

# Environmental Impact of Rat-Hole Coal Mines on the Biodiversity of Meghalaya, India

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**Abstract:** The paper appreciates coal mining laws and policies applied by National Green Tribunal to ban traditional, artisanal and rat-hole coal mining in Jaintia Hills of Meghalaya (a state in India) in an attempt to conserve its environment and biodiversity. Meghalaya represents an important part of the Indo-Burma biodiversity hotspot which is one of the four bio-diversity hotspots of India and ranks 34th among the hotspots in the world. It is equally bestowed with rich deposits of coal, which can be found in the Khasi Hills, Garo Hills and Jaintia Hills districts. Coal mining from these districts is labour-intensive and involves digging narrow rat-hole sized tunnels that are four-feet high. The workers enter into the rat-hole in an extremely hazardous manner, setting aside the ergonomic principles for the extraction of coal. The legal framework of coal mining is governed by Mines Act, 1952, Mines and Minerals (Development and Regulation) Act, 1957, Mineral Concession Rules, 1960, Coal Mines (Nationalization) Act, 1973, Mineral Conservation and Development Rules, 1988 and Mines and Minerals (Development and Regulation) Amendment Act, 2015. However, these laws are not applied to Meghalaya because of its constitutional status enshrined in Sixth Schedule and Article 244 of the Constitution of India, 1950. Coal mining has brought employment opportunities, tribal sustenance and economic development that led to environmental degradation, disruption of ecosystems and biological diversity. The hazardous pursuits have been bereft of safety and ergonomic principle besides being oblivious of SDF of mining laws and policies in India.

**Key words:** Mine closure, rat-hole mining, mining laws, biodiversity, sustainable mining, Meghalaya.

## Introduction

The adoption of sustainable development under Brundtland Commission Report, 1987; Millennium Development Goals, 2000-2015; and Sustainable Development Goals, 2015-2030 was implored on the mining industry to switch over Sustainable Development Framework (SDF). This implies synergising environmental impacts, social auditing, health and safety of workers. It also calls for auditing

and scrutiny of Indian mining laws and policies in the SDF framework. The legislative framework of mining laws in India centres around *Mines Act, 1952, Mines and Minerals (Development and Regulation) Act, 1957, Mineral Concession Rules, 1960, Coal Mines (Nationalization) Act, 1973, Mineral Conservation and Development Rules, 1988 and Mines and Minerals (Development and Regulation) Amendment Act, 2015*. However, these laws are not applied to the rat-hole coal mining in Meghalaya state because of its special

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status enshrined in Sixth Schedule and Article 244 of the *Constitution of India*, 1950. In the name of the legal policy of mining in Meghalaya, there exists only *Meghalaya Mines & Mineral Policy*, 2012 and *Meghalaya Mineral Development Corporation Ltd. Notification*, 2015. Hence, the rat-hole coal mining goes unabated under the tribal people's property right and cultural right to extract and exploit coal and other mineral resources in the state.

The inherent conflict of national mining and state laws has been a bone of contention in courts besides the encroachment in cultural autonomy of the tribal under the autonomous district councils (ADCs) of Khasis, Garo and Jaintia hills in Meghalaya. The environmental impacts of rat-hole coal mining are precipitate acid mine drainage, leaching of heavy metals, organic enrichment and silting by coal and sand particles (Figure 1). The roadside dumping and coal transportation of coal is a major source of air, soil and the ecological degradation of the tribal's private lands of West Garo Hills, East Khasi Hills, West Khasi Hills and Jaintia Hills districts of Meghalaya (Guha, 1991). The paper critically appraises coal mining laws and policies in the context of the National Green Tribunal (NGT)'s order of banning traditional, artisanal and rat-hole coal mining in Jaintia Hills and subsequently opening order of the Supreme Court after paying 100 crores as fine for environmental mitigation and biodiversity reclamation.

## Meghalaya's Biodiversity and Rat-Hole Coal Mining

Meghalaya represents an important part of the Indo-Burma biodiversity hotspot which is one of the four bio-diversity hotspots of India and among the 34<sup>th</sup> in the world. It is a state in north-eastern India possessing rich deposits of coal estimated to be 576.48 million tonnes. It is a subtropical forest eco-region encompassing montane and tropical forests, also containing a huge biodiversity of mammals, birds and plants (Tiwari, 1998). It is a mountainous strip in the eastern part of India, which is about 300 km long (east-west) and 100 km wide, with a total area of about 22,429 km.

### Meghalaya as a Biodiversity Hotspot

India is one of the 17 mega-diverse regions of the world contributing 2.4% of the world's land area but harbours 6.7% of the animal species and 9.13% of the floral diversity of the world (Mishra, 2004). Meghalaya means 'abode of clouds' whose biodiversity ranges from vegetation types from tropical rain forest in the foothills to Alpine meadows and cold deserts. The state represents an important part of the Indo-Burma biodiversity hotspot which is one of the four bio-diversity hotspots of India and ranks 34<sup>th</sup> in the world (Chatterjee, 2006).

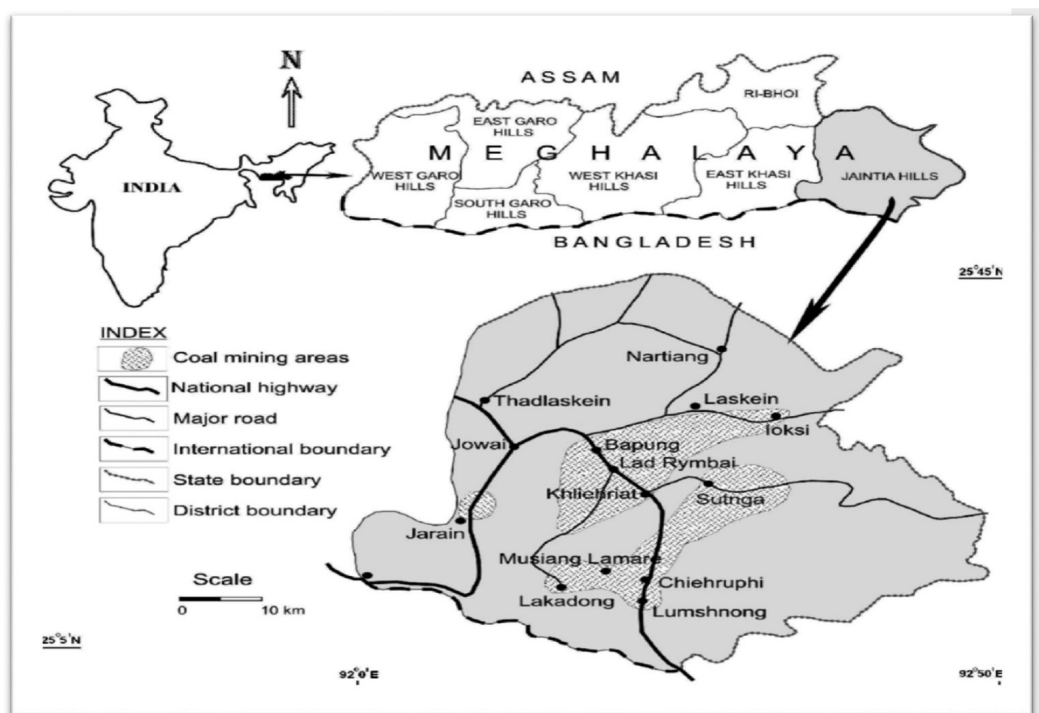


Figure 1: Rat-hole coal mining in Meghalaya.

It is bestowed with high species diversity and endemism (Jeeva, 2006). There are a total of nine Bird Life International sites in Khasi Hills, Nohkalikai Falls and Nohsngithiang Falls. The Biodiversity Management Committees (BMCs) of state has prepared 25 People's Biodiversity Register (PBR) on biological resources, (Nomani, 2019a) medicinal plants and traditional knowledge in consultation with local people (Amirmahmoudi, 2019). It has also declared a forest patch of 16 ha area, in Dorbar and Umkon village in Ri-Bhoi district as Biodiversity Heritage Sites (BHS) under Section 37 of *Biological Diversity Act*, 2002 (Amirmahmoudi, 2018).

### Coal Mining in Meghalaya

Meghalaya is simultaneously endowed with large deposits of valuable minerals such as coal, limestone, kaolin, clay, granite, glass-sand and uranium, minerals such as coal, limestone, kaolin, clay, granite, glass-sand and uranium (Shimray, 2007).

It is located on the southern fringe of the Shillong plateau and distributed into seven districts (Figure 2). There are three coal-rich deposits namely Khasi Hills, Garo Hills and Jaintia Hills districts with thriving artisanal and rat-hole mining (Dasgupta, 2002). This labour-intensive form of mining involves digging narrow rat-hole sized tunnels, usually three to four feet high (Figure 3). The workers enter into the rat-hole in an extremely hazardous manner and setting aside the ergonomic principles for the extraction of coal (Nomani, 1996).

### Mining Laws and Policies

The legislative framework of coal mining is governed by *Mines Act*, 1952, *Mines and Minerals (Development and Regulation) Act*, 1957, *Mineral Concession Rules*, 1960, *Coal Mines (Nationalization) Act*, 1973, *Mineral Conservation and Development Rules*, 1988 and *Mines and Minerals (Development and Regulation) Amendment Act*, 2015 (Ministry of Mines, 2009). However, these laws do not apply in Meghalaya because of its constitutional status enshrined in Sixth Schedule and Article 244 of the *Constitution of India*, 1950 (Nomani, 2000a). In the regulatory framework, we find two major policies which include the *Meghalaya Mines & Mineral Policy*, 2012 and *Meghalaya Mineral Development Corporation Ltd. (MMDC) Notification*, 2015. The denudation of forest cover, pollution of air, water and soil and degradation, shrinking of agricultural lands are some of the conspicuous environmental implications of rat-hole coal mining in Meghalaya (Nomani, 2019b).

Coal mining has brought employment opportunities, tribal sustenance and economic development but resulted in environmental degradation, disruption of ecosystems and biological diversity. The hazardous pursuits have been bereft of safety and ergonomic principle besides being oblivious of SDF of mining laws and policies in India.

### Rat-Hole Mine Closure in Meghalaya

It is under this backdrop, the NGT principal bench at New Delhi ordered dated April 17, 2014 blanket ban on the unscientific and unregulated rat-hole mining in the Jaintia hills (Chauhan, 2016). In order to trace the enviro-legal implications of rat-hole mine closure on the biodiversity, it is imperative to dwell on the concept of mine closure for due incorporation of SDF framework in mining laws and policies of India in general and Meghalaya in particular. The planning for mine closure in principle requires EIA in pre- and post-closure phase and given under the flow chart below (Chabukdhara, 2016).

The mine closure should ensure environmental resources conservation, public health and safety, minimisation of adverse socio-economic impacts and ensure sustainability in the region. The banning order has triggered subsequent judicial interventions because of mine accidents, hazardous conditions and enigma of compensation to workers and tribal people.

The NGT ban on rat-hole coal mining in Meghalaya is oblivious of environmental as well as economic fall outs of closure. The bench issued direction to deputy commissioners of ADCs to seal all coal pits before allowing these to be transported to other destinations (Figure 4). The royalty earned from the sealed and extracted coal would be distributed between the ADCs and Government of Meghalaya. However, the amount recovered after banning coal deposits will be used for resource conservation and biodiversity protection of the region. A cursory glance on Table 1 enumerates different directives and orders passed on the regulation of rat-hole coal mining in Meghalaya for our understanding.

A critical analysis of judicial intervention is beyond the scope of the present paper. However, all these orders have cumulatively taken due cognizance of adverse environmental impacts and biodiversity loss (Figure 5). But unfortunately, these directives have not addressed the seminal issues of mine closure procedures prescribed under the theoretical and legal plane (Otto, 2009).

Therefore it is not surprising that the social and economic ramifications of mine closure to the regional



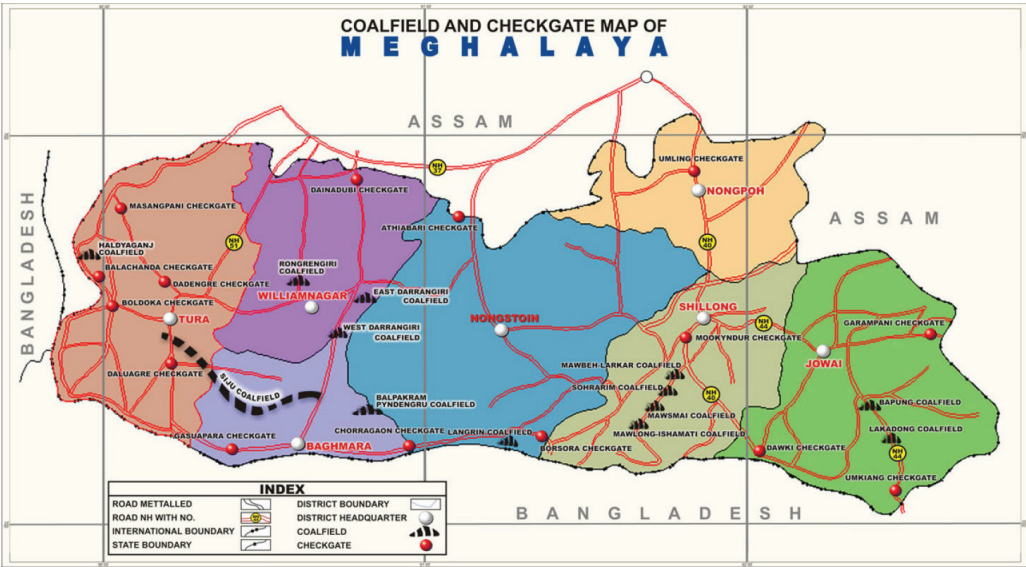


Figure 2: Coalfield maps of Meghalaya.



Figure 3: Rat-hole coal mining.



Figure 4: R quarrying process.

development and environmental damages were not assessed properly (Sasson, 2000).

Environmental Impact on Banning of Rat-Hole Mining

The enviro-legal assessment of judgment reveals that the pre- and post banning orders came heavily against the rat-hole coal mining, however, it protected the environment and conserved biodiversity. The

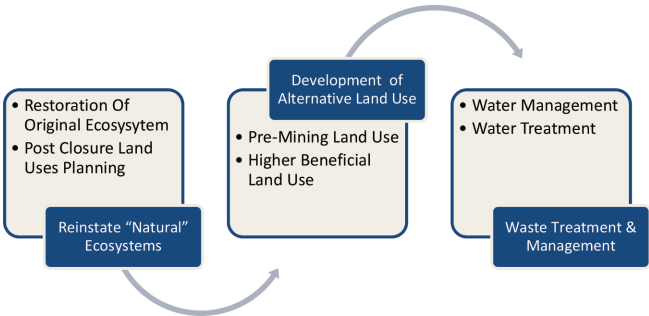


Figure 5: Environmental impact assessment of mine closure.

Table 1: List of orders and directives of NGT and Supreme Court on rat-hole coal mining in Meghalaya

S. No.	Chronological order	Decision making body	Nature of dispute
1.	July 6, 2012	National Green Tribunal	Coal Mine Accident Nengkol in South Garo Hills District
2.	17/04/2014	National Green Tribunal	Rat-Hole Coal Mining in Jaintia Hills, Meghalaya
3.	09/06/2014	National Green Tribunal	Illegal, Unregulated and Indiscriminate Rat-Hole Mining
4.	13/12/ 2018	National Green Tribunal	Ksan Mining Accident
5.	04/01/2019	Supreme Court	Miners Trapped in Illegal Mine

orders came as a realisation of the human right to an environment of workers and tribal (Nomani, 2000b). The petitioner's major complaint to the NGT was the acidic discharge from coal mines caused water pollution of Kopili River Downstream (Singh, 2012). It was also documented that unscientific mining has denuded forest areas, made the biodiversity extinct, caused soil salinity and erosion, and polluted air, water and land. The 'rat-hole' method of mining has devastated the environment, biodiversity and ecosystem of the state (Swier, 2003). It is quite surprising to note that the apex court had refused the miners to transport the extracted coal. Ostensibly it appears that heaps of coal deposits will lead to pollution in the area. But the logic behind its sealing is to recompense ecological loss out of the proceeds of the coal deposit in Meghalaya (Internet, 2019a). This is compounded by the post-closure environmental impact of indiscriminate dumping of coal, converting it to a breeding ground of diseases (Figure 6). It was under this backdrop that the Supreme Court, on July 3, 2019, directed the state authorities to hand over illegally extracted coal to Coal India Limited. The company was allowed to auction and deposit the funds with the state government. On the other hand, the NGT directive was issued for setting up of a six-member committee to prepare an inventory report of the extracted coal for valuation and assessment. This is culminated by the imposition of a fine of Rs 100 crore as post-closure initiatives to mitigate environmental damages (Lahiri, 2007).

Meghalaya's government has maintained in the Supreme Court that it is in favour of regulating coal mining in the constitutional conspectus of the Sixth

Schedule which equally empowers the tribals to protect, preserve and promote their culture and traditions. Keeping in view the special status of Meghalaya under the *Constitution of India*, 1950 the NGT balanced the economic interests on privately and community owned land by rolling back to mining operations to continue in the state on privately and community-owned land. The only rider attached was the permissions from the concerned authorities and undertaking by the Government of Meghalaya for regulating coal mining in the state (Internet, 2019b). The state government wanted to strike a balance between ecology, economy and society by invoking Para 12-A (b) of the Sixth Schedule of the *Constitution of India*, 1950. It reads as under:

*Application of Acts of Parliament and of Legislature of the State of Meghalaya to autonomous districts and autonomous regions in the State of Meghalaya' of the Sixth Schedule empowers the President of India to direct through notification, that any Act of Parliament shall not apply to an autonomous district or regions in the State or shall apply to such district or region or any part thereof subject to such exceptions or modifications as he may specify in the notification and any such direction may have retrospective effect.*

In line with this strategy, Meghalaya's Government adopted a resolution in the state assembly urging the Centre to promulgate a presidential notification to exempt Meghalaya from the application of central enactments such as *Coal Mines Nationalization Act*, 1973, *Mineral Conservation and Development Rules*, 1988 and *Mines and Minerals (Development and Regulation) Amendment Act*, 2015 to continue the pernicious pursuits of traditional and artisanal rat-hole coal mining in the state.

### Shift in Mine Closure Policy and Law

It is quite surprising to note the Government's response in the wake of the banning order of the NGT and Supreme Court. Instead of taking it as an opportunity to refurbish its mineral laws and policies, it prefers to hide in the cloak of the constitutional veil of special status. Nowhere in the world have we found such a precedent to have a refuge in the name of the constitution to keep environmental and sustainable development goals as ever-receding horizons. The state has not taken lessons even from the *Meghalaya Mines and Minerals Policy*, 2012 which promotes scientific and planned



**Figure 6: Mine closure policy framework.**

utilisation of mineral resources, eco-friendly mineral resource extraction and socio-economic development (Internet, 2012). The policy named Environment Management Plan (EMP) was adopted for mitigation of environmental damage, restoration and reclamation of mined areas, storage and disposal of mine-spoils. The waste dumping sites were to be filled by re-vegetation and land covered by trees. The safeguard prevention and control of water pollution are to be adopted for the containing gaseous pollutants, soil erosion and landslides to give effect to EIA and post-closure mining (Nomani, 2019c).

It is a significant reference to the mine closure plan which emphasises on post-mining measures for restoration of mined landscapes, control of subsidence, control of pollution of surface and ground water, especially from acid mine drainage and afforestation of the mined land and surrounding areas. Thus, the policy discerns an attitudinal shift by balancing competing demands of environmental conservation as well as the exploitation of mineral resources with social-oriented tribal development in the constitutional framework of the Sixth Schedule to the *Constitution of India*, 1950 and the legislative framework of *Meghalaya Land Transfer (Regulation) Act*, 1971 and mining laws. It was only in aftermath of the NGT Order in 2014, that the Meghalaya Mineral Development Corporation Ltd. (MMDC) has notified on June 2015 Appointment of Mining Consultant in collaboration with Directorate General of Mines Safety, Dhanbad (DGMS) for carrying out mining operations in different parts of the state in June 2015 (Internet, 2019c). The mine closure plan under the Policy makes provision for reclamation and restoration of the land, bringing land into productive use, reducing soil erosion through vegetative means; improving the water regime and recharge potential, and mitigating the adverse visual impact.

### Conclusion

The mine closures of rat-hole coal mining in Meghalaya are desired to be monitored in multi-stakeholding approach through a transparent process enabling tribal communities in the pursuits of SDF of mineral development. The current discourse of sledge hammer banning of rat hole-coal mining from pollution containment, health and safety to ecological system restoration seems oblivious of the mine closure planning and integration of sustainable development (Warhurst, 1999), environmental impact assessment (EIA), social impact assessment, and strategic impact

assessment (SIA) (Nomani, 2011) in the mine life cycle in SDF framework (IIED, 2002). Despite the salubrious provisions of *Meghalaya Mines and Minerals Policy*, 2012 and *Meghalaya Mineral Development Corporation Ltd.(MMDC) Notification*, 2015 the state has not enforced central mining laws and policies to combat pernicious pursuits of rat-hole coal mining on the environment and biodiversity of Meghalaya. It is submitted that the Indian mining laws, in general, and Meghalaya's mining laws, in particular, are in the process of churning to adopt the SDF framework under its federal framework of environmental laws. There is no denying that the banning order has a salutary impact on the unscientific rat-hole mine closure, which are legally untenable, environmentally unsustainable and ergonomically hazardous. However, it has not dwelt on the wider ramifications and circumspections of mine closure procedure adumbrated in the mining laws and policies in India and abroad. Therefore, the regulatory framework of mine closure has to be essentially incorporated in banning order and its aftermath legal adjustments failing which it will travesty of not only the mine developers, workers and people's right but to the ecology, biodiversity including climate justice.

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