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Mining and Environmental Degradation: A Case Study of Kund Slate Mining Activity, Rewari, Haryana

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Abstract – Mining is second largest industry after agriculture at all scales and regions and it has played a vital role in the development of Civilization from ancient time. Most of the valuable material like metal, chemicals, fuel for energy, rocks and stones for building, all comes from mining. Mining is very long and complex process and involves several steps between the sampling and excavation of mineral ore to concentration and processing of the final products, leading to a variety into land degradation, followed by the continuing air, noise and water pollution till the final product is available.

Kund slate mining area is located about 25 km. in the west of Rewari at Rewari-Narnaul State Highway. It lies between 28°7'30"-28°12'30"N latitudes and 76°20'-76°26'E longitudes in the survey of India toposheet no, 53 D/8. The area is represented by moderate to steep high hills of slate and shaly Formation with an average elevation of about 40 metres from ground level. The contours of the area are distributed from 290-350m.

The regional geology of the area is represented by different types of formation belonging to Delhi Super group. The slate of the area is exposed in the form of hillocks shows a general Strike trend of N 10° E to N 20° E with moderate to steep dips of 50° to 80° towards N80° to N70° W. The slate reserve of the area is found in the form of vein extended North to South about 8 km. long and 300 meter wide.

The unplanned, unscientific and ruthless mining activity of slate stone has degraded more than 2400 hect. of land (Forest and Agriculture Land) in the form of mining and dumping overburden/mining waste. Besides this decline in biodiversity air, noise and water pollution, scarcity of animal fodder, lowering of ground water level are the most obvious effects of Kund slate mining area.

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INTRODUCTION

The southern part of Haryana i. e. Rewari district is bestowed with abundant deposits of high quality slate stone. The hill range having slate stone extends NE to SW toward Behali Bas area and further passes into Rajasthan. School Slate and multicolour slate tiles are the chief products of this mining area, that are used for roofing, flooring, paneling_tables as decoration wall tile etc. These mined material after cutting and polishing is exported to the countries like Australia, Newzeland, Belgium, Japan, west Germany etc.The mining area is surrounded by densely populated settlements Bhalki-Majra, Kund, Manethi, Palra, Basduda, Kathuwas, Mahetawas, Cheeta Dungra, Mandhan and Nangwas.

STUDY AREA

Kund Slate mining site is located at the distance of 25km. from Rewari in the west of Rewari at Rewari-Narnaul state highway. It lies between 28^0 7^l30^{ll} to 28^0 12^l 30^{ll} N latitudes and 76^020^l to 76^026^l E longitudes in the survey of India toposheet No. 53D/8 with scale of 1:50000(2cm=1km) The mining area spreads NE to SW in a narrow strip. The length of the mining area is about 2km, breadth is 300m with an average depth of 50m. There are more than 300 active mines and about 80 abundant mining pits. A broad gauge railway line connects the mining area to Delhi, Jaipur and Bombay.

GEOLOGY

The regional geology of the area is represented by different type of formation belonging to Delhi Super Group. Stratigraphically the rocks formation of Delhi Super Group composed of arenaceous, argillaceous and calcareous sediments.

General trend of the beds in the area is N-S to NNE-SSW with high dips varying from 50^0 to 80^0 towards west. The rocks are highly folded with the major fold axis striking N-S to NNE-SSW and plunging 50^0 to 70^0 toward south.

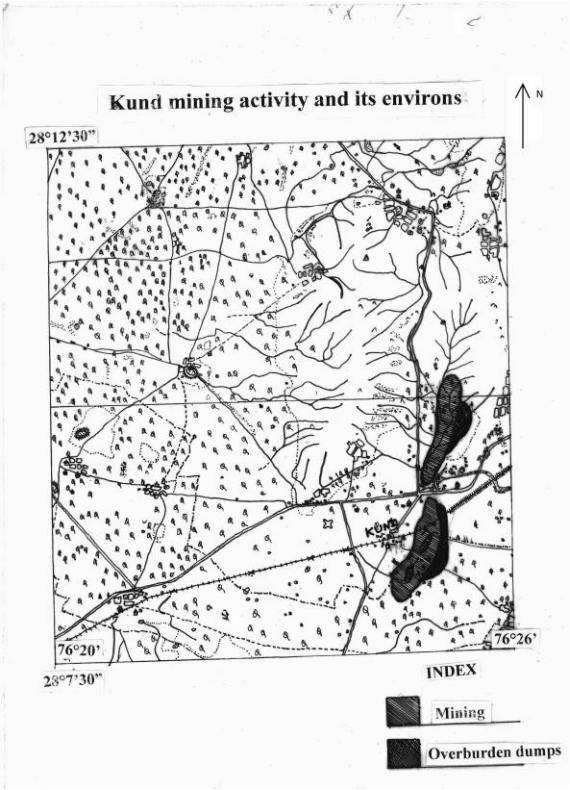
The slate mineral of the area as exposed in the form of hillocks show a general strike trend of $N10^0E$ to $N20^0$ E with moderate to steep dip of 50^0 to 80^0 towards N 80^0 to N 70^0 W. Three quartz veins are found within slates running in the same direction. The slates are found over lie shaly formation (silt stone) and sandy phyllites which form the foot wall rock.

AGRICULTURE LAND

The Kund slate mining area is surrounded by fertile agriculture land. These Fields provide double crop in a year like musterd, Bajara, Gram,Wheat, Jawar, Guwar etc. These fields are under irrigation by wells, tubewells, and canals. The most of the population of this area is engaged in agriculture.

PHYSIOGRAPHY AND DRAINAGE

The area of Kund is marked by moderate steep high hill of metamorphosed shale and allied formation which are surrounded by fine grained blown soil. The average elevation of the area is about 40m. From ground level. The mining area lies on contour height of 300m. The general slope of area is north to south. In the northern part of the mining area there is a continuous hill range of average 450-470m height. The highest altitude is 472m from msl that is in Nn part of mining. The western part of the mining area is almost plain having contour height of 300m.



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In the area the drainage system is dentric. A major seasonal rivulet crosses the mining area. Another major rivulet flows towards west of the mining site. Most of rivulets in the region are of first and second order.

NATURAL VEGETATION

The northern part of the mining site is covered by dense vegetation that is under open forest having trees of Babool (*Accacia orabica*), Bargad (*Ficus bengalensis linn*), Khejri (*prosopis spiccigeralinn*), Peepal (*ficus religiosa*), Neem (*azadiraehta indca*). The Sn,En and Wn parts of the mines are under agriculture fields that have scattered vegetation dominated by trees of Khejri and Babool.

MINING AND ENVIRONMENT

Mining is the second largest industry after agriculture at all scales and regions and it has played a vital role in the development of civilization from ancient times. Most of the valuable materials for man such as metals, chemicals, fuel for energy, rocks and stones for building, all come from mining. However, mining is also an environmentally damaging activity, causing large scale deforestation, fleeing away of wildlife and even extinction of some forms of it and destruction of other natural resources. Mining creates huge wastes and requires considerable space for their dumping and thus triggers a number of environmental problems like land degradation, water and air pollution, land collapse and even

drop in water table. Huge quantity of air and water pollutants is also added to the environment during beneficiation processes of minerals. In addition to the construction of roads, slurry dams and lagoons for waste stabilization, civil construction etc. also cause incalculable damage to the environment.

As a matter of fact, the conflict between mining activity and its external environment has been intensified in recent years. Consequently mining has lead to the destruction of not only its own resources but also of other productive natural resources such as land, water, air and vegetation. These physical changes, let lose and aggravated, in turn have initiated grave chemical and biochemical changes, many of which are yet to be understood by the man. The extent of such an environmental impact can range from scarcely perceptible changes to highly obstructive impediments.

Mining is a very long and complex process and involves several steps between the sampling and excavation of mineral ores to concentration and processing of the final products, leading to a variety of environmental problems. The degeneration begins with the extraction of minerals resulting into land degradation followed by the continuing air and water pollution till the final product is available. The significance and magnitude of the environmental pollution caused by mining depends on the nature and extent of natural resources found in the area. Its geological and geomorphological setting, nature and type of mineral deposit. Impact of Kund mining activity on environment can be summarized as :-

IMPACT OF MINING ON TOPOGRAPHY

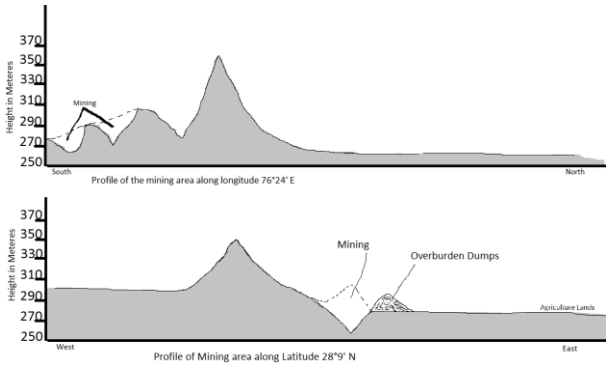
Kund slate mining activity has altered the original landscape of the area. Here mining is done across the hillocks and huge quantity of waste material has been dumped in the Wn as well as En part of the piedmont area. These dumps of overburden look like a hillocks. The contours have been disturbed by the mining activities.

One can easily observe rills on the overburden dumps. In the core area mining activities steps down about 50m from the ground level and creates long narrow ditches. In rainy season these ditches are filled with rain water and contaminates the water which percolate down the ground.

IMPACT OF MINING ACTIVITY ON SURFACE AND GROUND WATER REGIME

The Kund mining area is drained by seasonal rivulets of first and second order. There are 35first order and 6 second order rivulets. Due to mining activities of slate stone 12 rivulets have been disturbed by dumping of overburden,waste of mining activity and mining itself.

The ground water channels have also been disturbed by the mining. The mining pits have been dug up to ground water level, so the acquifer is punctured and ground water is ponded in mining pit. In the area there are about 250 edge cutting machines to polish and cutting slate in different sizes. In this operation, ground water is regularly used, resulting lowering of ground water level of the region.



IMPACT OF MINING ON AGRICULTURE LAND

Agriculture fields near the mining area are affected in several ways. Most of these fields near mining do suffer adversely by fly rocks, rolling down of boulder, dust deposition, siltation and dumping overburden. Agriculture fields with in the radius of 500m found most affected. About 15-20% decline is noticed in productivity of agriculture fields. By the mining and its allied activities like crushing, polishing, packing units and transport about 2400 hect. of agriculture land is affected adversely directly or indirectly.

DAMAGE TO HUMAN SETTLEMENT AND LIFE

Due to vibration generated by blasting activity and heavy earth moving machinery wells and mud houses of the nearby area collapse, cracks develop in the walls and roofs. About 150 houses have been badly affected in the reigon. The settlements within 500m radius from mines noticed affected maximum. Beside these, accidents take place by the fly rocks, collapsing mines, rolling down of stones etc. About 100 accidents occur annually.

NOISE POLLUTION

Kund mining activity creates a lot of noise which is very harmful for mine workers as well as for near by population and wildlife. Noise pollution particularly creates by blasting, drilling, loading, unloading, removing overburden, cutting machines, polishing units and earth moving machineries.

AIR POLLUTION

The airborne particulate matter is the main air pollutant contributed by mining. Apart from the fine

sized solid particles resulting during drilling, blasting, mining, transportation, particulate matter is released into the atmosphere due to wind action from mineral and waste dumps as well as tailing disposal area. The transport of mineral from mine through Katcha temporary road provides further fillip to the problem. Mining area nearby state highway creates maximum air pollution.

SOCIO ECONOMIC IMPACT OF MINING ACTIVITY

Opening of mining industries has both positive and negative socio economic Implication . slate mining activity rises the income of local people and to some extent change their social status. In the area near about 5000 people engaged in mining and its allied activities like cutting, polishing, packing, transportation etc. Due to mining operation the area enjoying infrastructural development like communication, schooling, marketing, medical facility, road and rail transport etc. On the other hand some social evils as alcohol consumption and gambling are some of its negative consequences.

ENVIRONMENTAL MANAGEMENT PLAN OF MINING ACTIVITY

The basic theam a behind environmental management is broadly related to the rational adjustment of man with nature, the skillful utilization of environment without disturbing the ecological balance. For sustainable development it is moral responsibility of present generation to protect and conserve the natural resources as well as ecosystem. There are two approaches for environmental management- Preservative and conservative. The first approach pleads for non interference by man in physico-biotic world. On the other hand the second approach is relating to man's adjustment and possible accomplishment. In the mining activity areas the second approach is the best way to check and maintain ecological balance. The environmental management depends upon the nature of mineral, topography of the area, land use pattern, climate, drainage and population density of the area. For Kund mining activity the following measures should be adopted to minimize detroiatation of environment :-

- Overburden of newly opening mines should be filled in abundant mining pits.
- Overburden should not dumped towards agriculture fields i.e. En side of mining area
- Mining should be banned in the Nn part as this area is under open forest and have dense vegetation as well as habitat of wild life.
- To minimize the run off and erosion of overburden dumps, the slope should not be more than 300.
- Overburden dumps should be covered by plantation.
- To minimize dust pollution either water should be sprayed regularly on the local transportation routes or connects with metalled road.
- To avoid accidents the mining area should be covered by boundary wall and the slope of mining pits should not be more than450.
- Mines should not dug below the ground water level.
- The blasting activities should be prohibited in night and morning it should be practiced in afternoon.

REFERENCES

Agarwal, M.C. (1980). Environmental Pollution due to Surface Mining. Indian Mining and Engeneering JI., 19, (102): pp. 13-18.

Boulton, R.J. (1971). Open cast coal Mining and conservation Agriculture 78, pp. 132-51.

Dhar, B.B. (1986). Assessment and Analysis impact of mining on ecology int. symp. on environmental problems in regions of mining and associated activities, Jan. 10-16, New Delhi.

Dhar B.B. and Ratan, S., 1985. Impact if surface mine blasting on surrounding environmenta, Nat. Seminar on Indegenious development of Mining Explosive and accessories, policies and programmes, Feb. Vigyan Bhawan, New Delhi.

Ghosh, A.K. (1982). Environmental control and the Mining Industry.

Ghosh, Rekha (1990). Land Restoration Measures in area damaged by unplanned mining, A.P.H., New Delhi-26.

Lodha R.M. Aggarwal V., Lodha P. (1996). Mining and Environmental stress, Himanshu Publishers, New Delhi.

Lodha R.M. (1997). Environmental and Industry-An Alarm, Shiva Publishers Distributers, Udaipur.

Mathur, H.N. (1978). Environmental Comnservation and Mining, Indian J. Forestry.

Trivedi, R.K. (1990). Impact of Mining on Environment, A.P. House, New Delhi.

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