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Illegal Sand Mining in River Jhelum in Jammu and Kashmir: Environmental Law and Governance Challenges

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Abstract

In Jammu & Kashmir, illegal sand mining in the Jhelum River has emerged as one of the most pressing environmental and legal governance issues. With estimated extraction volumes increasing from 0.47 million tonnes in 2021 to an alarming 1.14 million tonnes in 2023, riverbed mining- once a regulated and small-scale activity- has devolved into an unregulated, large-scale enterprise. The ecological integrity of the river has been seriously damaged by this surge, endangering public infrastructure and rural livelihoods while also causing habitat destruction, bank erosion, groundwater depletion, and increased flood vulnerability. Illegal extraction persists in spite of strong legal frameworks like the Environment (Protection) Act of 1986, the Mines and Minerals (Development and Regulation) Act of 1957, and the Jammu & Kashmir Minor Mineral Concession, Storage, and Transportation of Minerals Rules of 2016. Lax enforcement, institutional fragmentation, and the cooperation of strong sand mafias that function outside the purview of administrative oversight all contribute to the issue. The definition of "minor minerals," statutory requirements, and enforcement shortcomings are all examined in this research paper's critical analysis of the laws and regulations controlling sand mining in Jammu & Kashmir. It also discusses the socio-economic effects of unregulated mining, such as displacement and decreased agricultural productivity. The chapter concludes by discussing potential reform avenues, such as community-based supervision, technological monitoring, judicial interventions, and more stringent environmental clearance processes. The study promotes a rights-based and environmentally conscious approach to natural resource governance in

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Kashmir by bridging the legal framework with sustainable development goals and ecological justice principles.
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1. Introduction

The Jhelum River, often considered the lifeline of Kashmir's agrarian and ecological systems, faces a growing crisis from illegal sand and gravel mining. Sand mining, which was previously restricted to small-scale, local operations, has recently become more commercialised and industrialised, with widespread extraction from embankments and riverbeds. The estimated amount of riverbed material extracted increased from 0.47 million tonnes per year to more than 1.14 million tonnes per year between 2021 and 2023.[1] Even in environmentally sensitive areas, the widespread use of mechanised operations- often conducted at night with JCBs and tippers has become ingrained, in defiance of legal protections. The impact on the environment has been profound. Particularly in the districts of Pulwama, Budgam, and Kulgam, the unrestrained use of heavy machinery has caused riverbank instability and severe erosion.[2] The Kashmir Water Resources Department's hydrological surveys indicate that groundwater tables in nearby areas have dropped by 15-20%.[3] In rural Kashmir, this not only jeopardises farming operations but also lowers the amount of water available for drinking and sanitation. Flood risks have increased and natural aquifer recharge cycles have been hampered by the change in river morphology. Even though laws like the Mines and Minerals (Development and Regulation) Act of 1957 and the Environment Protection Act of 1986 give authorities the authority to control mineral extraction, enforcement is still irregular. Over 7,000 vehicles and 35 excavators were seized for illicit mining activities in 2021–2022, and ₹14 crore in fines were imposed.[4] These

[1] J&K Department of Geology and Mining, *Annual Sand Extraction Report 2022–2023*, Govt. of Jammu & Kashmir (2023).

[2] "Sand Mafia Ravages Jhelum Riverbanks in Pulwama," *Rising Kashmir*, 19 January 2023.

[3] Kashmir Water Resources Dept., *Hydrological Survey Report*, Dec. 2023, cited in *Greater Kashmir*, Jan. 2024.

[4] "7000 Vehicles Seized Over Illegal Mining in J&K," *Greater Kashmir*, March 2023.

measures, however, were mainly short-lived, and violators were free to carry on with impunity. The enforcement regime is ineffective in the absence of deterrent penalties, institutional coordination, and real-time monitoring.

The J&K Government was fined ₹35 crore by the National Green Tribunal in 2021 for unregulated mining along the Doodh Ganga, in response to environmental complaints and public interest litigation.[5] Additionally, the Tribunal prohibited mining without a valid clearance and mandated routine environmental assessments. Local agencies have been sluggish to put corrective measures into place in spite of these directives, and violations persist unpunished, especially in rural riverbank areas with minimal administrative presence. This inaction has had extremely concerning humanitarian and environmental repercussions. Damage to embankments from illicit sand extraction was directly linked to flash floods in the Budgam district's Korel area in November 2023.[6] Local media outlets and civil society organisations reported on the damage to over 40 homes and the collapse of two schools. Many residents lost access to croplands and safe water, and more than 500 residents were forced to relocate. These incidents show how ecological violations frequently result in violations of fundamental rights, which disproportionately impact marginalised groups. The Minor Mineral Concession Rules, 2016 in Jammu and Kashmir place severe restrictions on mining at night and forbid the use of large equipment within 25 meters of riverbanks.[7] However, these guidelines are rarely adhered to in reality. Furthermore, the Panchayats (Extension to Scheduled Areas) Act, 1996 (PESA) and other constitutional principles of community involvement and decentralised governance are frequently disregarded when mining block licensing and monitoring are conducted. This violates local self-governance and the right to livelihood in addition to environmental law.

There is an urgent need for a rights-based, cogent approach to natural resource governance. Participatory environmental audits, real-time

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[5] *Vishwa Jit Sharma v. Union of India & Ors.*, OA No. 45/2019, Order dated 13 Dec. 2021, National Green Tribunal, Principal Bench, New Delhi.

[6] "Flash Floods Sweep Budgam After Illegal Mining," *Kashmir Observer*, 25 November 2023.

[7] Govt. of J&K, *Jammu and Kashmir Minor Mineral Concession, Storage, and Transportation of Minerals Rules, 2016*, SRO 302 dated 26 July 2016.

satellite surveillance, harsher penalties, and judicial oversight must all become commonplace. Local panchayats and Gram Sabhas must be given the authority by the government to take the initiative in consent and grievance redressal procedures. Protecting the Jhelum River is vital to maintaining the environmental rule of law and guaranteeing intergenerational equity because it is an integral part of Kashmir's hydrological and cultural identity.

2. History & Scope of Sand Mining in Kashmir

Communities in the Kashmir Valley have coexisted peacefully with the Jhelum River for centuries, using hand-operated techniques to extract small amounts of sand and gravel for local purposes like road upkeep, brickmaking, and small-scale building.[8] Village elders and panchayats enforced customary water laws and community oversight to regulate these practices instead of central statutes. This ensured that extraction remained minimal and sustainable, protecting aquatic ecosystems and bank integrity. In Kashmir, resource governance was based on communal customs prior to the emergence of formal legal frameworks. When, where, and from which sections of the river sand could be collected were determined by village assemblies, or panchayats, which were frequently influenced by social and religious conventions.[9] Because excessive removal led to prompt communal response (either fines or social exclusion), this model maintained hydrological balance by guaranteeing that traditional irrigation patterns and groundwater recharge zones remained intact. However, the balance was upset in the early 2000s when India's mineral governance was liberalised and policy priorities changed after Article 370 was repealed. In a sharp break from community-based extraction, the J&K government put more than 100 new minor-mineral blocks up for open bidding by 2019–2020, with many of them going to outside contractors.[10] This change in policy sped up the transition from manual to commercial-scale extraction, which is usually aided by 24-hour extraction cycles and large earthmoving machinery.

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[8] Ghulam Nabi, *Artisanal Sand Extraction in Kashmir: Customary Practices* 127 (University of Kashmir Press 2018).

[9] F. Ahmad, *Water Commons and Panchayat Governance in J&K* 98–104 (2020).

[10] J&K Dep't of Geology & Mining, *Auction Status Report for Minor Mineral Blocks 2020–2021* (Government of Jammu & Kashmir 2022).

This change had negative ecological effects and seriously compromised local stewardship. According to a 2023 report by Kashmir University's Environmental Policy Group, deep, mechanised sand excavation was responsible for a 15–18% drop in groundwater tables and widespread embankment destabilisation in Pulwama and Budgam.[11] The loss of fish spawning grounds, the shrinkage of wetlands, and the disruption of riparian soil stratification are all detrimental effects that were hardly taken into account when allocating blocks. Enforcement has been ineffectual despite the legal framework established by the J&K Minor Mineral Concession Rules 2016, which forbid the use of heavy machinery within 25 meters of embankments and require environmental clearance and Gram Sabha consent.[12] Many villagers have complained that their traditional control over riverine resources has been erased by lease auctions that were held without local notice or Gramme Sabha input.[13] It is imperative that customary governance systems be reintegrated into statutory processes going forward. Restoring ecological balance and restoring public trust may be possible through co-management models in which state agencies, local panchayats, and Gramme Sabhas share supervision. Furthermore, regulatory actions like environmental audits, GPS-based excavation activity monitoring, and meaningful community consultations could support Kashmir's long-standing stewardship of its river systems and help align development with sustainable principles.

The introduction of liberalised regional development policies and the expansion of public and private infrastructure projects in the 1990s caused major changes in the governance of natural resources in Jammu and Kashmir. The Srinagar–Jammu National Highway (NH-44), a strategically important route that links Kashmir with the rest of India,

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[11] Environmental Policy Group, University of Kashmir, *Survey on Sand Mining & Groundwater Decline in Kashmir* 15–17 (2023).

[12] Govt. of Jammu & Kashmir, *Minor Mineral Concession Rules, 2016* (SRO 302, July 26, 2016).

[13] "Kashmir Villagers Protest Against Sand Mining Contracts Given to Non-locals," *The Wire* (Mar. 15, 2022), *available at:* https://thewire.in/environment/kashmir-sand-mining-non-local-contractors. (last visited on June 25, 2025).

was one of the most noteworthy.[14] Massive amounts of sand, gravel, and crushed stones were needed for the highway's widening as well as for the building of bridges and tunnels; these resources were far more in demand than could be obtained through conventional, small-scale, community-regulated extraction. The Valley's sand mining operations became more mechanised in response to this spike in material demand. By the early 2000s, riverbed dredgers, tippers, and JCBs (earthmovers) were frequently seen along the Jhelum and its tributaries, frequently without the necessary permits or environmental clearance.[15] This was a major change from previous methods where extraction was mostly seasonal, labour-intensive, and volume-limited. Large-scale, unregulated mining operations were made possible by both formal and informal actors due to liberalised mineral policies, lax enforcement, and corruption at the local level.

The ecological effects of this shift started to become more apparent between 2005 and 2010. Significant riverbank erosion occurred along several sections of the Jhelum; major incidents involving the collapse of river embankments and agricultural land into the waterway were reported close to Awantipora and Pampore.[16] Due to excessive riverbed deepening, groundwater tables in South Kashmir declined by an average of 10-15% during this decade, upsetting the region's hydrological balance.[17] Due to destabilised banks and changed sedimentation patterns, the river lost its natural floodplain buffering, which further increased flood vulnerability, especially in low-lying areas. During this time, government reports and environmental experts also noted the increasing risk of flash floods. Uncontrolled riverbed mining has been associated with more flash floods downstream of mining hotspots, according to a 2009 report by J&K's Department of Environment and Remote Sensing.[18] However, these

[14] Ministry of Road Transport & Highways, *Status Report on NH-44 Expansion* (2021).

[15] "Illegal Riverbed Mining Surges Along Jhelum," *Greater Kashmir*, March 2009.

[16] Dept. of Irrigation and Flood Control, J&K, *Erosion Mapping Report: Jhelum Basin* (2010).

[17] University of Kashmir, *Hydrological Trends in South Kashmir: 1995–2010*, Faculty of Earth Sciences (2012).

[18] Department of Environment & Remote Sensing, *Report on Anthropogenic Drivers of Flooding in J&K* (2009).

warnings did not result in long-term policy changes because there was no comprehensive plan for managing the river basin. Rather, a reactive strategy was used, with temporary prohibitions frequently put in place after significant mishaps and then discreetly removed in response to contractors' pressure. At the same time, local consent and public involvement, which were once essential to traditional resource governance, were gradually weakened. Decision-making became more centralised with the implementation of the Mineral Concession Rules in 2004 and later in 2016, and contracts were awarded to the highest bidders, frequently leaving out local stakeholders.[19] Communities that had traditionally served as guardians of riverine ecosystems were offended by this, which sparked demonstrations and legal challenges in districts like Anantnag and Budgam. Overall, mechanised and commercially driven extraction replaced subsistence-level, community-managed sand mining due to infrastructure demands and liberalised economic policies, which led to regulatory failure, long-term environmental degradation, and the marginalisation of local voices. It also laid the groundwork for the current sand governance crisis, which is the focus of this paper.

The demand for construction-grade sand and gravel in Kashmir increased starting in the 1990s as a result of liberalised regional policies and the growth of major infrastructure projects, most notably the widening of the Srinagar–Jammu National Highway (NH-44).[20] Traditional, community-led manual extraction was unable to meet the demands of this development, which led to a move towards mechanised sand mining. By the early 2000s, it was common practice to use heavy equipment like JCBs, tippers and dredgers without proper permits or lease compliance. The effects on the environment became apparent between 2005 and 2010. Significant riverbank erosion in Pulwama, Budgam, and Anantnag was reported by the Department of Environment and Remote Sensing, which connected it to illicit deep excavation.[21] Sand removal in the Kashmir Valley was

[19] Govt. of J&K, *Jammu and Kashmir Minor Mineral Concession Rules, 2004 and 2016* (SRO 302).

[20] Ministry of Road Transport & Highways, *NH-44 Infrastructure Expansion Status Report* (Govt. of India, 2022).

[21] Department of Environment & Remote Sensing, *River Morphology Study of Jhelum Basin*, Govt. of J&K (2009).

blamed for riparian vegetation destruction and sediment balance disruption, which led to hydrological changes like declining groundwater tables and heightened flood vulnerability.[22]

According to official data, the amount of extraction increased from roughly 0.47 million tonnes in 2021 to 1.14 million tonnes in 2023, spread across 72 blocks that were put up for auction.[23] According to media investigations, contractors commonly violate the J&K Minor Mineral Concession Rules, 2016 by conducting most of this mining activity at night to evade monitoring.[24] Regulatory enforcement is still uneven in spite of these interventions. The J&K government was fined ₹35 crore by the National Green Tribunal (NGT) in 2021 for neglecting to control mining along the Doodh Ganga river.[25] The ruling highlighted the lack of coordination between the departments of mining, irrigation, and pollution control, as well as the absence of Environmental Impact Assessments (EIA). However, because of a lacklustre monitoring system and ongoing mafia influence, violations continue.

Biodiversity loss is another effect of ecological disruption. For example, the loss of fish spawning grounds has been connected to deep pitting in the Rambiara and Veshaw rivers.[26] The drying of traditional springs like Arbal Nag in Budgam and declining water quality serve as additional evidence of the damaging effects of excessive extraction on the environment.[27] Concurrently, local farmers have voiced their opposition to the arrival of foreign contractors, claiming that it compromises customary access and

[22] University of Kashmir, *Hydrological Impact of Sand Mining in South Kashmir* (Faculty of Earth Sciences, 2012).

[23] Department of Geology & Mining, *Annual Mineral Extraction Report 2022–23*, Govt. of J&K (2023).

[24] Govt. of Jammu & Kashmir, *J&K Minor Mineral Concession Rules, 2016*, SRO 302 (26 July 2016).

[25] *Vishwa Jit Sharma v. Union of India*, OA No. 45/2019, Order dated 13 Dec. 2021, National Green Tribunal, Principal Bench, New Delhi.

[26] "Sand Mafia Depletes Trout Habitats in South Kashmir," *Kashmir Observer*, 12 Nov. 2023.

[27] Environmental Policy Group, *Status of Traditional Water Sources in Budgam*, Kashmir University (2023).

care.[28] Transparent lease issuance, environmental auditing, and participatory regulation involving Panchayati Raj institutions are urgently needed to address this crisis. The sustainability of Kashmir's riverine ecosystems is still in jeopardy in the absence of such structural changes.

3. Legal and Regulatory Framework

According to Section 3(e) of the Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act), sand and gravel are classified as "minor minerals."[29] Because of this classification, the State Government, which has the authority to establish particular regulations for concession, extraction, and transportation under Section 15 of the Act, is primarily responsible for their regulation. These authorities are used in Jammu and Kashmir under the 2016 Jammu and Kashmir Minor Mineral Concession, Storage, and Transportation of Minerals Rules.[30] According to these regulations, it is illegal to extract, store, or transport minor minerals without a current mining lease or short-term permit. Furthermore, using large equipment like JCBs, excavators, and dredgers without first obtaining environmental approval is extremely dangerous, especially in riverbeds, floodplains, and embankment zones. These activities also violate the Environment (Protection) Act of 1986, particularly when mining occurs in ecologically sensitive areas or within 200-500 meters of riverbanks without a valid Environmental Impact Assessment (EIA).[31] Additionally, mining close to bridges and embankments jeopardises the structural soundness of public infrastructure and is prohibited by guidelines issued by the National Green Tribunal (NGT) and the Ministry of Environment, Forests, and Climate Change

[28] "Kashmir Villagers Protest Mining by Non-Local Contractors," *The Wire*, 15 March 2022, available at: https://thewire.in/environment/kashmir-sand-mining-non-local-contractors. (last visited on May 20, 2025).

[29] The Mines and Minerals (Development and Regulation) Act, 1957, § 3(e), No. 67, Acts of Parliament, 1957 (India).

[30] Govt. of J&K, *Jammu and Kashmir Minor Mineral Concession, Storage, and Transportation of Minerals Rules*, SRO 302 (2016).

[31] Environment (Protection) Act, 1986, §§ 3 and 5, read with MoEFCC Notification S.O. 1533(E) (14 September 2006).

(MoEFCC).[32] Notwithstanding these legal protections, field reports and court rulings have consistently shown extensive extraction in protected riparian areas, indicating lax enforcement and regulatory oversight.

In India, illegal riverbed mining is a major violation of mining and environmental regulations. Unauthorised mining operations are punishable by both jail time and fines under the Environment (Protection) Act, 1986 (EPA), especially if they are conducted in ecologically sensitive areas or without the necessary environmental clearances.[33] In particular, Section 15 of the EPA stipulates that a person who violates the law for five years may be imprisoned, fined up to ₹1 lakh, and subject to an additional ₹5,000 fine for each day that the violation persists.[34] Riverbed mining is a clear violation of EPA regulations when it occurs in protected areas, like floodplains, within the allowed buffer distances from embankments or bridges, or without an Environmental Impact Assessment (EIA). Concurrently, mining operations carried out without a valid lease, licence, or permit are subject to criminal liability under the Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act).[35] Illegal mining is a crime under Section 21 of the Act, which gives authorised officers the authority to confiscate the vehicles, tools, and mineral stock used in the crime. The state may seize assets used in illegal mining, such as excavators and dumpers, and punish repeat offenders with increased jail time and fines.[36] State-specific regulations such as the J&K Minor Mineral Concession, Storage, and Transportation of Minerals Rules, 2016 have operationalised these powers by allowing the imposition of compounded penalties and the termination of contracts for noncompliance.

Ground-level enforcement is still weak in spite of this strong legal framework, frequently due to a lack of coordination between local government, environmental regulators, and mining authorities. Large-

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[32] *National Green Tribunal Guidelines on Sustainable Sand Mining Management*, Ministry of Environment, Forest and Climate Change, 2016.

[33] Environment (Protection) Act, 1986, No. 29 of 1986, Sections 3, 5, and 15.

[34] Ibid. Sections 15(1), (2).

[35] Mines and Minerals (Development and Regulation) Act, 1957, No. 67 of 1957, Section 21.

[36] Ibid. Section 21(4); see also Ministry of Mines, *Model Guidelines for Prevention of Illegal Mining and Monitoring of Mineral Production* (2020).

scale riverbed mining operations in Kashmir, especially along the Jhelum and its tributaries, thus continue to operate with impunity, threatening the rule of law and environmental justice. A thorough regulatory framework for the extraction and transportation of minor minerals, including sand and gravel, was established by the Jammu and Kashmir Minor Mineral Concession, Storage, Transportation of Minerals, and Prevention of Illegal Mining Rules, 2016 (henceforth referred to as the "JK Minor Mineral Rules, 2016"). These regulations place a strong emphasis on decentralised oversight, procedural transparency, and environmental safety. In order to protect riparian ecosystems and flood protection infrastructure, Rule 17 expressly forbids the use of large equipment, such as excavators or JCBs, within 25 meters of riverbanks, embankments, or any hydraulic structures.[37] Furthermore, mining is specifically prohibited at night because of the higher risk of regulatory violations and the higher environmental hazards brought on by the absence of supervision during those hours.[38] Additionally, as required by the EIA Notification 2006 issued under the Environment (Protection) Act, 1986, the Rules stipulate that any mining lease or permit may only be granted following the acquisition of Environmental Clearance (EC) from the State Environment Impact Assessment Authority (SEIAA).[39] In addition, Rule 26 requires lessees to provide recurring environmental audit reports that demonstrate their adherence to safety regulations, extraction restrictions, and restoration duties. The Rules now promote GPS-based tracking of vehicles and equipment used in mining and mineral transportation to improve accountability and stop illicit extraction outside of permitted areas.[40] In many districts in Kashmir Division of J&K, implementation of these safeguards is still lacking. Widespread violations of these provisions have been caused by a combination of political patronage of contractors, institutional inertia, and a shortage of skilled enforcement personnel. Regular violations of the night-time ban, mining too near embankments, and a lack of GPS tracking have been reported by media outlets and field investigations by civil

[37] Jammu and Kashmir Minor Mineral Concession, Storage, Transportation of Minerals and Prevention of Illegal Mining Rules, 2016, Rule 17.

[38] Ibid. Rule 20.

[39] Environment (Protection) Act, 1986, read with MoEFCC Notification S.O. 1533(E), dated 14 September 2006 (EIA Notification, 2006).

[40] JK Minor Mineral Rules, 2016, Rule 26(4).

society.[41] Consequently, destabilisation of ecologically sensitive riverbeds persists, endangering biodiversity and human settlements. In India, including in Jammu and Kashmir, judicial intervention has been crucial in controlling illicit and unsustainable sand mining. By requiring prior environmental clearance for mining and restricting industrial activity in forested and riparian areas, the Supreme Court of India established the framework for environmental governance in ecologically sensitive zones in the seminal case of *T.N. Godavarman Thirumulpad v. Union of India* (1996).[42] A number of guidelines focussing on the "precautionary principle" and "intergenerational equity" in the use of natural resources were initiated by this case. Building on this precedent, the National Green Tribunal (NGT) stressed the ban on extraction without a proper Environmental Impact Assessment (EIA) and public consultation in a number of orders, including those issued in 2010, 2013, and 2021.[43] In a landmark decision on November 15, 2021, the NGT fined the Union Territory of Jammu and Kashmir ₹35 crore for neglecting to regulate illicit sand and gravel mining along the Doodh Ganga river, close to Srinagar.[44] The tribunal concluded that extraction was proceeding in violation of buffer zone regulations and river ecology guidelines issued by the Ministry of Environment, Forests, and Climate Change (MoEFCC), and that mining leases had been granted without the required environmental clearance. The NGT ruled that the "polluter pays" principle was fully applicable and instructed the authorities to use the fine money for ecological rehabilitation and restoration in the

[41] "Kashmir Sand Mining Violates Safety, Distance Norms, Reports Reveal", *The Wire*, 15 March 2022, available at: https://thewire.in/environment/kashmir-sand-mining-non-local-contractors. (last visited on May 20, 2025).

[42] *T.N. Godavarman Thirumulpad v. Union of India*, AIR 1997 SC 1228.

[43] National Green Tribunal, *In re Compliance of Environmental Norms by Mining Operators in India*, O.A. No. 186/2013 and related matters (2010–2021).

[44] *Vishwa Jit Sharma v. Union Territory of J&K & Others*, OA No. 45/2019, Order dated 15 November 2021, National Green Tribunal, Principal Bench, New Delhi.

impacted areas.[45] These decisions demonstrate the judiciary's dedication to environmental preservation and are in line with a pressing demand that the government of Jammu and Kashmir uphold legal protections, limit mechanical dredging in areas of the river that are sensitive, and put ecological sustainability ahead of immediate financial gain.

4. Governance Failures: Enforcement and Institutional Gaps

Even with a formal regulatory framework in place, Jammu and Kashmir's mining and environmental regulations are still woefully ineffectively enforced. The failure of authorities to confirm adherence to Environmental Clearance (EC) requirements, which are essential for all mining operations in accordance with the Environment (Protection) Act of 1986 and the EIA Notification of 2006, is a significant weakness.[46] Even though ECs usually impose conditions like limited extraction depths, specified working hours, and mine site restoration, these are rarely followed in reality. To guarantee that leaseholders operate within assigned mining blocks, there is no operational real-time monitoring infrastructure in place, such as GPS-enabled vehicle tracking systems, automated sensor-based alerts, or drone surveillance.[47] Because of this, infractions like deep pitting, mining outside of boundaries, and extraction close to embankments are not reported. The lack of interdepartmental coordination among important regulatory agencies exacerbates this enforcement gap. Without shared databases or synchronised field inspections, the Department of Geology and Mining, the Forest Department, the Public Works Department (PWD), and the Irrigation and Flood Control Department frequently function independently. Conflicting jurisdiction, a slow response to infractions, and general administrative inertia are the results of this fragmentation. For

[45] Ministry of Environment, Forest and Climate Change, *Sustainable Sand Mining Guidelines* (2016), and *Enforcement and Monitoring Guidelines for Sand Mining* (2020).

[46] Environment (Protection) Act, 1986, read with EIA Notification S.O. 1533(E), Ministry of Environment, Forest and Climate Change, 14 September 2006.

[47] Ministry of Mines, *Star Rating of Mines and Monitoring Framework Guidelines*, Government of India (2020); see also "Sand Mining in Kashmir: No GPS Checks, No Compliance Audits," *Greater Kashmir*, 18 March 2023.

instance, the Forest Department may have concurrent restrictions that are not consistently enforced or communicated, even though the Mining Department may issue a lease.[48] Contractors frequently take advantage of the gaps created by this systemic chaos, some of which carry on operating even after a lease has expired or been suspended.
Systemic corruption and collusion between contractors and public officials are important but frequently disregarded aspects of illegal sand mining in Jammu and Kashmir. Bribery, coercion, and the unofficial subletting of mining leases allow organised "sand mafia" networks to operate with almost complete impunity, according to a number of investigative reports and anecdotal accounts.[49] It is common for licensed contractors to illegally sublease their blocks to unregistered operators, who then extract the blocks using heavy machinery against the terms of the lease and environmental clearance requirements. Because enforcement agencies frequently ignore or actively conspire in exchange for illegal financial gains, this practice not only violates the J&K Minor Mineral Concession Rules, 2016, which forbid the transfer or subletting of mining leases without prior approval, but it also avoids accountability. The "institutional inertia" of regulatory agencies in dealing with such malpractices has been frequently criticised by judicial authorities. The National Green Tribunal (NGT) noted a "deliberate pattern of non-enforcement" of court orders and a failure to follow up on compliance reports in its 2021 order against the J&K administration, especially in cases involving Doodh Ganga and Jhelum riverbed violations.[50] The NGT also cautioned that persistent inaction against illicit mining was an insult to environmental justice and the rule of law in addition to being a violation of statutory obligations. Despite these cautions, institutional indifference endures, as remedial action is undermined by frequent administrative reorganisations, a lack of political will, and inadequate interdepartmental coordination.

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[48] Comptroller and Auditor General of India, *Performance Audit of Mining Activities in J&K*, Report No. 3 of 2022, Chapter 4.

[49] "How Sand Mining in Kashmir is Run Like a Syndicate," *The Wire*, 15 March 2022, *available at:* https://thewire.in/environment/kashmir-sand-mining-non-local-contractors. (last visited on May 21, 2025).

[50] *Vishwa Jit Sharma v. Union Territory of J&K & Others*, OA No. 45/2019, Order dated 15 November 2021, National Green Tribunal, Principal Bench, New Delhi.

Village-level organisations in districts like Pulwama and Budgam have started to play a significant grassroots role in monitoring and reporting cases of illegal sand mining, despite systemic shortcomings in state enforcement. Numerous Panchayats and Village Development Councils (VDCs) have set up local surveillance teams, reported excavations that occur at night, and even sent memoranda to district authorities asking for tighter oversight or the cancellation of leases.[51] Growing environmental consciousness and a call for democratic accountability in the management of natural resources are reflected in these citizen-led initiatives. Though admirable, these initiatives frequently lack legal force because they are not formally recognised by the state's mining regulatory framework. Village representatives' complaints are frequently ignored by mining officials, and in certain cases, complainants have experienced intimidation or reprisals from influential mining contractors. The Panchayats (Extension to Scheduled Areas) Act, 1996 (PESA), which gives Gramme Sabhas the legal right to be consulted prior to the distribution of mining rights in Scheduled Areas, is consistently disregarded, as this discrepancy demonstrates.[52] According to Section 4(k) of the Act, land acquisition or mineral leasing requires the Gramme Sabha's prior informed consent, especially in areas with a tribal majority or ecological sensitivity. The majority of mining leases in Jammu and Kashmir are granted through centralised tenders without community consultation, indicating that PESA implementation is still patchy and inadequate in the region.[53] Despite suffering the most from the environmental damage and loss of livelihoods brought on by illegal mining, the outcome is a legal and participatory vacuum where village voices are ignored.

5. Environmental and Socio-Economic Impacts

The negative environmental effects of illicit sand and gravel mining in the Jhelum and its tributaries have been more extensively documented by scientific research and hydrological surveys carried

[51] "Budgam Panchayat Alleges Mafia Involvement in Night-Time Mining," *Kashmir Reader*, 17 May 2023.

[52] The Panchayats (Extension to the Scheduled Areas) Act, 1996, Section 4(k), No. 40 of 1996.

[53] "Ignored Gram Sabhas: Sand Mining in Kashmir Leaves Villages Powerless," *Scroll.in*, 10 August 2022.

out throughout Kashmir. A noticeable increase in river turbidity is one of the most obvious consequences, and it directly affects irrigation systems, drinking water quality, and aquatic biodiversity.[54] Constant dredging of riverbeds changes the dynamics of sediment transport, causing channel incision, in which the river cuts deeper into its bed, which causes riverbank failure and exposes nearby infrastructure and farmlands to flooding and collapse.[55] Furthermore, the baseflow regime, which is the portion of river flow supported by groundwater and is crucial for sustaining perennial flow during lean seasons, is upset when surface and subsurface sediment layers are removed.[56] As a consequence, discharge levels in critical stretches of the Jhelum have reduced, affecting both downstream ecosystems and hydroelectric projects. The sharp decline in groundwater tables in regions close to active mining zones is among the most concerning trends seen. According to field data from Budgam and Pulwama, high levels of uncontrolled extraction were linked to an average drop in water table of more than 1.5 meters between 2020 and 2023.[57] Traditional well systems and agricultural livelihoods are directly threatened by this groundwater depletion, especially in areas where irrigation relies on groundwater for rice production. Villagers in Anantnag and Baramulla have also reported that artisan wells and springs are drying up, which further supports the connection between declining hydrological resilience and unscientific riverbed mining.[58] In addition to impairing ecosystem services, these changes increase socio-economic vulnerabilities, particularly for communities that depend on farming and fishing.

The Jhelum River basin's natural hydrological regime has been seriously upset by the cumulative effect of uncontrolled sand mining, which has weakened embankments and made them more vulnerable

[54] University of Kashmir, *Hydrological Impact Assessment of Riverbed Mining in South Kashmir*, Department of Earth Sciences (2022).

[55] Central Water Commission (CWC), *Sediment Transport and Channel Degradation Studies in Himalayan Rivers*, Report No. CWC/2021/42.

[56] National Institute of Hydrology, *Assessment of Baseflow Reduction Due to Riverbed Mining*, Roorkee (2020).

[57] Groundwater Division, Public Health Engineering Department, J&K, *Well Depth Monitoring Report: Pulwama & Budgam*, 2023.

[58] Environmental Policy Group, *Status of Traditional Water Sources in Baramulla and Anantnag*, University of Kashmir (2023).

to flooding. Particularly in the low-lying regions of Pulwama, Anantnag, and Kulgam channel deepening and bank destabilisation have resulted from the removal of sediment from riverbeds at unsustainable depths.[59] Riverbanks were more likely to collapse in high-flow situations as they lost the natural sediment support they once had. The Jhelum and its tributaries, particularly the Veshaw and Rambiara rivers, broke through weak embankments due to sudden cloudbursts and heavy rainfall in August 2023, causing flash floods that destroyed 1,200 hectares of agricultural land and more than 500 homes.[60] The Department of Disaster Management, Relief, and Rehabilitation confirmed that areas previously subjected to illegal extraction suffered the most structural damage, further underscoring the link between uncontrolled mining and disaster risk amplification. These floods also demonstrated the shortcomings of the current embankment maintenance procedures, many of which had not been strengthened or restored since the floods in Kashmir in 2014.[61] Despite legal prohibitions, villagers in the impacted districts reported that sand mining went on all the way up to the embankment base, weakening the compacted earth structures designed to withstand water pressure. In addition to uprooting hundreds of families, the 2023 flash floods ruined irrigation systems, tainted groundwater, and caused long-term disruptions to agrarian livelihoods.[62] With embankment stability as a non-negotiable environmental safeguard, these results highlight the pressing need to combine disaster risk reduction with riverbed mining regulation.

Rural communities in the Jhelum River basin that depend on the river for livelihoods and sustenance have been disproportionately impacted by the socio-economic effects of illegal sand mining. Over the last five years, about 93,000 people who work in horticulture, fishing, weaving, and river-based crafts have reported suffering large income losses, which are directly related to the decline in riverbank

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[59] Department of Irrigation and Flood Control, J&K, *Riverbank Stability Assessment: Jhelum Basin South Sector*, 2022.

[60] "Kulgam, Pulwama Worst Hit as Jhelum Breaches Banks," *Greater Kashmir*, 23 August 2023.

[61] J&K Disaster Management Authority, *Post-Flood Infrastructure Audit Report*, 2023.

[62] Environmental Policy Group, *Mining-Induced Flood Vulnerability in Kashmir Valley*, University of Kashmir, 2024.

ecology and water quality.[63] Due to increased turbidity and sediment disturbance, fish stocks in Wular and downstream wetlands have decreased, which has affected traditional fishermen's incomes, especially in Sopore, Bandipora, and Baramulla.[64] Similarly, saffron fields and apple orchards that rely on regulated groundwater and river-fed systems have been impacted by siltation and irrigation channel disruption, exacerbating agrarian distress in districts such as Pulwama and Anantnag.[65] Women-headed households and rural women entrepreneurs who rely on small-scale water-intensive jobs like vegetable farming, basket weaving (using river reeds), and dairy farming are among the hardest hit. Women in Budgam, Ganderbal, and Kupwara now have to walk farther to fetch water for domestic and livestock needs as a result of nearby riverbed mining, which has caused groundwater tables to drop and spring sources to dry up. This has increased the burden of unpaid caregiving.[66] Furthermore, women who previously made extra money by selling fish or weaving are now facing almost total income erosion, according to a 2023 participatory study conducted by the University of Kashmir's Centre for Women's Studies.[67] State environmental audits and compensation plans for mining-affected areas have not embraced an intersectional lens in spite of this gendered impact, indicating a crucial gap in disaster response and resource justice planning.

6. Human Rights and Constitutionality

The Indian Supreme Court has consistently interpreted Article 21- the right to life and personal liberty- as encompassing the right to a clean, pollution-free, and ecologically balanced environment, despite the fact that the Indian Constitution does not specifically list a stand-

[63] Department of Fisheries, J&K, *Annual Report on Inland Fishing Communities in North Kashmir*, 2023.

[64] Wildlife Trust of India, *Biodiversity Disruption in Riverine Wetlands of Kashmir*, Policy Paper No. 17, 2023.

[65] Department of Agriculture, J&K, *Irrigation Deficit and Crop Yield Patterns: A Five-Year Review (2018–2023)*.

[66] Centre for Water and Sanitation, CEPT University, *Water Insecurity and Gender in Himalayan Regions*, 2022.

[67] University of Kashmir, *Women and Environmental Change in the Kashmir Valley: A Participatory Study*, Centre for Women's Studies, 2023.

alone "right to a healthy environment."[68] Starting with the seminal decision in *Subhash Kumar v. State of Bihar*, the Court ruled that "the right to life includes the right to enjoyment of pollution free water and air," expanding the protection of the constitution to include environmental issues.[69] Since then, cases like *T.N. Godavarman Thirumulpad v. Union of India* and M.*C. Mehta v. Union of India* (Taj Trapezium and Ganga Pollution cases) have upheld this broad interpretation, finding that unchecked resource exploitation, including illicit mining, violates fundamental rights. The judiciary has increasingly viewed unmitigated extraction in the particular context of sand and gravel mining as a violation of Article 21, particularly when it jeopardises ecosystems, displaces communities, or poses a health risk.[70] Furthermore, the state and citizens are expected to preserve and enhance the natural environment in accordance with Article 48A (Directive Principles) and Article 51A(g) (Fundamental Duties).[71] Despite being non-justiciable, these clauses support the binding nature of Article 21's environmental duties by acting as interpretive tools. Under the public trust doctrine, illegal sand mining in Kashmir is therefore a constitutional wrong that calls for both judicial scrutiny and proactive state intervention due to its cascading effects on water access, livelihood security, and disaster vulnerability. The widespread exclusion of tribal and local communities from decision-making processes in Kashmir's sand mining regime is blatantly against two important legal frameworks: The Forest Rights Act of 2006 (FRA) and the Panchayats (Extension to the Scheduled Areas) Act of 1996 (PESA). By requiring Gramme Sabhas' prior informed consent before beginning operations like mining, land acquisition, or leasing, both laws were passed with the goal of democratising the governance of natural resources in Scheduled and forested areas.[72] The Gramme Sabha has the authority to protect community resources under PESA Section 4(k), and it must be consulted before mining leases are granted. In a similar vein, the FRA's Section 3(1)(i) acknowledges the

[68] Constitution of India, Art. 21.

[69] *Subhash Kumar v. State of Bihar*, AIR 1991 SC 420.

[70] *M.C. Mehta v. Union of India*, AIR 1987 SC 1086; *T.N. Godavarman Thirumulpad v. Union of India*, (1997) 2 SCC 267.

[71] Constitution of India, Arts. 48A and 51A(g).

[72] The Panchayats (Extension to the Scheduled Areas) Act, 1996, Section 4(k); Forest Rights Act, 2006, Section 3(1)(i).

rights of communities that live near forests to preserve and safeguard the natural resources that they have historically used.[73] However, despite numerous mining leases being issued across districts like Pulwama, Anantnag, and Baramulla- many of which include forest fringes and riverbank settlements- there is little to no record of community consultation or Gram Sabha consent.

Articles 14, 21, and 243 of the Constitution's tenets of environmental justice, participatory democracy, and tribal welfare are all compromised by this systematic marginalisation of local voices, in addition to breaking legal requirements.[74] In rulings like *Samatha v. State of Andhra Pradesh* and *Orissa Mining Corporation v. Ministry of Environment*, the Supreme Court has emphasised the need for fair benefit-sharing and community consent in extractive operations in tribal areas.[75] Therefore, the dominant top-down mining strategy in Jammu and Kashmir represents a socially regressive and legally unsustainable model of resource governance, where statutory protections for marginalised communities are frequently disregarded, resulting in rights erosion, ecological degradation, and alienation.

7. Comparative Perspectives

Through financial disincentives and technological surveillance, the state of Uttarakhand has become a prominent illustration of how proactive governance can reduce illicit sand and gravel mining. The state government implemented round-the-clock electronic monitoring systems, such as drone surveillance, RFID-based entry systems at mining sites, and GPS-enabled vehicle tracking, in response to the widespread use of mechanised extraction along the Ganga and its tributaries.[76] The state changed the Minor Minerals Concession Rules in 2021 to require licensees to submit data in real-time and to install CCTV at mining locations. The Department of Geology and Mining is now able to identify infractions like over-extraction, boundary violations, and unauthorised transportation thanks to the digital audit trail that these actions have produced.

[73] *Ibid*.

[74] Constitution of India, Arts. 14, 21, and 243.

[75] *Orissa Mining Corporation v. Ministry of Environment & Forests*, (2013) 6 SCC 476; *Samatha v. State of Andhra Pradesh*, AIR 1997 SC 3297.

[76] Department of Geology and Mining, Government of Uttarakhand, *e-Mining Monitoring Dashboard Report*, 2023.

Concurrently, Uttarakhand imposed a tax on earthmovers and JCBs, two types of mechanised mining equipment, to deter their use in environmentally sensitive areas.[77] This action raised money for afforestation and riverbank restoration projects while simultaneously creating a cost-based deterrent for illicit operators. Official reports from 2020 to 2023 showed a 38% decrease in unlicensed mining cases and a 27% rise in state mining revenues, highlighting the value of a technologically advanced and economically sophisticated regulatory strategy.[78] These reforms provide valuable insights for Jammu and Kashmir, where illicit mining persists due to a lack of robust enforcement infrastructure and digital monitoring.

Additionally, Kerala offers a strong example of interagency cooperation and community-centered governance in combating illicit sand mining, especially in its vulnerable riverine and coastal areas. Under the Kerala Protection of River Banks and Regulation of Removal of Sand Act, 2001, Kerala has given local self-government institutions (LSGIs) and District Environment Committees the authority to oversee and control sand extraction, in contrast to states that only use top-down enforcement.[79] This participatory legal framework permits community organisations to send environmental impact assessments and real-time violation reports straight to the State Environment Impact Assessment Authority (SEIAA), and it requires that Panchayats and local stakeholders be consulted prior to issuing Environmental Clearances (ECs).[80] The strategy is in line with Article 243 of the Indian Constitution, which encourages grassroots participation in natural resource management. In addition to decentralisation, Kerala has used the Prevention of Money Laundering Act, 2002 (PMLA) to impose stricter enforcement measures, including financial scrutiny on illicit sand syndicates.[81] The Enforcement Directorate (ED) and Revenue

[77] Uttarakhand Minor Minerals (Concession) Rules, 2001 (Amended 2021), Rule 26-A.

[78] "Uttarakhand Cuts Illegal Mining Through Surveillance Tech," *Hindustan Times*, 18 April 2023.

[79] The Kerala Protection of River Banks and Regulation of Removal of Sand Act, 2001, Act 18 of 2001.

[80] Kerala State Environment Impact Assessment Authority (SEIAA), *Decentralised EIA Guidelines for Minor Minerals*, 2022.

[81] Ministry of Finance, *Prevention of Money Laundering Act, 2002*; Directorate of Enforcement Circular, 2021.

Intelligence units were able to freeze assets and use proceeds of crime statutes to prosecute illegal operators in a number of cases filed under the PMLA and Benami Transactions (Prohibition) Act. Notably, in 2022, the Alappuzha District Administration seized property valued at over ₹14 crore that was connected to illicit sand traders through proceedings connected to the PMLA.[82] Kerala is now a leader in rights-based environmental regulation after a 44% decrease in illegal mining activity between 2020 and 2023 was achieved through the integration of financial intelligence, local governance, and precautionary EC protocols.

Important insights that can guide sustainable sand mining governance in environmentally delicate areas like Jammu and Kashmir are revealed by the examination of regulatory models in various Indian states. Primarily, technology-assisted monitoring, such as the use of GPS-enabled vehicle tracking, drone surveillance, satellite imagery, and Geographic Information Systems (GIS), has been crucial in identifying infractions, preventing over-extraction, and guaranteeing spatial transparency. By implementing digital compliance dashboards and real-time e-surveillance infrastructure, states like Madhya Pradesh and Uttarakhand have drastically decreased instances of illegal mining.[83] Enforcement agencies in Jammu and Kashmir are unaware of nocturnal operations, boundary violations, and lease violations due to the absence of such systems. Second, a legitimate and sustainable mining regime requires transparency and accountability from the community. In addition to empowering local communities, Kerala's legal system places a strong emphasis on prior informed consent, Gramme Sabha involvement, and participatory environmental impact assessments. These measures also serve as a deterrent against contractors' overreach in extractive industries.[84] On the other hand, J&K's lack of community consultation and inadequate grievance redressal procedures have alienated impacted villagers, fuelled public mistrust, and allowed ecological damage to continue unchecked. Lastly, it is impossible to

[82] "Kerala Seizes ₹14 Crore in Illegal Mining Crackdown," *The Hindu*, 6 July 2022.

[83] Department of Geology and Mining, Uttarakhand, *Mining Surveillance Dashboard Report*, 2023.

[84] Kerala State Environment Impact Assessment Authority, *Local Governance and River Sand Regulation Guidelines*, 2022.

exaggerate the significance of interagency coordination. Coherent cooperation between the departments of mining, environment, forestry, irrigation, and disaster management is essential for effective enforcement. Task forces have been established in states like Tamil Nadu and Kerala that have had successful interventions to promote timely prosecution, coordinated inspections, and data sharing.[85] The disjointed institutional response in Jammu and Kashmir has resulted in role duplication and subpar application of current legislation. Going forward, balancing economic demands with ecological and constitutional imperatives will require an integrated regulatory framework supported by law, technology, and community legitimacy.

8. Policy Recommendations

(a) Strengthen Regulatory Oversight

Institutional accountability and contemporary surveillance technologies must be integrated for riverbed mining governance to be effective. The Department of Geology and Mining should oversee all sand-extracting equipment and require it to use GPS-connected digital logbooks. This reduces underreporting and enables real-time tracking of operations. To guarantee a comprehensive assessment of the impact, field inspections must be multidisciplinary and include officers from the geology, fisheries, forest and irrigation departments. Crucially, in accordance with the provisions of the Panchayats (Extension to the Scheduled Areas) Act, 1996 (PESA), Gramme Sabhas must be granted the statutory authority to approve or veto mining leases within their jurisdictions. The lack of trust between local communities and the state would be lessened with such democratic decentralisation.

(b) Enhance Environmental Clearance (EC) Processes

According to EIA Notification 2006, the current Environmental Clearance procedure is frequently superficial and lacks scientific depth. It needs to be updated to include climate-informed flood and erosion risk mapping, as well as hydrological, biodiversity, and fisheries impact assessments. Accredited independent agencies should conduct these evaluations, and operations that endanger river integrity or contravene catchment management plans must be

[85] Ministry of Mines, Government of India, *Inter-Departmental Task Force Model on Minor Minerals*, 2021.

refused clearance. In order to ensure transparency and penalise non-compliance, periodic post-clearance audits must be made public.

(c) Promote Community-Based Monitoring

With the help of NGOs and educational institutions, village-level environmental vigilance committees can be established to provide focused, reasonably priced oversight. These communities can serve as the state's eyes and ears in remote riverine belts if they are given the necessary training and digital resources (such as GPS-tagged reporting apps). Success stories from Odisha and Kerala show how community involvement lowers long-term enforcement costs, increases ownership, and improves compliance.

(d) Reform Legal Sanctions

India's MMDR Act of 1957 and the Environmental Protection Act of 1986 both have harsh enough penalties to discourage repeat offenders. In addition to volumetric penalties, there is an urgent need to raise monetary fines based on the ecological cost of damage. Provisions must permit the prompt seizure of illicit machinery, the termination of leases for recurring infractions, and the criminal prosecution of public servants who conspire or neglect their regulatory responsibilities. Justice in mining-related cases can be accelerated through district-level green benches or fast-track environmental courts.

(e) Build Sustainable Alternatives

The government must encourage fly ash bricks, manufactured sand (M-sand), and recycled building materials through certification, standardisation, and subsidies in order to lessen reliance on river sand. At the same time, rehabilitation packages that include employment under rural development programs, skill training, and credit connections should be created for artisanal and informal sand miners. Such options are essential for a fair transition that strikes a balance between socio-economic equity and environmental preservation.

9. Conclusion

In addition to being an environmental emergency, the illegal sand mining crisis in the Jhelum River is a complex failure of justice, governance, and the law. The Jhelum was once Kashmir's cultural and ecological lifeline, but over the past ten years, excessive and uncontrolled riverbed mining has turned it into a corridor of

hydrological imbalance, social upheaval, and institutional impunity. Even with strong legal frameworks like the Mines and Minerals (Development and Regulation) Act of 1957, the Environmental Protection Act of 1986, and the Jammu and Kashmir Minor Mineral Concession Rules of 2016, enforcement is still merely ceremonial. Public trust in environmental governance has been undermined by sand mafias operating with political support and near-legal immunity due to a lack of technological monitoring, opaque lease allocations, and little prosecution of violators. According to the Supreme Court's numerous seminal rulings upholding the idea that a dignified life is inextricably linked to the environment, this situation violates the right to life under Article 21 of the Constitution. There are serious violations of environmental and livelihood rights, especially for women, children, and Scheduled Tribes, when riverbanks deteriorate, water sources are contaminated, and artisanal and agrarian communities are uprooted. Gramme Sabhas' exclusion from lease decisions also violates the Forest Rights Act of 2006 and the Panchayats (Extension to Scheduled Areas) Act of 1996, undermining federal principles and democratic resource stewardship. Ecologically speaking, the unscientific mining has harmed aquatic biodiversity, groundwater recharge, and sediment balance. In addition to reducing agricultural productivity, the decline in water table in impacted areas such as Pulwama, Anantnag, and Budgam has increased climate vulnerability, making these regions more vulnerable to drought cycles and flash floods. A fragmented institutional approach that is inappropriate for the complexity of Himalayan ecosystems is demonstrated by the failure to integrate hydrology, disaster management, and mining policy.

This study makes the case that urgent legal reform is required and that merely adhering to antiquated licensing processes or obtaining flimsy environmental clearances is not enough and the following are all essential components of a valid reform agenda:

a) mandatory digital surveillance and real-time extraction logs;
b) environmental clearance reforms that incorporate hydro-ecological assessments;
c) criminal accountability for public officials' collusion and duty neglect; and
d) community-based monitoring frameworks backed by NGOs, academic institutions, and legal aid organisations.

Most importantly, for a fair ecological transition, economic rehabilitation packages must be made available to displaced workers and informal sand miners through skill-building programs, microcredit, and rural employment programs. A rights-based, participatory, and restorative approach to natural resource governance is supported by international jurisprudence, ranging from the UN Guiding Principles on Business and Human Rights to rulings from South Asian Green Tribunals. How successfully Kashmir balances its aspirations for development with environmental sustainability and constitutional integrity will determine its future. It is not just a matter of law enforcement; protecting the Jhelum River is a generational, ecological, and moral necessity. The Jhelum must be governed by custodianship rather than extraction because it is a site of ecological vitality, economic sustenance, and civilisational memory.