

6. Aravalli Hills – Geography

The Supreme Court accepted the recommendations of a Union Environment Ministry panel on the definition of Aravalli Hills to restrict mining

Background – Why the Supreme Court Intervened

A. Long-standing Environmental Pressure – The Aravalli Hills, one of India's most fragile ecological zones, have been under intense pressure for decades due to –

1. Legal and illegal mining
2. Real estate development & construction
3. Urban expansion of NCR (Delhi, Gurgaon, Faridabad)
4. Deforestation & land degradation

These activities have led to loss of green cover, damage to groundwater systems, and worsening air quality in the region.

B. Supreme Court Direction for Uniform Definition – In 2023, the SC noted inconsistencies in how different states defined the Aravalli range. It asked the Government to develop a uniform scientific definition so that the entire range could be clearly demarcated and protected. Without such definition, states arbitrarily reclassified hills to bypass environmental restrictions.

Earlier Definition by Forest Survey of India (FSI)

A. FSI Method (2010) – FSI used a 3-degree slope rule to classify landforms as “Aravalli Hills.” This allowed broader coverage and offered stronger environmental protection.

B. Technical Committee Modification (2024) – The committee increased the threshold to –

1. Slope ≥ 4.57 degrees
2. Height ≥ 30 m

This would classify around 40% of the Aravalli range as “hills”.

C. Purpose of Revision – Intended to bring scientific clarity. But some experts warned it could still exclude ecologically important low-rise ridges crucial for airflow, groundwater recharge, and habitat connectivity.

New Definition Approved by Supreme Court

A. New SC-Accepted Definition – The Supreme Court accepted the panel recommendation – Any landform 100 m or more above local relief will be considered part of the Aravalli Hills along with its slopes and adjacent lands.

B. Impact of the New Definition – This definition excludes ~90% of the Aravalli landforms from being legally classified as “Aravalli Hills.” FSI internal assessment – Only 1,048 hills across 15 Rajasthan districts are ≥ 100 m. This is just 8.7% of the actual Aravalli topography.

C. Importance of the 20 m Height Cut-off – Geomorphologists highlight that even low ridges (~20 m high) –

1. Act as wind barriers
2. Prevent dust storms from Thar Desert entering NCR
3. Maintain ecological corridors for wildlife
4. Aid groundwater recharge

The new definition ignores these crucial ecological services.

Aravalli Range – Geographic & Ecological Significance

A. Geography – Extends ~692 km from Gujarat → Rajasthan → Haryana → Delhi. India's oldest mountain range, remnants of early Proterozoic orogeny. Rajasthan constitutes nearly 70% of the total range.

B. Ecological Functions

1. **Natural Barrier to Desertification** – Prevents eastward spread of the Thar Desert. Shields Delhi-NCR from dust storms.
2. **Climate Regulation** – Influences micro-climates. Reduces urban heat island effects.
3. **Hydrological Importance** – Source of rivers – Sabarmati, Luni, Banas, and tributaries. Acts as a major groundwater recharge zone.
4. **Biodiversity Hotspot** – Contains dry deciduous forests, scrublands, unique grasslands. Home to leopards, hyenas, nilgai, foxes, porcupines, and diverse birdlife.
5. **Carbon Sequestration** – Forest patches absorb CO₂ and mitigate climate change.

Concerns Over the New 100-m Definition

A. Exclusion of 90% of Aravallis – Majority of the Aravalli system comprises low-elevation hills and ridges under 100 m. These will no longer enjoy automatic protection under the "Aravalli Hill" category.

B. Increased Risk of Mining & Construction – If classified as non-Aravalli land, the following could legally occur –

1. Mining leases
2. Construction projects
3. Real estate expansion
4. Land-use change

This could lead to irreversible ecological destruction.

C. Air Quality Impact on NCR – Low ridges are key wind breakers preventing desert dust entry from Rajasthan. Their removal may worsen Delhi's already severe air pollution.

D. Groundwater Depletion – Aravalli foothills act as major aquifer recharge zones. Mining and concreting will block natural recharge pathways, affecting water availability in –

1. Delhi
2. Gurgaon
3. Faridabad
4. Alwar
5. Southern Haryana

E. Exclusion of Important Districts – The Ministry's list of 34 Aravalli districts excluded many areas with well-known Aravalli ridges. Raises questions about scientific rigor and motive.

Supreme Court Decision – Accepted Recommendations

The Supreme Court accepted recommendations related to –

A. Uniform Definition of Aravalli Hills – Ensures a single scientific standard across states.

B. Prohibition of Mining in Core / Inviolable Areas – Certain ecologically sensitive zones will be strictly off-limits.

C. Sustainable Mining in Other Zones – Areas not part of "core Aravalli" may be opened for mining under

1. Strict monitoring
2. Environmental safeguards
3. GPS-based tracking to prevent illegal mining

Way Ahead (As Directed by the Supreme Court)

A. Management Plan for Sustainable Mining – The Ministry of Environment has been directed to prepare a Management Plan with –

1. Indian Council of Forestry Research and Education (ICFRE)
2. State governments
3. Scientific institutions

B. Balancing Development with Conservation – The SC recognises the need for –

1. Controlled, sustainable mining
2. Protection of ecologically sensitive regions
3. Restoration of degraded Aravalli landscapes

C. Long-Term Ecological Security of NCR – Ensuring Aravalli protection is directly linked to –

1. Delhi's air quality
2. Monsoon stabilization
3. Water security in North India

Conclusion

The Supreme Court's acceptance of the 100-m definition marks a massive shift in how the Aravalli range will be legally classified and managed. While the move aims to bring clarity and uniformity, it raises serious concerns as it excludes 90% of the fragile Aravalli ecosystem from protection. The future of the Aravallis now depends on how effectively India balances scientific definitions, environmental conservation, and economic pressures. The SC-directed Management Plan will be critical in ensuring sustainable mining and preserving the ecological integrity of this ancient range.

Source – <https://indianexpress.com/article/india/forest-survey-had-red-flagged-but-govt-took-green-shield-off-90-per-cent-aravalli-hills-10388228/>