



## A study on Livelihood pattern in Rock Mining Areas of Ri-Bhoi District of Meghalaya

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### ABSTRACT

Despite government's repeated assertions for the sustainable mining extraction and development of rural and tribal communities living near the vicinity of mining areas, these have not been converted into implementable solutions. The top-down approach proved disastrous in managing the natural resources, causing harm to the ecosystem and thus threatening the lives of the poor people dependent on the ecosystem. Because of the current onslaught of globalization and industrialization the power of money and market has begun to distort democracy and the natural resources from rural and tribal areas are being exploited to meet the ever-increasing requirements and aspirations of the affluent groups. With the above background, the present study primarily focuses on the various implications that rock mining has on social structure and culture of the mining affected areas. The impact that rock mining has on health with a special reference to women and child and on local biodiversity, agricultural productivity, employment and livelihood is chalked out in details. The study also explores various roles of in helping rehabilitation of displaced people and restoration of ecological resilience and the various roles of Gram Sabha/ Gram Panchayat/Non- Government Organizations/Forest and Tribal Affairs Department on mitigation of and adaption of livelihood. In addition, the study has also accessed the status of ecological restoration of evident mining areas and role of mining companies in its complete restoration and more specifically the role of both mining companies and forest department for ecological restoration.

### 1. Introduction

In Meghalaya agricultural land, traditionally owned by the community. With increasing privatization and rising commercial value of land for non-agricultural use, many owners have sold the land for mining operations. The State owns very little and what it owns is basically reserved forests for environmental protection. In the Ri-Bhoi district, covering a large part of Meghalaya, a distinction was made between Ri Raid (communal) and Ri Kynti (private clan land). Under the traditional system, village residents had access to community land and could cultivate and reap the benefits of their work. In brief, the land was supposed to be the property of the community.. Private land is frequently sold for non-agricultural use. In other parts of Meghalaya, community land institutions have survived, but in Ri-Bhoi district the potentially higher profits from non-agricultural land use has

led to land being set aside for mining, in particular rock mining. Further, it appears to be a correlation between the extent of landlessness and mining in certain parts of the State. This trend of privatization of land has focused attention on the negative effects of mining on agriculture, but also on the environment and the health of the local population. As noted by O.P. Singh, "coal mining in Meghalaya has benefited the people and the state and has been a means of wealth generation for some people of the coal mining area. However, it is also a bare fact that the benefit of rock mining is going to a small group of people, whereas a majority are excluded to share the benefit due to various reasons. Thus, the gap between rich and poor is increasing rapidly. The livelihood of a large population is at stake due to degradation of water and soil quality and reduction in agricultural productivity. Traditional crafts and artisanal skills are also fast

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disappearing. Very little concern for future is visible in society.” Despite the formulation of a state-wide mining policy, these dynamics are not well understood and under the present circumstances, there was hardly any activity for restricting environmental degradation.

The National Green Tribunal Principal Bench in New Delhi investigated the mining activity in the State of Meghalaya, The Tribunal directed the Chief Secretary, Government of Meghalaya and the Director General of Police, State of Meghalaya to ensure that illegal mining is stopped forthwith throughout the State of Meghalaya and any illegal transport shall not take place. The ban in illegal mining have jeopardized the livelihood of the tribal people, suggesting that the ban had infringed their right to life.

Over the years, stakeholders in the industry have been striving to avoid and mitigate the potential adverse part from the above issues, there are certain very important issues that are required to be addressed in the context of rock mining impacts with a specific reference to a economically poor state like Meghalaya.

### Research questions

1. How does the rock mining influence the social structure and indigenous culture?
2. What impact does it have on the health of women and children?
3. Does mining support/ provide sustainable livelihoods? And what exactly are the benefits / costs of the mining projects? How can benefits and indeed potential negative outcomes be assessed?

With these questions in mind the present study concentrates on the socio-cultural, economic and ecological effects of rock mining in the Rio-Bhoi district of Meghalaya. Five major impacts viz on social structure, culture, livelihoods, agriculture and health analyzed.

### 2. Objectives

More specifically, the major objectives of the current study are -

1. To assess the impact of the rock mining on the local biodiversity, , social structure, agricultural productivity, employment and livelihood
2. To assess the impact of the rock mining on health with special reference to women and child

### 3. Methodology

The study is based on the primary data and supportive secondary data. The data collection has been done in the month of Oct 2022 through personnel interview and with the help of structured questionnaire. Six villages according to the classified distances from the mine are purposely selected. The strata of distances for villages were 4,

8 and 12 kilometers from the vicinity of the mines and two villages from each stratum were selected. In addition to this, two more villages as control villages which are not affected by mining and which belong to the same district were selected for comparison. A total of 25 Households based on ethnic composition and size of landholding were selected for enumeration from each of the villages. Thus, a total of 200 such households were the sample for the study. Both qualitative as well as quantitative data were collected using household schedules, different set of questionnaires for various stakeholders.

The present study was confined to twelve villages namely Upper Jorbill, Jorbill, Noksikgittim, Hatimora, Chotakiling, Barakiling, Abri vikkage, killing viialage, Model village, umnawoe, umduba and Umalangpur

The area where the study was located is a poverty ridden area where tribal communities are residing. It is considered as one of the most degraded areas in Meghalaya. The significant problem in this area is that of water scarcity. Although this area is situated close to highly rainfall area, but ironically this area has been declared as a drought prone area. The peoples do not get potable drinking water whereas the industries are withdrawing huge quantities of water for their industrial operations. Over the years mining operations have accelerated in this area but there is a dearth of research regarding the socio-economic and environmental impacts of rock mining. This study intends to fill these objectives.

## 4. Results and Discussions

### Annual Income of Family

This study reveals that the income of the affected families has markedly increased in post-project years. This increasing income status shows that non-farm income sources or project-based employment sources are fast becoming the alternative options against sustainable agro-based or eco-based livelihood pattern of pre-affected households. As a result, why the displaced families cannot be called as ecosystem people is quite visible. Further, in our focus group discussions many senior most land outsees explain that with the current money income, they cannot meet the requirements and comforts of their increasing and invisible expenditures on food and non-food items. The present study reveals that with the increase in money income of the outsees in post project period there is a huge marked change in their consumption style. The Researcher found that due to mining, the average annual income of the family has greater than before and also much higher than the control village. Just because most of the families are getting employment in the mining project, their income level is more. But incase of control villages, the income level is less. The reason behind their low-income level is that, they are depending only on agriculture and other people are working as wage laborers *i.e.*100-150 days during

a year. In the mining villages around 30% households' annual income is between ₹2.5 lakh-5 lakh. But in the control villages it is only 33%. In the mining affected villages, the standard of living is high than the control villages. It is fact that peoples those who could manage to get regular salaried category project jobs are now placed in highincome groups with steady flow of income. And their educated children have also got engaged in non-farm employments in and around the rock mining industries. However, the majority of displaced people especially, the weaker and depressed category population did not actualize that opportunity due to their backwardness and illiteracy. But somehow or other they have also been earning wage income through daily wage labour, contract work and many other non-farm engagements in and around the coal mining industries. This has been revealed in following Table No.1.01

**Table 1.** Annual Income of the Family

Sl No	Income (₹ in Lakh)	Type of Village	
		Mining affected	Control
1	1.00-1.50	13	22
2	1.50-2.00	42	18
3	2.00-2.50	35	10
4	2.50-5.00	45	-
5	5.00 and above	15	-
	Total	150	50

#### A. Social Structure

Rock mining has negatively affected the unity, cohesion of the rural people. Mining related displacement has caused more than 75% of the family's transition in their family structure i.e. From Joint family to nuclear family. No doubt the economic gain of the people in these villages have soared but the hard-hitting fact is that the economic gains have brought unprecedented loss in the context of social structure, family, kinship and caste structure. Rise in income and wealth has given rise to intra household conflicts in mining affected villages where the family relation, social structure has faced tremendous loss. Loss of agriculture and forest-based resources has brought a loss to social relation and traditional rituals and customs. The rise of industrialization and urbanizations which enters into this area along with mining intervention has widened the scope for cultural diffusion. With the passage of time the urban culture has taken a dominating space then the traditional culture. Where as in the control villages the social relation, celebration of village festivals, village unity is in the position of status quo and have not undergone deviation in any way. It was also found out that a mere portion of around 18.5% of the sample population celebrated the agro based and other village

level festivals which the villagers used to celebrate before the advent of mining whereas around 81.5% of the sample population of the villagers stated that they do not celebrate the festivals in the present context due to lack of unity and integrity. With the advent of mining the traditional relation has received a big blow and it has taken a new shape with no concept of land, grains, agriculture but only cash. In mining affected villages no more land was found as center of power. The loss of land due to mining has given a space in rise of new class that is contractor. It was observed that a large number of landless villagers as well as few elite groups of villagers were seen running behind the contractors for getting non- agricultural occupation.

#### B. Environment and Health

The different activities relating to mining have directly or indirectly contributed to air pollution. The associated activities with the open cast mines of rock, loading and unloading of rock, transportation of rock, poor condition of roads and huge quantities of open grinding of big size rock into small pieces by the machines are the causes responsible for air pollution. During winter season it used to create a pathetic condition as the entire area became dust in morning. Lack of proper monitoring mechanisms might be the reason for environmental pollution. Spillage from the tippers due to overloading and poor body condition of transport vehicles generates large amount of dust particles. The authorities haven't taken sufficient measures the planting of trees. Rock transportation roads in this region are found blacktopped. They were constructed quite earlier when the rock transportation volume was 33%of the present level. During field work it was observed that as rock dispatch facilities are not properly developed. Thus eliminates the dust generating operations like drilling, blasting and crushing and mist type water spraying system along the conveyor belts/bunkers should be in the major rock handling plants. system was not found during the field study. It should be a compulsion that both the road sides should have sufficient number of water sprinklers which is not seen in the rock field. While around 95% villagers in mining affected villages claim that intervention of mining has changed their earlier healthy environment, it is not so in the case of control villages. While all most all the villagers are in favour of mining as it benefited their economic condition they show their unsatisfaction towards the air pollution in their locality. The extraction of mining has influenced the water table. Especially in summer season the villagers are facing lots of problem in getting water for domestic consumption. Water bodies have been clearly dominated by the rock associated waste materials which have resulted in water scarcity. However, in the case of control village there is no such water scarcity.

The data collected from SPCB Shillong shows that suspended sediments and COD in most of the mining areas and BOD in few cases have crossed the specified standard. Aquatic life will be disturbed due to reduction in photosynthesis, high suspended sediments, COD and BOD. Drainage of mine water to various stream and rivers have affected the aquatic life. There is certain short fall of soil quantity and proper reclamation of dump area not being practiced. In the abandoned mines the top soil is not being whether progressively or concurrently utilised for its reclamation which is making the environment degradable as it has become a dumping ground. As per the rules of mining closure act for successful biological reclamation of the abandoned mines the area should be planted with nitrogen fixing tree species or fruit bearing tree species and endemic and mixed culture. Lack of monitoring mechanisms some of the plants are dead and also the villagers are not much aware about it. The destruction of ecosystem in post mining period has brought a great loss to the wildlife and their habitat. The fragmentation of habitats due to mining activities has made difficult for some animals for their ecological move. The overall observation during fieldwork reflects that the sound pollution is mostly due to transportation of heavy vehicles. Though 52% households claim that some crack has appeared in their houses, but not all the cracks are the recent one. A lot of steps to control sound pollution by using blast less technology, fixing of time of blasting, giving prior information of blasting to villagers, blasting time is very much limited and its effect is minimized by use of electronic delay detonators. Villager's health condition has deteriorated due to direct inhaling of air pollutants which has asthma attacks, respiratory infections, or changes in lung function. The cases of suffering from asthma and respiratory toxicities have increased. Around 88.12% households contended that they have suffered from some serious diseases in last 3 years. More than 66% of the house hold claimed that frequency of women and children getting stuck with various diseases have increased enormously than the pre-mining phase. According to the villagers the frequency of diseases also increased in manifold periods. In this situation poor unemployed households are the worst sufferers. They have neither a job nor having free medical facilities. This data collected from field visualizes that due to mining the direct cost of medical expenditure has increased as compared to pre mining and control villages. Population of Livestock has decreased to a significant level. The green lush environment has now changed into barren lands and therefore livestock's food intake has declined because of which diseased incidence of livestock has grown.

### C. Role of Institutions

The functioning of different institutions such as NGOs, Gram Sabha, Gram Panchayat, and Forest Department is far from the satisfactory level. In all of the affected areas not a single NGO was found working for the community. Villagers too did not know about NGOs and their functioning. All the villagers claimed that there is not even a single NGO working in the villages for the betterment of the people. There are number of issues related to people in the villages ranging from issues related to health, environment, wages, safety, pure water, electricity and displacement. The number of conflicts among the government, villagers and rock miners are increasing in frequency and NGOs can play a big role ranging from advocating for the poor to implementers of government programs; from agitators and critics to partners and advisors; from sponsors of pilot projects to mediators. Due to lethargic approach of Gram panchayats, the number of government welfare schemes and measures such as BPL card, Pradhan Mantri Awas ( Gramin), Job card are not distributed in the villages in proportion. Gram Sabha is losing its relevance in the affected villages. Villagers asserted that the elected heads have developed a nexus with private miners, so they could not go against miners. During field study it was observed that abandoned mines which are present nearby villages have become a challenge for the environment and also a menace for the villagers. Much before the intrusion of mining activity the area was consisted of lush green vegetation but now the same land has become a source of environment concern. As per the guide lines issued by the Ministry of Mining, Government of India, after the exhaustion of rock, the mines should be properly closed as per the Mining Closure Plan. Final Mine Closure activities should start towards the end of mine life so that the mining area is restored to an acceptable level in order to create a self-sustained ecosystem. The over burden dumps (internal) are first technically reclaimed and brought to the level of original ground. Then it is physically reclaimed by putting soil over it and leveling. Finally, plantation is done which is biological reclamation. In the abandoned mines the top soil is not being whether progressively or concurrently utilized for its reclamation which is making the environment degradable as it has become a dumping ground. As per the rules of mining closure act for successful biological reclamation of the abandoned mines the area should be planted with nitrogen fixing tree species or fruit bearing tree species and endemic and mixed culture. Due to lack of monitoring mechanisms most of the plants are dead and also the villagers are not much aware about it.

#### D. Livelihood

A significant change was observed as the earlier producer has turned into consumers depending solely on market. Displacement has compelled villagers to accept the transition. It was hard to find people with cultivation; the reason being people don't have land for cultivation after displacement. A rare number of people have land but most of them don't dare to cultivate because of labor crisis, loss of fertility of land due to pollution and water scarcity. Mining has broadened the path for employment and high standard of living, but it is very disturbing to look into the health aspects of the mining affected communities. Mining has a sheer negative impact on human capital. During pre-mining period the major source of income was agriculture and forest resources, the source of incomes became mining centric after the post mining period. Percentage of households depending on trade and commerce is more in mining villages than in the control villages. High monthly income ensures them higher purchasing power and hence is able to invest in business. The scenario from mining affected villages shows that while around 89% households were having income less than rupees fifty thousand per annum during pre-mining period, it is only 8.7% now. have stood as major threat in the process of development. Most of the displaced communities found it very difficult to procure an appropriate land and build a house by investing the monetary compensation. it is not sufficient to afford a house as the market price has gone up. Prior to mining the women folk used to collect minor forest products such as firewood, cereals, animal products, fibres, and edible products. But with the establishment of mining industry, women populations are actively participating in the mining related activities working 7-8 hours and are earning 250 rupees per day. The livelihood of the women communities of control villages is still protected. They used to participate in the agricultural activities of their village and are generating some income from forest products. all most all the households are completely reliant on coal for preparation of food. The intervention of mining has posed a serious question on sustainable livelihoods. People now depend on mining and allied areas for their survival but issue at hand is what will happen once the mining activities are over in these areas? Do the villagers will get back their traditional source of income? We need mining activities to be faster to make India a developed nation. But it is needed to bring a balance between economic gain and environmental loss to ensure greater sustainability of the local communities. Keeping in view the need for combating global warming and climate change the country should try for different policy options for an environmentally clean and energy secure future.

#### 5. Conclusion

The economic wellbeing of the people has increased tremendously after the inception of mining than the control villagers but there are host of negative impacts that rock mining and the people are directly and indirectly affected by it. At this juncture, improvement in the overall condition of the environment and the quality of life should be the prime responsibility of the mining company apart from the administration. Certain recommendations on the basis of research findings are:

- a) Rehabilitation and Compensation issues should be dealt with equitably. The mining company should provide all infrastructure facilities to the rehabilitation colony. They should take into consideration the plight of landless households. They should give much emphasis on rehabilitation rather resettlement.
- b) Issues of post-mine closure like unemployment, income potential, migration, environmental clean-up should be discussed and taken care much in advance.
- c) A proper monitoring mechanism should be developed by the government to monitor the negative impact of mining activities and proper implementation of its policy guidelines including CSR, mining closer, R&R, environmental protection, etc.
- d) To create a healthy environment for industrial promotion regular interface among villagers and industry should be organised.
- e) To strictly implement the mining closer plan, the Government should act more vibrantly and try to resolve all the technical issues if companies are facing to close the mining.
- f) Government departments working in grass root levels should monitor the CSR activities of the companies and should give suitable advices to them wherever required.
- g) Pollution control board should more vigilant and should take the public opinion regularly in the context of pollution.
- h) State Government should assure local administrative support to meeting the demands of people.
- i) Provisions should be made for a buffer zone between the local habitation and the mine lease in the form of a green belt of suitable depth. Restricted entry, use of sirens and cordoning of the blasting area are some of the good practices to avoid accidents.
- j) NGOs should be promoted for working in this region in accordance with need.