



Aravalli Hills: Protecting Ecology and Ensuring Sustainable Development

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Overview

The Supreme Court of India, in its order dated November–December 2025, considered the recommendations of the Committee constituted by it vide order dated 9/5/24 and its further directions dated 12/8/2025 regarding uniform policy level definition of Aravali Hills and Ranges specifically in the context of regulating mining, and to incorporate the views of the concerned State Governments. Ministry of Environment, Forest and Climate Change (MoEFCC) led this Committee comprising Secretaries of departments of forest from UT of Delhi, Haryana, Rajasthan, Gujarat as well as representatives of Forest Survey of India, Central Empowered Committee and Geological Survey of India. The Court emphasized the ecological importance of the Aravalli range as a barrier against desertification, a groundwater recharge zone, and a biodiversity habitat

Importance of Aravallis

The Aravalli Hills and Ranges are among India's oldest geological formations, stretching from Delhi through Haryana, Rajasthan, and into Gujarat. Historically, they have been recognized across 37 districts by state governments, with their ecological role noted as a natural barrier against northern desertification and a protector of biodiversity and water recharge. The Supreme Court has emphasized that uncontrolled mining here poses a “great threat to the ecology of the nation” and directed uniform criteria to safeguard them. Their conservation is thus vital for ecological stability, cultural heritage, and sustainable development.

M/o EF&CC Committee Report Findings

The Committee, constituted by MoEF&CC pursuant to Supreme Court directions had extensive consultation with State Governments in which it emerged that only Rajasthan has a formally established definition for regulating mining in the Aravalli definition which was based on the 2002 Committee Report of the State Government relying on Richard Murphy landform classification which Identified all landforms rising 100 m above local relief as hills and based on that , prohibiting mining on both the hills and its supporting slopes. State of Rajasthan has been following this definition since 9th January, 2006. During deliberations, all States agreed to adopt the aforementioned uniform criterion of “100 metres above local relief” for regulating mining in the Aravalli region as had been in force in Rajasthan since 09.01.2006 while unanimously agreeing to make it more objective and transparent. All the landforms enclosed within the lowest binding contour encircling Hills of height 100 metre or more irrespective of their height and slopes are excluded for the purposes of grant of mining lease. Similarly, Aravali range has been explained as all the landforms which exists within 500 metres of two adjoining Hills of height 100 metre or more. All landforms existing within this 500 metre zone irrespective of their height and slopes are excluded for the purposes of grant of mining lease. **It is, therefore, be wrong to conclude that**

mining is permitted in all landforms below 100 metre height. The Committee constituted by the Supreme Court proposed several improvements over the definition currently followed by Rajasthan to strengthen it and to make it more transparent, objective and conservation centric:

- A clear, objective, and scientifically robust criterion for determining local relief, enabling uniform application across all States and ensuring full protection of the entire hill landform up to its base.
- Explicit protection to ranges, which was absent in Rajasthan's definition. The Committee recommended that hills within 500 metres of each other constitute a range and must be protected accordingly.
- Mandatory marking of Aravalli hills and ranges on Survey of India maps before any mining activity is considered.
- Clear identification of core/inviolate areas where mining is strictly prohibited.
- Detailed guidance for enabling sustainable mining and effective measures to prevent illegal mining.

The aforesaid measures ensure a clear, map-verifiable operational definition of “Aravalli Hills” and “Aravalli Range,” and a regulatory framework that protects core/inviolate areas, restricts new mining, and hardens safeguards and enforcement against illegal mining. In its final judgment dated **20.11.2025**, the **Hon'ble Supreme Court commended the Committee's work including the assistance of the Technical Committee (para 33 of the Order)** and also **appreciated its recommendations regarding prevention of illegal mining and permitting only sustainable mining in Aravali Hills and Ranges (para 39 of the Order)**. The Supreme Court has accepted these recommendations and imposed an interim moratorium on new leases until a landscape-wide MPSM is prepared.

Operational Definitions

Aravalli Hills: Any landform located in the Aravalli districts, having an elevation of 100 metres or more from the local relief, shall be termed as Aravalli Hills. For this purpose, the local relief shall be determined with reference to the lowest contour line encircling the landform (as per the detailed procedure mentioned in the Report). The entire landform lying within the area enclosed by such lowest contour, whether actual or extended notionally, together with the Hill, its supporting slopes and associated landforms irrespective of their gradient, shall be deemed to constitute part of the Aravalli Hills.

Aravalli Range: Two or more Aravalli Hills, as defined above, located within the proximity of 500m from each other, measured from the outermost point on the boundary of the lowest contour line on either side forms Aravalli Range. The area between the two Aravalli hills is determined by first creating buffers with a width equal to the minimum distance between the lowest contour lines of both hills. An intersection line is then generated between the two buffer polygons by joining the intersection of both buffer polygons. Finally, two lines, are drawn perpendicularly from both endpoints of the intersection line and extended till it intersects the lowest contour line of both hills. The entire area of landforms falling between the lowest contour lines of these Hills as explained, along with associated features such as Hills, Hillocks, supporting slopes, etc., shall also be included as part of Aravalli Range.

These definitions are not just technical but they are ecological safeguards. By clearly identifying what counts as an Aravalli Hill or Range, they ensure that all critical landforms, slopes, and connecting habitats remain under statutory protection, thereby preventing ecological degradation.

- **Comprehensive inclusion of landforms:** By defining Aravalli Hills as any landform rising **100 metres or more above local relief**, along with their **supporting slopes**, the entire ecological unit is protected. This prevents piecemeal exploitation of slopes or foothills that are vital for soil stability, water recharge, and vegetation cover.
- **Cluster-based definition of ranges:** Hills within **500 metres proximity** are grouped into Aravalli Ranges. This ensures that valleys, intervening slopes, and smaller hillocks between major peaks are

also safeguarded. Ecologically, this protects **connectivity of habitats**, wildlife corridors, and the integrity of the ridge system.

- **Mapping on official toposheets:** Using Survey of India maps to mark hills and ranges makes the boundaries **objective and enforceable**. This reduces ambiguity and strengthens regulatory enforcement against illegal mining or construction making it objective and transparent.
- **Protection of core/inviolable areas:** The definition is tied to ecological safeguards—Protected Areas, Tiger Reserves, Eco-Sensitive Zones around Protected Areas, wetlands, and CAMPA plantations are automatically included. This ensures that the most fragile and biodiversity-rich zones are **off-limits to mining or development**. Hon'ble Supreme Court in its order dated 20/11/2025 has inter-alia given the following directions:
 - We accept the recommendations made by the Committee with regard to the definition of Aravali Hills and Ranges given by MoEF&CC;
 - We further accept the recommendations with regard to the prohibition of mining in core/inviolable areas except in case of critical, strategic and atomic minerals (Atomic minerals notified in part B and Critical and Strategic minerals notified in Part D of the First Schedule of MMDR Act) and minerals listed in the Seventh Schedule of the MMDR Act 1957;
 - We also accept the recommendations for sustainable mining in Aravali Hills and Ranges and the steps to be taken for preventing illegal mining in Aravali Hills and Ranges;
 - **We, however, direct the MoEF&CC to prepare a Management Plan for Sustainable Mining (MPSM) through Indian Council of Forestry Research and Education (ICFRE) for the entire Aravalis**, i.e., understood as the continuous geological ridge extending from Gujarat to Delhi on the lines of the MPSM for Saranda and the MPSM must:
 - **Identify permissible areas for mining, ecologically sensitive, conservation-critical and restoration- priority areas within the Aravali landscape where mining shall be strictly prohibited or permitted only under exceptional and scientifically justified circumstances;**
 - **Incorporate a thorough analysis of cumulative environmental impacts and the ecological carrying capacity of the region; and**
 - **Include detailed post-mining restoration and rehabilitation measures.**
 - We further direct that **till the MPSM is finalised by the MoEF&CC through ICFRE, no new mining leases should be granted;**
 - We further direct that upon the MPSM being finalised by MoEF&CC in consultation with the ICFRE, mining would be permitted as per the MPSM only in those areas wherein sustainable mining could be permitted; and
 - In the meantime, the mining activities in the mines which are already in operation would be continued in strict compliance with the recommendations made by the Committee regarding sustainable mining in the report.
- **Freeze on new mining leases:** Because the definition is now operational, the Supreme Court has ordered **no new mining leases** until a Mining Plans for Sustainable Mining (MPSM) has been prepared by ICFRE on the lines of the one prepared by it for Saranda Forests in Jharkhand. This acts as a **preventive shield** against immediate ecological threats.
- **Landscape-level conservation:** By treating the Aravalis as a continuous geological ridge, the definition protects the **entire landscape**, not just isolated hills. This guards against fragmentation, which is one of the biggest ecological risks.
- **Ecological functions preserved:**
 - Prevents desertification by maintaining the natural barrier against the Thar Desert.
 - Safeguards groundwater recharge zones in foothills and valleys.
 - Maintains biodiversity habitats across slopes, ridges, and intervening areas.
 - Protects Delhi-NCR's "green lungs" that regulate air quality and climate.

How the Aravallis Are Protected

The Committee’s findings, later upheld by the Supreme Court, provide a clear scientific basis for identifying the Aravalli Hills and Ranges. These findings, combined with strict mining regulations and monitoring, ensure that the ecology of the Aravallis remains safeguarded and free from imminent threat.

- **Transparent, Objective and Scientific:** Aravalli Hills are defined as landforms rising 100 metres or more above local relief, including their supporting slopes. This prevents loopholes and ensures all genuine hill areas are covered.
- **Ranges mapped comprehensively:** Hills within 500 metres proximity are clustered into Aravalli Ranges, so intervening valleys, slopes, and smaller hillocks are also protected.
- **Core/inviolable zones safeguarded:** Mining is absolutely prohibited in protected areas, eco-sensitive zones, tiger reserves, wetlands, and CAMPA plantation sites.
- **No new mining leases:** The Supreme Court has ordered a freeze on new mining leases until a detailed sustainable mining plan (MPSM) is prepared.
- **Strict regulation of existing mines:** Current operations must comply with environmental clearance, forest clearance, and continuous monitoring; violations can lead to suspension.
- **Illegal mining prevention:** Surveillance with drones, CCTV, weighbridges, and district task forces ensures strong enforcement against unauthorized activity.
- **Landscape-level planning:** The upcoming MPSM to be prepared by ICFRE will identify permissible and prohibited zones, assess ecological carrying capacity, and mandate post-mining restoration.

Safeguards for Mining and Ecological Protection

The findings upheld by the Supreme Court set out strict measures to ensure that mining does not compromise the ecological integrity of the Aravallis. These safeguards combine absolute prohibition in sensitive zones, sustainable mining practices, and strong enforcement against illegal operations.

Regulation of Mining	Protection of Core/inviolable Areas
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New leases (general minerals): No new mining leases in areas mapped as Aravalli Hills and Ranges under the prescribed procedure. Critical, strategic, and atomic minerals: A narrowly tailored exception applies to atomic minerals (First Schedule Part B), critical and strategic minerals (First Schedule Part D), and minerals in Schedule VII of the MMDR Act, given national security and economic imperatives; all other safeguards continue to apply. Existing/renewal leases: An expert team (Forest, Mining & Geology, Local Administration, SPCB, and domain experts) must inspect to verify compliance with EC/CTO conditions, prescribe additional safeguards, and ensure ongoing monitoring by SPCB.	Absolute Prohibition Zones: Protected areas: Including tiger reserves and identified corridors. • Eco-Sensitive Zones/Areas: Draft or final ESZ/ESA under EPA, 1986; where ESZ proposals are pending, apply Supreme Court’s default ESZ directions in T.N. Godavarman. • Buffer Zone: No mining within 1.0 km of Protected Area boundary even if notified ESZ is smaller. • Conservation investments: Areas with plantations raised via CAMPA, government funds, or international cooperation. • Wetlands: 500 m from Ramsar/wetlands under the 2017 Rules.
Sustainable Mining Safeguards	Preventing Illegal Mining

Operational Controls:

Forest land approvals: Forest clearance (Van Adhiniyam, 1980) in addition to EC; compensatory afforestation, Net Present Value, wildlife plans, safety-zone greenbelts, and soil-moisture conservation are mandatory.

Environmental appraisal and EC: EAC/SEAC appraisal with ToR and standard EC conditions plus site-specific conditions; robust EIA/EMP addressing cumulative impacts as per the provisions of EIA Notification 2006, as amended.

Compliance monitoring: Six-monthly reports; first-year joint inspections by MoEF&CC RO, SPCB, SEAC, DMG, Forest, and CGWB/SGWB; EC may be held in abeyance upon non-compliance.

Audits and enforcement: Periodic checks by MoEF&CC RO and SPCBs, online monitoring, environmental auditors; repeated breaches can trigger EC/CTO revocation and penalties.

Groundwater safeguards: NOCs for DARK zones or when operations meet groundwater; protect hydrogeology and recharge functions.

Cultural heritage: NOC from ASI when near protected monuments (e.g., forts).

Regulated mining only: Permit with stringent conditions in designated areas; inviolate areas remain untouched.

Surveillance: Drones, CCTV (including night-vision), high-tech weighbridges, trenches on access paths, and special anti-illegal mining patrols.

Governance: District-level task forces (Revenue, Forest, Police, Mining), control rooms with toll-free complaint lines, and signage declaring prohibitions and penalties.

Logistics oversight: E-challan matching for dispatches; SPCB-led teams for monitoring transport and storage; immediate closure of any illegal mines.

Conclusion:

The Aravalli Hills remain under **robust protection** through the Ministry of Environment, Forest and Climate Change and coordinated efforts with state governments. The Government reiterates its commitment to ecological preservation, sustainable development, and transparency.

Contrary to alarmist claims, there is **no imminent threat to the Aravallis' ecology**. Ongoing afforestation, eco-sensitive zone notifications, and strict monitoring of mining and urban activities ensure that the Aravallis continue to serve as a natural heritage and ecological shield for the nation. **India's resolve is**

clear: the Aravallis will be safeguarded for present and future generations while balancing conservation with responsible development.

References:

Ministry of Environment & Climate Change:

[Report of the Committee on Uniform definition of Aravalli Hills and Ranges](#)

Supreme Court of India:

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