
COMMAND AND CONTROL VS. COOPERATIVE FEDERALISM: COMPARING ENVIRONMENTAL ENFORCEMENT MODELS IN THE USA AND INDIA

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1. Introduction

Environmental governance has emerged as a foundational concern in the twenty-first century, demanding urgent attention from both domestic legal systems and international regimes. Escalating climate change impacts, biodiversity loss, increasing pollution levels, and resource depletion have all necessitated the evolution of robust legal frameworks for environmental protection. Among these frameworks, the mechanism of enforcement plays a pivotal role in ensuring the efficacy of environmental laws. Enforcement ensures compliance with prescribed norms, penalises transgressors, and signals the state's commitment to sustainable development.

Across jurisdictions, environmental enforcement models typically take two dominant forms: the command-and-control (CAC) approach and cooperative federalism. The former is characterized by centralized regulatory oversight, direct statutory prescriptions, and stringent penalties, often with limited discretion afforded to administrative or local authorities. In contrast, cooperative federalism is predicated on a shared distribution of responsibilities between federal and state governments, fostering flexibility, mutual collaboration, and context-specific regulatory execution. This paper seeks to comparatively evaluate these two approaches by focusing on their development and operationalization in two major federal democracies: the United States of America and the Republic of India.

The United States offers a mature model of cooperative federalism in environmental governance, shaped by decades of jurisprudence, agency evolution, and legislative innovation. Federal environmental statutes such as the Clean Air Act and Clean Water Act incorporate mechanisms that allow states to administer and enforce programs, provided

they meet or exceed federal standards. The Environmental Protection Agency (EPA) oversees the process, balancing national objectives with localized autonomy. On the other hand, India, despite having a federal constitutional structure, has evolved a largely centralized command-and-control regime in environmental matters. Statutes such as the Environment (Protection) Act, 1986, vest substantial powers in the Central Government and its agencies, with limited decentralization in practice. The model presumes uniformity in environmental conditions and administrative capacities across diverse Indian states, leading to both implementation challenges and jurisdictional ambiguities.

This dichotomy between the two models is not merely theoretical but has significant real-world implications. It affects how swiftly and effectively pollution is controlled, how industrial actors are held accountable, and how public health is safeguarded. It also determines whether environmental enforcement is inclusive, participatory, and adaptive to local needs—or rigid, hierarchical, and exclusionary. Moreover, it reveals deeper tensions between legal formalism and administrative pragmatism, federal supremacy and state autonomy, and rights-based activism and technocratic regulation.

The evolution of environmental enforcement in both countries has been shaped by historical, political, and constitutional factors. In the United States, environmental federalism emerged partly due to the limitations of central oversight in a geographically diverse and politically decentralized landscape. States were not only better positioned to monitor local conditions but also became active laboratories of environmental innovation. The EPA's role became one of standard-setting, oversight, and intergovernmental collaboration, rather than sole execution. Courts too have recognized this balance, ensuring federal dominance in setting minimum standards while upholding state autonomy in enforcing them.

In contrast, India's command-and-control framework is rooted in post-colonial administrative patterns, centralised planning traditions, and a perception of weak state-level capacities. Although the Constitution of India envisages a federal structure, environmental protection falls within the Concurrent List (Entry 17A of the Seventh Schedule), allowing both the Centre and States to legislate. However, judicial interpretations—especially post the Bhopal Gas Tragedy—have led to an increasing centralization of environmental

governance, culminating in the Environment (Protection) Act, 1986, which granted sweeping powers to the Union Government. Environmental agencies like the Central Pollution Control Board (CPCB) and State Pollution Control Boards (SPCBs) exist, but the CPCB exercises significant control over state actions, blurring the boundaries of federal decentralisation.

The tension between centralisation and decentralisation in enforcement is not merely structural but also affects outcomes. In the United States, cooperative federalism has often allowed for state-led innovation in enforcement, with states like California pioneering stricter emissions standards and policy experimentation. However, the model is not without flaws—under-enforcement by politically reluctant states or inconsistent implementation across jurisdictions has been a recurrent problem. Federal withdrawal from environmental commitments during certain administrations, such as under the Trump presidency, has also tested the limits of the cooperative model.

India's centralized enforcement model has similarly been a double-edged sword. While it facilitates swift national action and provides a uniform legal framework, it also suffers from bureaucratic bottlenecks, lack of local accountability, and institutional fragmentation. The National Green Tribunal (NGT) has partially filled the enforcement vacuum by judicialising environmental issues and holding agencies accountable. However, enforcement remains reactive rather than preventive, and state pollution control boards often lack the technical and financial capacity to implement orders effectively.

In the global context, the comparative study of these models offers valuable insights. As environmental challenges grow increasingly transboundary and complex, the search for effective enforcement models becomes urgent. Federal systems face the dual task of ensuring national policy coherence while accommodating local ecological and socio-economic variations. This balance is at the heart of the debate between command-and-control and cooperative federalism.

This paper, therefore, seeks to provide a structured comparative analysis of the enforcement models in the USA and India, focusing on the following questions:

- How have each country's constitutional structure and legislative frameworks shaped their environmental enforcement models?

- What are the institutional and operational mechanisms that define the respective approaches to enforcement?
- How do courts, regulatory agencies, and civil society actors influence the enforcement process in each country?
- What lessons can India and the USA learn from each other in enhancing the effectiveness and equity of environmental enforcement?

To address these questions, the paper is structured as follows:

Section 2 sets out the conceptual and theoretical foundation of the command-and-control and cooperative federalism models. Section 3 delves into the environmental enforcement framework of the United States, examining the interplay between the EPA and state-level agencies. Section 4 analyses India's enforcement mechanisms under a command-and-control regime, highlighting statutory powers, agency roles, and judicial interventions. Section 5 undertakes a comparative analysis, drawing out key differences and commonalities across institutional, legal, and procedural dimensions. Section 6 identifies the limitations in both systems and proposes a hybrid enforcement model that could strengthen environmental governance in federal democracies. Section 7 concludes with reflections on future directions in comparative environmental law.

This analysis is not merely academic but of practical significance in an era where environmental degradation increasingly threatens both ecological integrity and human rights. It is hoped that through this comparative inquiry, the study can contribute to a more nuanced understanding of how federal democracies can craft effective, inclusive, and accountable systems of environmental enforcement.

2. Conceptual Framework

2.1 Understanding Environmental Regulation

Environmental regulation encompasses a wide spectrum of legal and administrative instruments designed to control activities that cause harm to the natural environment. It functions at the intersection of law, policy, science, and governance. The objective is not merely to prohibit pollution but to establish an enforceable system of ecological

management that balances environmental integrity with developmental imperatives. Regulation, therefore, must not only set substantive standards but also provide effective means of enforcement, monitoring, and compliance. At its core, environmental regulation is both a legal and institutional enterprise, responsive to the constitutional, political, and administrative structure of a given jurisdiction.

Two major models of environmental enforcement have emerged globally over time—command-and-control regulation and cooperative federalism. These are not mutually exclusive but often coexist in hybrid forms. Understanding these frameworks is essential to a comparative study of environmental enforcement, particularly in federal systems like the United States and India.

2.2 The Command-and-Control Model: Definition and Characteristics

The command-and-control (CAC) model is the traditional regulatory mechanism adopted by states to govern environmental conduct. It is typified by statutory standards that prescribe limits or technical requirements, backed by a centralized enforcement authority empowered to monitor compliance and impose penalties.

This model involves three critical components:

1. **Standard-setting:** The legislature or regulatory agency defines permissible levels of pollutants, emissions, or environmental conduct. These may be technology-based (e.g., best available technology standards), health-based (e.g., ambient air quality standards), or performance-based.
2. **Permitting/licensing:** Activities with environmental implications are regulated through permits or licenses, issued by a designated authority under specific terms and conditions.
3. **Enforcement and penalties:** Violation of the prescribed standards or permit conditions attracts penalties, which may be administrative (e.g., fines, suspension of licenses), civil (e.g., compensation for environmental harm), or criminal (e.g., imprisonment for serious violations).

The command-and-control model thus operates in a top-down manner, where discretion is minimal and compliance is non-negotiable. The focus is on deterrence, legal certainty, and uniformity of enforcement. Centralized pollution control boards, ministries of environment, or executive agencies typically implement this model.

While effective in ensuring compliance with clearly defined obligations, CAC has been critiqued for its rigidity, high administrative costs, and lack of responsiveness to local ecological or economic conditions. It assumes a level of institutional capacity and monitoring infrastructure that may not always exist, particularly in developing jurisdictions.²Moreover, over-criminalisation without sufficient prosecutorial resources may lead to symbolic rather than substantive enforcement.

Nonetheless, CAC remains the backbone of most environmental legislation, especially in jurisdictions with strong central governments or unitary administrative structures.

2.3 Cooperative Federalism: Meaning and Legal Architecture

Cooperative federalism refers to a governance structure in which different levels of government—federal and state—collaborate in policy formulation, implementation, and enforcement. In environmental law, this model recognizes the shared responsibility of the central and subnational governments in achieving regulatory outcomes, while accommodating the functional diversity and capacities of each level.

In legal terms, cooperative federalism is underpinned by the delegation of authority, conditional funding mechanisms, and oversight structures that allow states to administer federal environmental programs. States may enact and enforce their own environmental laws, so long as they meet or exceed federal standards. The federal authority—typically a national environmental agency—retains the power to review, override, or intervene in case of state failure.

Key features of the model include:

- Horizontal and vertical collaboration among agencies across jurisdictions.
- Flexible enforcement mechanisms that allow adaptation to local conditions.

- Incentivised compliance, such as grants-in-aid or technical assistance from federal institutions.
- Judicial deference to agency expertise at both levels of government.

This model is widely practiced in the United States, where the Environmental Protection Agency (EPA) sets national standards under laws like the Clean Air Act (CAA) and Clean Water Act (CWA), but states are primarily responsible for implementing and enforcing these standards through State Implementation Plans (SIPs) or delegated authority.

The advantage of cooperative federalism lies in its institutional decentralisation and policy innovation. It promotes experimentation at the state level, encourages responsiveness to local contexts, and diffuses regulatory burdens. However, it also raises concerns about inconsistent enforcement, regulatory capture at the local level, and fragmentation of national environmental policy.

2.4 Comparative Dimensions: CAC vs. Cooperative Federalism

(a) Institutional Structure and Autonomy

In the command-and-control model, the central authority is the main driver of environmental policy and enforcement. Institutional hierarchy and centralised decision-making dominate. State or provincial authorities, where they exist, function as subordinate entities executing centrally mandated standards.

In contrast, cooperative federalism fosters institutional pluralism. Both levels of government have autonomy, with overlapping and interdependent responsibilities. While the federal government may retain pre-eminent legislative power, states are active participants in execution, often with discretion to innovate or exceed federal requirements.

For example, the EPA in the United States cannot directly enforce environmental standards in states that have approved implementation plans—except under exceptional circumstances such as failure to enforce or emergencies. In India, however, while SPCBs exist, their autonomy is limited by the oversight and financial dependence on the CPCB and the Ministry of Environment, Forest and Climate Change (MoEFCC).

(b) Legal Certainty vs. Flexibility

CAC provides high levels of legal certainty, especially beneficial in industrial and commercial regulation. However, it does so at the cost of flexibility, often ignoring regional disparities in environmental conditions or enforcement capacity. For instance, a uniform air quality standard may be ill-suited to states with varying levels of urbanisation or topographical characteristics.

Cooperative federalism, by contrast, enables legal adaptation. States can tailor enforcement approaches to their specific ecological and economic contexts. However, this very flexibility can generate inequality in enforcement, leading to environmental injustice where certain states lag in implementation.

(c) Efficiency and Compliance Costs

CAC models are typically administratively intensive, requiring a robust bureaucracy for inspections, licensing, and prosecutions. For developing countries with under-resourced institutions, this can create significant burdens and lead to selective enforcement or corruption.

In cooperative models, shared responsibility may reduce central burdens and create efficiencies. Yet, it demands greater intergovernmental coordination, which, if poorly managed, may result in institutional delays or jurisdictional conflicts.

(d) Public Participation and Accountability

Public participation mechanisms—such as access to environmental information, public hearings, and citizen suits—are crucial in any enforcement model. CAC systems often function in a technocratic and opaque manner, with limited public oversight.

Cooperative federalism has the potential to deepen democratic accountability by bringing governance closer to the people. Local agencies are more accessible, responsive, and amenable to community pressure. In the U.S., citizen enforcement provisions in the CAA and CWA have allowed civil society to directly challenge polluters and agencies.^[7] In India, public interest litigation has partially compensated for weak formal participation mechanisms.^[8]

2.5 Relevance in Federal Democracies

In federal democracies, environmental regulation must reconcile national goals with regional autonomy. The command-and-control model may undermine the principle of subsidiarity, which holds that decisions should be taken as closely as possible to the citizen. On the other hand, unregulated federalism may lead to a "race to the bottom," where states lower standards to attract investment.

Hence, the challenge is to design enforcement mechanisms that respect federal principles while ensuring uniform minimum environmental standards. This is where cooperative federalism offers a middle path—one that balances national cohesion with local adaptability.

India's environmental governance, while nominally federal, has often drifted toward centralised unilateralism, with limited functional federalism. The National Green Tribunal (NGT), while innovative, is centrally constituted and not state-representative. Conversely, the U.S. experience shows that functional federalism, when backed by adequate institutional capacity and public participation, can create a resilient enforcement framework.

2.6 Emerging Hybrid Models and Global Trends

Globally, there is a growing move towards hybrid models that integrate the normative clarity of CAC with the flexibility of cooperative federalism. Multilevel environmental governance under the European Union, for example, combines binding directives with member-state discretion in implementation.^[9] Climate change governance increasingly relies on polycentric models that involve not just federal and state actors but also municipalities, civil society, and international organisations.

Both the U.S. and India are increasingly experimenting with such hybridisation. For instance, India's National Action Plan on Climate Change involves state action plans, although still directed by central guidelines. The U.S. has seen subnational actors such as California form global alliances like the Under2 Coalition, independently advancing climate goals.

These developments show that while models like CAC and cooperative federalism provide a useful conceptual lens, actual enforcement frameworks are dynamic, overlapping, and increasingly complex.

The conceptual tension between command-and-control and cooperative federalism is not one of normative superiority but of contextual relevance. Each model has strengths and limitations depending on the political, institutional, and socio-economic context in which it is applied. While CAC offers clarity and centralised authority, it often struggles with adaptability and local enforcement. Cooperative federalism fosters inclusivity and responsiveness but demands high levels of intergovernmental cooperation and institutional maturity.

In federal democracies like the USA and India, enforcement of environmental laws must evolve beyond rigid dichotomies, toward integrated frameworks that are robust, democratic, and context-sensitive. Understanding these conceptual models provides the necessary analytical foundation for assessing their practical performance, which subsequent sections of this paper will explore in detail.

Section 3: Environmental Enforcement in the USA

3.1 Introduction

The United States of America (USA) offers one of the most developed systems of environmental regulation in the world, characterised by its federal structure and strong reliance on cooperative federalism. Environmental enforcement in the USA is grounded in a combination of federal legislation, state-level implementation, agency oversight, citizen engagement, and judicial review. The Environmental Protection Agency (EPA) plays a central role in crafting national environmental standards, but enforcement responsibility is often shared—or delegated—to state authorities under the cooperative federalism framework. This section explores the institutional, legal, and procedural mechanisms of environmental enforcement in the United States, with a particular focus on how the federal-state dynamic shapes outcomes.

3.2 The Role of the U.S. Constitution and Federalism

Environmental regulation is not explicitly addressed in the U.S. Constitution. However,

the Commerce Clause (Article I, § 8, cl. 3) has been interpreted as granting Congress authority to regulate environmental matters affecting interstate commerce. This constitutional foundation has allowed Congress to enact landmark federal environmental laws, including the Clean Air Act (CAA), Clean Water Act (CWA), Resource Conservation and Recovery Act (RCRA), and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

Under the U.S. federal system, states retain sovereignty over matters not exclusively assigned to the federal government. However, environmental pollution often crosses state boundaries, justifying federal intervention. In this context, cooperative federalism allows federal and state governments to share enforcement duties. Federal statutes often provide minimum environmental standards while permitting states to implement and enforce stricter or equivalent laws within their jurisdictions.

3.3 Legislative Framework of Environmental Enforcement

The legislative foundation for environmental enforcement in the USA is composed of several key federal statutes. While each statute addresses a specific environmental domain, their enforcement mechanisms reveal common themes of federal oversight, state delegation, and public involvement.

3.3.1 The Clean Air Act (CAA), 1970

The CAA is the cornerstone of air pollution regulation. It authorises the EPA to establish National Ambient Air Quality Standards (NAAQS) for harmful pollutants. States are required to develop and implement State Implementation Plans (SIPs) to achieve and maintain these standards.

The CAA's enforcement provisions allow for:

- Federal enforcement through civil and criminal penalties;
- State enforcement via approved SIPs;
- Citizen suits under Section 304 against violators or government inaction.

The Supreme Court has upheld the EPA's authority to regulate greenhouse gases under the CAA, most notably in *Massachusetts v. EPA*, where the Court found that greenhouse gases qualify as "air pollutants" under the statute.

3.3.2 The Clean Water Act (CWA), 1972

The CWA governs water pollution by regulating point source discharges into navigable waters. It created the National Pollutant Discharge Elimination System (NPDES), under which the EPA or delegated state agencies issue permits to discharging entities.

Like the CAA, the CWA features:

- Delegated enforcement to qualified state agencies;
- Federal backstop authority retained by the EPA;
- Citizen suit provisions under Section 505 for enforcement where public agencies fail to act.

The Supreme Court has interpreted the CWA broadly, reinforcing the role of the EPA in enforcement while occasionally narrowing jurisdiction over certain wetlands and isolated waters.

3.3.3 Resource Conservation and Recovery Act (RCRA), 1976

RCRA regulates the generation, transportation, treatment, and disposal of hazardous waste. It imposes stringent requirements on handlers of such waste and mandates states to adopt and administer regulatory programs equivalent to the federal standards.

Enforcement mechanisms include:

- Administrative orders and civil penalties by the EPA;
- State-level enforcement under authorized programs;
- Criminal sanctions for wilful violations;
- Citizen suits under Section 7002.

3.4 Institutional Structure and Division of Authority

3.4.1 The Environmental Protection Agency (EPA)

Created in 1970 through an executive reorganization plan, the EPA is the primary federal agency responsible for administering environmental laws. Its functions include:

- Promulgating national environmental standards;
- Reviewing state programs for compliance;
- Issuing permits where states have not obtained authorization;
- Conducting inspections and investigations;
- Initiating administrative, civil, or criminal enforcement actions.

The EPA frequently enters into Memoranda of Agreement (MOA) with states, outlining specific enforcement responsibilities and cooperative mechanisms.

3.4.2 State Environmental Agencies

Each U.S. state has its own environmental regulatory body (e.g., California Environmental Protection Agency, Texas Commission on Environmental Quality). States may receive authorization from the EPA to administer federal programs, provided they meet federal criteria. Once approved, the state agency becomes the primary enforcement authority, although the EPA retains oversight and residual enforcement powers.

States are encouraged to adopt standards that are at least as stringent as federal laws. Some states, like California, have gone further, enacting more rigorous environmental standards, especially in air pollution and vehicle emissions.

3.5 Enforcement Mechanisms and Procedures

3.5.1 Administrative Enforcement

The EPA may issue administrative compliance orders, notices of violation (NOVs), or administrative penalty orders against violators. These actions are cost-effective and can

be resolved without resort to court proceedings. Violators typically receive a specified period to comply, failing which further legal action is initiated.

3.5.2 Civil and Criminal Enforcement

In more serious cases, the EPA or the U.S. Department of Justice (DOJ) may file civil lawsuits against violators in federal district courts. Civil penalties are imposed based on the severity, duration, and nature of the violation.

Criminal enforcement is pursued when violations are knowing, wilful, or reckless. Prosecutors may bring charges under various statutes, with penalties including imprisonment, corporate fines, and restitution.

For instance, in *United States v. Citgo Petroleum Corp.*, the company was convicted of violating the CWA by illegally discharging oil into waterways, resulting in multi-million-dollar fines.

3.5.3 Citizen Suits

One of the hallmarks of U.S. environmental law is the provision for citizen enforcement. Under various statutes (e.g., Section 304 CAA, Section 505 CWA), private individuals or organizations may sue:

- Private parties in violation of environmental laws;
- Government agencies that fail to perform mandatory duties.

Citizen suits have been instrumental in promoting environmental accountability and supplementing agency enforcement. The U.S. Supreme Court in *Friends of the Earth v. Laidlaw Environmental Services* confirmed standing for citizen groups even when the pollution ceased prior to the lawsuit, emphasising the deterrent effect of civil penalties.

3.6 The Role of the Judiciary

U.S. courts have played a vital role in interpreting and enforcing environmental laws. Courts scrutinize agency decisions under the Administrative Procedure Act (APA), ensuring they are not arbitrary, capricious, or contrary to law.

Judicial review extends to:

- Reviewing permits and regulations;
- Interpreting statutory terms (e.g., “navigable waters”);
- Assessing procedural compliance under the National Environmental Policy Act (NEPA);
- Deciding citizen suits and class actions.

In *Chevron U.S.A. v. NRDC*, the Supreme Court established the principle of Chevron deference, under which courts defer to reasonable agency interpretations of ambiguous statutes, a doctrine critical to EPA's regulatory authority.

However, this deference has been contested in recent years, and the future of Chevron remains uncertain given ongoing judicial scepticism toward agency autonomy.

3.7 Challenges in the U.S. Enforcement Model

Despite its sophistication, the U.S. enforcement model faces several persistent challenges:

- **Variability in State Enforcement:** Not all states enforce federal laws with equal vigour. Political, economic, and institutional differences contribute to enforcement disparities.
- **Regulatory Rollbacks:** Environmental protection has been vulnerable to political shifts. The Trump Administration saw a major rollback of EPA rules, weakening enforcement capacity.
- **Funding and Capacity:** Both the EPA and state agencies often face budgetary constraints, which affect inspection frequency, staffing, and litigation resources.
- **Overreliance on Litigation:** While citizen suits strengthen accountability, overuse can lead to judicial overload and reliance on courts rather than regulatory solutions.

3.8 Innovations and Best Practices

Despite these challenges, the U.S. system has demonstrated remarkable capacity for innovation:

- Supplemental Environmental Projects (SEPs): Settlements in enforcement actions may include projects benefiting the environment beyond compliance, fostering restorative justice.
- Environmental Justice Initiatives: The EPA has incorporated environmental justice metrics into enforcement targeting, seeking to protect marginalised communities disproportionately affected by pollution.
- Data Transparency and E-Governance: Tools like EPA's ECHO database (Enforcement and Compliance History Online) enhance public access to enforcement data, fostering transparency and civic engagement.
- Cooperative Enforcement Agreements: States and the EPA collaborate through performance partnership agreements and strategic planning to improve enforcement outcomes.

The United States has developed a robust environmental enforcement system that reflects the principles of cooperative federalism, legal accountability, and citizen empowerment. While the EPA remains central to standard-setting and oversight, the states play a critical role in administering and enforcing environmental laws, with considerable discretion and innovation.

This decentralised, cooperative model balances national consistency with local responsiveness. Its strengths lie in its multi-layered institutional design, public participation mechanisms, and judicial engagement. However, enforcement disparities, political volatility, and resource constraints continue to pose challenges. The U.S. experience underscores the importance of intergovernmental cooperation, stable regulatory frameworks, and transparent enforcement practices in building an effective environmental legal regime.

Section 4: Environmental Enforcement in India

4.1 Introduction

Environmental enforcement in India operates within a legal and institutional framework that has evolved over decades in response to growing ecological degradation, public health

crises, and international environmental commitments. Unlike the cooperative federalism model observed in the United States, India's environmental enforcement regime is predominantly centralised, adhering to a command-and-control model. This model is characterised by prescriptive legislation, hierarchical regulatory agencies, and limited decentralisation of authority to state-level institutions. Despite India's constitutional structure as a federal polity, the environmental governance landscape reveals a strong concentration of power in the Union Government and its instrumentalities.

This section explores the constitutional, statutory, administrative, and judicial dimensions of environmental enforcement in India. It analyses the centralised architecture of environmental regulation, evaluates the roles of the Central and State Pollution Control Boards, and examines how the judiciary has filled enforcement gaps through public interest litigation (PIL) and environmental jurisprudence. The discussion highlights the strengths and weaknesses of India's command-and-control regime, especially in light of increasing environmental challenges and federal coordination needs.

4.2 Constitutional Foundations of Environmental Governance

The Indian Constitution did not originally contain explicit provisions on environmental protection. However, through judicial and legislative developments, environmental protection has been embedded in the Constitution as both a directive principle and a fundamental duty.

- Article 48A, inserted by the 42nd Amendment in 1976, directs the State to protect and improve the environment and safeguard forests and wildlife.
- Article 51A(g) places a corresponding duty on citizens to protect the natural environment.
- Environmental protection has also been read into the right to life under Article 21, expanding the constitutional mandate through judicial interpretation.

The 42nd Amendment also moved "forests" and "protection of wild animals and birds" from the State List to the Concurrent List (Entry 17A and 17B, Schedule VII), thereby empowering both the Union and States to legislate on environmental matters. However, in

practice, the Union has exercised dominant control over environmental legislation and enforcement.

4.3 Legislative and Institutional Framework

India's environmental enforcement regime is anchored in a cluster of statutes enacted in the post-Stockholm Conference period. The principal laws include:

4.3.1 The Environment (Protection) Act, 1986 (EPA)

Passed in the aftermath of the Bhopal Gas Tragedy, the EPA provides an overarching framework for environmental regulation in India. It empowers the Central Government to take all necessary measures for environmental protection and to issue directions binding on any person, officer, or authority.² Section 3 of the Act grants the Union Government wide powers to frame rules, set standards, and regulate industrial activities. Under Section 5, the Centre may issue binding directions, including for closure or prohibition of any industry or operation.

Importantly, the EPA enables delegation of powers to state authorities, but in practice, the role of the Centre remains predominant. Rules framed under the EPA, such as the Environment Impact Assessment (EIA) Notification, further underscore the command-and-control approach by prescribing detailed procedural requirements for environmental approvals.

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

This was the first major environmental law in India and led to the establishment of the Central Pollution Control Board (CPCB) and State Pollution Control Boards (SPCBs). The Act provides for the prevention and control of water pollution and confers powers on boards to monitor, inspect, and penalise violators. The law prohibits discharge of pollutants into water bodies without consent and prescribes penalties for non-compliance.

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

Modeled on the Water Act, the Air Act extends similar powers to pollution control boards to regulate and monitor air quality. It mandates industries to obtain 'consent to operate' and

empowers the SPCBs to issue directions, conduct sampling, and impose fines.

4.4 Institutional Enforcement Structure

India's enforcement apparatus comprises multiple tiers of regulatory institutions, though the power distribution heavily favours the Union Government.

4.4.1 Central Pollution Control Board (CPCB)

The CPCB is the apex technical agency for environmental regulation. Established under the Water Act and entrusted with powers under the EPA, its functions include:

- Setting national standards for pollutants;
- Coordinating with SPCBs;
- Conducting inspections and investigations;
- Advising the Union Government on policy matters.

While CPCB has advisory and coordinating functions, it often operates as a central authority exercising supervisory control over SPCBs. It also plays a key role in monitoring compliance with national standards.

4.4.2 State Pollution Control Boards (SPCBs)

SPCBs are statutory bodies under the Water and Air Acts, tasked with implementing environmental laws at the state level. Their functions include:

- Issuing environmental consents to industries;
- Monitoring industrial pollution;
- Enforcing emission and effluent standards;
- Advising state governments on environmental matters.

However, SPCBs often face significant resource constraints, lack of technical expertise,

and institutional dependence on state governments. Their enforcement capabilities vary widely across states, and they are frequently criticised for bureaucratic inertia and poor regulatory oversight.

4.5 Judicial Role in Environmental Enforcement

One of the most distinctive features of India's environmental governance is the activist role played by the judiciary, particularly the Supreme Court and High Courts. Through expansive interpretations of the right to life under Article 21, the judiciary has transformed environmental protection into a justiciable right. This has led to judicial creation of enforcement norms, in the absence of effective administrative action.

4.5.1 Public Interest Litigation (PIL)

In landmark decisions such as *M.C. Mehta v. Union of India*, the Supreme Court has entertained environmental petitions under PIL jurisdiction and issued continuing mandamus directing executive agencies to perform specific enforcement functions. These include orders for industrial closures, vehicular pollution control, river cleaning, and waste management reforms.

Through PILs, the Court has developed environmental principles such as:

- Polluter Pays Principle
- Precautionary Principle
- Public Trust Doctrine

These principles have been read into domestic environmental law, creating a normative framework for enforcement.

4.5.2 National Green Tribunal (NGT)

Established under the National Green Tribunal Act, 2010, the NGT is a specialised environmental court with powers to adjudicate and enforce environmental laws. It can award compensation, direct remediation, and issue binding orders. The NGT is empowered

to hear cases under major environmental statutes and is mandated to decide cases within six months.

The NGT has become a central forum for environmental litigation in India, and its decisions have had direct enforcement implications, including closure orders, penalty imposition, and reversal of environmental clearances.

4.6 Characteristics of the Command-and-Control Regime

India's environmental enforcement regime reflects a classic command-and-control model:

- **Prescriptive Regulation:** Industries are subject to statutory norms with little discretion or negotiation.
- **Centralised Control:** The Union Government exercises overarching powers through CPCB and MoEFCC.
- **Sanction-Oriented Enforcement:** Violations are met with criminal penalties or regulatory action, though enforcement is often weak in practice.
- **Low Public Participation:** Though PILs have improved access to justice, formal mechanisms for public participation (e.g., in EIA) remain limited and procedurally opaque.

This model emphasises uniformity over flexibility, and control over collaboration, contrasting sharply with the U.S. cooperative federalism approach.

4.7 Challenges in Enforcement

Despite an extensive legal framework, enforcement in India faces several systemic challenges:

- **Weak Institutional Capacity:** SPCBs often lack trained staff, laboratory facilities, and enforcement autonomy. Many are under the administrative control of state governments, which may be politically influenced.
- **Overcentralisation:** The excessive role of the Centre results in top-down governance, leaving little room for state-specific innovation or adaptation.

- **Ineffective Penalties:** Penalties prescribed under environmental laws are often outdated and inadequate to deter major industrial violators. Prosecutions are slow and seldom result in convictions.
- **Political Interference:** Regulatory discretion is often exercised arbitrarily or under political pressure, undermining rule-based enforcement.
- **Environmental Clearance Regime:** The EIA process has been criticised for lack of transparency, superficial assessments, and post-facto approvals, diluting the preventive purpose of environmental laws.

4.8 Case Study: Bhopal Gas Tragedy and Its Aftermath

The 1984 Bhopal Gas Disaster, caused by a toxic gas leak from a Union Carbide pesticide plant, remains the world's worst industrial catastrophe. It exposed the absence of a regulatory framework for hazardous industries and led to the enactment of the EPA, 1986.

Despite the enormity of the disaster, criminal enforcement was limited, with lenient penalties imposed decades later. The tragedy demonstrated the state's inability to prevent and penalise catastrophic environmental harm, despite subsequent legislative reforms.

Bhopal catalysed the development of India's environmental law, but enforcement has often remained reactive and event-driven rather than systemic and preventive.

India's environmental enforcement regime reflects the architecture and logic of a command-and-control framework. While the country has made significant legislative and institutional strides, its enforcement mechanism remains centralised, bureaucratically rigid, and uneven across states. The Centre dominates standard-setting and policy implementation, while state authorities lack the autonomy and capacity to tailor enforcement to local realities. Judicial interventions and the establishment of the NGT have helped fill institutional gaps, but these are not substitutes for structural reform.

For India to improve its environmental enforcement, a functional shift toward cooperative federalism—with clearer state roles, capacity-building, and decentralised innovation—is essential. As environmental challenges become more complex and localised, rigid central control may no longer suffice. Drawing lessons from comparative models, India must

evolve toward a more participatory, accountable, and region-sensitive environmental enforcement regime.

Section 5: Comparative Analysis

5.1 Introduction

Environmental enforcement mechanisms in the United States and India represent divergent legal traditions, regulatory philosophies, and institutional configurations. While the U.S. embraces a **cooperative federalism model**, India operates predominantly within a **command-and-control regime**. These approaches reflect distinct constitutional arrangements, administrative capacities, and political cultures. This section conducts a **comparative analysis** of the two systems, highlighting their operational principles, institutional architecture, enforcement tools, and practical effectiveness. It aims to elucidate the strengths and limitations of each model and assess the potential for cross-jurisdictional learning.

5.2 Constitutional and Federal Frameworks

The constitutional architecture of a country profoundly influences its environmental governance.

5.2.1 United States

The United States Constitution does not explicitly mention environmental protection. Nevertheless, environmental regulation has been justified under the **Commerce Clause**, granting Congress authority to regulate activities that affect interstate commerce. Enforcement powers are shared between federal and state governments. Federal environmental statutes, such as the **Clean Air Act (CAA)** and **Clean Water Act (CWA)**, empower the **Environmental Protection Agency (EPA)** to set nationwide standards but permit **state agencies** to implement and enforce those standards, subject to federal oversight.

This model of **cooperative federalism** incentivizes states to adopt and administer federal environmental programs, providing flexibility and encouraging localized solutions. However, if a state fails to enforce adequately, the EPA can intervene and assume direct

control—ensuring a balance between decentralization and federal supervision.

5.2.2 India

In contrast, the **Indian Constitution**, particularly after the 42nd Amendment, reflects a **centralised approach** to environmental governance. Environment-related subjects are included in the **Concurrent List**, allowing both the Union and states to legislate, but Union legislation prevails in case of conflict. Major environmental statutes such as the **Environment (Protection) Act, 1986** centralise authority in the hands of the Union Government. Enforcement functions, though nominally delegated to State Pollution Control Boards (SPCBs), remain tightly coordinated through the **Central Pollution Control Board (CPCB)**.

Unlike the United States, where states act as semi-autonomous agents, Indian states operate more as administrative units under the guidance of central agencies, with limited discretion or innovation in enforcement strategies.

5.3 Institutional Design and Regulatory Structure

The enforcement machinery in both jurisdictions reveals contrasting institutional roles and responsibilities.

5.3.1 Regulatory Authorities

- **United States:** The **EPA** is the principal federal agency responsible for environmental protection. It works in coordination with **state environmental agencies**, which can obtain “primacy” to implement federal programs. States with primacy receive federal funding and oversight but retain administrative discretion. This shared model promotes institutional pluralism and responsiveness to local conditions.
- **India:** The **Ministry of Environment, Forest and Climate Change (MoEFCC)** and the **CPCB** supervise environmental enforcement at the national level. State-level enforcement is entrusted to **SPCBs**, which suffer from institutional under-capacity, political interference, and financial dependence on the Centre or state government. This leads to uneven enforcement across jurisdictions, with a pronounced **top-down** regulatory approach.

5.3.2 Regulatory Instruments

The U.S. employs a mix of **regulatory instruments**, including:

- Performance standards;
- Market-based mechanisms (cap-and-trade systems);
- Voluntary compliance programs (e.g., EPA's Performance Track);
- Administrative penalties and citizen suits.

India's enforcement toolkit is more **prescriptive**, dominated by:

- Command-and-control mandates;
- Fixed emission and effluent standards;
- Criminal penalties and closure notices;
- Limited use of economic instruments.

The **absence of flexible, market-based enforcement tools** in India constrains innovation and cost-effective compliance.

5.4 Enforcement Mechanisms and Compliance

5.4.1 Inspection and Monitoring

In the U.S., enforcement is supported by a robust system of self-reporting, third-party audits, and EPA inspections. Facilities are required to submit **discharge monitoring reports**, with non-compliance subject to penalties. Technological tools, such as **remote sensing** and **electronic reporting**, enhance regulatory oversight.

In India, compliance monitoring remains largely **manual**, inspection-driven, and reactive. While online consent management systems and Continuous Emissions Monitoring Systems (CEMS) have been introduced, their integration is uneven, and enforcement is often driven by judicial mandates rather than routine administrative action.

5.4.2 Penalties and Deterrence

The U.S. legal system permits **civil, administrative, and criminal penalties**, calculated based on severity, duration, and economic benefit of non-compliance. Courts impose **substantial fines**, and citizen suits provide an additional layer of accountability.

India's environmental laws, in contrast, prescribe relatively **low fines** and **cumbersome criminal procedures** for prosecution. For example, violations under the EPA are often met with fines of a few thousand rupees—insufficient to deter large polluters. The judicial system is slow, and prosecutions rarely culminate in convictions, undermining regulatory credibility.

5.5 Role of Judiciary and Civil Society

5.5.1 Judiciary

In the U.S., courts play a limited role in environmental policymaking but are instrumental in interpreting statutes and adjudicating enforcement actions. The principle of **Chevron deference** allows courts to defer to agency interpretations of ambiguous statutory provisions, reinforcing administrative primacy.

In India, the **Supreme Court and High Courts** have actively shaped environmental enforcement through **Public Interest Litigation (PIL)**. In *M.C. Mehta v. Union of India*, the Court ordered closure of polluting industries, introduced environmental principles like the **Polluter Pays Principle**, and expanded the **right to a healthy environment under Article 21**. The establishment of the **National Green Tribunal (NGT)** has further enabled expedited adjudication of environmental disputes.

While judicial activism has filled administrative gaps, critics argue it has **blurred the line between adjudication and governance**, occasionally leading to overreach and inconsistency in enforcement norms.

5.5.2 Public Participation

The U.S. **environmental regime** emphasizes participatory governance. The **National Environmental Policy Act (NEPA)** mandates **Environmental Impact Statements**

(EIS) with public comment periods, ensuring transparency and civic engagement.

India's **EIA process** nominally provides for public hearings but is often **procedurally deficient**, marred by inadequate notice, lack of access to documents, and superficial consultations. Civil society and non-governmental organisations play a crucial role in enforcement through litigation and advocacy but face structural barriers in accessing information and influencing decision-making.

5.6 Federal-State Dynamics

A defining feature of U.S. environmental enforcement is the **dynamic interplay between federal and state agencies**. States with stronger capacity and political will can tailor enforcement to local conditions, fostering innovation. Others rely more heavily on federal intervention. This **flexible architecture** allows a tailored approach, with EPA ensuring a minimum floor of protection.

India's federal enforcement is largely **unitary in practice**. SPCBs have limited autonomy and often await directions from CPCB or MoEFCC. There is little inter-state cooperation, and enforcement mechanisms are standardised, leaving scant room for adaptation. Centralisation also leads to a **compliance burden** on industries that operate across states with varying regulatory attitudes and capacities.

5.7 Comparative Case Illustrations

Clean Air Regulation

- **United States:** The **Clean Air Act** enables states to develop **State Implementation Plans (SIPs)** to meet federal air quality standards. States like California have gone further by setting **stricter emission standards**, leading the nation in clean air innovation.
- **India:** The **National Clean Air Programme (NCAP)**, launched by the Centre, sets non-binding targets and relies heavily on SPCBs for implementation. However, many cities have failed to achieve even basic reductions due to institutional weaknesses and inadequate inter-agency coordination.

Industrial Pollution

- **U.S. Example:** The **Toxic Release Inventory (TRI)** system under the EPA mandates industries to publicly report chemical emissions, promoting self-regulation and community oversight.
- **India:** No comparable national database exists. Data on emissions and compliance is fragmented, hindering transparency and informed policy intervention.

5.8 Strengths and Weaknesses

Criteria	United States (Cooperative Federalism)	India (Command-and-Control)
Institutional Autonomy	High for states with primacy	Low; SPCBs depend on CPCB and state governments
Public Participation	Strong legal mechanisms (NEPA, citizen suits)	Limited and procedural in nature
Flexibility in Enforcement	High; states innovate within federal framework	Low; rigid norms and centralised control
Judicial Role	Interpretative and deferential	Activist and interventionist
Transparency	Comprehensive reporting and data disclosure	Fragmented and limited access
Enforcement Tools	Diverse (market mechanisms, civil suits)	Mainly prescriptive and punitive

5.9 Scope for Convergence and Reform

The contrast between cooperative federalism and command-and-control should not obscure possibilities for convergence. India can benefit from:

- **Strengthening state-level capacity:** Empowering SPCBs through financial autonomy, technical training, and legal reform.
- **Incentivising state innovation:** Similar to U.S. primacy programs, India can reward states that exceed minimum environmental standards.
- **Enhancing transparency:** Creating public databases for emissions and compliance akin to the U.S. TRI.
- **Institutionalising public participation:** Reforming the EIA process to ensure genuine community engagement.
- **Introducing flexible instruments:** Incorporating emission trading, tax incentives, and voluntary programs for proactive compliance.

Conversely, the U.S. may draw lessons from India's judicial innovations, such as the **Polluter Pays Principle**, though the structural differences in constitutionalism and separation of powers may limit direct adoption.

5.10 Conclusion

The comparative analysis underscores that environmental enforcement is not merely a question of institutional form but also of regulatory culture, legal philosophy, and administrative ethos. The U.S. model, grounded in cooperative federalism, allows for **flexibility, innovation, and shared responsibility**, whereas India's command-and-control regime emphasises **uniformity, centralisation, and prescriptive compliance**. Both systems face challenges: the U.S. with inconsistent state implementation and political rollback, and India with bureaucratic rigidity and weak enforcement.

As environmental crises grow more complex and multi-scalar, blending the strengths of both systems—**federal dynamism and central coordination**—could pave the way for more effective, equitable, and responsive environmental enforcement.

Section 6: Conclusion and Policy Recommendations

6.1 Introduction

The comparative analysis of environmental enforcement models in the United States and India reveals significant differences in institutional design, constitutional mandates, enforcement philosophies, and governance dynamics. While both jurisdictions have developed robust legal frameworks for environmental protection, their enforcement trajectories diverge due to their respective federal structures, historical developments, and socio-political contexts. This section synthesises the findings of the preceding chapters and proposes context-sensitive policy recommendations aimed at strengthening environmental enforcement through improved federal coordination, institutional reform, and participatory mechanisms.

6.2 Summary of Key Findings

6.2.1 Divergent Federal Logics

The United States employs a model of cooperative federalism, where both the federal and state governments share responsibility in environmental enforcement. Federal statutes like the Clean Air Act and Clean Water Act explicitly delineate enforcement roles, often allowing states to administer and enforce standards under EPA supervision. This model provides a balance between national uniformity and local autonomy. States innovate and tailor enforcement to regional contexts, while the federal government ensures consistency and intervenes where necessary.

In contrast, India follows a centralised command-and-control model, where environmental authority is concentrated in the Union Government and its agencies. Despite constitutional recognition of environmental responsibilities at both Union and State levels, enforcement remains top-down. The Central Pollution Control Board (CPCB) plays a dominant role, and State Pollution Control Boards (SPCBs) often act as implementing arms rather than autonomous enforcers. The result is a lack of flexibility, local ownership, and accountability at the sub-national level.

6.2.2 Enforcement Mechanisms

U.S. enforcement is characterised by a combination of administrative, civil, and criminal

sanctions, public participation provisions, and citizen suit mechanisms. State environmental agencies, although varied in capacity, engage actively in inspections, permit issuance, and litigation. Federal oversight ensures compliance and provides a backstop against lax enforcement.

India's enforcement is more formalistic, reliant on criminal sanctions and bureaucratic orders under statutes like the Environment (Protection) Act, 1986, and the Water and Air Acts. Despite a vibrant public interest litigation (PIL) movement and the presence of the National Green Tribunal (NGT), enforcement remains fragmented and inconsistent. Penalties are often minimal, and state agencies lack autonomy, resources, and political will to act decisively.

6.2.3 Judicial versus Executive Roles

In the U.S., the judiciary plays a reactive and interpretive role, largely deferring to administrative expertise. In India, the judiciary has emerged as a proactive enforcer of environmental rights, often compensating for executive inaction. Landmark rulings by the Supreme Court and NGT have shaped India's environmental jurisprudence. However, this judicial activism risks undermining institutional accountability and blurring lines of separation of powers.

6.3 Lessons from the Comparative Experience

Drawing insights from both systems offers valuable lessons for enhancing environmental enforcement capacity:

6.3.1 Institutional Autonomy and Accountability

One of the strengths of the U.S. system is the relative autonomy of state environmental agencies and their capacity to innovate within a federal framework. Programs like California's air quality standards exemplify this approach. By contrast, Indian SPCBs function more as subordinate entities, lacking the independence, resources, and legislative support to take firm action.

Empowering state agencies in India—by ensuring functional autonomy, increasing budgetary allocations, and insulating them from political influence—is crucial for a more

responsive and localised enforcement system.

6.3.2 Cooperative Enforcement Structures

The U.S. system incorporates mechanisms for intergovernmental cooperation—such as State Implementation Plans (SIPs) under the Clean Air Act, Memoranda of Understanding (MOUs) between EPA and states, and Performance Partnership Agreements (PPAs). These tools allow for negotiated responsibilities and joint standard setting, creating shared ownership of environmental goals.

India lacks comparable mechanisms. Instead of rigid command models, India could adopt cooperative instruments such as performance-based federal grants, co-regulatory schemes, and negotiated rulemaking between the Centre and states to incentivise compliance and collaboration.

6.3.3 Public Participation and Transparency

Citizen enforcement is a hallmark of U.S. environmental law. Under statutes like the Clean Water Act, citizens may file suits against violators or against government agencies for failing to enforce standards. Public hearings, Environmental Impact Statements (EIS), and access to data ensure transparency.

India's legal regime offers limited formal avenues for public enforcement, barring PILs. While the EIA notification requires public consultation, it is often reduced to a formality. Enhancing citizen participation, transparency in regulatory decisions, and access to environmental information can improve enforcement legitimacy and responsiveness.

6.3.4 Decriminalisation and Administrative Remedies

U.S. environmental law relies heavily on civil and administrative penalties, allowing regulators to enforce without resorting to criminal trials. This enhances efficiency and deterrence.

Indian law, on the other hand, primarily relies on criminal prosecution, which is slow and rarely successful. Shifting toward administrative enforcement powers, such as fines, consent orders, and injunctive relief, would modernise India's approach and relieve the

overburdened criminal justice system.

6.4 Policy Recommendations

Based on the comparative findings, the following policy reforms are suggested to enhance India's environmental enforcement model and align it with global best practices:

6.4.1 Decentralised Enforcement Mandates

India must move beyond a centralised model and promote decentralised environmental governance. This includes:

- Granting SPCBs greater legislative and financial autonomy;
- Allowing states to design state-specific compliance strategies;
- Developing state-level environmental standards that go beyond the national baseline, where appropriate.

The Centre's role should shift from controller to coordinator—setting minimum standards, monitoring outcomes, and facilitating technical and financial support.

6.4.2 Establishing Cooperative Federal Mechanisms

A framework similar to the U.S. cooperative federalism model can be introduced by:

- Formulating State Environmental Implementation Plans (SEIPs);
- Establishing Centre-State Environmental Councils for joint policymaking;
- Creating performance-linked environmental grants to incentivise compliance.

Such mechanisms would help address regional environmental issues—such as groundwater depletion in Punjab or air pollution in Delhi-NCR—through joint responsibility rather than unilateral mandates.

6.4.3 Strengthening Administrative Enforcement

India must expand the use of administrative sanctions to allow timely and proportionate

responses to violations. This includes:

- Empowering SPCBs to impose civil penalties without court intervention;
- Introducing environmental performance bonds or financial assurance mechanisms;
- Creating a central repository of violators to track compliance history.

These steps can bridge the enforcement gap and reduce over-reliance on courts.

6.4.4 Legal Reforms for Public Participation

Legislative amendments should be introduced to:

- Allow citizen suits under environmental statutes, as in the U.S.;
- Mandate disclosure of pollution data and regulatory actions;
- Strengthen public consultation requirements in EIA processes.

A legal culture of participatory enforcement would increase accountability and democratise environmental governance.

6.4.5 Institutional Capacity Building

Both central and state agencies must be equipped with:

- Adequate staff trained in environmental science and regulatory compliance;
- Technical infrastructure, including monitoring equipment and GIS tools;
- Inter-agency coordination platforms.

Regular training, exchange programs with foreign agencies (e.g., the EPA), and recruitment reforms are essential to professionalise enforcement agencies.

6.5 Looking Ahead: A Hybrid Enforcement Model

Neither the command-and-control model nor cooperative federalism is perfect in isolation.

India should aim for a hybrid model, combining central standard-setting with decentralised enforcement, judicial oversight with executive efficiency, and state innovation with national consistency.

Such a model would reflect:

- Vertical integration (between Centre and states);
- Horizontal integration (across sectors like water, waste, forests);
- Diagonal integration (including citizens, corporations, and civil society).

In the age of climate change, transboundary pollution, and biodiversity loss, India's environmental enforcement must evolve from rule-centric control to goal-oriented collaboration.

6.6 Conclusion

Environmental enforcement is not merely a legal exercise but a manifestation of a nation's commitment to sustainable development, intergenerational equity, and the public trust doctrine. While the United States demonstrates how cooperative federalism can empower both federal and state actors to act in synergy, India's command-and-control regime reveals the limitations of centralised enforcement in a complex and diverse federal democracy.

A recalibrated enforcement model for India must embrace decentralisation, innovation, and participation. By learning from international best practices and adapting them to its unique context, India can build a resilient and inclusive environmental governance architecture—one that upholds constitutional values, strengthens democratic accountability, and ensures ecological sustainability for generations to come.

References:

- See *New York v. United States*, 505 U.S. 144 (1992); *Train v. Natural Resources Defense Council*, 421 U.S. 60 (1975).
- *M.C. Mehta v. Union of India*, (1987) 1 SCC 395; *Indian Council for Enviro-Legal Action v. Union of India*, (1996) 3 SCC 212.
- *California v. EPA*, 940 F.3d 1342 (D.C. Cir. 2019).
- Richard L. Revesz, “Federalism and Environmental Regulation: A Public Choice Analysis,” 115 Harv. L. Rev. 553 (2001).
- Leelakrishnan, P. “Environmental Law in India” (5th ed., LexisNexis 2016); Shibani Ghosh, "Accountability in Environmental Governance: The Role of the NGT," 6 NUJS L. Rev. 357 (2013).
- P. Leelakrishnan, *Environmental Law in India* 5 (5th ed. 2016).
- Richard Stewart, “A New Generation of Environmental Regulation?” 29 Cap. U. L. Rev. 21 (2001).
- 42 U.S.C. § 7401 et seq. (Clean Air Act); 33 U.S.C. § 1251 et seq. (Clean Water Act).
- Kirsten H. Engel, “State Environmental Standard-Setting: Is There a ‘Race’ and Is It ‘to the Bottom’?” 48 Hastings L.J. 271 (1997).
- *Train v. Natural Res. Def. Council*, 421 U.S. 60, 79 (1975).
- V. Rajamani, “The ‘Right to Environment’ in Indian Constitutional Law,” in *Indian J. Const. L.* 50 (2010).
- 42 U.S.C. § 7604 (Clean Air Act citizen suit provision).
- *Subhash Kumar v. State of Bihar*, A.I.R. 1991 S.C. 420.
- Joanne Scott, “From Brussels with Love: The Transatlantic Travels of European

Environmental Law,” 57 Am. J. Comp. L. 897 (2009).

- U.S. Const. art. I, § 8, cl. 3.
- 42 U.S.C. § 7409.
- 42 U.S.C. § 7604.
- *Massachusetts v. EPA*, 549 U.S. 497 (2007).
- 33 U.S.C. § 1365.
- *Rapanos v. United States*, 547 U.S. 715 (2006).
- 42 U.S.C. § 6972.
- U.S. Env'tl. Prot. Agency, Memoranda of Agreement with States, available at <https://www.epa.gov/compliance/memoranda-agreement>.
- *United States v. Citgo Petroleum Corp.*, 801 F.3d 477 (5th Cir. 2015).
- *Friends of the Earth, Inc. v. Laidlaw Env'tl. Servs. (TOC), Inc.*, 528 U.S. 167 (2000).
- *Chevron U.S.A., Inc. v. Nat. Res. Def. Council*, 467 U.S. 837 (1984).
- Lisa Friedman, “Trump’s Rollback of Auto Pollution Rules,” N.Y. Times, Mar. 31, 2020.
- *Subhash Kumar v. State of Bihar*, A.I.R. 1991 S.C. 420 (India).
- The Environment (Protection) Act, No. 29 of 1986, § 3–5, India Code (1986).
- The Water (Prevention and Control of Pollution) Act, No. 6 of 1974, §§ 24–33A, India Code (1974).
- Central Pollution Control Board, *Functions of CPCB*, <https://cpcb.nic.in/functions/> (last visited July 15, 2025).
- Centre for Science and Environment, *State of India’s Environment Report 2022* (2022).

- *M.C. Mehta v. Union of India*, (1987) 1 S.C.C. 395 (India).
- The National Green Tribunal Act, No. 19 of 2010, India Code (2010).
- Shibani Ghosh, *Environmental Law and Enforcement in India: Challenges and Opportunities*, 3 I.J.E.L. 61 (2017).
- *Union Carbide Corporation v. Union of India*, A.I.R. 1990 S.C. 273 (India).
- U.S. Const. art. I, § 8, cl. 3.
- India Const. sched. VII, List III, Entry 17A.
- Clean Water Act, 33 U.S.C. § 1251 et seq. (1972); Clean Air Act, 42 U.S.C. § 7401 et seq. (1970).
- The Environment (Protection) Act, No. 29 of 1986, § 3, India Code (1986).
- Centre for Science and Environment, *State of India's Environment 2023* (2023).
- Environmental Enforcement: Civil Penalties, 42 U.S.C. § 13101 et seq.
- The Air (Prevention and Control of Pollution) Act, No. 14 of 1981, § 37, India Code (1981).
- *Chevron U.S.A., Inc. v. Natural Resources Defense Council*, 467 U.S. 837 (1984).
- *M.C. Mehta v. Union of India*, (1987) 1 S.C.C. 395 (India).
- Kalpavriksh v. Union of India, W.P. (C) 202/1995 (N.G.T., 2012).
- Cal. Health & Safety Code §§ 39000–44474.
- U.S. Const. art. VI, cl. 2.
- Clean Water Act § 505, 33 U.S.C. § 1365 (2018).
- Clean Air Act § 110, 42 U.S.C. § 7410 (2018).

- The Environment (Protection) Act, No. 29 of 1986, § 3, India Code (1986).
- The Water (Prevention and Control of Pollution) Act, No. 6 of 1974, § 33A, India Code (1974).
- *M.C. Mehta v. Union of India*, (1987) 1 S.C.C. 395 (India).
- National Green Tribunal Act, No. 19 of 2010, § 14, India Code (2010).
- Shibani Ghosh, *Environmental Adjudication in India: The Supreme Court and the National Green Tribunal*, 10 Env't L. & Pol'y Ann. 25 (2020).
- Tseming Yang, *The Problem of Weak Enforcement in Environmental Law: A Comparative Analysis*, 15 Tul. Envtl. L.J. 105 (2001).
- Sujatha Byravan & Sudhir Chella Rajan, *Democratising Environmental Governance in India*, 50 Econ. & Pol. Wkly. 46 (2015).
- Ctr. for Policy Research, *State Pollution Control Boards: Institutional Challenges and the Way Forward* (2022).
- Armin Rosencranz et al., *Environmental Law and Policy in India* (3d ed. 2016).
- David Markell, *States as Innovators: It's Time for a New Look to Our "Laboratories of Democracy" in the Effort to Improve Our Approach to Environmental Regulation*, 58 Alb. L. Rev. 347 (1994).
- U.N. Human Rights Council, *The Right to a Healthy Environment: Report of the Special Rapporteur* (2022).
- World Resources Institute, *Strengthening Environmental Governance in India* (2023).