

THE VANISHING ARAVALLIS

“31 hills or hillocks have disappeared. If hills will disappear in the country, what will happen? Have people become ‘Hanuman’ that they are running away with hills?”

Justice Madan Lokur

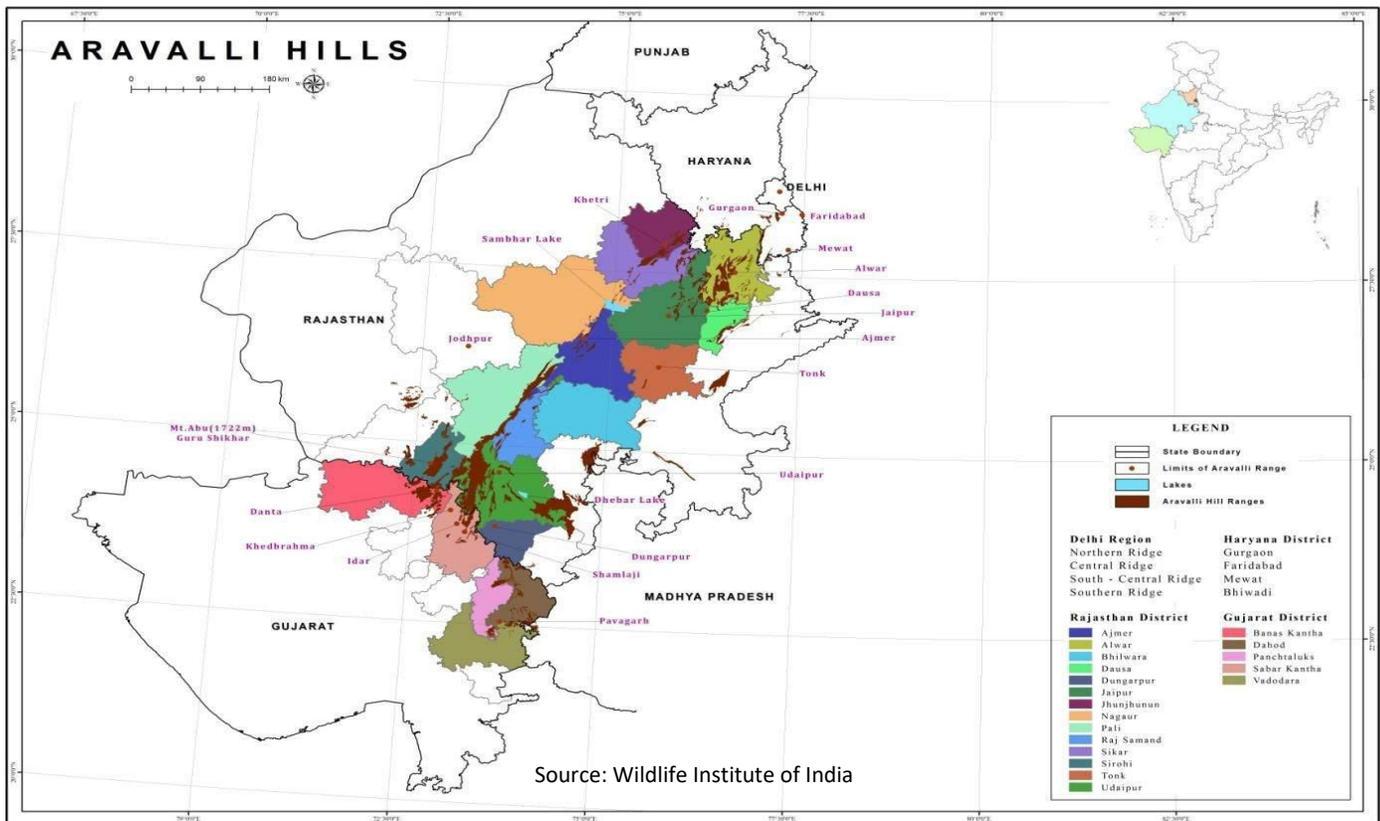


Image Source: Economic Times

INTRODUCTION AND BACKGROUND

The Aravalli hills of India are the oldest mountain range on earth. Spread across four states in India, the Aravallis stretch from South West in Gujarat, Rajasthan to North East in Delhi and Haryana and play an important role in shaping the west-Indian climate and biodiversity.

However, the Aravallis range as it stands today is threatened due to deforestation, land degradation, encroachments, developmental activities and mining. This has led to serious consequences like the desertification, increase in frequency of dust storms, drying up of lakes, loss of biodiversity, human wildlife conflicts, air pollution etc.



Many studies like the one by Wildlife Institute of India (WII)¹ also highlight that the shrinking green cover in the Aravallis is a major reason for the increase in the intensity of dust storms in the Indo-Gangetic plains. Besides, according to a report submitted by the Central Empowered Committee (CEC) to the Supreme Court, 31 out of 128 hills mapped by the Forest Survey of India have disappeared in the Rajasthan state. Expressing its shock over the disappearance of the hills and linking it to the possible cause of pollution in the Delhi NCR, the Apex Court passed an order during the proceedings of the Case T.N. GODAVARMAN THIRUMULPAD VERSUS UNION OF INDIA AND ORS². The order directed the government of Rajasthan to stop illegal mining in a 115.34-hectare area in Aravalli hills within 48 hours. Previously the court had also ordered the demolition of buildings in Faridabad's Kant Enclave that came up after August 18, 1992.³

¹ Mapping Land use/ Land cover Patterns in Aravallis Haryana with Reference to Status of Key Wildlife Species, May 2017

² Writ petition(civil) 202/1995

³ <https://www.hindustantimes.com/delhi-ews/supreme-court-orders-demolition-of-buildings-in-faridabad-s-kant-enclave/story-lsyxeZvDXIdinOFyQoFAyO.html>

Apart from the issues brought up and adjudicated by the judiciary, the CAG (Comptroller and Auditor General) report tabled in Rajasthan legislature earlier this year pointed out that between 2011-12 and 2016-17, minerals worth 204.5crore were illegally extracted in five districts of Rajasthan.⁴ The report also pointed out that besides flouting the court orders to stop degradation in the Aravallis and allowing mining without environmental clearance, the authorities had also failed to effectively implement the Rajasthan Mineral Policy, 2011 which aims to check illegal mining.

Various civil society organizations also recently protested against the National Highway Authority of India (NHAI) proposed road plan passing through the Aravalli Biodiversity Park in Gurugram. Last year, Wildlife Institute of India (WII) in a study on Haryana Aravallis found that developmental activities are leading to deforestation and threat to wildlife.

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<https://www.google.com/amp/s/www.thehindu.com/todays-paper/cag-pulls-up-rajasthan-for-rampant-illegal-mining/article22885542.ece/amp/>

Despite the various reports and judgments that have time and again documented the plunder, degradation and exploitation of the Aravallis, the hills continue to face several challenges. In this context it becomes

necessary to understand the significance of Aravallis and the major threats to the oldest fold hills. Further, this issue of Policy watch explores the possible impact of its denudation and proposes measures that need to be taken to save 'The Vanishing Aravallis.'

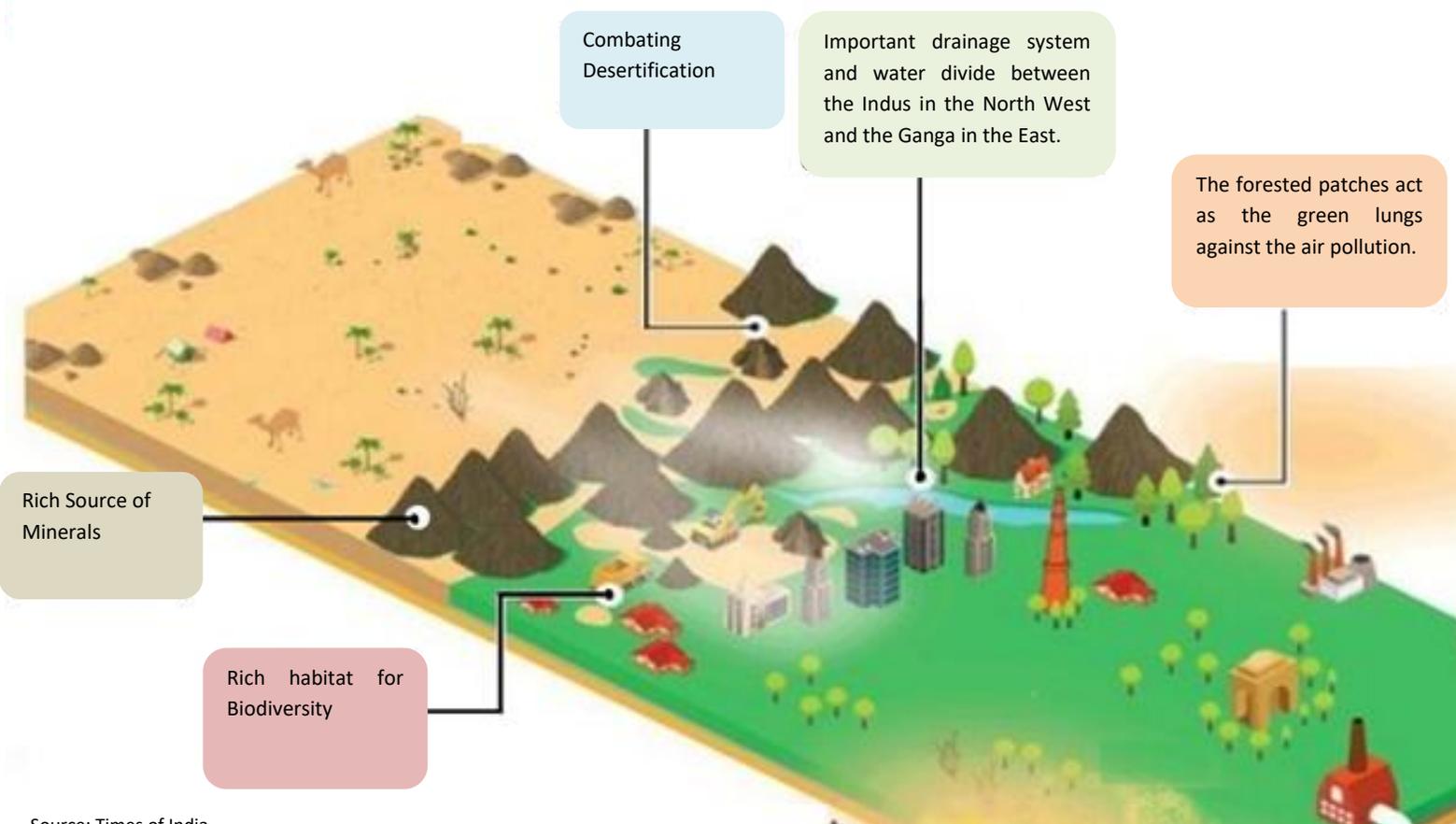


The Aravallis (Source: Down to Earth)

THE ARAVALLIS: SIGNIFICANCE

For more than three billion years, the Aravallis have provided a watershed between the Indus basin in the North West and the Ganga basin in the East. Its forested patches have acted as green lungs against the air pollution and soil erosion. The hills

also moderated the wind velocity and checked the spread of the Indian Desert (Thar) towards eastern Rajasthan, Indo Gangetic plains, Haryana and Western UP.⁵ It has also provided a rich habitat for wildlife and is a rich source of minerals like silica, quartz and other stones.



Source: Times of India (Edited Picture)

⁵ page i, Mapping Land use/ Land cover Patterns in Aravallis Haryana with Reference to Status of Key Wildlife Species, May 2017

MAJOR THREATS TO THE ARAVALLIS:

MINING

The Aravallis range is rich in non-ferrous minerals like Zinc, Gold, silver⁶ and ferrous minerals like Copper ore and lead, non-metallic minerals and building stones like marble, limestone etc. Lured by the huge mineral reserves and strong-layered stones in this region, both miners and constructors had been exploiting the ranges since the late years of the 20th century.⁷

Due to increase in urbanization, building and construction activities in and around Delhi, the demand for red Badarpur sand, silica, quartz and other stones has been growing constantly. Although, mining operations in the area of Aravalli hills of Rajasthan has been prohibited by honorable Supreme Court of

⁶Rathore, N.S., 2009. The study of the environment and its impact in the Aravalli Mountain Range in the study of the changing environment and its impact in the Aravalli Mountain Range in the western Region of India. Udaipur, Rajasthan.

⁷https://www.academia.edu/11937783/ADVERSE_EFFECTS_OF_MINING_IN_THE_ARAVALLIS_AND_THE_CREATION_OF_INDUSTRIAL_WASTE

India,⁸ but due to the great demand of construction materials; mining-legal and illegal, both have been rampant in the region, especially in Rajasthan and Haryana.

As reported by the CAG⁹, in eight operating leases in the jurisdiction of three Mining Engineer (ME)¹⁰ offices, the lease holders excavated 38.23 lakh MT minerals during April 2010 to March 2017 causing degradation of environment in the Aravalli hills. Scrutiny of the records of nine Mining Engineers AME/ME offices in Rajasthan by CAG revealed illegal mining of nearly 99 lakh MT during 2011-12 to 2016-17. The Department, however, could recover only ` 25.57 crore against recoverable amount of ` 204.50 crore.¹¹ Under the jurisdiction of these nine offices the government had registered 4,072 cases of illegal mining, illegal transportation

⁸ GOVERNMENT OF INDIA MINISTRY OF MINES LOK SABHA UNSTARRED QUESTION NO.3032 "PROHIBITED MINING AREAS"

⁹ Report of the Comptroller and Auditor General of India on Economic Sector for the year ended 31 March 2017 (Government of Rajasthan, Report No. 5 of the year 2017) (Tabled in State legislature in February, 2018)

¹⁰ Rajasamand-I, Rajasamand-II and Uaipur

¹¹ Report of the Comptroller and Auditor General of India on Economic Sector for the year ended 31 March 2017 (Government of Rajasthan, Report No. 5 of the year 2017) (Tabled in State legislature in February, 2018)

and illegal storage of mineral during 2011-12 to 2016-17 (see table below).

Name of office	No. of cases registered			Total quantity of minerals (in lakh MT)	Amount Recovered (₹ in Crore)	Outstanding amount (₹ in Crore)
	Illegal mining	Illegal transportation	Illegal storage			
ME Alwar	115	786	78	3.03	4.71	2.30
ME Jaipur	166	457	1	4.01	5.33	2.16
AME Kotputli	108	648	0	20.94	6.46	26.89
AME Neem Ka Thana	5	82	1	0.02	0.63	0
ME Rajsamand-I	8	37	0	0.005	0.18	0
ME Rajsamand-II	76	344	5	0.20	1.32	0.02
ME Sikar	206	379	1	67.22	4.94	147.15
ME Udaipur	106	433	14	3.45	1.93	0.41
AME Rishabhdeo	1	14	1	0.002	0.07	0
Total	791	3,180	101	98.87	25.57	178.93

Source: CAG Report No. 5 (2017), Government of Rajasthan.

The extent of mining as evident from these figures is such that the hills of Aravallis have almost been wiped out. *“The Faridabad Gurgaon Minerals has carried out excessive mining of stones in the Sirohi and Khori Jamalpur mines to cater to the entire construction material demand in the region, besides the Delhi market. In the village of Choorpur, the mafia, in collusion with a section of the villagers, the police, forest and mining departments, fit dynamites at dangerous heights and then blast the hills,*

thereby razing one of the oldest mountain ranges to dust”¹²

Although mining provides for material and resources needed for development of sectors like transport, construction, industrial etc, it has also led to serious concerns- social, environmental, physical and so on in and around the mining areas, as is also seen in the case of Aravallis. The situation is further worsened in the case of Illegal mining.

¹²https://www.academia.edu/11937783/ADVERSE_EFFECTS_OF_MINING_IN_THE_ARAVALLIS_AND_THE_CREATION_OF_INDUSTRIAL_WASTE

According to the CAG report¹³, '*mining without a licence, mining outside lease area, raising of minerals without paying royalty, etc. constitute illegal mining. It puts pressure on environment because these do not comply with any regulations or environmental conditions.*'

This has also been a serious threat to the protected wildlife areas as well. As seen during the proceeding of a case in the National Green Tribunal, (NGT) the petitioner presented the responses to Right

To Information (RTI), according to which only 2 out of the 85 mines operating near the Sariska National Park had been granted the RSPCB's consent to operate (CTO) whereas none had been given the given the Environmental Clearance (EC).¹⁴

This shows that in case of Aravallis, several laws, policies and the SC orders have been flouted and have a long history of not being implemented effectively thereby, leading to the making of a possible environmental disaster.

REGULATORY FRAMEWORK FOR MINING IN INDIA

The process or business of extracting ore or minerals from the ground is known as Mining. Mineral extraction activities in the State are regulated under the provisions of the Mines and Minerals (Development and Regulation) Act, 1957 and rules/policies made there under. The mining leases/quarry licenses are granted by the Mines and Geology Department (MGD) of the respective State Government. The applicant also has to obtain approvals before the grant of mining lease/quarry license for diversion of forest land for non-forest purposes and Environmental Clearance (EC) from Ministry of Environment and Forest (MoEF), Government of India (GoI). Beside this, all projects irrespective of being major mineral or minor mineral in area of five hectares to less than 50 hectares were required to have prior EC from the SEIAA and projects in area of 50 hectares and above were required to have prior EC from the MoEFas per the EIA notification, 2006. (This has been subsequently amended to include projects less than 5 hectares also.) A Consent To Operate (CTO) is also needed to be obtained from the State Pollution Control Board.

The lessee is also required to furnish reports on production of minerals and the measures for environmental protection to the Mines Department and the respective state Pollution Control Board.

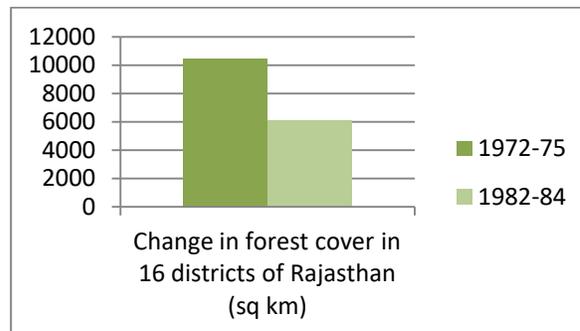
¹³ Report of the Comptroller and Auditor General of India on Economic Sector for the year ended 31 March 2017 (Government of Rajasthan, Report No. 5 of the year 2017) (Tabled in State legislature in February, 2018)

¹⁴ <https://www.downtoearth.org.in/news/ngt-orders-complete-ban-on-mining-in-rajasthans-alwar-48487>

Developmental Activities

Another major cause that has directly and indirectly threatened the hills is development activities and growing urbanization. This has directly pushed up the demand for infrastructure and therefore materials to build the same, which has led to rampant mining, mostly illegal, leading to razing of the hills to the ground.

Indirectly, this has posed a challenge in the form of encroachment and disturbing the hills ecosystem and as a result leading to large scale deforestation of the Aravallis forests. During 1972-75, the 16 Aravalli districts in Rajasthan recorded 10,462 sq km of area under various categories of forest cover. Less than a decade in 1981-84, the forest cover reduced to 6,116 sqkm.¹⁵



Data Source: Rathore, N.S. and Verma, N., 2013. Impact of climate change in the southern Rajasthan, India

Another recent example of this includes the proposal of a six lane road to enhance connectivity between Delhi and Manesar, to run along the periphery of the Aravalli Biodiversity Park in Gurugram. This invited protests from the civil society organizations as *'it would have a collateral impact on the flora and fauna, affect the water recharge potential and the air quality of the city.'*¹⁶

¹⁵ NRSA Summary Report, 1984. Mapping of Forest cover in India from Satellite Imagery 1972-75 and 1980-82, Summary Report of Rajasthan, NRSA, 1984. Cited in Rathore, N.S. and Verma, N., 2013. Impact of climate change in the southern Rajasthan, India. International Journal of Water Resources and Arid Environments, 39, pp.45-50.

¹⁶

<https://www.thehindu.com/news/cities/Delhi/nasscom-writes-to-khattar-gadkari/article25421135.ece>



Video Link: How Real Estate Greed Threatens Aravallis (Scroll.in)

Video Description: The video gives a brief history and status of the Aravallis and mentions the threat to Aravallis and its forests, in the form of mining and real estate. It focuses on the loss of Aravalli forests in Haryana and the lack of any legal protection to the forests. It also mentions the threat to Mangar Bani forests of Aravallis.

To watch, please follow the link:

<https://scroll.in/video/863609/video-how-real-estate-greed-threatens-to-wipe-out-the-ancient-forests-of-the-northern-aravallis>

Policy Lapses in Haryana

In the case of Haryana, several other issues also remain. One of these is of ownership and the process of privatization of land in the Haryana Aravallis.

In the 1970s, when changes were made to the common land ownership norms, instead of transferring the common land to the forest department, the state government, vested it with the village panchayats as per the Punjab Village Common Lands Act (applicable to Haryana). Later during 1970s-80s, revenue

department allowed the transfer of share in common land to the stakeholders.¹⁷ Thus, the land was apportioned among landowners and sold off at a low price, creating scope for resale of the land to make profits. According to environmentalists, this forms the basis of the privatization of Aravallis in Haryana, especially around Delhi where the real estate interest continues to be high.

Another issue is regarding the definition of forest. In T.N. GODAVARMAN THIRUMULPAD VERSUS UNION OF INDIA AND ORS¹⁸(1996 Judgment), the apex court laid down that the provisions of the Forest (Conservation) Act 1980, shall apply to all thickly wooded areas. However, the state of Haryana has failed to record or notify major parts of the Aravalli forests. The state has also failed to officially notify around 60,000 acres of the Aravallis as the Natural Conservation Zone (NCZ) as per the Regional Plan 2021 of the National Capital Regional Planning Board, formulated in 2005. The NCZ status allows construction only in 0.5 per cent of the area and its purpose as

¹⁷

<https://timesofindia.indiatimes.com/city/gurgaon/how-haryana-has-failed-the-aravallis/articleshow/65852078.cms>

¹⁸ Writ petition(civil) 202/1995

specified should be “regional recreational activities”.¹⁹

Thus without any legal protection, the forests of Aravallis continue to be exploited by the real estate lobby and threatened by deforestation.

The ineffective implementation of the policies, lack of political will and rising urbanization have given a serious blow to the Aravallis ecosystem. The various adverse impacts of this have been highlighted in the next section.

IMPACTS:

- 1. INCREASE IN STORMS AND POLLUTION:** A study²⁰ as reported in a WII report²¹ identified that 12 gaps that exist in between the range, due to the absence of adequate forest

¹⁹

<https://indianexpress.com/article/cities/delhi/aravalli-range-hills-mangar-bani-this-is-whats-left-of-a-forest-ecosystem-environment-wildlife-human-habitation-4901951/>

²⁰ Rathore, N.S., 2009. The study of the environment and its impact in the Aravalli Mountain Range in the study of the changing environment and its impact in the Aravalli Mountain Range in the western Region of India. Udaipur, Rajasthan.

²¹ Mapping Land use/ Land cover Patterns in Aravallis Haryana with Reference to Status of Key Wildlife Species, May 2017

cover and degradation of the hills, have emerged and expanded at faster rate. This may lead to frequent dust and sand storms in states like UP, Punjab, Delhi and may worsen the pollution levels in Delhi.²² Further, long-continued mining in this region of India has led to irreparable damage to the natural environment of this region and has created a huge amount of air and water-polluting industrial waste²³.



Video Link: Why is Delhi and North India engulfed in dust? (Down To Earth)

Video Description: The video explains the phenomenon of increasing dust storms in and around Delhi and proposes to save the Aravalli Forests to act as barrier to prevent the storms.

For complete video, please follow:

<https://www.youtube.com/watch?v=iUuydIUoEL4>

²²

<https://www.downtoearth.org.in/news/environment/behind-intense-dust-storms-in-north-west-india-lies-withered-aravallis-60873>

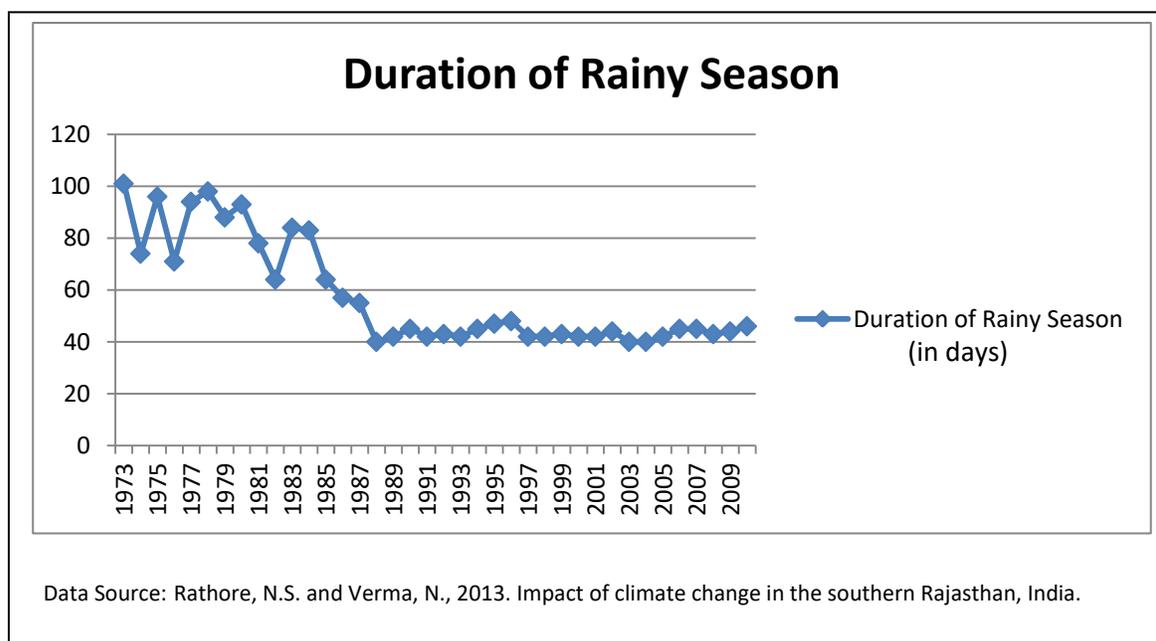
²³

https://www.academia.edu/11937783/ADVERSE_EFFECTS_OF_MINING_IN_THE_ARAVALLIS_AND_THE_CREATION_OF_INDUSTRIAL_WASTE

2. CHANGES IN RAINFALL PATTERN:

According to a study²⁴, the alarming deforestation and the removal of soil cover from most of the hill slopes have caused micro-climatic changes, particularly in the nature of rainfall. It

further uses data from Irrigation department, Government of Rajasthan to find that the duration of rainy season has shrunk from 101 days in 1973 to only 46 days in 2010. The following graph shows the declining trend.



²⁴ Rathore, N.S. and Verma, N., 2013. Impact of climate change in the southern Rajasthan, India. International Journal of Water Resources and Arid Environments, 39, pp.45-50.

RISK TO PUBLIC HEALTH: Due to crushing and mining of stones, the level of particulate matter increases. High level of particulate matter is attributed to increase in respiratory diseases such as chronic bronchitis and asthma cases.²⁵ Apart from this, the data of silicosis cases as seen cited in the CAG report²⁶ is another point in case. Silicosis is an incurable lung disorder caused due to inhalation and results in slow and painful death. The number of cases and death due to Silicosis in the five districts of Alwar, Jaipur, Jodhpur, Kota and Udaipur in the period of January 2015 to February 2017 is mentioned in the table below.

Year	Number of silicosis cases detected	Number of affected persons who have died
2013-14	304	01
2014-15	905	60
2015-16	2,186	153
2016-17	1,536	235
Total	4,931	449

Source: CAG Report No. 5 (2017), Government of Rajasthan

4. DRYING UP OF THE LAKES: Another serious ecological impact of mining includes digging or mining to a great depth causing puncturing of aquifers, thus disturbing the water flow regimes. Mining activities disturbed the catchment area of the natural drainage system²⁷. Lakes like the Soorajkund lake are drying eventually.

“Digging to that depth always impacts surrounding areas. It interferes with the flow of groundwater, which in this area flows towards the plains and mountains.”

-Manu Bhatnagar, Indian National Trust for Art and Cultural Heritage (INTACH).

²⁵ Monio M. and Iglesias D.A. (2004): Plants and the environment, ESPERE Climate Encyclopaedia, pp 05-12.

²⁶ Report of the Comptroller and Auditor General of India on Economic Sector, 2017 (Government of Rajasthan, Report No. 5 of the year 2017)

²⁷ Nathalia, Deepa & Suresh, Arjun & Singh, Neha. (2018). Monitoring land use/cover changes during the mining activities in Aravalli Hill Region. 10.13140/RG.2.2.28840.67849.

5. POPPING UP OF NEW LAKES:

The Bharadwaj lake in Faridabad is an example. Apparently named after the contractor who was allotted the mining contract in that area for red badarpur sand (red silica), the lake points towards a possibility of illegal mining when the Faridabad mining department records claim that no one named Bharadwaj was allotted a mining lease in that area. There are a number of such water bodies that have filled the depressions left by mine contractors.²⁸ They are a sign of interference with the natural ecosystem and puncturing of aquifers and the land left ravaged after being dug to a great depth.

6. DEGRADATION OF LAND AND

DEFORESTATION: The forests of Aravallis range are now the most degraded forests in India, most of the

indigenous plant species have disappeared.²⁹

7. LOSS OF BIODIVERSITY: There are almost 20 different wildlife sanctuaries in the Aravali hills range such as Ranthambhore, Sariska, Jamwa Ramgarh, Sawai Mansingh³⁰ and so on. Besides mining destroying the homes of the various wildlife, highways passing through the wildlife habitats have adversely affected the fauna in these forests. Fast moving vehicles kill these animals when they are move across these road stretches. The Gurgaon Faridabad expressway is one such road in Aravallis.³¹

²⁸ <https://www.downtoearth.org.in/news/mining-effect-aravalli-gets-new-lakes-41145>

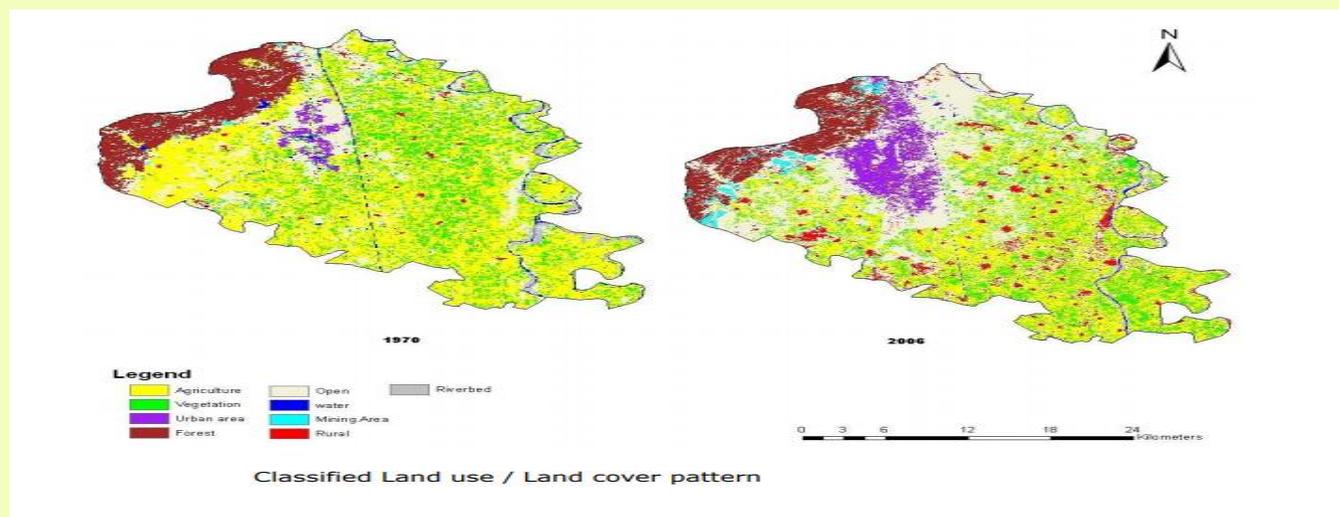
²⁹ Mapping Land use/ Land cover Patterns in Aravallis Haryana with Reference to Status of Key Wildlife Species, May 2017

³⁰ Dutta, Aakriti & Grover, Ankita & Bhardawaj, Avdesh. (2014). An Assessment of Effects of Mining in the Aravali Range, India. Nature and Environment. 19. 63-66.

³¹ Mapping Land use/ Land cover Patterns in Aravallis Haryana with Reference to Status of Key Wildlife Species, May 2017

CHANGES IN LAND USE PATTERN: THE CASE OF FARIDABAD

A study using remote sensing data was conducted to correlate land use changes and mining activities with surface water bodies in Faridabad district of Haryana and observe the changes over the 35 year period, 1970-2006. Faridabad is not only affected by rapid urban growth but also by changes in natural topography by sand mining.



The study concludes that major changes were observed mostly in areas formerly occupied by vegetation, agriculture, and forest, which were converted into residential use. These developments can be observed along the foot hills NW corner of the study area as shown in the above Fig. with urban sprawl towards East & South of Faridabad. This showed that between 1970 and 2006, urban area increased to 310.8%. Mining area both legal and illegal increased to 587.9%. Many water bodies are not present now e.g. Surajkund Lake. A decrease of 39.9% in water bodies has been observed. Thus, surface water which is the important source for the mankind is depleting in the region. Mining causes damage to the vegetation and surface water etc. The excessive withdrawal of water due to mining activity resulted in shortage of surface water. It is further noticed that agricultural area reduced by 40.6% whereas there was rise in rural area by 444% compared to 1970s which is attributed to settlement of population from erstwhile village land. Surprisingly the open area has increased by 70.6%. This increase in open area may be on account of no construction zone /parks gardens or cleaning of forest area/ vegetation/agriculture etc.

Source: Wadhawan, M., & Ahmad, S. (2010). Changes in Land use Pattern due to Mining in Faridabad (Haryana). *11th ESRI India User Conference*.

Link: www.esriindia.com/~media/esri-india/files/pdfs/events/uc2010/papers/Manish%20Wadhwan.pdf

CONCLUSION

The Aravallis is a unique ecosystem and is one of the oldest mountain ranges. Its significance cannot be seen only in terms of the economic gains from the minerals and the natural resources and their mining, but also in terms of the ecological services that the hills have been providing for centuries. As a barrier against the spread of desert and the lush green forests regulating winds and sustaining a rich wildlife biodiversity, the Aravallis have played an important role in shaping the geography of India.

Today as the hills face several challenges in the form of encroachment, mining and deforestation; its consequences on the rainfall, soil fertility, health of environment etc would be disastrous.

In fact the change in rainfall patterns, decrease in water resources in Faridabad district and the increasing level of air pollution in Delhi NCR have been well linked to the denudation of the Aravallis as mentioned in this article.

At a time when India is already facing acute environmental crisis in the form of climate change, lowering of groundwater table, increasing pollution of the air and water, drying up of lakes and other water bodies, loss of biodiversity and mass extinction of species and so on; it would be disastrous to invite further environmental catastrophe by exploiting the Aravallis and its ecosystem.

However, it would also be wrong to say that nothing has been done. The Supreme Court judgments and orders in cases like *MC. Mehta vs Union of India and Ors*³², *TN Godavarman Thirumulpad vs Union of India and Ors*³³, the EIA notification of 2006 and several other steps have been taken to conserve the Aravallis ecosystem. But these have not been adequately implemented and followed. The Haryana government's failure to notify the Aravalli forests of the entire range, the Rajasthan government's failure to check illegal mining have taken a heavy toll on the environment of the hills and the area surrounding it.

³² Writ petition (civl), case 4677/ 1985

³³ Writ petition (civl), case 202/ 1995

Therefore, any first step towards conservation of Aravallis would logically come from implementing the Court orders and legal framework in place and conducting effective EIA before providing clearances.

Further, the ecosystem of the Aravallis has already been destroyed to a great extent.

While legally permitted and sustainable mining and quarrying is suggested by some, when it comes to ecologically sensitive areas like the Aravallis, there must be a complete ban on mining and developmental activities in and within a specified range.

Jasleen Kaur

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