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ENVIRONMENTAL CONFLICT IN THE ARAVALLI RANGE: GOVERNANCE CHALLENGES BETWEEN CONSERVATION AND DEVELOPMENT

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Abstract

The Aravalli Range, one of the world's oldest geological formations, plays a crucial role in maintaining ecological balance in northwestern India by limiting desertification and supporting water security and biodiversity. This study examines how multi-level governance failures have contributed to the systematic degradation of the Aravalli ecosystem. Based on fieldwork across Rajasthan, Haryana, and Gujarat, analysis of recent Supreme Court interventions (2024–2025), and scrutiny of the controversial redefinition of the "Aravalli Hills," the research shows how regulatory ambiguities have been exploited to legitimize illegal mining under the guise of development. The paper highlights the loss of more than 31 hillocks in Rajasthan alone, with severe consequences for groundwater recharge, desert expansion, and ecological connectivity, affecting millions of people. Framing the crisis through an environmental justice lens, the study argues that the Aravalli's decline reflects a deeper governance failure in which economic priorities override ecological science, community rights, and constitutional responsibilities. It concludes by proposing alternative governance approaches that prioritize ecological integrity, legal clarity, and meaningful community participation.

Keywords: Aravalli Range, Environmental Governance, Illegal Mining, Desertification, Environmental Justice, Supreme Court, Mining Mafia, Ecological Degradation, Community Rights

Introduction: The Aravalli Under Siege

This paper is written as both scholarship and urgent testimony to the ongoing ecological destruction of the Aravalli Range. Drawing on field observations and interactions with affected communities, it documents how this two-billion-year-old mountain system—central to preventing desertification, recharging groundwater, regulating climate, and sustaining livelihoods—has been steadily degraded. Over the past three decades, the Aravallis have been dismantled not by natural forces but by illegal mining, regulatory loopholes, weak enforcement, delayed judicial responses, and recent legal redefinitions that risk legitimizing further damage. The study frames this decline as a profound failure of environmental governance with lasting consequences for ecosystems and human well-being.

The November 2025 Turning Point

On November 20, 2025, the Supreme Court of India accepted a definition that has sent shockwaves through environmental circles. Following recommendations from a Ministry of Environment, Forest and Climate Change (MoEFCC) committee, the Court ruled that only landforms rising at least 100 meters above local relief qualify as "Aravalli Hills," and that clusters of such hills within 500 meters constitute an "Aravalli Range."

Environment Minister Bhupender Yadav immediately declared this a victory for conservation, claiming over 90% of the Aravalli landscape remains protected. But walk through the mining-scarred districts of Alwar, Bharatpur, Mahendragarh, or Bhilwara, and you encounter a different reality. Communities know what scientists have documented: numerous ecologically vital formations fall below the 100-meter threshold. Under this definition, they lose legal protection.

The immediate public response was extraordinary. Within days, #SaveAravalli trended nationally on social media. Protests erupted across Rajasthan and Haryana. In Jaipur, thousands marched demanding the definition's withdrawal. Young activists like Jigisha Joshi gave voice to communities' anger: "खड़ा रहना हमने हमारे पहाड़ों से ही सीखा है" (We learned to stand firm from our mountains). This wasn't mere environmental activism—it was communities defending their survival.

Research Questions and Approach

This paper investigates several interconnected questions:

How did governance failures at multiple levels enable the Aravalli's systematic degradation? I examine the institutional architecture that has consistently prioritized short-term economic gains over long-term ecological stability.

What role have definitional ambiguities played in facilitating exploitation? The history of how "Aravalli Hills" has been variably defined reveals how semantic precision—or its deliberate absence—serves political and economic interests.

Who benefits from the current governance regime, and who bears the costs? Environmental conflicts are never neutral; they involve winners and losers, and understanding these power dynamics is essential.

What alternative governance frameworks might better protect the Aravalli while supporting legitimate developmental needs? I refuse to accept the false choice between environment and development; the challenge is reimagining development itself.

How can affected communities' voices and traditional knowledge be centered in conservation policy? Top-down conservation consistently fails; enduring protection requires community participation and respect for indigenous practices.

My methodology combines traditional academic research with activist-scholar approaches. I have conducted extensive field work across Aravalli districts, interviewing mining-affected communities, environmental defenders, local officials, and miners themselves. I have analyzed thousands of pages of court documents, government reports, environmental impact assessments, and policy papers. I have participated in public consultations and protest actions. This dual positioning—scholar and activist—is not a limitation but a strength, providing insights that purely detached analysis cannot access.

Situating Myself in This Research

This study is informed by my position as an environmental scientist working closely with social movements opposing ecological degradation. While I am explicit in my belief that the Aravalli Range must be protected, the analysis remains grounded in critical inquiry into why existing protection has failed and how it can be improved. Claims of activist bias are addressed by arguing that ignoring power imbalances, community impacts, and questions of justice reflects a different—and equally problematic—form of bias. Research on environmental issues, the paper contends, is incomplete if it excludes considerations of equity and social justice.

The Aravalli: Ecological, Geological, and Cultural Significance

Geological Heritage

The Aravalli Range formed during the Proterozoic Era, approximately 1.8 to 2 billion years ago, when the pre-Indian subcontinent collided with the mainland Eurasian Plate. This makes them among Earth's oldest mountain ranges—far older than the Himalayas (50 million years) or the Rockies (80 million years).

The range consists primarily of rocks from the Aravalli Supergroup and Delhi Supergroup, containing valuable geological records of Earth's early history. Guru Shikhar in Mount Abu, Rajasthan, stands as the highest peak at 1,722 meters above sea level. However, much of the range consists of lower elevations and rolling terrain that, while not dramatic in height, performs critical ecological functions. The Geological Survey of India has documented rich mineral deposits throughout the range: copper, zinc, lead, tungsten, marble, limestone, sandstone, and granite. Carbon dating reveals copper mining activities dating back to the 5th century BCE. This mineral wealth has driven both economic development and environmental destruction—a tension as old as mining itself.

Ecological Functions: Why the Aravalli Matters

Desertification Barrier

The Aravalli Range acts as a vital barrier against the eastward spread of the Thar Desert by moderating winds, preserving soil, and maintaining regional humidity. Extensive mining and vegetation loss have breached this natural shield, accelerating desertification and allowing desert dust to reach Delhi-NCR. Continued degradation threatens ecological stability, food security, and livelihoods across northwestern India.

Water Security

The Aravalli Range is a key groundwater recharge system, capturing monsoon rainfall to sustain aquifers and major rivers across northwestern India. Field evidence and official data show that mining has disrupted this function,

causing falling water tables, drying wells, polluted sources, and reduced river flows. Loss of forest cover has further weakened recharge, threatening water security and agriculture for millions.

Biodiversity and Ecosystem Services

Despite extensive degradation, the Aravalli Range continues to support rich biodiversity, including diverse wildlife, bird species, endemic flora, and several protected areas. However, mining and infrastructure have fragmented habitats and disrupted vital wildlife corridors, threatening species survival. Beyond biodiversity, Aravalli forests provide essential ecosystem services such as carbon storage, air purification, climate regulation, and soil conservation.

Climate Regulation

The Aravalli influences regional climate patterns in complex ways. Forest cover moderates temperature extremes, regulates wind patterns, and influences rainfall distribution. Research indicates that vegetation loss can alter local rainfall patterns and increase heat stress throughout northwestern India.

Delhi's increasingly severe dust storms correlate with Aravalli degradation. When protective vegetation is removed, bare ground becomes a source of particulate matter that wind carries eastward. Studies link declining air quality in the National Capital Region partly to Aravalli mining that generates dust and removes natural filters.

Cultural and Livelihood Dimensions

The Aravalli Range is a lived landscape, home to indigenous and traditional communities whose livelihoods and cultures are closely tied to its ecology. Mining and environmental degradation have displaced these groups, destroyed water and forest resources, and harmed health, while their voices remain largely excluded from decision-making. This marginalization highlights a governance model where development priorities override community knowledge, rights, and cultural ties to the land.

Strategic and Economic Importance

Official reports recognize the Aravalli Range as strategically important, containing critical minerals vital for India’s clean energy transition. This creates a dilemma, as mineral extraction threatens fragile ecosystems that provide essential services like water security, climate regulation, and air purification. While policymakers claim both ecological protection and “sustainable” mining are possible, the long-term value of ecosystem services likely outweighs short-term extraction gains.

Historical Evolution of Aravalli Governance and Degradation

Pre-Independence Resource Management

Historical records indicate that pre-colonial and colonial-era resource extraction in the Aravalli, while certainly present, occurred at scales that allowed ecological recovery. Traditional mining was small-scale, seasonal, and technically limited. Colonial-era extraction intensified but remained constrained by transportation and processing technology.

Forest management under British rule was exploitative but maintained some tree cover for commercial timber needs. Independent India inherited this mixed legacy—some degraded areas but substantial forest cover remaining compared to today's situation.

Post-Independence Development Priorities (1947-1990s)

India's post-independence development paradigm prioritized rapid industrialization and mining as essential for economic growth. The Aravalli's mineral wealth was viewed primarily through this developmental lens, with environmental concerns largely absent from policy.

The early decades saw expansion of mining operations, particularly for construction materials (limestone, sandstone, marble) to support urban growth and infrastructure development. Little regulatory oversight existed—environmental impact assessment was not legally required until 1994.

By the 1980s, environmental degradation had become visible: extensive forest loss, declining water tables, abandoned quarries, and air pollution from stone crushing. However, mining interests had become politically entrenched, making regulation difficult.

Emergence of Environmental Regulation (1990s-2000s)

The 1990s marked growing environmental consciousness in India, reflected in strengthened laws and judicial activism. Key developments affecting the Aravalli included:

1991: The Environment Ministry issued notifications restricting mining to sanctioned projects in the Aravalli. However, enforcement remained weak, and illegal mining proliferated.

1996: India ratified the UN Convention to Combat Desertification, creating international obligations to protect areas like the Aravalli that prevent desertification.

1997: The Supreme Court in Jagpal Singh v. State of Punjab emphasized environmental protection over short-term economic gains, establishing precedents for Aravalli cases.

2002: Increased public interest litigation focused on Aravalli protection, bringing mining activities under judicial scrutiny. The landmark T.N. Godavarman Thirumulpad case, though focused on forests generally, had implications for Aravalli governance.

Despite these legal developments, the gap between policy and implementation widened. State governments continued approving mining leases, and enforcement agencies proved unable or unwilling to stop illegal operations. The nexus between mining interests, local administration, and political leadership became increasingly apparent.

The 2009 Haryana Mining Ban

Public outcry and judicial intervention led to a significant 2009 Supreme Court order imposing a blanket ban on mining in Gurugram, Faridabad, and Mewat districts of Haryana. The Court responded to evidence of massive illegal mining causing severe environmental degradation in areas critically important for Delhi-NCR's ecology.

This ban represented a high-water mark for Aravalli protection. For several years, mining in these districts largely ceased, allowing some ecological recovery. However, several problems emerged:

Geographic Limitation: The ban covered only three Haryana districts, leaving mining in Rajasthan and Gujarat largely untouched.

Enforcement Challenges: Even within banned areas, illegal mining continued at reduced scales, facilitated by corruption and weak monitoring.

Economic Pressure: Construction industries dependent on Aravalli stone lobbied intensely for ban removal, arguing economic hardship.

Political Resistance: State governments, particularly in Rajasthan, resisted similar bans in their jurisdictions, arguing that their regulations were adequate.

The 2009 ban demonstrated both the possibility and the limitations of judicial intervention. It could stop legal mining but struggled to prevent illegal operations. It created political backlash without building broader consensus for alternative approaches.

The Definitional Ambiguity Problem

A critical governance failure emerged: the absence of a uniform definition of what constituted "Aravalli Hills and Ranges" subject to protection. Different states operated on different criteria:

Rajasthan (since 2006) defined Aravalli Hills as landforms rising 100 meters or more above local relief, prohibiting mining within the lowest contour enclosing such hills.

Haryana had no official definition, leaving interpretation to district-level officials and creating massive scope for arbitrary decisions.

Gujarat used varying criteria without formal standardization.

Delhi lacked clear demarcation, though some areas were protected under other environmental regulations.

This definitional chaos was not accidental. It served interests benefiting from ambiguity. When a mining lease application's legality depends on whether a particular formation qualifies as "Aravalli," vague definitions allow flexibility that consistently favors extraction.

Environmental defenders repeatedly demanded uniform, scientifically-based definitions. Government responses were slow and often obfuscatory. The issue festered for years, enabling illegal mining to continue while parties argued about whether specific sites even fell within the Aravalli.

Intensification of Illegal Mining (2010-2020)

Illegal mining in the Aravalli has intensified despite legal restrictions, with reports documenting large-scale operations and the complete disappearance of 31 hillocks in Rajasthan. Key drivers include lease manipulation, political protection, weak enforcement, corruption, intimidation of activists, nighttime operations, and rapid transport of materials, creating a multi-crore illegal economy. Supreme Court cases like *M.C. Mehta v. Union of India* and *T.N. Godavarman Thirumulpad* highlighted regulatory gaps and definitional ambiguities. A 2024 committee formed to define protected areas included government agencies but excluded community representatives and independent environmental experts, and its proceedings remained largely opaque.

The November 2025 Definition: Analysis and Critique

The Committee's Recommendation

In October 2024, the committee submitted its report to the Supreme Court. On November 20, 2025, the Court accepted the committee's core recommendation:

"Those hills and ranges comprising rocks of the Aravalli Supergroup and Delhi Supergroup, which originated during the Palaeoproterozoic to Mesoproterozoic, having a relief higher than 100 meters (±5 meters) above the surrounding terrain, may be defined as 'Aravalli Hills and Ranges.'"

Additionally, the definition specified that two or more such hills located within 500 meters of each other constitute an "Aravalli Range," with all landforms within this 500-meter buffer—regardless of elevation—receiving protection.

The committee justified this definition on several grounds:

1. **Geological Consistency**: The 100-meter threshold aligns with standard geological criteria for distinguishing significant landforms.
2. **Administrative Uniformity**: A clear, objective criterion enables consistent application across all states.
3. **Enforceable Standards**: The definition provides unambiguous guidance for enforcement agencies and courts.
4. **Rajasthan Precedent**: Adopting Rajasthan's long-standing definition (applied since 2006) brings other states into alignment with established practice.

The committee also acknowledged—and this is critical—that Aravalli vegetation acts as a "value-added protective layer" that arrests soil erosion, regulates microclimate, and preserves biodiversity. Yet despite recognizing vegetation's importance, the definition focuses solely on elevation.

Government's Defense

Environment Minister Bhupender Yadav defended the 100-meter Aravalli definition, claiming over 90% of the landscape remains protected and that new mining leases are paused pending ICFRE’s management plan. He emphasized that illegal mining is the main threat, legal mining is minimal and regulated, and all protected areas remain fully safeguarded. Yadav also blamed the opposition Congress for spreading misinformation about the definition’s effects.

The Conservationist Critique: Why This Definition Fails

As both an environmental scientist and activist, I argue the November 2025 definition represents a fundamental failure that will accelerate Aravalli degradation. Here's why:

The 100-Meter Threshold is Ecologically Arbitrary

Ecological functions don’t depend on arbitrary height thresholds—formations under 100 meters still support groundwater recharge, biodiversity, soil conservation, and climate regulation. Field research and FSI mapping show many critical sites, like streams, forests, grasslands, and sacred groves, fall below this limit. Redefining the Aravalli by elevation risks removing protection from these areas, worsening ecological and climate impacts.

The Definition Ignores Ecological Connectivity

Ecosystems are interconnected, with lower hills, valleys, and plains crucial for wildlife corridors, aquifer recharge, and overall ecological health. Protecting only peaks above 100 meters fragments these networks, threatening biodiversity and water systems. Even the 500-meter buffer is often too small to maintain essential ecological processes.

The "90% Protected" Claim is Misleading

Environment Minister Yadav's claim that 90% of the Aravalli is protected is misleading, as it includes forests, agricultural land, residential areas, and water bodies—many of which are already safeguarded or irrelevant to conservation. True assessment requires data on ecologically sensitive land gained or lost under the new 100-meter definition, which the government has not disclosed despite repeated requests. Lack of transparency prevents proper evaluation and raises concerns about the definition's actual impact on conservation.

The Mining Ban is Temporary and Conditional

The Supreme Court's order temporarily halts new mining leases pending ICFRE's Management Plan, but this is not a permanent ban; the plan's goal is to define where and how mining can resume. With the Ministry that promoted the 100-meter definition overseeing the plan, environmental groups doubt ecological priorities will prevail. In fragile ecosystems like the Aravalli, "sustainable mining" is largely impossible, and any further mining should be considered unacceptable.

Existing Mining Continues Unchecked

While new leases are paused, existing mining operations continue. The government notes that only 0.19% of Aravalli districts' area currently has legal mining permits. But this figure doesn't account for:

- The actual extent of mining beyond lease boundaries (which field evidence shows is common)
- The cumulative impact of even "limited" mining in ecologically sensitive areas
- The precedent that existing operations create for future expansion
- Illegal mining that continues regardless of legal status

Activists point out that areas already damaged by legal mining are often the most ecologically degraded parts of the Aravalli. Allowing these operations to continue prevents ecological recovery.

Enforcement Capacity Remains Inadequate

While the government plans to use drones and surveillance for enforcement, technology alone cannot overcome political, legal, and resource challenges. Forest officials face vast areas, remote mining sites, political pressure, safety risks, legal delays, and low penalties, making violations hard to stop. Detection is meaningless without the capacity and will to respond, highlighting that enforcement failures are primarily political, not technical.

The Process Excluded Community Voices

The committee defining the Aravalli included officials and experts but excluded local communities, reflecting top-down governance that sidelines those who depend on the land. Communities hold vital traditional ecological knowledge critical for conservation, yet their input was ignored. Despite demands for public consultations, none have occurred, violating principles of environmental justice and meaningful local participation.

Strategic Minerals Argument Opens Doors

The committee highlighted the Aravalli's potential for critical minerals, framing their extraction as strategically important for national interests. While the report calls for "sustainable" mining, such rhetoric often prioritizes extraction over conservation, using environmental concerns to justify ecological damage.

The Political Economy of Definition

The November 2025 Aravalli definition reflects powerful economic and political pressures. Mining and construction industries profit massively from Aravalli resources and wield political influence, while the diffuse benefits of conservation—water, climate, biodiversity—lack concentrated advocates. The 100-meter criterion

serves as a compromise favoring exploitation, offering regulatory "clarity" for business while excluding many ecologically vital areas from protection.

The People's Resistance: #SaveAravalli Movement

The Spark of Mobilization

Within days of the November 20, 2025 Supreme Court order, what began as scattered protests transformed into a coordinated mass movement. The #SaveAravalli hashtag trended nationally, becoming a rallying cry for environmental defenders across northern India.

The movement's diversity is its strength. It brings together urban environmentalists concerned about Delhi's air quality, rural communities dependent on Aravalli water sources, youth activists demanding climate action, political opposition parties sensing public sentiment, lawyers arguing constitutional violations, scientists providing technical critiques, indigenous communities defending ancestral lands, and ordinary citizens increasingly aware of ecological crisis.

Street Protests and Direct Action

Rajasthan

Protests against the 100-meter Aravalli definition erupted across Rajasthan, with thousands marching in Jaipur, lawyers submitting memoranda in Udaipur, and activists gathering at Sikar's Harsh Parvat. Demonstrations highlighted both human displacement and threats to wildlife, emphasizing ecological concerns and advocating protection for the entire Aravalli ecosystem, including lower formations excluded under the new definition.

Haryana

In Gurugram on December 21, activists, social organizations, and locals gathered outside Cabinet Minister Rao Narbir Singh's residence for peaceful protest. They held banners and placards with slogans like "Save Aravalli, Save the Future" and "No Aravalli, No Life."

Sanjiti, a protester, articulated the stakes clearly: "Nature cannot be compromised in the name of development, as the conservation of Aravalli is linked to the secure future of coming generations. Toxicity of air is gradually becoming widespread."

Delhi-NCR

Groups like "Aravalli Bachao" organized silent marches in Delhi-NCR, specifically highlighting how low-lying hills now legally vulnerable are the only barrier against toxic dust storms. Environmentalist Neelam Ahluwalia emphasized that "nature doesn't work on a tape measure," warning that removing protection from smaller ridges will shatter the entire ecosystem.

At the "Clean Air – My Right" Convention, Ahluwalia highlighted how Aravalli destruction directly worsens air pollution and public health in Delhi-NCR—connecting environmental degradation to lived experiences of millions breathing toxic air.

Digital Activism and Social Media Mobilization

The #SaveAravalli movement effectively mobilized social media, using hashtags, infographics, before-and-after mining images, community testimonies, and scientific critiques to raise awareness. Tweets from political groups and activists amplified public outrage, while online petitions demanding protection for the entire Aravalli ecosystem garnered thousands of daily signatures, showing widespread concern beyond traditional environmental circles.

Political Mobilization

The opposition Congress party has made Aravalli protection a key political issue, warning that mining even small hills threatens dust control, water security, and regional environmental stability. Leaders like Ashok Gehlot, Kumari Selja, and Sonia Gandhi highlight the risks of legalizing mining and call for stronger environmental governance. While critics view this as political opportunism, it has nonetheless raised public awareness and intensified pressure for conservation.

Legal Challenges

Environmental lawyers are preparing legal challenges to the November 2025 Aravalli definition, while the Save Aravalli Abhiyaan demands public consultations and comparative protection data—requests the government has ignored. Key legal arguments include constitutional obligations (Articles 48A and 51A(g)), arbitrary classification under the 100-meter threshold (potentially violating Article 14), the public trust doctrine, intergenerational equity, and the precautionary principle. A memorandum submitted in Udaipur urges the President to protect the Aravalli, citing both legal and moral responsibilities.

What This Movement Represents

The #SaveAravalli movement goes beyond opposing a single definition, reflecting public demand for transparency, accountability, and community participation in environmental governance. It rejects the false choice between development and conservation, highlighting that ecological destruction affects everyone. Driven by long-standing frustration and urgent climate concerns, especially among young activists, the movement emphasizes that protecting the Aravalli is essential for current and future generations.

Voices from the Ground: Community Testimonies

Water Scarcity: The Most Immediate Impact

In villages near mining sites, water scarcity is the most severe and consistent impact. Local residents report wells running dry and declining agricultural productivity as mining depletes groundwater and disrupts natural aquifer recharge. Mining removes vegetation, creates impermeable surfaces, and extracts water directly, affecting interconnected aquifers and causing water stress even in communities far from the mines.

Health Impacts: Living in Dust and Pollution

Field interviews reveal widespread respiratory and health issues linked to mining. Dust from blasting and material transport causes lung, eye, and cardiovascular problems, while silica exposure leads to silicosis. Noise and water contamination add further health risks. Studies, such as in Faridabad, show health improves when mining stops, confirming its direct harm, though ongoing or intensified mining continues to threaten communities.

Displacement and Livelihood Loss

Mining expansion leads to both formal and informal displacement, often forcing communities out through environmental degradation. The 2021 demolition of over 10,000 homes in Khori village displaced working-class families with minimal compensation, exacerbating hardship. Tribal communities like the Minas, Bhils, and Gujjars lose ancestral lands, livelihoods, and cultural ties to the Aravalli. Even conservation initiatives can cause dispossession when local communities are excluded from decision-making.

Agriculture in Crisis

Farmers near mining areas face water scarcity, soil degradation, crop damage from dust, land loss, and disrupted market access, forcing many fields to be abandoned. This drives rural migration as agriculture can no longer sustain families, ironically supplying labor to the urban development fueled by the very mining that destroyed their land.

Violence and Intimidation

Environmental defenders in the Aravalli face severe risks, including targeted killings of activists and even police officers opposing illegal mining. Journalists and community members are threatened or harassed, creating a climate of fear that silences resistance. These attacks reflect the impunity and political protection enjoyed by powerful mining interests.

Economic Dependence and Complexity

The Aravalli crisis involves complex economic dependencies. Mining provides employment—directly in extraction and indirectly in transportation, processing, construction. For communities with limited economic opportunities, mining jobs represent survival, even when they recognize environmental costs.

My research in Faridabad found that mining closure in 2009, while bringing environmental and health benefits, created economic hardship. Income stability declined, employment opportunities contracted, and out-migration increased as people sought work elsewhere.

This creates genuine dilemmas. How do we transition away from ecologically destructive activities without abandoning the communities who depend on them? Simply shutting down mines without providing alternative livelihoods is neither just nor sustainable—displaced miners often turn to illegal mining or other environmentally harmful activities out of economic necessity.

Traditional Ecological Knowledge: What Communities Know

Local communities hold rich traditional ecological knowledge—about water sources, wildlife corridors, medicinal plants, seasonal grazing, and sustainable forest use—that is crucial for effective conservation. Despite its value, the Aravalli definition committee excluded community representatives, overlooking insights that, combined with scientific expertise, could support more locally appropriate and effective protection.

What Communities Want

In my conversations, communities articulated clear demands:

Recognition and Respect: Acknowledge their rights to land they have lived on and stewarded for generations.

Participation: Meaningful involvement in decisions affecting their environments and livelihoods, not token consultation.

Alternative Livelihoods: Support transitioning to sustainable economic activities—ecotourism, sustainable agriculture, forest restoration work, handicrafts.

Protection: Effective enforcement against illegal mining and environmental crime, with officials accountable for inaction.

Restoration: Active efforts to restore degraded areas, involving communities in restoration work and benefiting from ecosystem recovery.

Compensation: Fair compensation for past environmental damage, health impacts, and livelihood losses.

Education: Awareness programs about environmental laws, rights, and sustainable practices.

These demands are reasonable, pragmatic, and aligned with both environmental protection and social justice. Meeting them requires political will that has been absent.

Enforcement Failures: Why Laws Don't Work

The Gap Between Policy and Practice

India possesses extensive environmental laws: the Environment Protection Act (1986), Forest Conservation Act (1980), Wildlife Protection Act (1972), Water and Air Acts, and numerous notifications specific to the Aravalli. Yet illegal mining continues extensively.

This gap between formal protection and actual enforcement reflects multiple failures:

Insufficient Resources

Enforcement agencies are dramatically under-resourced. Forest departments responsible for monitoring vast areas have limited personnel, vehicles, and equipment. Forest guards often patrol hundreds of square kilometers on foot or bicycle, making comprehensive monitoring impossible.

Illegal mining frequently occurs at night in remote locations. Without adequate staff, vehicles, and surveillance technology, detecting and responding to these operations is extremely difficult. By the time officials arrive, miners have often fled, leaving only environmental damage.

Corruption and Political Patronage

Corruption and political patronage dominate mining regulation, with operators bribing officials and receiving political protection. Enforcement is undermined as officials face transfers or penalties for acting against illegal mining, while those who comply advance their careers, making meaningful regulation nearly impossible.

Legal and Procedural Complexity

Environmental law enforcement is slow and complex, with cases taking years to resolve, allowing mining to continue. Low penalties fail to deter violations, as profits often exceed fines. Legal ambiguities, including the lack of a uniform Aravalli definition, allow operators to claim their activities are lawful, further undermining enforcement.

State Governments' Conflicted Roles

State governments face a conflict between environmental protection and revenue generation from mining. Mining provides significant economic benefits, creating incentives to prioritize extraction over conservation. Weak coordination between revenue and forest departments further allows economic interests to override environmental concerns.

Judicial Interventions: Necessary but Insufficient

Courts, particularly the Supreme Court, have intervened repeatedly in Aravalli protection. The 2009 mining ban in Haryana districts, multiple orders against illegal mining, and the recent November 2025 definition all reflect judicial activism on environmental issues.

Judicial intervention is crucial—courts provide avenues for redress when executive and legislative branches fail. However, courts face limitations:

Implementation Dependence: Courts can issue orders, but implementation depends on executive agencies. If those agencies lack will or capacity, court orders have limited effect.

Technical Expertise: Judges aren't environmental scientists. They rely on expert committees and government reports, which may reflect institutional biases or be politically influenced.

Case-by-Case Approach: Litigation addresses specific cases but doesn't create comprehensive policy frameworks. The Aravalli needs systematic protection, not just reactive judicial responses to individual violations.

Time: Legal processes are slow. By the time courts decide cases, irreversible environmental damage has often occurred. You can't restore a mountain that's been quarried away.

The Technology Gap

Modern illegal mining operations are sophisticated. They use advanced equipment, detailed geological knowledge, and complex logistics. Enforcement agencies often operate with outdated technology, making detection difficult.

The government has promised enhanced surveillance using drones and satellites. While welcome, technology alone cannot solve enforcement problems. Satellites can identify illegal mining, but what happens next? Without rapid response capabilities, political will to prosecute violators, and penalties that actually deter violations, detection changes little.

The Missing Element: Community-Based Monitoring

Most enforcement models rely on state agencies—forest departments, police, environmental authorities. But state agencies cannot be everywhere. Communities, however, live in these landscapes. They observe what happens daily.

Empowering communities to monitor and report environmental violations could dramatically enhance enforcement. This requires several elements:

Legal standing: Communities need recognized rights to report violations and see action taken.

Protection: Whistle-blowers need protection from retaliation by powerful mining interests.

Responsiveness: When communities report violations, agencies must investigate and act promptly.

Incentives: Communities might receive portions of fines collected, creating economic incentives for monitoring.

Capacity: Communities need training in monitoring techniques, understanding regulations, and documenting violations.

Some examples exist—forest protection committees in certain states, village forest management schemes. But these remain limited and under-supported. Scaling community-based monitoring could transform enforcement effectiveness.

Alternative Governance Models: Reimagining Aravalli Protection

Why Current Governance Fails Current frameworks fail due to fragmentation across agencies, state-centric management, extractive biases, top-down decision-making, reactive approaches, weak accountability, and short-term focus. Effective alternatives must address these systemic issues.

Model 1: Aravalli Conservation Authority

Create an independent authority with legal mandate, autonomy, and resources to manage the entire range. Include government, scientists, and community representatives. Powers include zoning, vetoing harmful projects, enforcing laws, and directing restoration, with transparent reporting and dedicated funding.

Model 2: Community-Based Conservation

Empower local communities with legal forest rights, conservation responsibilities, benefit-sharing, training, and ecosystem service payments. Village clusters coordinate landscape-level management, integrating with the Conservation Authority.

Model 3: No-Mining Zones with Economic Transition

Phase out mining entirely while supporting affected workers through alternative livelihoods like ecotourism, sustainable agriculture, restoration jobs, and skill development. Fund via government contributions, environmental bonds, and CSR. Immediate moratorium plus phased transition ensures ecological sustainability.

Model 4: Ecosystem Service Payments

Monetize Aravalli's services (water, air, climate, biodiversity) and require beneficiaries to pay. Funds support conservation, restoration, enforcement, and community compensation, creating sustainable financing and highlighting the economic value of protection.

Model 5: Integrated Landscape Management

Manage the Aravalli as a single ecological landscape across administrative boundaries. Use land-use planning, coordinate across sectors, enforce ecosystem-level standards, and engage multiple stakeholders for adaptive, integrated management.

Hybrid Approach

Combine models: a Conservation Authority for oversight, community management for local protection, transition funds and service payments for sustainable livelihoods, and integrated landscape planning. The goal is to integrate multiple approaches rather than rely on either/or solutions**.**

Policy Recommendations: Roadmap Forward

Immediate Actions (0–6 months)

1. Suspend the 2025 100-meter definition pending full ecological assessment.
2. Publicly release detailed maps and data comparing protection under old vs. new frameworks.
3. Strengthen enforcement: increase personnel, use drones/satellites, prosecute violators, protect whistle-blowers.
4. Extend mining ban and halt expansions until comprehensive environmental and social assessments are complete.
5. Begin genuine consultations with communities, scientists, and NGOs on governance.

Short-term Actions (6–24 months)

6. Commission independent ecological assessment identifying areas critical for water, biodiversity, climate, and desertification control.
7. Legally recognize community forest rights under the Forest Rights Act.

8. Establish an independent Aravalli Conservation Authority with community representation.
9. Launch alternative livelihood programs for mining-dependent communities.
10. Implement large-scale restoration projects creating green jobs.
11. Reform laws to increase penalties, streamline enforcement, and allow community legal standing.
12. Introduce ecosystem service payments and environmental bonds for conservation funding.

Medium-term Actions (2–5 years)

13. Phase out existing mining with fair compensation and alternative employment.
14. Develop integrated land-use plans with clear zoning and participatory management.
15. Build community conservation capacity via training, resources, and legal support.
16. Expand protected areas to include all ecologically critical ecosystems.
17. Operationalize payment-for-ecosystem-service schemes.
18. Formalize interstate coordination across Delhi, Haryana, Rajasthan, and Gujarat.
19. Establish permanent ecological monitoring with public access to data.

Long-term Actions (5–10 years)

20. Complete ecosystem restoration with native vegetation and functional recovery.
21. Transition regional economy to sustainable sectors: ecotourism, organic farming, renewable energy, and crafts.
22. Fully operational Aravalli Conservation Authority with measurable community-based results.
23. Document and replicate successful conservation models nationally.
24. Ensure Aravalli performs critical climate regulation and supports regional resilience.

Cross-Cutting Requirements

- Funding: Government budgets, ecosystem service payments, green bonds, climate finance, CSR, and innovative mechanisms.
- Political Will: Sustained public pressure, media attention, and accountability to ensure implementation.
- Accountability: Clear responsibilities, measurable progress, and consequences for failure.
- Participation: Meaningful involvement of communities, scientists, NGOs, and local governments.
- Flexibility: Adaptive management, learning from results, and adjusting plans as needed.

Conclusion: The Aravalli's Fate is Our Fate

The devastation of the Aravalli has real human consequences—from health crises to displacement—reflecting a global pattern of ecosystems being destroyed for short-term profit while costs fall on communities and the environment. Legal and regulatory loopholes, like redefining protected areas by elevation rather than ecological function, normalize such destruction and favor corporate and political interests over genuine conservation. The Aravalli mountains are crucial for water security, air quality, climate stability, and food production, directly or indirectly affecting millions. Beyond their practical importance, they hold intrinsic value as ancient ecosystems, highlighting the danger of exploiting them solely for human gain.

The False Choice

This paper argues that the perceived choice between conservation and development is false—true development enhances human wellbeing sustainably without degrading the environment. It calls for reimagining development, shifting to regenerative economies, and building equitable societies within ecological limits.

The Power of Movements

The #SaveAravalli movement reflects rising public environmental awareness and resistance to treating ecological destruction as inevitable. While movements alone cannot deliver change, they create the political pressure needed for legal reform and institutional accountability. The Aravalli's survival ultimately depends on sustained civic action aligned with responsive governance and political will.

Personal Reflection

The author argues that scholarship and activism are not contradictory, asserting that research detached from justice can enable harm. The Aravalli crisis demands ethical engagement, as it involves real damage to ecosystems and communities. While maintaining scholarly rigor, the paper also takes a clear moral stance against the destruction of the Aravalli and calls for accountability.

The Road Ahead

The coming years will be decisive for the Aravalli Range, as expanded mining under the 2025 definition could push the ecosystem beyond recovery, while stronger protections could still enable revival. Although government action appears unlikely due to entrenched economic interests, growing public resistance and community-led movements offer hope. The Aravalli's possible loss would be irreversible, affecting ecology, livelihoods, and future generations. Addressing this crisis demands collective action—scientific engagement, legal accountability, community participation, and sustained activism—to reframe development around ecological integrity and justice.

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