability for environmental harm. Public trust protects resources that have broader collective significance.

However, principles require effective institutional application. Judicial recognition alone cannot guarantee environmental protection. Regulators must incorporate these principles into environmental assessment, licensing, monitoring, enforcement, and remediation.

The continuing challenge for Indian environmental jurisprudence is therefore to translate broad principles into consistent administrative practice. A mature environmental justice framework should ensure that these principles are not invoked only after environmental damage has occurred but are integrated into decision-making before potentially harmful activities are authorized.

Figure 1. Integrated Environmental Justice Model





6. Environmental Law in the United States

The environmental legal system of the United States represents one of the most developed and institutionally complex regulatory frameworks in the world. Unlike India, where constitutional interpretation has played a particularly prominent role in developing environmental rights, environmental protection in the United States has traditionally been structured around federal statutes, administrative agencies, state regulation, and judicial review. The resulting system is not based upon a single comprehensive environmental code. Instead, it consists of multiple statutes directed toward particular environmental problems, supported by administrative institutions responsible for implementation and enforcement.

The development of modern U.S. environmental law accelerated significantly during the second half of the twentieth century. Increasing public concern regarding air pollution, water contamination, hazardous waste, ecological destruction, and the health consequences of industrial activity contributed to the creation of major federal environmental statutes. The Clean Air Act established a federal framework for controlling air pollution, while the Clean Water Act addressed pollution of the nation's waters. The Resource Conservation and Recovery Act created a regulatory framework for solid and hazardous waste, and the Comprehensive Environmental Response, Compensation, and Liability Act established mechanisms for addressing contaminated sites and hazardous substances.

The **National Environmental Policy Act (NEPA)** introduced a different but equally important dimension. Rather than simply establishing pollution standards, NEPA requires federal agencies to consider environmental consequences when undertaking or approving certain major actions. Environmental review can therefore operate as a decision-making mechanism through which agencies identify potential environmental consequences before projects are implemented. The current EPA NEPA framework provides information concerning environmental review, environmental impact statements, and opportunities for citizens to participate in the process.

The Environmental Protection Agency occupies a central position within the federal environmental governance structure. However, environmental regulation is not exclusively an EPA function. Other federal agencies possess environmental responsibilities under specific statutes, while states exercise substantial regulatory authority through their own laws and institutions. This creates a federal system in which environmental protection is distributed across multiple governmental levels.

The strength of this system lies partly in its institutional specialization. Different agencies can develop technical expertise relating to air quality, water resources, hazardous substances, environmental assessment, public health, and ecological protection. At the same time, fragmentation can create coordination problems. Different regulatory authorities may apply different standards or possess overlapping responsibilities, making environmental governance complex.

The U.S. system therefore demonstrates that environmental law depends not merely upon legislation but upon institutional capacity, administrative enforcement, public participation, scientific expertise, and judicial oversight. Its experience also illustrates the growing importance of environmental justice within a traditionally regulatory framework.

7. Environmental Justice in the United States

Environmental justice has developed into an important dimension of U.S. environmental governance because environmental risks have historically been experienced unevenly across communities. The environmental-justice perspective challenges the assumption that environmental regulation is automatically equitable merely because the same regulatory standards are formally applicable to everyone. A formally neutral environmental rule may still produce unequal outcomes if certain communities are already exposed to multiple pollution sources, lack economic resources, or possess limited political influence.

The U.S. Environmental Protection Agency has defined environmental justice around two connected ideas: **fair treatment and meaningful involvement**. Fair treatment concerns whether any group bears a disproportionate share of negative environmental consequences, while meaningful involvement concerns whether affected communities have genuine opportunities to participate in environmental decision-making. EPA materials emphasize that participation should not merely be symbolic; affected communities should have an opportunity to provide information and concerns, and their contributions should be capable of influencing regulatory decisions.

This approach is significant because it transforms environmental participation from a procedural formality into an element of substantive environmental governance. A public hearing is of limited value if community members do not receive adequate information, cannot understand technical documentation, are unable to participate because of language or accessibility barriers, or discover that their concerns cannot influence the final decision.

The contemporary environmental-justice approach also recognizes that communities may face **cumulative environmental burdens**. A neighborhood may not be affected by a single pollution source alone. It may simultaneously experience traffic pollution, industrial emissions, contaminated land, poor housing conditions, heat exposure, and other environmental risks. Looking at each source independently may therefore underestimate the actual environmental burden experienced by residents.

The U.S. approach has increasingly emphasized community capacity and meaningful engagement. EPA's current policy framework recognizes the importance of timely, accessible information, inclusive participation, dialogue, and accountability in agency decision-making.

Environmental justice also has an important relationship with climate change. Climate risks such as extreme heat, flooding, wildfire, and other hazards can disproportionately affect communities that have fewer resources for adaptation. Environmental justice therefore requires climate policies to consider not only aggregate emissions reductions but also distributional consequences.

Nevertheless, environmental justice remains an evolving field. The legal status of environmental-justice principles may vary depending upon the statutory authority involved, the institutional level at which a decision is made, and the availability of judicial remedies. Policy commitments may also change over time.

The U.S. experience nevertheless offers an important comparative lesson: environmental law becomes more responsive when communities are treated not merely as recipients of environmental regulation but as participants in environmental governance.

8. Comparative Constitutional Approaches

The constitutional structures of India and the United States reveal one of the most important differences between their approaches to environmental law. India possesses a written Constitution containing express environmental responsibilities, while the U.S. Constitution does not establish a general federal constitutional right to a clean or healthy environment. This

difference has significantly influenced the manner in which environmental rights and governmental responsibilities have developed in the two jurisdictions.

The Indian Constitution contains several provisions relevant to environmental protection. The constitutional framework includes State responsibilities concerning environmental protection and a corresponding citizen duty. Most importantly, Indian judicial interpretation has connected environmental quality with the broader protection of life and human dignity under Article 21. This has allowed environmental issues to enter constitutional litigation and has provided courts with a basis for reviewing governmental and private activities that cause serious environmental harm.

The United States follows a different constitutional pathway. Environmental protection has primarily developed through federal statutes, administrative regulation, state environmental laws, and judicial interpretation of statutory obligations. Constitutional doctrines such as due process, federalism, property rights, and separation of powers can influence environmental disputes, but there is no generally applicable federal constitutional environmental right equivalent to the environmental rights jurisprudence that has developed in India.

This distinction has practical consequences. In India, a serious environmental dispute may potentially be framed as a question of constitutional rights and may therefore receive judicial attention through public interest litigation. In the United States, environmental challenges frequently depend upon identifying an applicable statutory provision, demonstrating standing, establishing administrative unlawfulness, or satisfying other procedural and jurisdictional requirements.

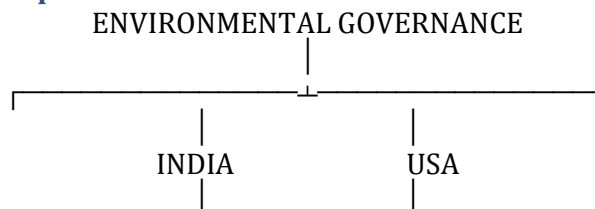
The difference does not mean that one system provides environmental protection while the other does not. Rather, it demonstrates two different institutional pathways. India illustrates the potential of **constitutional environmentalism**, where courts use constitutional principles to expand environmental protection. The United States demonstrates the strength of **statutory environmentalism**, where detailed legislation and administrative institutions provide the principal foundation for regulation.

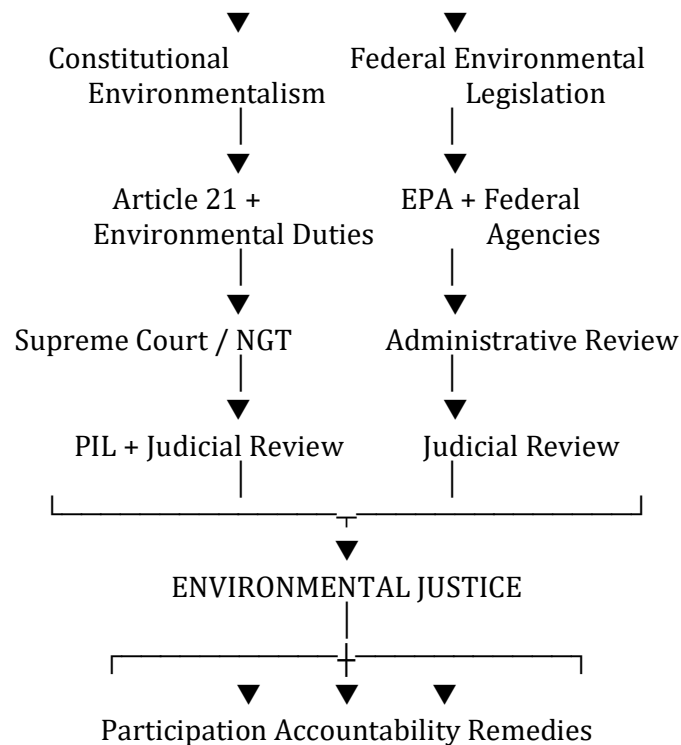
Each approach also presents limitations. Constitutional environmentalism may raise concerns about judicial overreach and institutional competence. Courts may be required to make decisions involving complex scientific, economic, and policy questions. Statutory environmentalism, on the other hand, may become dependent upon legislative design, administrative capacity, and the availability of judicial review.

A comparative approach suggests that effective environmental governance requires an appropriate combination of rights and institutions. Constitutional recognition can strengthen environmental accountability by establishing fundamental principles. Detailed legislation can translate those principles into operational standards. Administrative agencies can provide technical expertise, while courts can ensure legality, procedural fairness, and protection against arbitrary governmental action.

The India–USA comparison therefore demonstrates that environmental law does not depend upon a single constitutional model. Different legal systems can pursue environmental protection through different institutional pathways. The central question is whether those pathways provide meaningful protection, accountability, participation, and remedies.

Figure 2. India–USA Comparative Environmental Governance





9. Environmental Impact Assessment

Environmental Impact Assessment is one of the most important preventive mechanisms in contemporary environmental law. Its central purpose is to identify and evaluate the potential environmental consequences of proposed projects before irreversible decisions are made. EIA therefore represents a shift from a reactive model of environmental regulation, where authorities intervene after pollution occurs, toward a preventive model in which environmental consequences are considered during the planning and authorization stage.

The importance of EIA extends beyond technical environmental assessment. Properly designed EIA can provide a mechanism for integrating ecological considerations into economic decision-making. A proposed infrastructure project may generate substantial economic benefits, but it may also affect forests, water resources, biodiversity, agricultural land, local livelihoods, or public health. EIA provides an institutional framework through which such consequences can be identified and considered.

In the United States, NEPA provides an important federal environmental-review framework. Federal agencies may be required to examine environmental consequences of proposed actions and, where appropriate, prepare an Environmental Impact Statement. The process includes opportunities for public participation. EPA's current NEPA information identifies scoping and public comment as important stages at which citizens can contribute information and concerns.

India has also developed an environmental-impact-assessment framework through statutory and regulatory mechanisms. Environmental assessment procedures can require project proponents to provide information concerning expected environmental consequences and can create opportunities for public consultation.

However, the effectiveness of EIA depends upon the quality of information and the independence of assessment. An EIA prepared primarily as a compliance document, without adequate scientific investigation or genuine consideration of alternatives, may become a procedural formality rather than an effective environmental safeguard.

Environmental justice introduces another important dimension. An EIA should not only ask whether a project's overall environmental impact is acceptable. It should also examine **where the impacts will occur and who will experience them**. A project may produce relatively modest average environmental impacts while imposing severe consequences on a particular community.

Cumulative impacts should therefore receive greater attention. Communities may already be exposed to multiple industrial facilities, transportation infrastructure, contaminated land, water stress, or climate risks. Evaluating each project independently may fail to capture the combined burden.

Climate change also requires EIA systems to evolve. Environmental assessments should increasingly consider greenhouse-gas emissions, climate vulnerability, extreme-weather risks, ecosystem resilience, and long-term adaptation needs.

A justice-oriented EIA should therefore operate through four interconnected stages: identification of environmental risks, assessment of distributional impacts, meaningful community participation, and transparent decision-making. The purpose should not simply be to determine whether a project can proceed but to determine under what conditions it can proceed without creating unacceptable ecological and social consequences.

10. Public Participation

Public participation is a fundamental component of environmental justice because environmental decisions frequently affect people who may not possess direct control over governmental or corporate decision-making. Participation provides communities with an opportunity to communicate local knowledge, identify risks, question technical assumptions, and challenge decisions that may adversely affect their health, environment, property, or livelihoods.

The principle of participation is particularly important because environmental decisions often involve complex scientific information. Government agencies and project proponents may possess technical expertise, while local communities possess practical knowledge concerning water availability, seasonal flooding, traditional land use, biodiversity, pollution patterns, and local health concerns. An effective participation process can bring these different forms of knowledge together.

However, participation should not be confused with mere consultation. A process in which authorities simply collect comments without considering them meaningfully may satisfy a formal requirement but fail to achieve environmental justice. The central question is whether community participation can influence the decision.

The U.S. environmental-justice framework increasingly emphasizes this distinction. EPA's current meaningful-engagement policy seeks to make public participation more timely, accessible, inclusive, and influential. The agency recognizes that environmental decisions can be improved when they incorporate the lived experiences of communities affected by environmental and public-health problems.

NEPA provides another example. The federal environmental-review process provides opportunities for public participation during scoping and review of environmental documents. Citizens can submit comments and raise concerns regarding the environmental consequences of proposed federal actions.

India also recognizes public participation within environmental decision-making, particularly through environmental assessment and public consultation mechanisms. Public hearings can allow affected communities to raise concerns concerning displacement, pollution, water resources, employment, health, and ecological consequences.

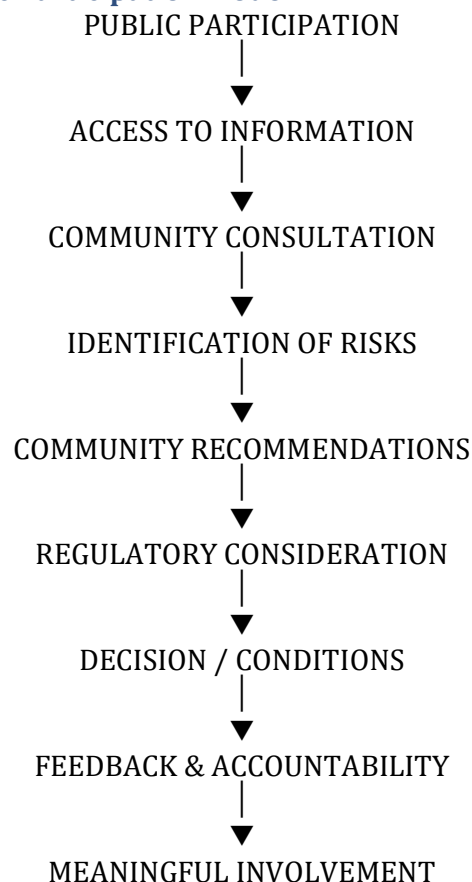
Nevertheless, meaningful participation can be affected by several barriers. Communities may lack access to technical information, legal assistance, transportation, language support, digital

access, or sufficient time to understand complex environmental documents. Vulnerable groups may also be excluded because meetings are conducted at inappropriate times or locations. Consequently, a genuine participation framework must address **accessibility as well as formal opportunity**. Information should be provided in understandable language. Technical documents should be explained where necessary. Participation should occur early enough to influence project design rather than after major decisions have already been made. Communities should also receive information explaining how their concerns affected the final decision.

Environmental participation should therefore be viewed as a continuing governance process rather than a single public hearing. Effective participation creates dialogue between regulators, project proponents, scientists, civil society, and affected communities.

The broader lesson for both India and the United States is that environmental democracy requires more than transparency. It requires **influence, responsiveness, accountability, and inclusion**. When communities can genuinely participate in environmental decisions, environmental law becomes more legitimate, more informed, and more capable of addressing environmental injustice.

Figure 3. Meaningful Public Participation Model



11. Climate Change and Environmental Law

Climate change has fundamentally expanded the scope and complexity of environmental law. Traditional environmental regulation was largely designed to address identifiable and relatively localized forms of environmental harm, such as industrial air pollution, contaminated water, hazardous waste, deforestation, and chemical exposure. Climate change presents a different regulatory challenge because greenhouse-gas emissions accumulate

globally, environmental consequences occur over long periods, and the effects may extend across geographical and political boundaries. Consequently, environmental law must increasingly address both the prevention of climate change and the protection of communities from unavoidable climate impacts.

The legal significance of climate change lies partly in its connection with existing environmental principles. The precautionary principle becomes particularly relevant because climate science involves uncertainty concerning the precise timing, location, and intensity of future impacts, even though the broader risks are well established. Sustainable development must also be reconsidered because development decisions made today may increase climate vulnerability for decades. Similarly, the polluter pays principle raises difficult questions concerning how responsibility should be assigned when environmental harm results from cumulative emissions produced by numerous actors over extended periods.

Climate change also changes the meaning of environmental justice. Communities do not possess equal adaptive capacity. A wealthy community may be able to invest in air conditioning, flood protection, insurance, resilient infrastructure, and alternative housing, while a low-income community may have limited ability to take similar measures. The U.S. Environmental Protection Agency has recognized that socially vulnerable populations can experience disproportionately severe climate impacts, including risks associated with extreme heat, flooding, air quality, and other climate-related hazards.

The Indian context presents similar concerns. Agricultural communities may be vulnerable to changing rainfall patterns, drought, heat stress, and water scarcity. Coastal populations may face increased exposure to flooding and extreme weather. Communities dependent upon forests and natural resources may experience additional pressure as ecosystems change. Urban populations may face heat-island effects, air pollution, water stress, and infrastructure vulnerability.

Climate change therefore requires environmental law to integrate **mitigation, adaptation, resilience, and justice**. Mitigation seeks to reduce greenhouse-gas emissions, while adaptation seeks to reduce vulnerability to climate impacts that cannot be avoided. Resilience concerns the capacity of communities and ecosystems to withstand and recover from climate-related disturbances.

The legal system must also ensure that climate responses do not create new environmental injustices. Renewable-energy infrastructure, transmission projects, carbon-removal projects, conservation programmes, and climate adaptation projects may themselves affect land, livelihoods, biodiversity, or local communities. Climate policy should therefore be subject to environmental and social safeguards.

A contemporary environmental legal framework must consequently recognize climate change as both an ecological and a justice issue. Environmental law must examine not only how emissions are reduced but also who bears the consequences of climate impacts, who receives adaptation resources, and whether vulnerable communities participate in decisions affecting their future.

12. Climate Litigation

Climate litigation has emerged as an increasingly significant area of environmental law because courts are being asked to address disputes involving governmental climate policies, environmental approvals, emissions, corporate conduct, public infrastructure, regulatory decisions, and alleged violations of rights. Climate litigation is not a single category of cases. It encompasses different legal strategies depending upon the constitutional and statutory structure of each jurisdiction.

In India, climate-related disputes can develop within the broader tradition of environmental public interest litigation. Indian courts have historically played an important role in

environmental governance, particularly where governmental authorities are alleged to have failed to discharge environmental responsibilities. Climate arguments can therefore become connected with constitutional rights, environmental principles, public trust, sustainable development, and governmental obligations.

The significance of judicial intervention is especially apparent where legislative or administrative responses are considered inadequate. Courts may review whether authorities have followed applicable environmental procedures, considered relevant scientific information, complied with statutory obligations, or acted consistently with constitutional requirements. However, climate litigation also raises questions concerning the appropriate institutional role of courts. Climate policy involves complex scientific, economic, technological, and political choices that may not always be suitable for judicial determination.

In the United States, climate litigation has frequently involved statutory interpretation, administrative authority, standing, federalism, and questions concerning the scope of governmental power. Litigants may challenge agency decisions or argue that government action is inconsistent with environmental statutes. Other litigation has sought to impose responsibility upon companies or governments for climate-related consequences. The outcome of such cases can depend heavily upon the precise statutory cause of action and procedural requirements.

Climate litigation can nevertheless perform several valuable functions. First, it can improve **governmental accountability** by requiring public authorities to explain and justify environmental decisions. Second, it can promote **transparency**, particularly where scientific information or environmental assessments are disputed. Third, it can clarify the interpretation of environmental legislation. Fourth, it can provide remedies where administrative institutions fail to perform their legal responsibilities.

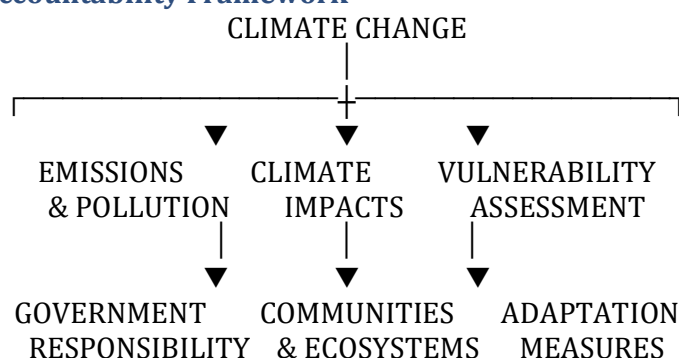
Climate litigation also has a symbolic dimension. Court proceedings can transform climate change from an abstract scientific issue into a legal question concerning rights, responsibilities, and remedies.

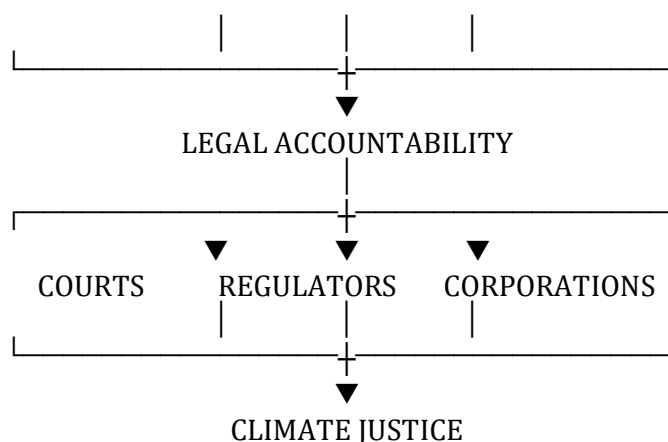
At the same time, litigation cannot substitute for comprehensive climate policy. Courts generally operate through individual disputes, while climate change requires coordinated action involving energy systems, transportation, industry, agriculture, infrastructure, finance, and land use.

The most effective role for courts may therefore be to ensure that climate decision-making remains **lawful, rational, transparent, evidence-based, and procedurally fair**, while leaving technically complex policy choices primarily to legislatures and expert agencies.

The development of climate litigation in India and the United States demonstrates that courts have become important participants in climate governance. Their long-term contribution will depend on maintaining a balance between environmental accountability and institutional restraint.

Figure 4. Climate Accountability Framework





13. Corporate Environmental Responsibility

Corporations occupy a central position in modern environmental governance because many activities responsible for environmental degradation are connected with industrial production, infrastructure development, energy generation, transportation, mining, manufacturing, construction, and resource extraction. Environmental law therefore cannot effectively pursue environmental justice without addressing corporate responsibility.

Corporate environmental responsibility traditionally focused on compliance with statutory standards. A company was expected to obtain necessary permits, comply with emission limits, treat wastewater, manage hazardous materials, and follow applicable environmental conditions. Contemporary environmental governance, however, increasingly requires a broader approach. Corporations may need to identify environmental risks before harm occurs, monitor their operations continuously, disclose relevant information, maintain appropriate safeguards, and contribute toward remediation when damage occurs.

The preventive dimension is particularly important. Environmental liability should not be viewed solely as a mechanism for compensating victims after damage has occurred. Effective environmental law should create incentives for corporations to avoid environmental harm in the first place. This requires credible inspections, monitoring, penalties, environmental performance standards, disclosure obligations, and effective enforcement.

In India, corporate environmental responsibility operates through environmental statutes, regulatory permissions, environmental-clearance conditions, liability principles, judicial decisions, and specialized environmental adjudication. The development of the polluter pays principle has strengthened the idea that corporations responsible for environmental damage should bear appropriate costs associated with remediation and restoration.

The U.S. system similarly uses a combination of statutory requirements, administrative enforcement, civil liability, judicial proceedings, and regulatory standards. Corporate environmental responsibility can arise in relation to air emissions, water pollution, hazardous substances, contaminated sites, waste management, and other regulated activities.

Climate change creates an additional dimension. Companies increasingly face questions concerning greenhouse-gas emissions, climate-related disclosures, transition risks, supply chains, and environmental claims. However, corporate climate responsibility must be carefully distinguished from voluntary corporate social responsibility. Voluntary sustainability initiatives may contribute positively, but they cannot replace enforceable legal obligations where environmental harm is regulated by law.

Corporate responsibility should also involve **environmental transparency**. Communities affected by industrial facilities should be able to obtain meaningful information concerning emissions, hazardous substances, environmental compliance, and environmental risks.

Transparency enables regulators and communities to identify problems before they become severe.

Another important issue is the relationship between corporate environmental responsibility and environmental justice. If corporations locate environmentally hazardous activities disproportionately in economically vulnerable communities, formal regulatory compliance may not necessarily resolve the underlying justice concern. Regulators should therefore consider cumulative environmental burdens and community vulnerability.

A robust corporate accountability model should consequently contain four interconnected elements: prevention, transparency, liability, and remediation. Prevention reduces environmental risks; transparency enables public oversight; liability creates accountability; and remediation addresses damage that has already occurred.

Corporate environmental responsibility should therefore be understood not as an optional ethical commitment but as an essential component of environmental governance. Businesses benefit from natural resources, infrastructure, markets, and public institutions. Environmental law can legitimately require them to internalize appropriate environmental costs and operate within ecological and social limits.

14. Polluter Pays Principle

The polluter pays principle is one of the most influential principles of contemporary environmental law. Its basic idea is straightforward: where an individual or corporation causes environmental pollution or ecological damage, the costs associated with addressing that harm should not be transferred entirely to society. The responsible party should bear appropriate costs related to prevention, control, remediation, restoration, and, where legally appropriate, compensation.

The principle performs both a **corrective and preventive function**. Its corrective function is concerned with existing environmental damage. If a corporation contaminates a river, damages soil, releases hazardous substances, or causes other environmental harm, the polluter pays principle supports the imposition of costs necessary to restore the affected environment. Its preventive function operates by creating an economic incentive to reduce environmental risks. If pollution is effectively cost-free for the polluter, there may be insufficient economic motivation to invest in cleaner technology or preventive safeguards.

The principle has particular importance in environmental justice. Without appropriate liability, environmental costs may effectively be transferred from corporations to communities. Residents may bear health risks, farmers may experience agricultural losses, governments may have to fund environmental restoration, and future generations may inherit degraded ecosystems. The polluter pays principle attempts to prevent this transfer of costs.

Indian environmental jurisprudence has given significant importance to the principle. Courts have used it alongside sustainable development, precaution, and public trust to establish a framework of environmental accountability. Its importance is particularly visible in cases involving industrial pollution and ecological damage.

In the United States, the principle is reflected through several forms of environmental liability, although its application depends upon the relevant statutory framework. Liability for contaminated sites and hazardous substances, for example, can require responsible parties to contribute toward cleanup and remediation. Federal and state environmental laws also establish penalties and enforcement mechanisms intended to discourage unlawful pollution.

A major challenge is determining the extent of liability. Environmental damage can involve multiple actors, historical contamination, cumulative pollution, and scientific uncertainty. Climate change makes the problem even more complex because greenhouse-gas emissions accumulate globally and their consequences cannot always be attributed to a single source.

Another challenge concerns the relationship between monetary compensation and ecological restoration. Payment alone may not restore a damaged ecosystem. A polluted river may require years of ecological rehabilitation; a damaged forest may require restoration; contaminated land may require long-term monitoring. Environmental law should therefore prioritize **restoration where restoration is scientifically and practically feasible**.

The principle should also be applied proportionately and transparently. Liability systems must establish clear standards for determining responsibility, causation, damage, and appropriate remediation costs. Excessive uncertainty can weaken enforcement, while inadequate liability can undermine deterrence.

A modern application of the polluter pays principle should therefore recognize that environmental harm has multiple dimensions. It should consider ecological damage, community impacts, remediation costs, monitoring expenses, and, where legally justified, compensation.

Ultimately, the principle reflects a fundamental idea of environmental justice: **those who create environmental risks should not be able to shift the consequences of those risks entirely onto communities, governments, or future generations**.

15. Environmental Damage and Compensation

Environmental damage can produce consequences that extend far beyond the immediate destruction of natural resources. Pollution can affect human health, agricultural productivity, drinking-water supplies, property values, livelihoods, biodiversity, cultural resources, and community well-being. Consequently, environmental law requires effective mechanisms not only for preventing harm but also for determining responsibility and providing appropriate remedies after damage occurs.

The traditional concept of compensation is often based on economic loss. A person whose property has been damaged may receive monetary compensation corresponding to the financial loss. Environmental harm, however, is frequently more difficult to quantify. The destruction of a wetland, contamination of groundwater, loss of biodiversity, or degradation of a culturally significant landscape may have values that cannot easily be expressed in monetary terms.

This creates an important distinction between **compensation and restoration**. Compensation provides financial relief to individuals or communities, while restoration seeks to repair the damaged ecological system itself. In many cases, restoration may be more important than financial payment. If a river is contaminated, for example, affected residents may receive compensation, but the broader environmental problem remains unless the river is cleaned and ecological functions are restored.

Indian environmental law has increasingly recognized the importance of remediation and restoration. Environmental liability may involve compensation for affected individuals as well as costs associated with restoring ecological systems. The National Green Tribunal framework also reflects the need for environmental adjudication that can address both legal and scientific dimensions of environmental harm.

The U.S. legal system contains different statutory mechanisms for addressing environmental damage. Certain federal environmental laws provide liability and cleanup mechanisms for contaminated sites and hazardous substances. The structure of these mechanisms demonstrates that environmental remedies can extend beyond compensation to include cleanup, restoration, monitoring, and preventive measures.

Climate change complicates the issue further. Climate-related damage may result from multiple interacting causes. Flooding, extreme heat, wildfire, drought, and ecosystem changes can arise from a combination of climatic, geographic, infrastructural, and social factors.

Determining a particular actor's legal responsibility therefore raises difficult questions of causation and attribution.

Environmental justice requires particular attention to communities that may lack resources to pursue compensation claims. Legal remedies are ineffective if the affected population cannot afford legal representation, cannot access technical evidence, or faces prolonged proceedings. Accessible environmental tribunals, public-interest mechanisms, legal assistance, simplified procedures, and transparent compensation systems can therefore play an important role.

Remedies should also consider long-term consequences. Environmental harm may affect children and future generations even when immediate damage appears limited. Long-term monitoring may therefore be necessary in cases involving hazardous substances, contaminated groundwater, or ecosystem degradation.

A comprehensive environmental-remedy framework should consequently contain several layers: immediate protective measures, individual compensation where appropriate, ecological restoration, long-term monitoring, preventive directions, and institutional accountability.

The central principle should be that environmental law must seek to **repair environmental harm rather than merely price it**. Monetary compensation remains important, particularly for individuals who suffer measurable losses, but ecological restoration and prevention should remain central objectives.

In this sense, effective environmental remedies connect environmental law with environmental justice. Communities should not merely be recognized as victims after environmental harm occurs. They should have access to legal mechanisms capable of preventing harm, obtaining timely relief, restoring damaged ecosystems, and ensuring that responsible actors remain accountable.

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