

Social and Gender Issues in the Stone Quarries Around Ranchi city, Jharkhand, India

By

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Introduction

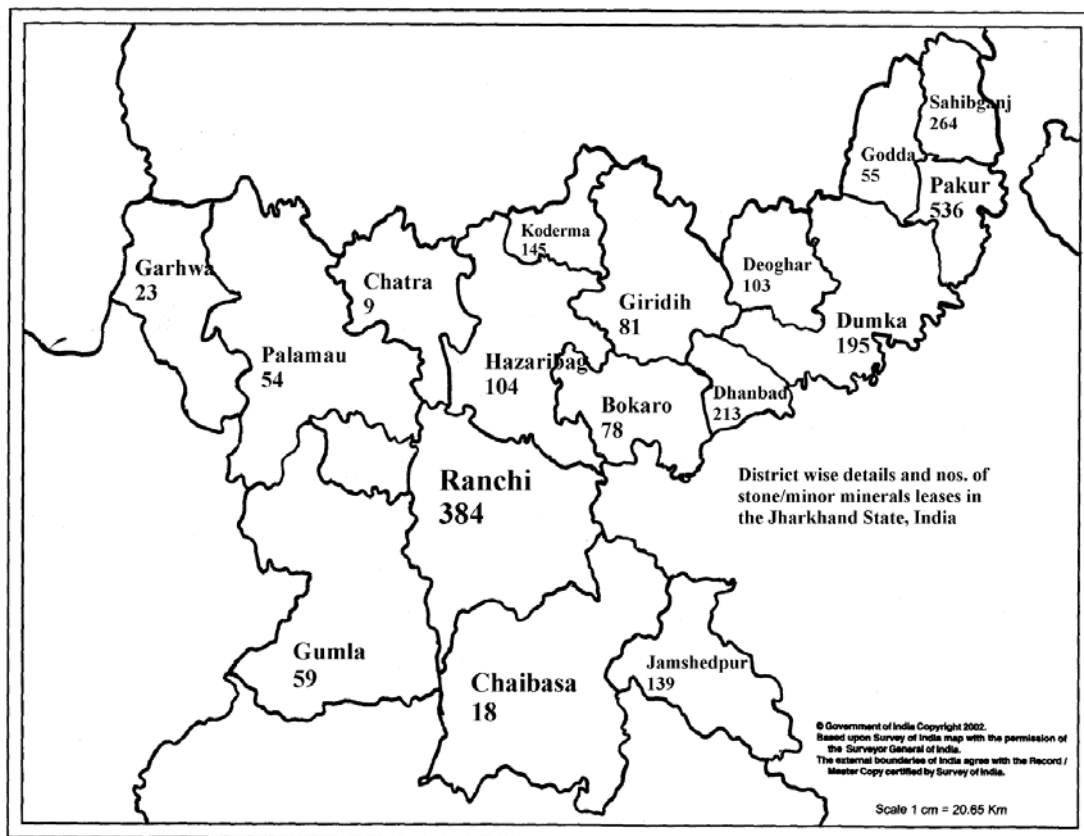
Units Studied: Small scale stone mines and quarries located around the Ranchi district in the Jharkhand state of India. The name Jharkhand literally means 'the land of forests' (*Jhar* - forests or jungle and *Khand* - land including hills and plateaus). The land comprises old erosional surfaces – Ranchi and Hazaribagh plateaus, separated by a steep scarp – once covered by forests that have now turned into degraded dry deciduous and scrub jungle. Innumerable stream channels, many of which come to life only during the monsoons, dissect the region. The Jharkhand state is co-extensive with the Chotanagpur plateau, the Singbhum hills and the Santhal Parganas with 18 districts of erstwhile Bihar state.

The controlling body of ASM: All quarries are privately owned under the lease given by the Jharkhand State Mineral Development Corporation under the Department of Mines and Geology. This mining lease is given subject to the clearance of the local *panchayat* (village council) with regard to the presence of forests and other environmental resources that must not be harmed.

Physical extent of the area: The district of Ranchi is located between $20^{\circ} 21''$ and $23^{\circ} 43''$ N latitude and between $84^{\circ} 0''$ and $85^{\circ} 54''$ E longitude. It extends over 7973.80 sq. km. and has a population of 2,783,577 according to the latest, 2001 census. Physiographically, the district comprises of three broad divisions – the north-western *pat* (flat-topped erosional surfaces) region, the lower Chotanagpur plateau and the Ranchi plateau. The general slope of the terrain is towards the east and south-east.

Local economic traditions: The economy of the district is mainly based on agriculture and forest produce which is the source of livelihood for the bulk of the population. It is only in the post-1960s era that industrialisation has made a rapid progress in the district and attracted people from outside. The indigenous population still follows the traditional occupations. The Census Report broadly records the following

eight livelihood classes, four being of the agricultural and remaining four of the non-agricultural category. The non-earning or dependant people comprise about 64 per cent of the total agricultural population and are composed of women, children and old, infirm persons. However, a large number of women among the scheduled tribes (STs), scheduled castes (SCs) and other backward castes (OBCs, as per the official Census of India definition) work in fields during agricultural operations. They also work as labourers on road and building works.



A map of the study area

Agricultural Classes

- Cultivators of land wholly or mainly owned by them and their dependents;
- Cultivators of land wholly or mainly unowned by them and their dependants;
- Cultivating labourers and their dependants; and

- Non-cultivating owners of land and their dependants, agricultural rent receivers and their dependants.

Non-agricultural Classes

- Primary source of economic well-being comes from kinds of production other than cultivation;
- Commerce;
- Transport; and
- Other services and miscellaneous sources.

Hard rock mining

Regional distribution of Hard rock mining: Mines and quarries are generally localized in Ranchi, Palamau, Gumla, Singhbhum and Dumka districts. In Ranchi, the mines are distributed in Tupudana, Ormanjhi, Namkom and Silli blocks.

Causes of regional variations in distribution: Most of the rocks in the areas are highly weathered and are not of good quality. In some areas top rocks are weathered and useless. Quarrying is taking place only where stones of good quality are found, especially granites and amphibolites.

A brief look at history: The stone quarrying and crushing industry has become common in Jharkhand after the formation of the state in 2000, particularly because of the boom in the building construction industry. There is a huge demand for stones of different sizes by the construction sector for buildings, roads, bridges etc. Small industries have emerged quarrying large rocks and/or stone chips.

Reserves of the resource: 386 million tons (including the other districts) are available, including black and coloured granites.

Rate of the consumption of the resource: In Ranchi district, an average of more than 200 trucks of stones per day is used. Each truck can carry about 10 tons of stones.

Other resources outside mining areas: There are agricultural lands, forest products and small amounts of laterite quarrying. Forest products include timber and fire wood. The forests in Ranchi district are quite deficient in timber. Firewood is the main produce of the forests. However, there are areas where it is not available due to the destruction of local forests. The inhabitants in these places have to burn cow – dung cakes as fuel and thus deprive their agricultural land of valuable manure. *Kendu* leaf (leaf of *Diospyros melanoxylon*) is available in large quantities for making cigarettes, which is commonly consumed by local people. There is potential to make revenue from selling these cigarettes. Myrobalans are also of economic value. Bamboo is available, but is in short supply and mainly confined to the extreme western and north-western parts of the district. River sand is also quarried for construction.

Grade of hard rock deposits: A part of the Plateau of Jharkhand is made up of *Archeans* which are the oldest rocks containing *Dharwars charnockites*, banded gneissic complex, older metamorphic and basement complex rocks. Older age black granites (*dolerite* and *gabbro*) occur as dykes in *Archeans*, which are of later age. Small parts of black granite, underlying the areas around Ranchi city have been useful as decorative stone for many years for the indigenous people as well as the outsiders who came to live in the region. Grey, pink and multi-coloured granites are found to be widespread throughout the Chotanagpur plateau in Jharkhand. However, grey granites with decorative value from which large blocks may be recovered are being mined in the Tupudana area near Ranchi. All the hard rocks, except weathered rocks are of good grade and can be used for decoration.

Mining and Processing tasks: Granite is being quarried from open mines in selected project areas. After quarrying, the rocks are sent to crushers where it is crushed

to different sizes according to the market demand. The crushed material is segregated size wise by screening and is then dispatched for road and building construction.

Mining equipment: A compressor with jack hammer – drills. They can arrange for line drilling, chisels and shovels.

Processing equipment: The machine, bridge, saw carriage, rise and fall rest, working spindle, control desk for electrical equipment and block Carriage.

Mining methods: Mining is done manually in these areas. Linear vertical drilling along chosen lines and manual wedge-splitting is the most common procedure of granite quarrying. Rocks with the desired quality are selected from among the rock exposures. The overburden, if any, is removed and fresh rocks are exposed and checked for suitability. Drilling and channeling is done by hand using chisels and hammers. Blocks as well as slabs of desired sizes are then cut from developed faces. Vertical joints, if well spaced, and rifts and grains, if any, are utilised for splitting the blocks. Horizontal joints called ‘sheetings’ are used for dislodging the blocks at their base. Generally very little blasting is done to avoid development of cracks in unwanted directions. To dislodge the bigger blocks, mild charging of linear holes with gun powder and controlled blasting using exploder is done in a few quarries in the area. The granite blocks or pieces recovered from the larger rock is lifted manually and taken to the dressing yards.

Methods of Transport: Women carry the smaller pieces in baskets carried on their heads. This is usually done locally for short distances from the site of cutting to the distant transport modes. This is an extremely heavy job, at once carrying about 40 kilograms of load on the head. Trucks and lorries are used to transport the large blocks and pieces of rock from a mine site to a processing plant.

Mineral processing methods: Stone crushing is a mechanical operation by which large sized stones mined from quarries, in the size range of 200-300 mm. diameter is crushed to smaller usable sizes generally 6, 15, 25 mm. diameters. The crushed material is segregated size wise by screening and is then ready for dispatch. However, the material is brought into the crusher by head loads of women, mostly from local indigenous communities.

The physical environment

Environmental factors: Negative and Positive

The **negative factors:**

1. Deforestation;
2. Loss of top soil;
3. Air pollution in the form of fine dust generated by the mining and crushing of hard rocks; and
4. Health problems like regular reports of cough and cold among the miners.

The **positive factors:**

1. After the quarry is abandoned the basin formed serves as good reservoir for surface water that is trapped during the rainy season. Villagers and miners use this water for domestic purposes and sometimes for other purposes, especially in summer when most sources of water are dry or are not good enough for domestic use.
2. Increased availability of water trapped in open abandoned mines can be used for local agriculture.

Key impacts on air quality: Fine white and grey dust forms a thin layer in the air and remains there for a longer time. This finally affects human health and also different flora and fauna.

Key impacts on water quality: All the quarrying is done on top of hills or high lands where there is no water table or other sources of water. There were only a few cases where water is trapped in abandoned mines. This water got polluted in the absence of any treatment.

Key impacts on local ecosystem: Open cast quarrying is supposed to have the maximum impact on the ecology. With this system, land is required not only for the area to be mined, but also for the dumping of overburden rocks. The impacts of mining on ecology in the project area are given below.

- Removal of vegetation has made animals leave the area required for quarrying.
- Dust in the atmosphere from various activities may slow the growth of some of the plant species in the surrounding area.
- Noise and vibrations from blasting, operation of the machines and transportation have driven away small animals including wild animals and birds from nearby forests.
- Due to quarrying, the top soil has been damaged.
- Topography and scenario has changed due to digging of open pits and dumping of overburden weathered rock mass in the form of large heaps.

Key impacts on the Forests: To create new areas for quarrying, forests have been removed. In some areas, especially near Tupudana in Ranchi district, there is no trace of forests.

Key impacts on cultural heritage and indigenous people: Invariably almost all the skilled and semi-skilled manpower required for quarrying comes from outside because such trained manpower is usually unavailable in the indigenous populations (*adivasis*). Also, some people come from other parts to this area for trade and for other various reasons. The population dynamics has thus undergone a major change over the years resulting in dilution of the indigenous population, their religion and

culture. The adivasis are losing their identity due to the mixing up with the other mine workers. For example the dowry system, non-existent among the adivasis, has been introduced into their customs nowadays. Negative patriarchal dominance has entered the society. Drug and liquor abuse has spread widely in their areas and women are much the same in relation to these addictions. Wife battering has become quite common among the adivasis. The values that the adivasis cherished and learnt from – the natural flora and fauna in the region – has now disappeared. The association between women and nature has been adversely affected. Earlier adivasi women had a right to property and land. With the onset of quarrying they have lost this right due to influences from the outside world. They are now forced to work in the quarries.

The social landscape

The changes in the last hundred years: Entry of the modern civilisation has stirred social life even in remote villages, although the old traditions and beliefs still prevail there. The urban and quasi-urban areas are undergoing a complete transformation. Generally the family life is becoming more and more individualistic. In rural parts near Ranchi district, the concept of joint family is disintegrating and educated people are migrating to Ranchi City as there is a prospect of employment to them there. The adivasis have started shedding their indigenous character. They are leaving their homes to earn a living in mining and industrial establishment. The uprooting of the adivasis from their home environments has brought material advancement for individuals. Industrialisation has promoted dignity of labour among upper castes and has reduced the social gulf among them. It has also brought some unrest in society, centering on the problems of labour.

The urbanisation process has been intensified after the modern industries have come to this district, particularly near Ranchi City. People have been uprooted, their land taken to

make space for the sites of various industries and there is now the problem of their relief and rehabilitation. Also, it has caused sex imbalance in the society and a housing shortage, though it has taken only a small portion of the rural population off their land.

Desire for higher education: In Ranchi City, there is a great desire for higher education among the populace. But among people in remote areas, especially around mining areas, there is no desire for higher education. They prefer to earn money from their childhood. Also due to the extremism in the outskirts of the district attendance of the students and teachers is very poor in colleges.

Awareness, knowledge and know-how: Compared to Ranchi City the people around mining areas lack basic knowledge and awareness. Due to poverty they prefer work to studies or gathering knowledge.

Pre-existing towns, villages and settlements: All the quarrying is done in abandoned areas like hills in forest. There is no report of any pre-existing civilization in the research area. There is no settlement as **Mining settlements** around the mining areas as the workers come to work from nearby villages and return back in evening after working hours.

Specific characters of housing owned: Near quarrying areas, the houses are made of mud with inclined roofs. The structure of all the houses was uniform. A few houses were made of bricks. There is no concept of rents or tent housing in villages in the project areas.

Facilities: General grocery store, cafés and bars, slaughterhouses, hairdressers and barber shops, pharmacies, computer games shops, cyber café, phone booths, video shops, cinemas etc. If they don't go to the general store, villagers and miners have to go to the State Highway, 4 km from the mining area and nearby villages or to the Ranchi City (capital of Jharkhand State) which is 25km away to meet their demands. Regarding cafés,

computer games and cinemas, miners and villagers have to go to Ranchi City. Villagers are not aware of computer games and cyber cafés.

Energy supply service - electricity: Electricity is now available in the villages around mining areas but not commonly consumed because of high prices.

Fuel supply service:

- **Timber and firewood** are classed as major forest produce. The timbers are brought from nearby forests, but it is hard to find good quality timbers. The forests in this district are dangerously short of timber. Particularly during the last World War all good timbers and poles were cut away from the accessible forests.
- **Coal** is available but the villagers have to purchase it. Coal comes from the coal mines 45 km away from the Ranchi City.
- **Cow-dung** is the chief source for animal dung fuel. Due to the destruction of local forests the inhabitants have to burn cow-dung cakes as fuel and thus deprive their agricultural land of valuable manure.
- **Rubber from cycle tyres or truck tyres** is generally used for burning. However, due to its foul smell it is only used in winter season to combat cold or sometimes to keep away wild animals like jackals, leopards and elephants that are now creating daily damages to the human life in this district.
- **Diesel and petrol:** They are available from the petrol pumps situated in near by state highways.

Transport service - passengers: Villagers and miners have to come to state/national highways to catch local buses or auto-rickshaw. Villagers generally walk to catch the buses or auto-rickshaws. Women carry their children tied to their back with basket loads on their head. In the early part of the last century pack-bullocks, pack-ponies and bullock carts continued to provide the transport in the countryside. Still today bullock carts can be seen in the villages but it is very few in number.

Pitched shops and mobile shops: Grocery shops are the only pitched shops around the mining areas and villages. Mobile shops include vegetables, clothes, locally made cold drinks, ice creams, bangles and fruits shops.

Illegal mining

Reasons for engaging in illegal mining: Poverty, as there is no other major source of income. Even the agricultural lands are not suitable for healthy farming.

Geological factors: Geologically, the district is underlain by Pre-cambrian metamorphic rocks, e.g. Chotanagpur granite, gneiss and schist. The district has variety of soils such as red, yellow and sandy soils; while red gravelly and older alluvium occurs occasionally. Recent alluvium occurs only along the river channels. Ranchi has undulating topography. The granite gneiss complex around Ranchi is a complete mass consisting mainly of granite gneiss, migmatites and massive granite with enclaves of para and orthometamorphics, dykes of dolerite and innumerable veins of pegmatite, aplite and quartz. Developed joints have been found all over the area, particularly in the granitic rocks. Phyllites and Mica schists, quartzite, quartz-schist, amphibolites, hornblende-schist, granite gneiss, dolerite and laterite are the important rock types in and around Ranchi. Vein rocks are found extensively among the older rocks of the Ranchi district. Coarse pegmatitic intrusive are quite abundant, though they tend to cluster at places and result in irregular distribution. Veins of aplite, quartz (blue and white), quartz-tourmaline rocks and massive biotite-granite are also of common types. Apart from the Chota Nagpur granite gneiss, laterite is the most abundant rock formation in this district.

Other reasons

1. **Resource losses due to mining operations:** Top soils and the forest covers.

2. **Resource losses due to mineral processing:** Fertility of the top soil.

The miners: All the miners are from local villages. They are primarily from local adivasi groups. The men generally work in the quarries, whereas women usually work on crushers. Some of the skilled miners have also been brought from other districts or states. The age group is from about 18 years to about 45 years of age. Some of them are actively involved in agriculture as an **alternative occupation** only when the mines are not working, especially during the rainy season. There are no itinerant miners.

Social problems

Alcoholism: Almost all women and men of adivasi groups enjoy alcoholism around the active quarrying areas. The traditional drink is *hanria* (name of the locally made drink) which is made from rice. It has been a common drink of the adivasis for a long time, but now it has rival in distilled liquor, which is sold everywhere through distilleries. This liquor is stronger and also costs more than locally made liquor, but the adivasis are getting addicted to it, even though they may have to spend the major part of their income on it.

Professionals: Professionals like explosive experts are the only people used in these mines. Above all most of them do not have even primary education.

Sexual division of labour

Men generally work in mines and women work on crushers. In processing, the role of women become more important and this sector is dominated by women. In short-distance transportation, women generally carry head loads of baskets from the mine site to the crusher site. In long-distance transportation by trucks of products, men regain the control. **At home** too, the division of labour continues in adivasi societies. Women are permitted to take up any profession open to men and they are the major earning members in family.

Previous employment of males: Earlier they employed themselves in agriculture or worked as labour on daily wages in a city or town. Others worked as rickshaw pullers

in a city or town. Some even worked as domestic servants on a monthly salary. The statistics of the employment exchange, Ranchi, do not project an accurate picture of the trends of employment or that of unemployment. There is no statutory obligation on an unemployed person to get themselves registered and employed either in the public or in the private sector and the employers make their appointments even without making a reference to the employment exchange.

Previous employment of females: Earlier women worked as labour in construction sites in a city or town on daily wages or they worked as a maid in city houses.

Working conditions

Mining season: Mining season usually extends from the winter to summer i.e. from October to June next year.

Law and order and human rights: There are no big law and order problems. Regarding human rights except of excess working hours and less pay and lack of primary medical facilities for the miners, there is no report of violation of human rights.

Wages in mining: According to mine owners daily wages to men and women are Rs.65. In some areas it is less for women. The **daily income** varies from Rs.50 to Rs.65, with a **monthly income** average of Rs.1500 for most workers. The **annual income** varies between Rs.16, 000 to Rs.18, 000.

Women's views on wages: Women are not satisfied. When asked about the wages they are given of Rs.65, they kept silent. It indicates that they are paid even less.

Provision of toilets, crèches: There is no provision of toilets. All the workers including women 'go' in the open to fulfill nature's demand. There is no concept of crèches.

Sexual harassment: Villagers around the mining areas are quite sensitive on this issue, so no cases of sexual harassment have been heard so far. Prostitution or sexual harassment as prevalent in feudal society or in cities does not exist in the rural areas, especially in adivasi dominated areas. This is due to the fact that the adivasi society has given sufficient opportunity to its young men and women to mix freely. Their social institutions have stood guard against such incidence.

Children of miners or child miners: No child was seen working in the active mining areas. Some small children were found playing around the mines while their mothers were working. As there is no one to take care of these children at home, the mothers would bring their children to the working site.

Labour protection in mining: Labourers working on daily wages are not well organised. Workers working on a contract are somehow in a good position. But in both cases no preventive measures are taken while working with and planting explosives in mines. Helmets are not provided to the miners working in dangerous condition. Nose masks are not given to them to protect them from the dust pollution created by the crushing of stones.

Labour protection in processing: Condition is more or less same as that of mining. The only difference is that explosives are used in mining and in processing it is not.

Protective clothing: No protective clothing is supplied. Workers generally bring clothes from their home to protect themselves from the dust pollution.

Opinion of miners on working condition: Workers are not satisfied with the working conditions, especially women mine workers. They complain about working in unhygienic conditions. They also complain about the lack of an emergency medical facility.

Working hours: Working hours differs from mine to mine and it is different for contract labourers and daily wages labourers. For contract labourers it depends on the labourers, it may vary from three hours to four hours a day. But the situation is different for daily wages labourers. Working time usually varies from eight hours to ten hours a day.

Opinions of miners on health condition: Workers always complain about cough and cold. Malaria is very common in the mining areas. In some mining areas like that of *Ormanjhi* block of Ranchi district, miners, especially women miners, complain that no preventive measures are taken against stone dust. Some of the women miners were found working in the dust without a nose mask inhaling all the dust. The situation is opposite for that of supervisors. They get a rest for one month after every two months of working. Miners have to travel 15 to 20km to reach nearest hospital. A health study was done on the workers working in stone mining areas in *Daltonganj* and *Gumla* districts of the state. It was found that in the Pulmonary Function test sixty percent of the people had an abnormal spirogram. Most had mild to moderate obstruction of airways while other workers with more than 10 years of experience had severe obstruction.

Creating sustainable livelihoods

Poverty reduction and employment generation: After mining reached these areas it brought changes in the adivasis or other indigenous people in reducing poverty by generating employment. People of this area are now consuming electricity, watching TV and going to the city to watch cinemas. Earlier these were dreams for them.

Community conflicts:

- **Law and order:** After the formation of Jharkhand State community conflicts especially among the indigenous people and non-indigenous are taking place. Several people of both communities have died due to conflict created by the political parties and politicians. The bone of contention is the land ownership and the job opportunities. Some extremist groups have even started creating influence on the poor people of this area and are demanding extortion from the mine owners.
- **Health:** Around the mining areas some common diseases are malaria, anemia, stomach problems and cough and cold.
- **Prostitution:** As mentioned earlier prostitution is not common in this area. This is due to the fact that the tribal society dominant in this area has given sufficient opportunity to its young men and women to mix freely. However, with the migration of people to this mining area from other parts of the district and state for employment, the sex disparity due to the preponderance of men over women has begun causing some social imbalances

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