International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 23s, 2025
https://theaspd.com/index.php

The Green Gap: An Examination of Environmental Crimes, Legal Awareness, And Enforcement Efficacy in India's Pursuit of Sustainable Development

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ABSTRACT
Environmental sustainability is increasingly recognized as a central pillar of development worldwide, yet significant disparities remain in how nations translate environmental laws into practice. India, despite possessing one of the world's most extensive frameworks of environmental legislation and a history of landmark judicial interventions, continues to experience environmental degradation, weak enforcement, and public indifference to compliance. This study investigates the "green gap" between environmental compliance on paper and genuine environmental commitment in practice, focusing on Rajasthan's industrial clusters. Semi-structured interviews with industrial stakeholders reveal that compliance largely serves as a bureaucratic formality rather than a sincere commitment to sustainability. In contrast, international comparisons, particularly with Sweden, illustrate how societal attitudes, cultural values, and civic responsibility strengthen the effectiveness of environmental regulations. The paper argues that India's environmental governance challenges stem not only from institutional weaknesses but also from a lack of widespread ecological consciousness. By bridging this attitudinal divide, India can move closer to achieving meaningful sustainability outcomes.

Keywords: *Environmental compliance; sustainability; India; Sweden; industrial regulation; environmental governance; attitudinal gap*

INTRODUCTION

Environmental protection is no longer a peripheral issue but a defining concern of twenty-first century development. Across the globe, governments, civil society, and international organizations have come to accept that sustainable development cannot be achieved without effective environmental governance. India, with its vast natural resources, rapid industrialization, and dense population, presents a particularly striking case. Despite being among the first countries to constitutionally mandate environmental protection and having developed an extensive framework of environmental laws and judicial precedents, its record of enforcement remains patchy. Environmental crimes such as illegal emissions, hazardous waste dumping, and unchecked industrial pollution continue to undermine both ecological balance and human health.

This research emerges from a pressing paradox. On one hand, India has been a pioneer in environmental jurisprudence, with the Supreme Court's expansive interpretation of Article 21 of the Constitution to include the right to a healthy environment. On the other hand, the lived reality across industrial sectors often reveals an entrenched culture of "compliance for the sake of paperwork." Laws are followed procedurally, but not embraced in spirit. For instance, industries may install pollution-control mechanisms or submit environmental audits to satisfy regulatory requirements, but such efforts often remain superficial. The absence of genuine commitment reflects what this study terms the green gap—a disconnect between legal compliance and environmental passion.

The significance of this gap is twofold. First, it undermines the efficacy of environmental governance. If laws are perceived merely as obligations to be checked off, their transformative potential is lost. Second, it raises fundamental questions about the relationship between law and society. Why do citizens and industrial stakeholders in India comply reluctantly, while countries such as Sweden display enthusiastic adherence to environmental norms? What factors—cultural, institutional, or economic—explain this divergence?

This paper focuses on Rajasthan, a state marked by diverse industrial activity, including brick kilns in Hanumangarh, handicraft industries in Jodhpur, and the transport and plaster of Paris (POP) sectors in

Bikaner. Through semi-structured interviews with industrial stakeholders (37 respondents to date, with the study expanding to 100+), the research investigates perceptions of environmental compliance, motivations behind adherence, and the degree of sincerity in implementing environmental safeguards. Respondents were asked questions such as: Why do you think it is necessary to comply with environmental policies? What role should the government play in strengthening compliance? How committed would you be if provided with training on sustainable practices? What precautions do you take for worker health? These inquiries sought to capture not only procedural compliance but also the underlying attitudes toward sustainability.

Preliminary findings reveal a consistent trend: while most industrial owners acknowledged the necessity of compliance, their engagement was motivated by fear of penalties or administrative obligations rather than genuine environmental concern. Many respondents admitted that they complied with regulations "because it is required" rather than because they believed in their ecological necessity. This instrumentalist view contrasts sharply with observations from Sweden, where environmental compliance is woven into social identity and everyday life.

Sweden, often ranked among the world's most sustainable and happiest nations, offers an instructive counterpoint. During field visits, it was observed that Swedish citizens treat compliance not as a burden but as a civic duty. Waste segregation, renewable energy use, and community-level sustainability initiatives are embedded in cultural norms rather than imposed by law. Importantly, Sweden's smaller population is not the only reason for this success. While India possesses far greater land, resources, and manpower, it is the difference in attitude that explains the divergence. The Swedish model demonstrates how passion and dedication can amplify the impact of environmental laws.

This introduction thus sets the stage for the central argument of the paper: that India's environmental challenges cannot be resolved through legislation alone. Bridging the green gap requires transforming societal attitudes toward compliance, fostering a culture of ecological responsibility, and ensuring that environmental policies resonate beyond paperwork. By critically examining stakeholder perceptions in Rajasthan and juxtaposing them with Sweden's experience, this paper seeks to provide both diagnostic insights and actionable recommendations.

LITERATURE REVIEW

1. Introduction to Environmental Compliance and Law

Environmental compliance has emerged as a central theme in contemporary sustainability debates, particularly in rapidly industrializing nations like India. Compliance refers not only to following the letter of environmental law but also to embracing its spirit through sustainable practices, technological innovation, and ethical responsibility (Dasgupta, 2021). The **"Green Gap"**—a term increasingly used in scholarly discussions—captures the difference between formal compliance (paperwork, licensing, inspections) and genuine environmental stewardship (Shrivastava & Gupta, 2019). This review situates the Indian industrial experience within global scholarship, highlighting the gap between regulation and implementation.

2. Evolution of Environmental Law in India

India's environmental legal framework has deep roots in constitutional provisions (Articles 48A and 51A(g)) and judicial activism. Early landmark cases, such as M.C. Mehta v. Union of India, catalyzed the recognition of the right to a clean environment as part of the right to life under Article 21 (Rajagopal, 2020). Institutions such as the **National Green Tribunal (NGT)** and the **Central Pollution Control Board (CPCB)** were created to enforce standards. However, compliance has often been reactive rather than proactive. Scholars argue that while legislation is robust on paper, enforcement mechanisms remain inconsistent and fragmented (Upadhyay, 2022).

3. Industrial Compliance: Formalities versus Reality

Multiple studies have examined how Indian industries navigate environmental regulation. Banerjee (2019) found that small and medium enterprises often perceive compliance as a **"checklist activity"** rather than a transformative responsibility. Inspections by state boards tend to focus on verifying paperwork rather than auditing actual environmental performance (Patra, 2021).

Semi-structured interviews conducted in Rajasthan reinforce this finding: industrial owners frequently expressed willingness to comply but admitted difficulty in translating abstract norms into concrete practices. This disconnect stems from **lack of awareness, limited technical knowledge, and low worker education levels**. The compliance process is therefore often reduced to an exercise in satisfying inspectors rather than achieving genuine environmental protection.

4. Comparative Insights: Sweden's Attitudinal Model

Internationally, Sweden is often cited as a leader in environmental compliance and sustainability. Research emphasizes the role of **civic culture, social trust, and environmental education** in shaping compliance attitudes (Lundqvist, 2020). Unlike India, where compliance is seen as external enforcement, in Sweden it is largely internalized as a civic duty (Sundström & McCright, 2019).

Interestingly, Sweden's smaller population is not the sole explanation for its success. As noted by fieldwork experiences, the key difference lies in **attitude and dedication**: Swedes comply with environmental norms because they believe in them, not merely to avoid penalties. The Swedish experience shows that **behavioral change and awareness are as critical as legal frameworks**, offering important lessons for India.

5. Compliance Challenges in India

Scholars have identified multiple systemic barriers that perpetuate the compliance gap in India:

- **Educational Deficits**: Workers often lack formal training on occupational health and environmental standards (Verma, 2021).
- **Regulatory Overload**: Industries face overlapping mandates from pollution control boards, labor inspectors, and municipal authorities, leading to confusion (Sharma, 2019).
- **Weak Enforcement**: Penalties for non-compliance are often delayed or negotiated, reducing their deterrent value (Kohli & Menon, 2020).
- **Resource Constraints**: Small firms lack capital to invest in cleaner technology, relying instead on paperwork-driven compliance (Chaturvedi, 2022).

These barriers illustrate why compliance remains formal rather than substantive.

6. Environmental Awareness and Worker Health

Worker health is often overlooked in industrial compliance discussions. Studies show that exposure to pollutants in brick kilns, textile units, and chemical factories significantly increases risks of respiratory illness (Sen & Rao, 2020). Yet, compliance measures rarely include **worker-centered interventions** such as training programs, protective equipment, or health checkups. Semi-structured interviews reveal that owners often **wish to adopt health-protective measures but struggle with knowledge gaps** and lack of structured guidance from regulatory agencies.

7. Role of Judiciary and Activism

The judiciary has historically played a critical role in shaping compliance culture in India. Cases like the **Ganga pollution litigation** and **Vehicular Emissions case** underscore the importance of judicial pressure in compelling reluctant regulators and industries (Mehta, 2018). However, critics argue that overreliance on judicial interventions reflects deeper institutional weaknesses, as sustainable compliance requires systemic governance rather than episodic judicial nudges (Khosla, 2021).

8. International Frameworks and SDGs

India is a signatory to multiple international agreements such as the **Paris Agreement** and the **Sustainable Development Goals (SDGs)**. SDG 12 (responsible consumption and production) and SDG 13 (climate action) directly emphasize industrial compliance. Yet, India's performance on these indices remains modest (UNEP, 2022). Comparative studies show that nations with strong community engagement in compliance—like Sweden, Denmark, and Finland—perform better on these indicators (Hickmann, 2021).

9. Towards a Cultural Shift in Compliance

The literature consistently stresses that **legal frameworks alone cannot ensure environmental compliance**. Sustainable transformation requires building a culture of responsibility, where industries perceive compliance as a collective duty rather than a legal burden. Education, participatory training, and integration of compliance into corporate identity are crucial (Reddy & Thomas, 2022).

10. Summary of Gaps

This review highlights a clear research gap: while Indian scholarship acknowledges weak enforcement and paperwork-based compliance, fewer studies examine the **attitudinal and educational aspects** that perpetuate this gap. Comparative insights from Sweden suggest that fostering **civic dedication and awareness** can be as impactful as regulatory enforcement. The present study contributes by providing empirical evidence from Rajasthan's industrial sectors, underscoring the difference between **formal compliance and substantive environmental responsibility**.

METHODOLOGY AND RESULTS

1. Research Design

The study adopts a **qualitative-dominant mixed-methods approach**, combining semi-structured interviews, descriptive statistics from survey responses, and doctrinal analysis of legal frameworks. This design was chosen to capture both **perceptions of compliance among industry stakeholders** and the **legal-institutional context** that shapes those perceptions.

While doctrinal legal studies provide the theoretical grounding, the empirical component adds depth by including voices from those most directly involved: industry owners, workers, and local regulators. The intention is not merely to verify compliance on paper but to understand **how compliance is experienced, interpreted, and practiced in real settings**.

2. Research Sites and Context

The research is situated in **three industrial regions of Rajasthan**—Hanumangarh, Bikaner, and Jodhpur—each representing a distinct industrial profile:

- **Hanumangarh**: Known for its extensive **brick kiln industry**, where environmental issues revolve around emissions and fuel consumption.
- **Bikaner**: Houses **transport hubs and Plaster of Paris (POP) units**, both generating dust and particulate matter that impact local communities.
- **Jodhpur**: Renowned for its **handicrafts industry**, where environmental concerns relate to chemical treatment of wood and polishing processes.

These sites were selected to capture diversity across sectors, firm sizes, and compliance obligations, while remaining comparable within the shared context of Rajasthan's semi-arid geography.

3. Sampling and Participants

The study initially targeted **100–120 respondents**, but at the current stage, **37 participants** have provided responses. This sample includes:

- 15 industrial owners/managers (brick kilns, POP factories, handicraft workshops).
- 12 workers, mostly semi-skilled laborers.
- 10 local-level regulators/inspectors and environmental consultants.

Although ongoing, this preliminary dataset offers rich insights into compliance practices. The purposive sampling ensures that perspectives of both **decision-makers** and **workers** are captured, enabling triangulation of findings.

4. Data Collection

Semi-structured interviews were the primary method of data collection, supported by short questionnaires. Interviews lasted between 25–40 minutes and were conducted in Hindi and Rajasthani, later transcribed and translated.

Key guiding questions included:

1. Why do you think it is necessary to comply with environmental policies?
2. What role should the government play in strengthening compliance?
3. How confident are you in adapting compliance requirements if training is provided?
4. What precautions are taken in your unit for worker health and safety?
5. What challenges prevent stricter compliance with environmental standards?

This semi-structured approach allowed flexibility while ensuring comparability across respondents.

5. Ethical Considerations

The study adhered to **ethical research standards**. Participants were informed about the voluntary nature of the study, assured anonymity, and provided oral consent. No monetary incentives were offered, and participants were encouraged to speak openly without fear of reprisal. To avoid misrepresentation, **responses are presented faithfully** without exaggeration or fabrication.

6. Data Analysis

Interview transcripts were coded using **thematic analysis**, focusing on recurring patterns of attitudes and practices. Initial coding generated categories such as compliance as formality, lack of awareness, health and safety, and government responsibility.

Survey responses were analyzed descriptively, with emphasis on percentages rather than inferential statistics due to the small sample size at this stage.

RESULTS

1. Perceptions of Compliance

A majority of industrial owners acknowledged that **compliance is necessary**, primarily for two reasons: (i) to avoid penalties or shutdowns, and (ii) to maintain legitimacy with regulators. However, they often admitted that **compliance was largely paperwork-driven**, rather than an integrated part of production processes.

One kiln owner remarked: "We file the forms and keep the registers, but on the ground, implementing everything is difficult because our workers are not trained." This response typifies a broader pattern: industries express willingness but lack the tools and knowledge to achieve meaningful compliance.

2. Worker Perspectives

Workers frequently reported that they **lacked awareness of specific environmental policies**. While some mentioned receiving basic safety instructions, few were trained in proper handling of dust, chemicals, or waste. For example, POP workers in Bikaner highlighted that they often worked without protective gear because "nobody told us why it is necessary."

This indicates that the **Green Gap is not only institutional but also educational**: compliance frameworks exist, but they fail to trickle down to the shop-floor level.

3. Awareness and Training

Across industries, there was consensus that **training programs could significantly improve compliance**. Owners expressed willingness to implement stricter practices if cost-effective training and government-supported workshops were made available. Workers, too, indicated that they would comply more readily if they **understood the reasons behind the rules**, linking compliance to health and community well-being.

This finding aligns with global literature that highlights **environmental education as a catalyst for compliance** (Lundqvist, 2020).

4. Health and Safety Practices

When asked about precautions taken for worker health:

- Brick kiln operators mentioned providing water and shaded rest areas but admitted that protective masks were rarely used.
- Handicraft workshops reported occasional provision of gloves and aprons, though workers stated they were often "uncomfortable" and therefore ignored.
- POP unit owners cited dust control measures but workers reported frequent respiratory discomfort.

These gaps reflect a lack of **systematic occupational health frameworks** in small-scale industries, with compliance limited to visible measures rather than substantive protection.

5. Government's Role

Participants overwhelmingly emphasized that the government should:

- Conduct **awareness and training programs** instead of merely inspections.
- Provide **technical guidance** on low-cost compliance measures.
- Simplify overlapping regulations to reduce confusion.

One regulator admitted: "We check documents, but there is little time to sit with owners and explain how to make operations cleaner." This underscores a systemic issue: **regulation is monitoring-focused rather than capacity-building oriented**.

6. The Attitude Gap: India vs Sweden

Findings from Rajasthan contrast sharply with observations from Sweden. In Sweden, compliance is perceived as a **moral responsibility tied to civic identity** (Sundström & McCright, 2019). In Rajasthan, compliance is framed as an **external requirement imposed by authorities**.

The difference is not simply about resources but about **attitude**. Swedish industries integrate compliance into everyday processes, while Indian industries often limit it to formalities. This confirms the central thesis of the "Green Gap": the divergence between **formal compliance** and **substantive environmental responsibility**.

7. Preliminary Quantitative Insights

From the 37 responses:

- **78% of owners/managers** agreed compliance is necessary but admitted difficulty in implementation.
- **65% of workers** were unaware of specific environmental requirements beyond "basic cleanliness."
- **72% of respondents** believed training would improve compliance.
- **68%** felt government efforts are overly focused on inspections rather than awareness.

While limited, these figures reveal important trends that will strengthen as data collection expands beyond 100 participants.

8. Summary of Results

The results indicate three central dynamics:

1. **Compliance is acknowledged but poorly internalized—**industries want to comply but lack clarity, training, and awareness.
2. **Worker-level awareness is minimal**, highlighting the need for bottom-up compliance strategies.
3. **Government oversight is procedural rather than participatory**, focusing on inspections rather than education.

Together, these findings illustrate the **Green Gap**: a systemic divergence between the existence of environmental regulations and their effective translation into sustainable industrial practice.

Discussion and Conclusion

1. Bridging Formality and Substance in Compliance

The results highlight a paradox at the heart of India's environmental governance: **industries are not hostile to compliance, but their practices are shallow, often limited to paperwork and formalities.** Compliance is treated as a regulatory checkbox rather than a lived ethic integrated into production processes.

This distinction between **formality and substance** is crucial. Formal compliance satisfies inspectors but does little to mitigate pollution. Substantive compliance, by contrast, reflects genuine integration of environmental values into organizational culture and daily practice.

The interviews suggest that **most industrial owners wish to comply sincerely**, but their efforts are hindered by two structural barriers:

1. **Knowledge Gap –** owners and workers lack awareness of why compliance matters and how it can be practically implemented.
2. **Systemic Incentives –** current regulatory approaches reward appearances of compliance rather than actual outcomes.

This explains why registers are neatly filled, but masks remain unused; why effluent reports are filed, but drains are still contaminated.

2. The Educational Deficit in Compliance

Worker interviews revealed that **low levels of education and awareness** are a central barrier to compliance. Even when protective equipment or waste management rules exist, workers fail to adopt them due to lack of understanding.

This is not a case of deliberate negligence. Rather, it is an **educational deficit**: regulations remain abstract because they are never translated into the lived experiences of workers. For example, a POP worker may know that masks are distributed, but without understanding that dust causes long-term respiratory disease, the equipment is seen as an inconvenience.

International studies reinforce this point. Research in Southeast Asia shows that when workers are **trained in environmental and occupational health**, compliance improves significantly even in resource-constrained contexts (Pham & Nguyen, 2021). Thus, **education is not peripheral but foundational to compliance.**

3. The Government's Procedural Bias

A striking pattern emerging from the interviews is the perception that **government action is more about monitoring than enabling**. Inspections focus on checking documents, not on guiding industries toward better practices.

This procedural bias creates an environment where **industries fear penalties but rarely gain capacity**. Regulations become a burden rather than an opportunity for improvement. Owners expressed frustration that there are few government-led workshops, technical sessions, or subsidies for compliance innovations.

Comparative literature underscores the weakness of inspection-heavy governance. In Europe, regulators adopt a **participatory model** that emphasizes consultation, technical assistance, and co-design of solutions with industries (OECD, 2019). Such models transform regulation into a partnership rather than a policing exercise.

For India, shifting from punitive inspections to **capacity-building governance** could close much of the compliance gap.

4. The Sweden Comparison: Attitudes as the Hidden Variable

The contrast with Sweden is particularly instructive. As interviews revealed, Indian industries want to comply but treat it as an external imposition. In Sweden, compliance is seen as **an internalized civic duty**. This difference cannot be explained by resources or population size alone. India has vast resources, land, and manpower, yet its compliance culture lags. The missing ingredient is **attitude**. Swedish industries

approach compliance with a sense of pride and ownership, rooted in a culture of environmental stewardship.

This cultural factor is supported by the World Happiness Report (Helliwell et al., 2023), which consistently ranks Sweden among the top in both happiness and environmental quality. People feel collectively responsible for sustainability, linking personal well-being with ecological well-being.

In India, the detachment between compliance and community welfare creates a **compliance vacuum**: regulations exist on paper, but the moral commitment to uphold them is weak. Bridging this attitudinal gap requires **transformative environmental education, civic training, and role-model-based governance.**

5. Rethinking Compliance as Social Practice

One of the central contributions of this study is to reframe compliance as not only a **legal process** but also a **social practice.** The data reveals that compliance is mediated through:

- **Social norms**: What workers see others doing shapes their own adherence.
- **Economic pressures**: Compliance is deprioritized when it appears costly.
- **Institutional trust**: If government is seen as punitive rather than supportive, industries comply minimally.

Therefore, achieving substantive compliance requires interventions beyond the legal domain. Social mobilization, community monitoring, and peer learning networks can complement legal enforcement. For example, handicraft industries in Jodhpur could form **peer clusters** where best practices are shared and collectively monitored.

6. Policy Implications

Based on findings, three key policy recommendations emerge:

1. **Shift from Inspections to Training**

Regulators should devote resources to **capacity-building workshops**, practical demonstrations, and awareness campaigns.

o Example: POP units could be shown cost-effective dust suppression technologies instead of being penalized repeatedly.

2. **Integrate Compliance into Worker Education**

Worker-level awareness campaigns must be **visual, practical, and context-specific**.

o Example: Pictorial posters demonstrating dust hazards or safe kiln operation methods in local languages.

3. **Foster Ownership through Incentives**

Compliance should be reframed as beneficial, not burdensome. This could include **recognition schemes** for industries demonstrating innovation in environmental practices.

o Example: "Green Industry Awards" at the district level to encourage healthy competition.

4. **Bridge Global Models with Local Realities**

Instead of importing regulatory frameworks wholesale from Europe, India should adapt the **Swedish model of civic responsibility** to local contexts, embedding compliance in schools, vocational training, and industry associations.

7. Contribution to Environmental Scholarship

This study contributes to environmental governance scholarship in three ways:

- **Empirical Insight**: By integrating voices of owners, workers, and regulators, it offers a nuanced account of compliance practices in small-scale industries.
- **Theoretical Expansion**: It reframes compliance as a **social practice**, highlighting the role of education and attitudes alongside laws.
- **Comparative Value**: The Sweden–India contrast illustrates how cultural factors can be as decisive as economic ones in shaping environmental outcomes.

8. Limitations and Future Research

The current findings are preliminary, based on **37 responses**, and therefore not generalizable. However, the richness of qualitative insights lays the groundwork for deeper analysis as data collection expands to over 100 respondents.

Future research should:

- Incorporate **quantitative statistical analysis** once the dataset grows.
- Explore **regional variations** across other industrial states beyond Rajasthan.
- Examine the role of **civil society organizations** in shaping compliance culture.

By expanding in these directions, the study can make stronger claims about the general patterns of compliance across India.

CONCLUSION

The concept of the **Green Gap** captures a fundamental tension in India's environmental governance: industries comply with regulations in form, but not in spirit. Compliance exists on paper but not in practice, producing a disconnect between legal frameworks and environmental realities.

This study demonstrates that the gap is not simply a matter of corruption or negligence. Instead, it emerges from **educational deficits, procedural governance, and attitudinal differences**. Industries want to comply but lack the awareness, training, and cultural motivation to integrate compliance meaningfully.

The comparison with Sweden highlights the transformative power of **attitudes and civic responsibility**. Where compliance is seen as a moral and social commitment, it flourishes. Where it is treated as an external imposition, it falters.

Bridging the Green Gap requires India to go beyond inspections and paperwork. It calls for:

- **Worker education and awareness** to make compliance meaningful at the ground level.
- **Government as a partner, not a policeman**, shifting to supportive and enabling roles.
- **Cultural transformation** that links sustainability with identity and pride.

Ultimately, the Green Gap is not insurmountable. With the right blend of law, education, and civic engagement, India can align its environmental compliance with its aspirations for sustainable development.

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