MINING AND MARGINALISATION OF INDIGENOUS PEOPLE IMPACT ON LIVELIHOOD AND ENVIRONMENT

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Mining and Marginalisation of Indigenous People: Impact on Livelihood and Environment

The discussions that follow focus on the links between mining activities, displacement population growth, marginalisation of indigenous people and cycles of environmental decline in the mine areas. Mining directly contributes to displacement of indigenous people and environment degradation in a variety of ways: depletion of forested areas due to mining and acquisition of agricultural land from indigenous people for mining: pollution of air, soil and water. Increasingly, land owned by indigenous people is acquired by the non-tribal people employed in the mines for housing and other purposes as well as encroached by migrants to the area. Creation and expansion of roads and railways by Government and public sector industries facilitated initiation and expansion of private mines. Roads, railways and private mining contributed significantly to the depletion of forest wealth and environmental degradation. The indirect effects of mining on the condition of indigenous people and environment may be very serious, if it attracts people poor in resources and skills. In conditions of acute rural poverty, any hope of employment attracts a greater number of people than the area can provide for and this creates a serious environmental crisis. Unfavourable market integration of the tribal area, very high levels of exploitation of forest and condition that enhance indebtedness have consequences on the indigenous people. These conditions perpetuate poverty and underdevelopment and the strategies that the displaced and migrant poor adopt to ensure their survival under such circumstances are often incompatible with sustained, environmentally appropriate land use and further lead to deterioration of soils and other natural resources.

This paper attempts to analyze the environment in which indigenous tribal people existed an impact of mining activities on them. The underlying assumption is that mining activities not only displace people from their land, but also induce rapid population increase in the area due to migration. Displacement of indigenous people from land and addition through migration of people poor in skills a resources lead to greater exploitation of forest wealth and deterioration of the environment. In the end, loss of land and degradation of environment results in social and economic marginalisation of indigenous people. Mining in the forested areas of Bihar and Orissa contributes maximum directly and indirectly to rapid deforestation and to economic and social marginalisation of indigenous people. The Impact mining on livelihood and environment of tribal people in Keonjhar district of Orissa is presented here as case study. A few villages that gave way to one of the public sector mines were intensively studied from 1990 to 1992. In the first part of the paper an attempt was made to reconstruct the socioeconomic and cultural environment in which indigenous people existed prior to initiation of mining activities. The social and economic impact of land acquisition and very high level of population growth on indigenous people were analyzed in the second part of the paper. In the last part of the paper, the nature and extent environmental degradation induced by mining activities and its impact on the indigenous people are examined.

Condition of Tribal People Prior to 1950

Prior to initiation of mining activities, Bolani, Champua and Balagoda (located in Barbil tehsil of Keonjhar district of Orissa) [2] were small and sparsely populated villages before the development of iron ore mines in the area. The Mundas and Bhuiyas were among the largest indigenous tribal groups in Jharkhand region. The Bolani, Balagoda and Champua villages were originally populated by Mundas and Bhuiyas. They lived in separate hamlets, and the houses within hamlets were well spread out. Every household had land and on marriage seems normally cleared a small patch of forestland for cultivate and set up an independent house. Agriculture in the area was dependent on monsoon. The Bolani valley and common land around the village provided pastures that facilitated most households in rearing a few cows, goats and bullocks. Cattle and livestock served as insurance against drought and scarcity. Besides, cattle and livestock facilitated payment of bride price and celebration of a variety of religious and social events. The forest was one of the major sources of livelihood. The number of persons collecting forest produce was less as the population density was very low (80 persons per sq km). People collected a variety of fruits, roots, leaves and small game from the forest (Sachchidananda 1979).

To safeguard the forest and ecology, the tribals declared a few species of trees as 'sacred' and effectively guarded. The Mundas and Bhuiyas of Keonjhar district were known for worship of sacred groves. Grazing and removal of wood from the sacred groves was prohibited. This practice helped them to preserve the forest wealth. Besides the tribal laws helped to strictly guard the common property within and around the village and any deviation from norms attracted punishment. To some extent, the people of Bolani, Balagoda and other villages were socially and economically self-reliant (Fernandes, et at 1988, 1989). Mahua flowers were collected from the forest. Individual households also owned mahua trees, which provided a number of benefits: flowers for brewing liquor, fruit for consumption and the seeds for oil. Mahua oil satisfied household requirements for a few months. For the rest of the year, oil extracted from till cultivated in their land sustained them. Rice, jowar and other cereals and minor millets were cultivated on the land they possessed. Availability of mahua flowers and rice assisted people in preparing liquor and rice beer, consumption of which is a part of their way of life. Every household brewed its own liquor and served it on all occasions: births, deaths, marriages, meetings, visits of relatives. Most households in a hamlet were bound by descent and sometimes, affinal - relationships and there was social and ritual equality among men representing the households (Sachchidananda 1979, Areeparampil 1989).

The economic organization suggested that people worked in leisure. Cultivation of land, collection of forest produce, activities such as hunting and maintenance of cattle followed a schedule. People had control over their labour, and women's labour, which was essential for the survival of the household, was valued greatly. A community cattle grazer took care of all cattle and livestock of the

community, whose symbolic function was to ensure equal access to grazing land to all households in the hamlet/village. The households and community had some control over the living condition of its members (Toppo 1992; Sachchidananda 1979, 1985). Relatively better economic and social self-sufficiency resulted from access to several means of production and availability of alternatives production from own and common lands, better access to minor forest produces, fishing, hunting, capacity to own and benefit from cattle, and inter-household exchange of services and provisions. Besides, people had control over produce (Fernandes et at 1988; Sachchidananda 1979; Fuchs 1978). In the Barbil area, middlemen and superior landlords, who played a leading role in depriving the people of what they produced were relatively unknown. Karo river passing through Bolani, was unpolluted and the environment remained clean and fresh. Access to forest based medicinal plants and clean environment helped traditional healers to have some control over disease[3]. People seem to have had some control over their fertility and knowledge of contraception was widespread. The level of population growth rate remained low.

Condition of Tribal People In 1990

Prior to 1950, Bolani was a small village with two adjoining villages-Balagoda and Champua had 800 persons in 1951. Even in 1951, Bolani had a sizable number of non-tribal migrants. The population of Bolani in 1961 and 1971 was 1780 and 7.277 respectively. By 1981, Bolani and Balagoda merged into the new mine township, with a population of 9,575. Subsequently, when a hamlet of Bolani and the Camp of Bolani, which had originally been excluded were added to the new town Botani's population rose to 11,591. The combined population of Bolani, Balagoda and Champua villages in 1951, 1961, 1971, 1981 and 1990 were 1520, 2980, 9000, 12490 and 19544 respectively. In 1990, Bolani was inhabited by the following population groups: descendants of original inhabitants (1,308 persons), migrants to original villages belonging to tribal groups similar to that of the original inhabitants (2,646 persons); tribal and non-tribal migrants from Uttar Pradesh, Bihar and other parts of Orissa settled in a number of hutment colonies spread all over Bolani (9,885 persons): and housing colony of Bolani mines accommodating a small proportion of employees and their family (5,705 persons).

Ethnic Composition of Population: The original villages were inhabited by Bhuiya and Munda tribes in each village there were a few Goval households. The Govals were community cattle grazers. They were involved in animal husbandry and supply of milk to Bolani Township. In 1951 there were 125 households of the original inhabitants, while in 1990, there were 218 households. Even in 1951 there was a large number of non-tribal migrant households in Bolani. The percentage of tribal population to total population declined from 78 percent in 1951 to 28.3 percent in 1981, altering the ethnic composition of the original villages drastically. Bolani village received 320 Munda, 4 Bhuiya and 7 Dalit households. Balagoda village had 5l migrant households of which 45 were that of Manatos and 5 belonged to caste Hindus. Champua village received a few Goval and Munda

households and many caste Hindu households. The Bhuiya, Munda and caste groups lived in separate hamlets. In Bolani village, this distinction is disappearing. In Champua and Balagoda, the Hindu households have occupied the centre of the village. In Balagoda, the non-tribal Mahato groups are rich and control the village panchayat and much of the land resources. The tribal households in Balagoda were pushed to the periphery of the village and are socially segregated.

Economic position: Prior to initiation of mining in Bolani all households in the original villages owned land. Mines, roads and railways acquired land from these villages. In Balagoda and Bolani most households lost all or most of the land they owned. In Champua, only a few households lost all land. All households that lost land were compensated with cash – Rs. 150 to Rs. 400 per acre - and one member in each household was given employment in the Mines/Kalinga Iron Works. Those who lost lard for roads and railways received only cash compensation. The Birlas acquired about 100 hectares of land from Champua village at the rate of Rs. 12,000 per acre in 1994. However, the people lost heavily when private mines acquired land. They were paid a meager amount and given temporary low wage paying employment.

Most of the households that lost land, subsequently cleared forestland for cultivation. Thus in 1990 all households in Champua possessed some land. In Bolani 80 percent owned land and a few others were cultivating land acquired by mines. In Balagoda, about 48 percent had land. Most of the migrant tribal families living in Bolani village also owned some land. In all the original village households lost land and the tribal migrants to the original village cleared about 180 to 250 hectares of forestland for cultivation. The process of acquisition of agricultural and forest land for initiation and expansion of mining activities and construction of road, railway and housing complexes and subsequent clearance of forest land for cultivation is continuing relentlessly. These interconnected processes have depleted forest cover from a vast area.

Main Occupation of Households in Original Villages

When the descendants of the original settlers and migrants in the three villages considered together 50 percent had permanent employment in mines and another industry (Kalinga iron works) in the area. The permanently employed category included a few persons employed in government jobs. Another 45 percent of the households had main earners engaged by contractors. This includes those working as daily wage labourers. The remaining 5 percent of the households had cultivation as their main occupation. Most of the Champua village men who were offered employment in Kalinga Iron works have left the job because of the arduous working conditions. These men are now engaged in stone crushing work as daily wage labourers.

Table 1: Distribution of Main Earners by Main and Secondary Activities Original and Migrant Households

Nature of main activity	% Distribution	Nature of secondary activity	% Distribution
Permanent employment in Mines and Iron works	50	Not do other work	19
	Cultivation 54		
	Sale of wood	27 (100.0)	
Contract/daily labour	45	Sale of wood	54
	cultivation 30		
	Construction work	10 (100.0)	
Cultivation	5 Sale of wood		50
	Construction work	50 (100.0)	

Source: Parasuraman, 1991

Cultivation and collection of wood for household use as well as for sale are among the most important secondary activities of the households. Most main earners with permanent employment with mines and government did some cultivation work during the peak agricultural season. On the other hand among the main earners working with contractors, a majority were engaged in sale of wood. Households with cultivation as the major activity owned more land. The involvement of such households in exploiting the forest depended on adequacy of agricultural produce. In good monsoon years, exploitation of forest for livelihood was limited while in drought years, forest resources were intensively exploited (Table 1).

Involvement of Women in labour force

Among tribal groups, most women were involved in gainful employment. The range of activities in which they were involved has increased in recent years. They were engaged in cultivation, wage labour in agriculture and mines, minor forest produce collection and household activities. The collection of firewood for household use was an exclusively women and children centered activity. Women did not find representation in permanent employment in mines. The concept of women taking up regular salaried jobs did not exist at all in the area. Though government mines did not employ local tribal women, there were a large number of small private mines in the area employing them as daily wage labourers. Women from all villages specifically Champua, were working as casual labourers in stone quarries and mica mines in the area. Most of these activities were difficult, strenuous and poorly paid. The heavy influx of migrant workers has made getting wage labour difficult and helped to suppress wages. Intensive involvement in wage labour in lean agricultural months has directly resulted from incapacity of agriculture to provide livelihood because of shrinkage of land and significant decline in soil fertility due to pollution. In spite of industrialization in Bolani area,

the indigenous tribal women from original villages did not benefit. Casualisation of labour and increasing necessity to engage in wage labour for survival has made ft difficult for people to gain labour input from others. industrialization has effectively eliminated community arrangement of labour organization.

Economic condition of Tribal Groups

Table 2 provides a summary of the economic condition of households in the original villages. This analysis includes both indigenous and migrant household. Income in households with at least one member holding permanent job with mines or in any other establishment, was higher than that of other households. Economic condition of households with steady income from a mine job and possession of some agricultural land was better than that of landless persons. In fact, the Hindu households had very high income, as they were able to make use of the income from company employment for agriculture improvement. However, the indigenous tribal households could not convert company job and land into an income-enhancing venture.

About one-third of the households with permanent jobs, but without agricultural land had better economic conditions. The remaining two-thirds of households had serious economic problems. Expenses on liquor and perpetual loan taking habits have pushed many households into poverty. Irrespective of better salaries paid by the mines, at least 70 percent original village households transferred outstanding loans. The local interest rates were very high and the households with loans are pushed into perpetual poverty.

In households with main earners engaged in contract and daily wage labour, life was difficult. Wage labour was available for about six to eight months in a year. Among the households with land 66 percent found it difficult to satisfy their consumption needs. On the other hand, among the households without land, all households found it difficult to meet consumption needs. Households with agriculture as a major source of livelihood seem to adequately satisfy their consumption needs. Only those households owning more land were engaged in full time cultivation activities. Among such households the average land holding turns out to be 7.8 acres

Table 2: Economic condition of households in original village December 1989

Households with Description of Economic condition	Permanent Job		Daily wage/contract Labour		Percentage Distribution of Agriculture with land
	With land	Without land	With land	Without land	
Good	72	35	17	-	70
Not bad	28	25	17	-	30
Bad	-	40	66	100	-
All	100	100	100	100	100
Average no. of workers per household	1.6	1.9	3.2	3.9	3.0
Average land holding (in acres)	6.2	-	1.7	-	7.8
Mean monthly income (in Rs.)	2000	1200	850	550	1200

Source: Parasuraman, 1991

Mining Employment and Marginalisation Process

In the 1960s 180 out of 218 original village households were offered employment in mines. However, less than 50 percent had mine employment in 1990. The process of eviction of indigenous tribal workers from permanent employment centered around the view widely held by administrators high caste executives in the mines, that social and cultural orientation of the tribal people was not appropriate to employment in the modern industrial sector. Indigenous tribal men if employed in the mines found employment as hand miners. The hand miners were among the lowest category workers in the mines and wage administration structure made it difficult for them to earn full wages. A hand miner by reporting to work becomes entitled to 50 percent of a day's wage. The remaining 50 percent was available only it he produced a specified minimum amount of iron ore. The work demanded a great deal of physical endeavour and the indigenous tribal men found it difficult to earn a full month's salary. The salary records show that about 75 percent of the indigenous tribal men have not earned a full month's salary even once during their employment with the mines.

The indigenous tribal men abstained from work on all their festive occasions because the holidays declared by the mines followed state/national holiday calendar. Involvement in agriculture further detained men from working the mines. All men had some land for cultivation and during the peak agricultural season, they worked in their land rather than reporting to work in the mines. In addition,

addiction to alcohol also meant that a few men abstained from work for several days following salary day. Traditionally, tribal groups developed a tendency to view agricultural products as items primarily meant for household consumption and not meant for sale. On the other hand, cash income was meant for immediate consumption. The original inhabitants spent their salaries haphazardly and thus faced very serious problems in satisfying consumption needs. Absenteeism and their inability to produce the minimum required quantity to quality for a day's full salary meant that the workers received only part of the monthly salary. Thus, often the average wages earned by a tribal worker was only one-third of the wages earned by for example a Gorakhpuri worker[4]. To satisfy household consumption and alcohol needs, tribal men have resorted to the following practices (i) borrowing money at high interest rates; (ii) purchase of consumer durables on credit from the company run society and selling it outside at very low prices. This meant monthly repayment of the loan; (iii) working as daily wage labourers (who get paid at the end of the day), and (iv) collecting wood and timber for sale. The first two practices drew men into the debt bondage and the latter two practices progressively marginalized them from their work in the mines. In an indirect way, quite a high proportion of company employed tribal men in effect were daily wage labourers or contract workers (Kanunga 1989; Parasuraman 1991). Discussions with men and women, the young and aged revealed that over a period of time the proportion of tribal households engaged in wage labour and sale of wood and timber to earn a livelihood has increased. High levels of alcoholism and absenteeism increasingly force the private sector to avoid employing tribal men, while the public sector mines use the minimum productivity criteria to squeeze them out of labour force. The perception of high caste officers about indigenous tribal workers as lazy and unproductive further contributed to a decline in the number of tribal workers in mines[5].

Impact of Mining on Environment

The mining activities contributed to extensive environmental degradation in the area. Degradation of agricultural land through soil pollution, destruction of forest wealth due to excessive encroachment by the mines and migrants, pollution of Karo river and other water sources are some of the negative effects of the mining activities which affected the life condition of the indigenous people.

Impact on agricultural land

One of the major conclusions emerging from the analysis is that the productivity potential of the land has declined, irrespective of increased labour and fertilizer inputs. Rice yield per hectare has dropped by 10 to 14 percentages in Bolani and Balagoda. In Champua, the drop in yield per hectare was over 15 percent (Parasuraman 1991; BHPE-KINHILL 1991). Some of the arguments put forward by the people for the decline in yield were:

The climate of the area expressed in terms of quantum and duration of rain, temperature and moisture level has changed due to the combined effect of mining

operations, deforestation and loss of vegetation. Deforestation in mining areas seems to have reduced moisture retention, leading lo soil erosion and a consequent decline in productivity. There is a causal relationship between the pollution of soil due to widespread mining operations and the steady decline in soil fertility. Dust and stone particles are washed down by rainwater and settle on the cultivable land, affecting the soil quality. The pollution of the river due to washing of iron ore has further exacerbated the problem. The inability of the households and the mining authorities to take appropriate action to safeguard agricultural and grassland from soil pollution was cited as a reason for the deterioration of soil quality and fertility. The indigenous people could not take any action to cheap pollution and meanwhile, management of Bolani mines was indifferent and did not undertake any initiative to help improve land productivity. Those who had resources bought more manure and fertilizers to compensate for soil erosion. Continuous encroachment of the forest around Bolani to provide land for cultivation, poor agricultural practices with little or no regard for basic soil conservation principles, combined with mining and road construction have facilitated rapid deforestation and soil erosion. Agriculture in the area has been severely affected with the continuation of mining activities, causing deforestation and reducing the stream flow and consequently drying up the irrigation systems.

The Karo river and a number of its nallas carry the substances related to mine runoff. Except one nalla flowing into a tailing pond, none of the nallas draining the mine area had any form of silt trapping arrangement and large quantities of silt appear to be washed down on the flat land during the monsoon. People who had land in the valley faced serious problems in dealing with the silt. While the public sector mines have got some silt controlling mechanism, it is very insufficient and extremely ineffective. The private mines, though occupying extensive area, operated haphazardly and had no silt control mechanisms installed. Their method of mining and acute disregard for pollution control has damaged agricultural and grazing land located around the mines and along the area drained by Karo river and its nallas. The prevalent scenario prompts one to inter that the Government does not seem to think that it has any role to check pollution or to help the indigenous tribal people.

Impact on Karo River and Nallas

In mining operation, water is used for dust suppression and beneficiation. Normally, the polluted water is treated at the tail end dam. However, the water becomes unusable for drinking along the stream. Villages located along the river and nallas used the water for drinking and irrigation. Specific study for Bolani area to help quantity the extent of pollution was not available, but studies on similar situations show the seriousness of the pollution of river by mining operations. A study of the iron ore mine at Bailadilla in Madhya Pradesh concluded that water pollution was the most serious of the mine's environmental impacts:

> "the screening and washing plants of the iron ore mines are located at the very source of Sankhani river, which is the principal source of water for

people of the valley. The tribal people who used to fetch water from the river no longer do so and not even the animals frequent the place. It has been found that such polluted water is no longer useful for irrigation purposes. This has created serious problems in 23 villages" (BHPE-KINHILL 1991).

The situation in Bolani is not different from Bailadilla. It is, if anything, worse, given the extent and nature of mining by state and private enterprises. The Karo river is under constant threat due to ever-increasing demand for water from a number of public sectors, Orissa state and private mines. The public sector mines in Bolani, Gua and Charia, over 40 private and a few state mines, which are located in the catchments of the Karo river, use its water and discharge effluent. Further, the river system is facing serious problems because of the proposal to introduce a wet beneficiation plant in the public sector mines as part of the modernization programme. The introduction of the wet beneficiation system will pollute the river beyond control and effectively remove it from the life of the people.

The pollution of the Karo river has effectively eliminated it as a drinking water source. For over 40 villages, the Karo river served as a primary water source. Due to pollution, many villages have experienced severe problems in using the Karo river water for drinking. However, a few continue to filter and use water for drinking purposes. It comes as no surprise that the people living in areas along the river reported skin and water-borne diseases as major problems and attributed the health hazards to the pollution of the water. The pollution of water appears to have delinked people from the river: a river that served as a source for drinking water for humans and animals and served as a source of fish for household consumption. It has now ceased to provide both these. Examination of the water sources that people and animals currently use for drinking, showed that the river has effectively ceased to serve as one of the sources in most villages downstream. Few authorized hutments, Bolani township, Balagoda and part of Bolani village were servede by the mine's water supply system which pumps water from the source of the Karo river. But villages along the river had no such provision.

Deforestation

The bulk of the forest in the area is tropical deciduous type and is dominated by sal growing on a variety of soils. On the ridges and some lower slopes and other areas with limited water, forests approach the drier class of tropical dry deciduous kind. Limited areas of moist tropical semi-green forest are present in wetter places, particularly in upper slopes and high plateaus with evergreen trees and shrubs with numerous lianas. Forest conditions have changed significantly in the area. Closer to Bolani, the forest cover has disappeared. Closer to the township, sal forests have been thinned to the point where only individual mature trees and occasionally very young saplings remain. Shrub under-storeys are either absent or consist of undesirable species such as lantana. The remnant plant communities have very low density, with very few perennial species remaining. In the dry season, ground cover is minimal and much of the ground has been burnt.

Tree density and cover increase with distance from mines. Intermediate age trees and shrub under-storeys appear. The diversity of tree and shrub species increases and even in late hot season, unburned areas remain. But then, after some distance in the impact area of another mine (SAIL or State or Private), hutments and villages start and naked patches reappear. The condition in Barbil area, which is true in other areas of Keonjhar district is such that large naked patches appear at regular intervals as one moves from one part to another. Forest cover has been destroyed due to the following causes:

The forest is being destroyed in order to make way for mining, township, roads, rails, electricity lines and other purposes. The forest cover is also destroyed by pollution from mining operations. Deforestation has become a serious problem because of increased demands for fuel wood, growing number of people who depend on sale of fuel wood and timber for livelihood and clearing of forest for agriculture and settlement. The serious threat to forest comes from people felling of trees for fuel, furniture and construction for self-consumption and sale. In early 1990 out of 1,639 huts in the encroached settlements, at least 10 percent households derived their livelihood purely through sale of wood for fuel and timber. Another 25 percent households derive part of their livelihood (ranging from 30 to 50 percent of the total income) through sale of wood. In the original villages for all the households the sale of wood accounted for about 18 percent of the total income. The Bolani township households depend on cheap fuel wood for cooking, which was sold by individuals collecting it from the forest. The demand for fuel wood is good and many households from hutment have taken it as their main occupation. The number of households depending on sale of fuel wood and timber is growing and in the process, depressing the price of the items. The vicious cycle of lack of viable employment opportunities and low income, increases the number of marginalized people, depressing labour wages and causing greater exploitation of forest resources by the increasing number of people pushed into poverty.

The villages populated by tribals located in the outer circle of Bolani mines were also affected by the mining operations, but received no benefits. Many households lost part of their livelihood due to loss of soil fertility; households that lost land to PWD, railways and electricity departments received meager money compensation and no other benefits; households that sold land to the migrant workers for housing and small business found themselves in a miserable position. There were many tribal households, which lost land to private individuals and government organizations, but did not receive any long-term benefits excepting a small cash compensation. The people whose life centered only around land found it very difficult to find employment and were deriving a part of the income through sale of wood. Besides, most have cleared fresh forestland for cultivation.

Substantial areas were officially notified and acquired by the Orissa government for the Bolani mines. The amount of land acquired was many times in excess of actual mining area. In all 1320 hectares of land was acquired from private

landowners, forest and revenue departments. A large amount of area was thickly forested at the time of initial mining exploration. In contrast to the amount of area acquired, the actual area under mining activity was limited. 202 ha was for manual mining and 53 ha for mechanized mining. The township and over 11 hutment colonies occupy about 500 ha of area. Out of 1,320 ha of lease land only a small amount of land remains under forest cover[6]. In the Barbil area, there were 65 private mines and many public sector and Orissa State mines, which put together, occupy a large tract of land. Around Bolani, there are four small and eight large mines owned by Government of India, which had a lease area of 17.481 hectares (BHPE-KINHILL 1991). The area of operation of private mines accounts for well over 20.000 hectares. After nationalization of mines large-scale illegal mining by private contractors is going on in the area and a complete assessment of the areas of operation is difficult to obtain (Areeparampil 1989). The State mines accounted for a much larger area. Thus, the actual mining area and the associated townships, encroachment of forest and common land for huts and the villages have denuded a vast tract of forestland (Source. compilation of figures from various mines and discussion with people working in the mines).

The problem of deforestation will be very seriously felt in the coming years. Several mining leases are contiguous with other leases. Public sector, Orissa state and private mining leases though originally located at some distance from each other, expansion of existing ones and initiation of legal and illegal mining by private parties and the rapid expansion of population due to migration increasingly claiming new land, have reduced the distance between them. Since the mines are administered by different management there are no coordinated efforts either to check deforestation or to initiate measures to reforest the area. Though Government of India has got 12 mines located close to each other, no coordinated action is attempted to reverse the process of rapid deforestation. In fact most mines had no programme to check deforestation and environmental degradation.

There are no concerted efforts from the Central and State (Orissa and Bihar) Government to reverse the process of deforestation. In fact the Government of India's policies on release of forestland for mining will further aggravate the situation. The decision by the Ministry of Environment in 1992 has made the diversion of forestland for mining much easier. According to the provisions, Regional Chief Conservator of Forests would be empowered lo clear proposals involving diversion of forestlands up to 5 hectares. Currently, they can clear proposals involving up to one hectare. The projects involving diversion of forests up to 20 hectares (current limit, 5 hectares) would be cleared by the respective state advisory committees. Further, separate environmental clearance would not be necessary for mining proposals if the forest area involved is less than 20 hectares. The changes in rules governing the release of forestland for mining are intended to help private operators to initiate mining and claim additional land, without having to get environmental clearance or obligation to do compensatory afforestation. The policy on the release of forestland for mining will accelerate the growth of private mining and accelerate deforestation. Population growth induced

by the growth of private mines will also have dangerous consequences for the forest given the employment conditions and wages offered in such mines. Mining activities generate dust, which adversely affects vegetation immediately adjoining the area. The nature and extent of damage caused by dust are not examined here because of lack of data.

The result of mining operation and expansion might have been beneficial to the rest of the country. But it adversely affected the tribal people, forests and the river. The mining and consequent development activities in the area deprived the tribal people of much of their resources the land, the forest and the river. In many ways, depriving the tribal people of their resources and livelihood and unmindful expansion of mining activities by the Government and private persons in the long run actually means depriving the country of its forest, river and other natural resources. Rapid population increase through migration of dispossessed tribal people and Dalits from Bihar, Orissa and West Bengal is also hastening the process of deforestation. The nature of mining operation and exploitation of natural resources in Keonjhar and other surrounding districts of Bihar and Orissa shows that mining is widespread and haphazard. If the current trend of deforestation continues, what now looks like the naked patches of 'forest cover removed pockets' in the midst of densely forested areas will become universal for the entire forest bell of Orissa and Bihar. Careful examination of the nature of forest cover depletion in the area suggests that we are heading towards that eventuality (Fernandes 1989, 1992).

Conclusions

For the indigenous tribal people, the transition from subsistence agriculture to mine related employment has not contributed to their social and economic welfare. They were least prepared to move from subsistence cultivation that demanded seasonal labour to industrial and mining work, which demanded hard labour all through the year. As hand workers, the tribal people required training and mental preparation to adapt to the new work environment. However, the Bolani mines did not pay attention to improving the skills of the hand miners. Instead, the mine authorities effectively segregated the tribal people and progressively marginalized them from mining employment (Fernandes et at 1988). With training, many could have moved to the mechanised mining sector, but the trend of ongoing modernisation programme in all public sector mines is to retrench hand miners. In this process most tribal workers engaged as hand miners are being forced to take voluntary retirement. At the same time their children could not find employment in the mines as they are unskilled and not educated enough to obtain employment in mechanised mines.

Mining activities have segmented tribal people into a number of disparate groups: permanent, piece-rate and contract workers in mines; casual wage labourers in mine related activities cultivators; families dependent on sale of wood. In effect mining activities by displacing people from land and aggravating the process of land alienation have helped to create an army of unskilled, cheap labour. The migration of a large number of tribal and lower caste peasants from Orissa and Bihar, usually dispossessed by similar development projects in their original lands has significantly increased the availability of unskilled labourers.

The future does not hold very much hope for the indigenous tribal people. Less than 60 percent of school age children ever enroll in schools and about 75 percent drop out before completing VIII standard. A few Munda households in Bolani village were successful in keeping their children in school up to or beyond higher secondary level. However, most of the tribal households from Champua and Balagoda were not successful in providing education to their children. Among other factors, the location of their houses, which restricts the child's access to school in monsoon, lack of enthusiasm from parents, inability of children to perform well and the need for the child's involvement in collection of fuelwood and other economic activities, contributes to poor enrollment and high drop-out rate. The emerging situation in the Bolani area points to a bleak future for the tribal people and their environment. The economic and social marginalisation of the indigenous tribal people will only get more aggravated and consequently hasten the deforestation and environmental degradation.

Life has drastically changed for the people of Bolani, Champua and Balagoda. Now their economy and ecology are tightly interlinked to the wider market economy of the country. The original inhabitants have been forced to become silent spectators of this change. They have remained outside the planning process. In the process of change, they have lost control over their own lives. The

forest slowly disappeared (Fernandes et at 1988; Comm. SC/ST 1988, 1990). Today, the whole concept of sacred groves has become meaningless. With the disappearance of the forest the benefits derived from it have disappeared too. The bhagat is no longer able to prescribe traditional medicines and women no longer use traditional contraceptives as the forest base that held the roots and plants of medicinal value has vanished. Simultaneously, alternative modern medicine has remained inaccessible. Inability to collect enough mahua flowers to brew liquor or loss of land resources to cultivate enough rice to make rice beer are increasingly becoming problematic. Consumption of liquor, which was once an integral part of the life of the people is now considered a serious problem. The tribal philosophy of work with leisure once the norm of life for the people is now considered to be a serious discipline problem (Sachchkiananda 1979; Areeparampil 1989).

Clearly many crucial elements governing the social, econmic and political aspects of the life of the indigenous tribal people of Bolani, Champua arid Balagoda have changed. However, the change is not holistic. The economy and ecology of the area and of the indigenous people have changed drastically due to external intervention while the social and cultural aspects have not kept pace with this change. The present condition of the original inhabitants in Bolani is a manifestation of rapidly changing economic and ecological aspects and slow changing social and cultural aspects (Comm. SC/ST 1988, 1990; Sharma 1993; Parasuraman, 1991). The tribal people are caught in this contradiction. Those who could effectively adopt their social and cultural values to fit the modern productive process have done well. Others, who were economically dispossessed are unable to keep pace with all these changes and are suffering. They were not given adequate opportunities to derive benefits from mining activities in their area. The experience of tribal groups in Bolani with mine related development and displacement is common in much of Chotanagpur region, comprising the contiguous tribal areas spread over Bihar, Madhya Pradesh, Orissa and West Bengal. Extensive mining activities has displaced over two million tribals in this area (Fernandes and Raj 1992). Mining and consequent developments in the area have deprived the tribal people of their resources: the land, the forest and the river.

Notes

This paper is derived from a larger report prepared by the author to BHPE-KINHILL Joint Venture and Steel Authority of India. All the views expressed in this paper are that of the author. Neither the Tata Institute of Social Sciences where the author is based nor BHPE-KINHILL or SAIL share the responsibility for the views expressed Bolani mines in Keonihar district belongs to the public sector Steel Authority of India Ltd. This paper reports findings of a large study conducted in 1990 and 1992.

Keonihar district of Orissa is one of the districts in Jharkhand region predominantly populated by tribal people. Jharkhand region is formed of contiguous tribal areas of Bihar, Orissa, West Bengal and Madhya Pradesh. Keonjhar is a mineral rich district and mining activities are widespread. The condition of indigenous tribal people in Keonjhar is indicative of the situation in the entire Jharkhand region.

People living in tropical forest areas for thousands of years have accumulated a body of knowledge about the usefulness of plants for curing various diseases. The oral transmission of this cultural knowledge is now jeopardised through the influence of 'modern civilization' with its usually negative impact on tribal unity and continuity.

The Gorakpuri workers from Gorakpur district of Uttar Pradesh were highly valued as hand-miners because of their physical power. The SAIL officials compare the Gorakpuri workers to animals because of their physical power and obedience.

A hand miner treated as contract worker until recently can never hope to live in the company township. Almost all tribal people living in original villages who have mine employment were employed as hand-miners. Schools and health facilities are all mostly located in such a way so as to serve the people living in the company township.

SAIL records available at Calcutta office.

Bolani, as also other mine areas symbolises the deep cultural divide among people living in that area. The tribal people from the original villages, the migrants living in hutments and the people living in Bolani township, represent three distinctively different cultural groups with very little interaction among them. The original village tribal people have now become strangers in their own area and live as separate entities. There is no attempt to bridge the social gap between the three groups. The character of tribal people in the evaluation of company management, government officials and other important persons are: lazy, irresponsible, illiterate, alcoholic and socially and ritual impure. No one has ever countered these charges by emphasizing that the tribal culture is different and they have every right to follow their cultural values. The tribal people who have shed their cultural values and fully adopted high caste Hindu practices were considered as progressive, while

those following their age-old cultural attributes were considered as backward and uncivilised. For the situation to change firstly there is an urgent need to change the attitude of influential people towards tribal people. Secondly, the tribals require the opportunity to benefit from development. At present, both the essential elements are lacking.

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