

**CENTRE FOR WORKERS' MANAGEMENT**

Research Paper Series 2015

# **Sandstone Quarrying in Rajasthan - Wages & Work**

**#4**

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The Centre for Workers' Management (CWM) is a resource centre for workers founded in 1991 as an initiative of democratic, autonomous trade unions, with the specific mandate to take forward collective bargaining and industrial democracy in all forms of employment relations. This mandate continues to guide CWM's activities and engagement with trade unions and social movements.

The Rosa Luxemburg Foundation is one of the largest political education institutions in Germany today and sees itself as part of the intellectual current of democratic socialism. The foundation evolved from a small political group, "Social Analysis and Political Education Association", founded in 1990 in Berlin into a nationwide political education organisation, a discussion forum for critical thought and political alternatives as well a research facility for progressive research analysis.

## **Preface**

This study was an exploration of the conditions of work and wages in the state of Rajasthan that in the 1980s used to be categorised as one of the BIMARU (undivided Bihar, undivided Madhya Pradesh, Rajasthan and undivided Uttar Pradesh, bimar meaning sick in Hindi) states and today leads the country with its model of deregulation of labour legislation. We chose the sandstone mining industry both for the growth in demand for sandstone across the world following the construction industry boom and to understand the changes in the industry and how it has adjusted to demand from the perspective of workers and also due to its location in Rajasthan, which today leads the country with its changes in labour laws and how this affects workers in a growing industry.

Shakti Hiranyagarbha ably and diligently assisted the study with the interviews in Kota-Bundi area and compiling the data. Manodeep Guha extended his support at every stage of the study sharing both his experience as a trade union activist and as a labour rights monitor in collecting information from the ground and identifying violations of existing legislation. Shakti and Manodeep's love of photography is evident in the report. Mohan Mani, of course, painstakingly wrote the report with support from Manodeep and Shakti.

Last, but most importantly, we would like to thank Ashok Khandelwal for putting us in touch with Dinesh Sharma who, notwithstanding the personal challenges before him, introduced us to workers, trade unionists, and many others in the region, walked us around mines, and shared his experience as a trade unionist in the mining area in long discussions for us to better understand the sector and its workers.

We hope this study will be a starting point in understanding how changes in legislative environment and global market scenario affects workers in different sectors.

- Dithhi Bhattacharya  
Executive Head

# Introduction

Sandstone is one of the most abundantly found and widely used natural stone across the world. A sedimentary rock, sandstone consists of sand or sand sized rock particles which are rich in quartz and/or feldspar<sup>1</sup>. Due to its hardness and resistance to weathering sandstone has been extensively used in construction since prehistoric times. The traces of usage of sandstone date back to the Indus valley civilisation.

India has large deposits of sandstone spread across Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Madhya Pradesh, Meghalaya, Mizoram, Karnataka, Odisha, Punjab, Rajasthan, Uttar Pradesh, Tamil Nadu and West Bengal. There is no comprehensive repository of sandstone availability in India. However, Centre for Development of Stones (CDOS), of the Government of Rajasthan has reported that sandstone reserves in the country exceed 1000 million tonnes.<sup>2</sup>

The hardness, colour and thickness of sandstone are dependent on the mode of formation and the sand composition, hence it is found in a variety of colour and hardness across India. This richness in variety has led to India becoming the largest global exporter of sandstone.

Among Indian states, Rajasthan, Madhya Pradesh, Gujarat and Uttar Pradesh lead the market in mining and export of sandstones. Kota, Bundi and Jhalawar districts of Rajasthan are known for their red sandstone. This popular variety has found a niche market for itself, so much so that the red sandstone has become synonymous to the Bundi district. Internationally red sandstone from Rajasthan is marketed under the commercial name *Bundi Red*.

Gujarat produces fairly hard, fine to medium-grain sandstone in colours varying from light-purple to yellow and white to cream. Large deposits of sandstone are found in the Kucch

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1 Chemically Quartz is Silica, SiO<sub>2</sub> and Feldspar is a group of minerals that is distinguished by the presence of alumina and silica.

2 Indian Minerals Yearbook 2012, Government of India

and Vadodara districts of Gujrat.

Panna, Shivpuri and Jabbalpur districts of Madhya Pradesh have extensive deposits of sandstone and mostly yield stones which are cream, yellow and white in colour. Agra, Sonebhadra, Mirzapur, Lalitpur are sandstone abundant areas in Uttar Pradesh. Sandstone from Uttar Pradesh offer a rich variety of colours such as cream, yellow, maroon and light green. These stones have carved a place for themselves in the domestic as well as international market and they are traded under commercial names such as Royal Gold, Beach Sand and UP Green.<sup>3</sup>

Table1: Sandstone Export 2012-14

Top 5 Sandstone Exporting Countries					
Year	Country	Net weight (in kgs)	Trade Value (in US \$)	Export value/ MT	Weighted Average Export value
2012	India	420380943	88062645	209.48	214.6
	Australia	25070822	7452012	297.24	
	Portugal	50381714	6559462	130.20	
	Belgium	16004303	4106853	256.61	
	Ireland	11885672	3324544	279.71	
2013	India	606012941	131356400	216.76	224.4
	Australia	37646392	8540789	226.87	
	China	10437382	4097501	392.58	
	France	12548953	3506192	279.40	
	Belgium	13215776	3379553	255.72	
2014	India	641632844	144814991	225.70	229.6
	Australia	21530011	5630617	261.52	
	France	20628222	4439173	215.20	
	Belgium	15696758	3437384	218.99	
	Spain	9094917	3391145	372.86	

Source: Ministry of Commerce and Trade

Table 1 above compares the trade in volume (in kgs) and value (in US \$) of the top five sandstone exporting countries in the world during the last three years. It shows that Indian

<sup>3</sup> ibid.

dominance of the global sandstone market increased over the past years, with its market share increasing from 80% in 2012 to 90% in 2014. The value of the exported Indian sandstone also remained steady, varying from a weighted average of \$214/MT in 2012 to \$230/MT in 2014 for 5 top buying countries of Indian sandstone.

This study restricts itself to sandstone mining in Rajasthan and looks at the conditions of employment in sandstone mining.

## Methodology

The study was undertaken in Bundi district in Rajasthan during August-September and in December 2015. August-September was a lean period for mining, as most mines were closed after the monsoon season. The mines reopened around November, with water in the mining area being cleared and the mines being made accessible for operation. Bundi district alone produced 21478846 tonnes of sandstone valued at Rs. 1290984285 mn in 2014-15.<sup>4</sup>

The study team conducted its study with the following organisations:

Bundi Silica Mines – this is the largest mines in Bundi district. The work is undertaken through direct contract with workers, and through subcontracting arrangements with several petty contractors. The mines employ a total of more than 1000 workers in peak season

1. Stone Stocks, Bundi
2. Small Mines (Masonry mines) Tulsi Village, Bundi
3. Mechanised stone cutters in Bundi district
4. ESI hospital and Medical College, Kota

The focus of the study was to understand the conditions

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<sup>4</sup> <http://bundi.rajasthan.gov.in/content/raj/bundi/en/about-bundi/statistical-handbook.html>

of employment and work, with special emphasis on occupational safety. A questionnaire schedule was prepared based on background readings on the sandstone mining sector. The questionnaire was used as guide for the individual interviews and focussed group discussions with workers, and with contractors.

In-depth interviews were done with fifteen workers in the two mines. In addition, one focussed group discussion was done with the mine workers, and one with workers engaged in stone work in the stock yard. While the research team was allowed to visit and look around the processes in the mechanised stone processing unit, they were not allowed to have interactions with the workers. They were however able to briefly discuss the production processes with the supervisors.

Discussion was conducted with a doctor who was Member on the state Silicosis Board, and with officials of the Directorate of Mines at Rajasthan.

## Sandstone in Rajasthan

The Vindhyan and Trans-Aravali formations which spread over an area of 35,000 sq km across the south eastern region form the sandstone rich areas of Rajasthan. They are spread across the districts of Dholpur, Bharatpur, Karauli, Sawai Madhopur, Tonk, Bundi, Jhalawar, Kota, Bhilwara and Chittorgarh. Some sandstone reserves are also scattered over the western desert plane. Though, concrete data is unavailable, it is the claim of the Directorate of Mines and Geology, Rajasthan that the state produces about 90% of India's total sandstone output.<sup>5</sup>

The following map highlights sandstone rich areas of Rajasthan.

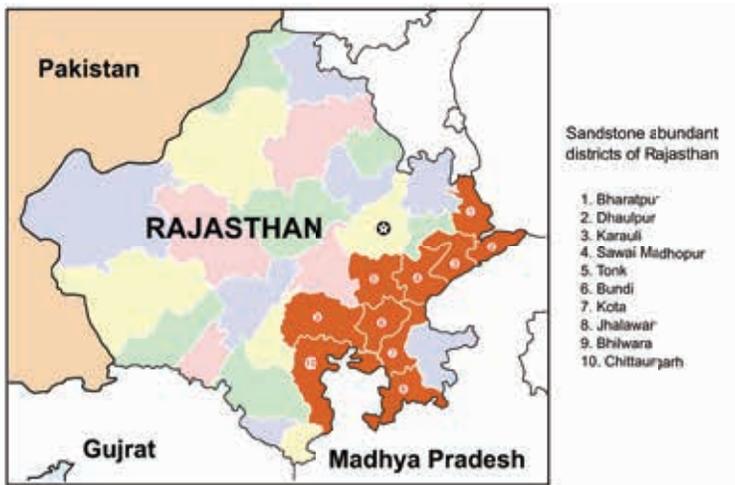


Photo 1: Sandstone Areas in Rajasthan

Source: *Indian Mineral Yearbook, 2014, Government of India*

In recent years, sandstone has seen an unprecedented surge in demand globally, as well as in the domestic market. The demand for sandstone is intrinsically linked to the growth of the construction industry both within the country and

<sup>5</sup> Indian Mineral Yearbook, 2014, Government of India

globally.

Table 2 below presents the value of sandstone exports from India for the period 2009-2015. In the last four year period, from 2011-12 to 2014-15, the Indian sandstone exports have increased nearly two and a half times. UK remains the principal importer of Indian sandstones, with 60-70% of sandstone being exported to the UK. In 2014, the output of the UK construction industry was £103 billion, 6.5% of the total economy. The industry’s output rose in 2014 by 9.5% in real terms, the biggest increase since at least 1990<sup>6</sup> which is evident from the sudden surge in export of sandstone that year (see table 2).

The crisis in the US subprime domestic housing market had triggered off the financial crisis in 2007–8 and this led to a severe impact on the construction industry worldwide. The ILO calculates that about 5 million construction workers across the world lost their jobs during 2008.<sup>7</sup> The sandstone export data shows this trend.

Table2: Indian Sandstone Exports 2009-15

Indian Sandstone Exports 2009-15						
	Value (in Rs. mn)					
Country	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
UK	2248.42	1368.98	1828.77	2921.63	4760.66	5220.71
Belgium	248.00	155.13	183.27	168.00	140.98	283.95
Germany	207.28	139.28	144.54	202.53	228.49	263.06
Australia	169.72	152.89	236.90	179.51	216.12	253.90
Italy	160.55	146.11	174.31	148.72	213.01	241.20
UAE	156.43	111.77	109.82	127.40	214.71	214.13
Canada	133.94	125.03	158.53	309.13	408.02	386.23
France	106.57	106.65	127.45	125.16	135.50	126.94
USA	78.55	93.05	113.97	189.94	284.21	449.76
Total	3509.49	2398.93	3077.58	4372.04	6601.73	7439.92

Source: Ministry of Trade and Commerce

6 Construction industry: statistics and policy, Briefing Paper Number 01432, 6 October 2015, Chris Rhodes, House of Commons Library

7 World of Work, ILO, No. 66, August 2009, Stemming the Crisis: World Leaders forge Global Jobs Pact

The demand for sandstone as a construction material in the global market especially in European countries can be attributed to its relatively lower price compared to marble and granite and its durability and capacity to retain heat.

Indian granite exports declined 33 per cent between 2006-07 and 2008-09. Its export revenues fell steeply in 2007-08, even before there were visible signs of a slowdown in Indian housing industry. What perhaps explains the increase in export volumes in 2007-08 is that polished granite, which commands a better price, was substituted by semi-finished blocks. Yet, prices in the latter category remained unattractive, reflecting the severity of the recession. Volumes increased by 10.2 per cent in 2007-08 over the previous year, while revenue earned from exports decreased by 17.6 per cent this year. The decline in export earnings and volumes was more pronounced in 2008-09. About 85-90 per cent of the total granite production in the country is for exports.<sup>8</sup> Thus, price of the stone was the determining factor in export volumes. Low cost semi finished blocks of granite replaced finished granite and low cost sandstone replaced semi-finished granite and marble.

Export Earning in Rs.mn					
	2007	2008	2009	2010	2011
UK	1922.35	2530.06	2028.75	2028.75	1995.14
USA	12932.24	10844.28	8105.92	7011.22	7530.65

Source: [www.commerce.nic.in](http://www.commerce.nic.in)

Traditionally, the domestic construction industry preferred marble and granite. The use of sandstone was limited for paving in gardens, public places like railway station or bus stands; or as milestones and road dividers. The sandstone used locally was not polished, and therefore gained popularity as a low-end natural construction material. It was due to the pressing demand from the European market that sandstone

8 A Study on Trend of Export of Natural Stones from India to Various Countries, Kalpana Agarwal, Parupriya Singh Gaharwa, International Journal of Advancements in Research & Technology, Volume 2, Issue 7, July-2013

started getting polished in India. The otherwise lustreless stone soon became popular in the domestic market and today it is being widely used to replace costlier granite by the construction industry.

## **Mining Business Ownership**

The mining business in Rajasthan remains in the control of family owned proprietorships or partnership companies. Most of the quarries are controlled by landlords and their families or politically influential persons. Usually a quarry owner buys land from a private land owner.

As most revenue and non agricultural land has already been leased for mining in this area, the demand for agricultural land has risen for mining purpose. The profits from mining are much higher than from agriculture and hence there has been a steady change in the land use pattern in the area leading to serious environmental consequences. Due to extensive deep excavation for mining, the water table depletes leading to a water crisis.

The rise in demand for sandstone has brought sky-rocketing profits to sandstone mine owners and contractors in Rajasthan.

The use of the product as polished stone has also meant changes in the manufacturing process, with mechanisation of cutting and polishing of stones. However, the traditional mining operations and post-mining manual sizing of stones still continue in the various sandstone mines. The sized stones sometimes are exported to European destinations where they are polished, or sent for polishing to local polishing units before use in construction, or used directly as unpolished sandstone. The labour intensive and difficult task of cutting and sizing sandstone still survives as it is more economical in comparison to mechanical cutting of stones. The abysmally low wages, lack of any form of regulation, absence of social security in the sector, all contribute to a

persistence of exploitative working conditions in an industry that is extremely profitable, and has a large export market. The integration into a global supply chain has thus not resulted in any changes in the conditions of employment for the workers at the bottom of the supply chain.

## Employment in the mines

As mining and hand dressing of sandstone into tiles is a manual, labour intensive and time consuming process, the industry requires a large number of workers during the peak seasons. The work during peak seasons therefore attracts, in addition to local workers, workers from the neighbouring state of Madhya Pradesh as well as migrant workers from the neighbouring districts. According to the 2011 census, of the total rural population of Bundi district, about 19% persons were of the Scheduled caste and 24% of scheduled tribes.<sup>9</sup> Many migrants in Bundi are adivasis from the Baran district in Rajasthan, or from Southern Uttar Pradesh, Orissa, or Jharkhand, and dalits from Tamil Nadu, Andhra Pradesh, Bihar and Madhya Pradesh.<sup>10</sup> On a seasonal basis, especially at the end of monsoon, migration increases.

The workers at the mines can be classified into two broad categories - resident workers and migrant workers. Both the resident and migrant workers were mostly persons belonging to scheduled tribes or dalits (scheduled castes).

Resident workers live around the mining areas in brick (*pukka*) tenements which are illegal settlements without access to water supply or electricity. Most of these workers are also migrant workers from other states but have been working in these mines for several generations. They are mostly tied to the mines through a complex debt bondage that extends to their families. In the lean season, these workers usually do not undertake other employments and sustain themselves on further loans.<sup>11</sup>

The migrant workers come in search of work to the mines during the peak season. They reside within the mining area in temporary tenements, and vacate the premises as the

9 <http://bundi.rajasthan.gov.in/content/raj/bundi/en/about-bundi/statistical-handbook.html>

10 Budhpura 'Ground Zero' Sandstone Quarrying in India, P Madhavan and Sanjay Raj, India Committee of the Netherlands, Dec 2005

11 Debt Bondage in the Sandstone Quarries of Rajasthan, S Gunasekaran, EPW, Vol. 49, Issue No 30, 26 July 2014

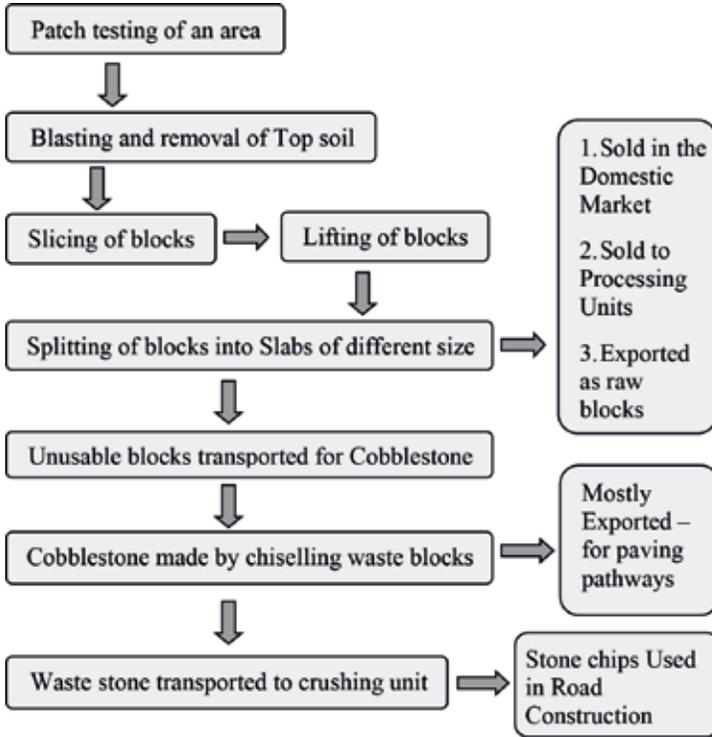
work comes to halt during the monsoons. They return to their villages for agricultural work as agricultural labourers. They are mostly landless adivasi agricultural labourers from nearby states.

Workers including migrants typically reside with their families in the mining areas. The women also work in support activities of carrying material and tools, cleaning the work area, and taking care of children and providing for the family.

The children who live and grow up in the mine area have no access to schooling. As a result many working in the mines are third and fourth generation mine workers, who started working in the mines as adolescents helping their parents. The lack of schooling means that workers are ill-equipped to understand laws and bargain for their rights and legal entitlements.

## Mining and Processing

The process of excavation of a non-splittable block of sandstone and its hand dressing into tiles could spread over as much as 15 days.



The stages of the process are as described below.

First, patch test of an area is conducted to determine the possibility and viability of quarrying in a particular area.

The quarry owner then has to obtain a lease license to quarry that area. Generally, the quarry lease is obtained for a period of 20 years. There are four main agencies involved in the lease process: (1) the Department of Mines and Geology, (2) the Department of Forests and Environment, (3) the Revenue Department, and (4) local self government bodies

such as the panchayat samitis. The quarry lease is cleared by the Mines and Geology Department, the surface lease is given by the Revenue Department and an environmental clearance is required from the Department of Forest and Environment. However, there is very little coordination between the different government agencies.

Once the legal procedure is cleared, the initial process of unearthing and top soil removal is undertaken. The top soil and rubble is removed from the surface of the non-splittable sandstone block. This takes about 2-3 days.



The hard and non-splittable sandstone block locally known as *Bhaata* is then drilled and blasted to expose the underlying sandstone. Debris from blasting and the *bhaata* is then removed from the mine site over a period of 2 days and the initial quarrying begins. Clearing of debris and top soil is categorised as unskilled work and generally carried out by women. Women do none of the “skilled” work in the sandstone mines.

Closely spaced holes are made using eye shaped chisels locally known as *Gulla*. The wedging of *gullas* to split a crack in the stone block is a highly skilled task. Hence, it is carried out by the older mine workers. To neatly crack the slab for excavation the block is continuously hammered. This

process of drilling the holes and hammering may extend up to 4-5 days.



The blocks thus split are transported to other areas of mine or to a stock place for further splitting into slabs of required length.



Layers in the sandstone block are obtained by the same technique as preparing the block for excavation - by constantly hammering the block. Layers of block are then cut into marked sizes using chisels.



Hand dressed slabs are stockpiled at a designated place and transported for polishing or packaging as per demand. Hammering and chiselling of sandstone and its transportation is carried out in groups by men. These groups, called *Jutka* may have 6 or more members depending on the task.



The processing of stone blocks usually ends here in the mines. The remaining stages of processing are conducted in stone crushing units.



The waste blocks are transported to stone crushing units for paving stones and stone chips.

## Policy Framework

The number of mineral concessions in the state of Rajasthan in the year 1960-61 was 5,713 (500 major mineral leases, 806 minor mineral leases and 4,407 quarry licences). This has increased to 33,375 (138 major mineral leases, 15,136 minor mineral leases and 18,249 quarry licences) in 2014-15. The following laws regulate mining activities in the state:

1. The Mines Act, 1952
2. The Mines and Mineral (Development and Regulation) Act, 1957 & Amendment Act, 2015
3. Mines Rules, 1955
4. Mineral Concession Rules, 1960
5. Mineral Conservation and Development Rules, 1988
6. Rajasthan Minor Minerals Concession Rules 1986
7. The Rajasthan Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules, 2007

Following liberalization, the government announced the National Mineral Policy (NMP) in 1993, opening the mining sector for private investment including foreign investment. In 1994, the earlier restriction of 40% on foreign equity was removed permitting even 100% foreign equity. The only requirement was that the company should be registered in India under India's corporate laws.

In the Mid-Term Appraisal of the Tenth Five-Year Plan, it was observed that the main factors responsible for slow growth of the mining sector were procedural delays in the processing of applications for mineral concessions and the absence of adequate infrastructure in the mining areas. The Planning Commission constituted a Committee under the Chairmanship of Shri Anwarul Hoda, Member, Planning Commission, in 2005 to look into this. Based on the recommendation of this Committee the National Mineral Policy 2008 was formulated.

The National Mineral Policy-2008 brought in many significant changes. This provided for a change in the role of the Central Government and the State Governments to incentivize private sector investment in exploration and mining and for ensuring level playing field and transparency in the grant of concessions and promotion of scientific mining within a sustainable development framework so as to protect the interest of local population in mining areas.

The policy calls for a strong push for more mechanised, less labour-intensive mining, where the industry will largely depend on “skilled” labour with a high level of technical competence. It also proposes to substantially increase the scale of privatisation. Moreover, by proposing a Sustainable Development Framework, environmental regulations have been made voluntary in mining. Environmental protection is further compromised by the fact that the policy prescribes no deterrents for non-compliance. The NMP is also ambiguous on the subject of rehabilitation and resettlement of those displaced by mining, mostly adivasis. In the period between 1998-2005, 216 mining projects across the country were granted forest clearance annually.<sup>12</sup>

The Mineral Policy 2011 of the state of Rajasthan was adopted after a gap of 17 years to “promote value addition in mining, generate employment and exploit the mineral wealth of the State prudently with balancing of environmental considerations”. The new policy abolished the Ministers’ discretionary powers for allotment of mining leases. The discretionary powers given under Rule 65 of the Minor Minerals Concession Rules, 1986, for allotment of mining leases and licences would henceforth be used collectively by the State Cabinet alone in public interest. In cases where government land is available, a 20-metre-wide strip will be allotted to mine owners to promote scientific mining. The policy extends the initial term for minor mineral leases from 20 years to 30 years and the total period, including renewal, from 60 years to 90 years. In case of quarry licences, the

<sup>12</sup> <http://infochangeindia.org/environment/analysis/indias-new-mineral-policy-will-usher-in-gloom-for-adivasis.html>

initial term will be 15 years and renewal period 10 years. The policy would reserve 50 per cent of the mining areas for categories including societies of unemployed youths, Scheduled Castes, Scheduled Tribes, Special and Other Backward Classes, unemployed mining engineers and dependents of defence martyrs while the remaining 50 per cent would be auctioned. In the tribal areas in southern parts of the State, 26 per cent of profit from new leases will be spent on welfare of tribals.

The Mineral Policy 2011 adopted by the Congress government in Rajasthan with the United Progressive Alliance government at the Centre despite its pro-privatisation position contained provisions for reserved leases as well as basic conditions of work for mine workers.

With the BJP under Vasundhara Raje coming to power in Rajasthan, the policy mood changed. The reserved lease proved to be a big hindrance for new grants and especially in allotment of minor mineral concession in tribal areas to private players. The fact that the policy restricted mining of certain minerals such as Gypsum, Rock Phosphate, Potash, SMS Grade Dolomite, SMS Grade Lime Stone only to public sector undertakings and allotment of mineral concessions through Joint ventures with the RSMML in tribal areas limited private participation. These restrictions, the new state Mineral Policy 2015, states increased illegal mining. Thus, the new policy proposes a regulatory framework for fulfillment of the principle of “Minimum Government, Maximum Governance” that will increase revenue from mining, increase land under mining by ensuring high participation in mining of all kinds of business and individuals. It aims to provide a conducive framework of procedural, regulatory, fiscal and legal aspects in the investment regime.

Specific to Sandstone mining, the new policy reduced the minimum size for grant of mining leases in Khatedari/government land from 4 ha to 1 ha. Khatedari land adjoining existing lease areas will be added to the existing leases/quarry licenses. No new quarry boundary shall be delineated

and no quarry licenses shall be granted in Khatedari land. The current provision of granting a quarry license for a period of 5 to 15 years with subsequent renewal in 10 years has also been increased to 30 years. Mining leases in the forest land will also be granted to those who obtain diversion of forest land from MoEF. The policy also aims to provide infrastructure facilities to mining areas to promote investment. All these are meant to attract private investors, including foreign investors.

## **Conditions of Work in Sandstone mines**

The workers reported that on a typical workday they worked for 9 hours or more with a break of 2 hours for lunch and rest. The lunch break was also necessary because of the intense heat of the afternoon sun. The heat was compounded by the rock surface also getting heated.

Wages in the sector are extremely low, and piece-rated. The wages are also linked to the final output of saleable product. This means that workers are only paid when the whole cycle of excavation to production of sized stones is completed, over a period of 10-15 days. Under tremendous pressure to make ends meet workers are forced to work seven days a week without any scope for taking time off from work to rest and recuperate. In order to compete with the machines they have to work themselves like machines.

There are no facilities at the workplace for drinking water or restrooms, or even a shaded area where workers can relax briefly. The workers carry bottles of water with them, which get replenished by the women through the day, from tankers provided by the contractors.

Women work at the mines performing all tasks of cleaning and carrying of materials and tools. They also do all the work at their makeshift shelters, take care of children, and tend to the men when they are sick.

## **Employment relations**

Discussions with the workers revealed that many had been working in the same area for decades, some with the same contractors since they began their life as mine workers.

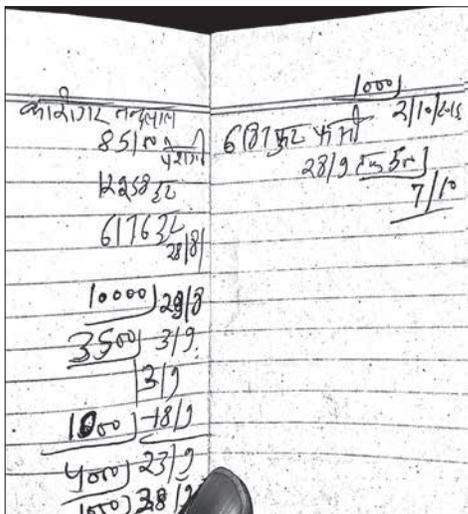
There was no formal system of recruitment in the mines. It was a heredity based work pattern, with the same group of workers coming to work during the season from their

villages. Children of mine workers got introduced to mine work as adolescents, and followed the footsteps of their parents. Without any formal education, and with a life bounded by the mines for 8-9 months in a year, they would have no other ready options.

There was no form of employment contract or identity card. The mines had no boundary walls or fences with security, and hence workers were not required to have ID cards to regulate entry. Therefore it was impossible to establish any employer-employee relationship between them and the contractors/mine owners and the workers.

Pay slips were unheard of. The contractors maintained a diary for each worker, where the manager noted the amount of work completed by the worker and the amount earned by him based on the ongoing piece rate. The amount was cross-listed in the diary maintained by each worker. As most of the workers were illiterate, they were not in a position to check on the correctness of the diary entries. Workers reported that discrepancies by managers in registering the amount produced, and dues to workers, was common.

The adjoining photo (Photo 2: Diary entry for payment to worker Nandlal) shows one such diary entry. As can be seen from the diary entries, there is no daily recording of work done and wages earned. The diary entry after 29/8 is on 3/9, and then on 18/9 and so on. The time between diary entries vary from 1 day to 15 days. There are no signatures of the manager/contractor, or signature/thumb impression of the worker, to show that the entries have been authenticated.



The absence of formal employment documents work meant that employers had no responsibility towards workers. They were not responsible for compensation to workers in the case of accidents. Workers commonly suffered injuries because of the sharp splinters around the workplace. More serious accidents from falling boulders and tool slippages, even resulting in permanent disability or death were reported. There was no compensation for these workplace injuries.

## Occupational Health and Safety

Mining is a hazardous task and the workers employed in the sandstone mines are at a constant risk of small and big health problems.

When the state government allots mine leases to the mine owner, the lessee is supposed to inform Directorate General of Mines Safety (DGMS) before the commencement of operation. The lessee has to also inform the chief inspector, the controller of Indian Bureau of Mines and the district magistrate in a prescribed format. On receiving the notice from the lessee, DGMS is supposed to inspect the mine and provide recommendations to the lessee on issues related to health and safety of mine workers in the leased mine.

The Directorate General of Mines Safety (DGMS) in a circular dated 21 January 2010 enlists the following as health hazards for workers engaged in mining work in sandstone mines<sup>13</sup>:

**Pneumoconiosis** is a respiratory disease caused by excessive or long-term exposure to harmful dust. It can have a long term impact on the life of the workers and even lead to death.

**Noise Induced Hearing Loss (NIHL)** can be defined as a partial or complete hearing loss in one or both the ears. Exposure to avoidable excessive noise is the major avoidable

<sup>13</sup> DGMS (Tech.) (S&T) Circular No.1, Ministry of Labour and Employment, 2010

cause of permanent hearing impairment worldwide.

Cases of NIHL are common amongst workers. All the workers who were interviewed complained of hearing problems and most workers confirmed that they would hear hammering sound long after their working hours. NIHL can cause hypertension and hamper the sleep cycle of workers.

**Silicosis** is a lung disease caused due to inhalation of dust containing silica particles. Silica dust can cause fibrous or scar tissue formations in the lungs, which reduce the capability of lungs to function.

**Musculoskeletal problems** such as back pain, pain in the joints are common amongst mine workers as they work for long hours in hunched position and lift heavy weights throughout their work day in the mines.

**Heat stroke and dehydration** is another problem that is commonly encountered by most workers employed in the mines. With extreme climatic conditions and lack of easy access to safe drinking water, workers face a perpetual dehydration problem.

**Cuts and bruises** are so common amongst workers that workers don't even consider it as an occupational hazard. Slipping of chisels or hammers result in deep gashes and even, at times, loss of fingers. Small chips and splinters during chiselling can injure eyes and fingers of workers without any protective gears.

Working hours in the mines are irregular and there are no weekly off days as workers are paid only on days they work. There are no medical facilities in the mines. The mine workers are not covered by the Employees State Insurance (ESI) and hence cannot access the ESI hospitals. However, sandstone mine workers can enrol with the Construction Workers Welfare Board in the state of Rajasthan as they work with building materials. The minimum wage of sandstone mine workers is also clubbed with the construction workers. However, majority of mine workers are not registered with the construction workers welfare board.

With (i) very little or almost negligible regulation, (ii) most workers being illiterate, and (iii) with unionisation very low, even accidents at mines are not covered under the Workmen's Compensation Act.

Further, it is essential to have proof of employment to be registered with the Welfare Board and get covered by the Workmen's Compensation Act.

The Mines Act and the Construction Workers Welfare Board ensures certain benefits for registered workers but proof of employment is critical in both.

*Four years ago a stone splinter had got into my thigh while working. I underwent treatment at my own expense. The doctors in the government hospital told me that surgery would be expensive. If the splinter was not causing pain that was unbearable I should let it be.*

*I avoided the surgery at that time. The splinter inside my body has now become a tumour. It needs to be operated on urgently to avoid any further complications. I still have no money for the surgery.*

Ajay, working in a mine for 12 years

The Mines Act, 1965 provides for the following benefits:

• **Education of children**

- Rs 250 for girls and boys for school dress and books from Class I to IV
- Rs 500 to boys and Rs 940 to girls between Classes V to VIII
- Rs 700 to boys and Rs 1140 to girls for Class IX
- Rs 1400 to boys and Rs 1840 to girls for Class X
- Rs 2000 to boys and Rs 2440 to girls for Class XI-XII
- A scholarship of Rs.250 each to school going children upto the age of 21 years or till they get married.

- **Maternity benefit:** Rs. 1000 for upto two live births, provided 6 months of employment

- **Family Planning Surgery:** Rs.500 after two children
- **Eye glasses:** Rs. 300 for each
- **Cancer:** 100% reimbursement on actual expenditure + Rs.600 to Rs.750 per month as maintenance allowance during treatment
- **Heart Diseases:** Reimbursement upto a maximum limit of Rs.130,000 + Rs.750 to Rs.1000 per month as maintenance allowance during treatment
- **Kidney Transplant:** Reimbursement upto a maximum limit of Rs. 200,000 + Rs.750 to Rs.1000 per month as maintenance allowance during treatment
- **Silicosis:** Rs.100,000 on identification and certification by medical board + Rs. 500,000 on death by silicosis
- **Accidents:** Financial Assistance in case of a serious accident: First time: Rs. 10,000 + Rs. 1000 every month for 5 years
- **Death:** Rs.1500 to dependent of the mine worker as funeral assistance.
- **Marriage assistance for daughters:** Financial assistance of Rs.5000 for marriage of each daughter (upto 2 daughters) of a widow/widower mine worker.
- **Housing assistance to mine owners for construction of housing for mine workers:** 25% of the cost of housing or Rs.50000 subsidy whichever is less is provided to mine owners for construction of housing for workers
- **Group Insurance for age group of 18-60:**
  - Normal Death while employed : Rs. 10,000
  - Death by Accident: Rs.25,000
  - Partial Disablement due to Accident: Rs.12,500
  - Total Disablement due to Accident: Rs.25,000

It also mandates the use of Personal Protective Equipments (PPEs) such as helmets, masks, safety glasses etc., for

people employed in the mining area. The onus of providing the PPEs lies with the employer.

*Owners are only interested in making money. They don't care if we live or die. If we demand for safety equipments they will get someone else to do the job from outside. They know we have no other skills. We will starve for a few days and then beg for work at their doorstep.*

Nand Lal, a mine worker

The interviews with workers and doctors revealed that most workers employed in the Kota-Bundi sandstone mines had never received any personal protective equipment. The structure of the mines is such that collective protective measures are unheard of. Demand for protective equipment by workers leads to contractors and supervisors replacing them with other workers, mostly migrant workers. The precarity of the employment gets aggravated in the case of migrant workers and young workers.

*I started working in the mines because my father who worked in a mine passed away in an accident. I was ten years old then. I have been working in the mines for close to 17 years now. I have a problem with my back. I can't even stand for ten minutes continuously, let alone working. I have no money for treatment now.*

*I have already spent more than 30 thousand rupees on medicines and treatment. I can't go to work and the contractors know this. They have now stopped lending me money. I have lost my health making wealth for them but, now that I am useless they won't even lend a single paisa to me.*

Arvind, mine worker

Workers also do not get any time away from work to treat their injuries or health problems, even when the health issues are directly related to work. Health exigencies are one of the most common factors that force workers to borrow money from the contractors.

Common health issues are therefore ignored, often leading to serious health problems requiring expensive hospital intervention. Understanding on workplace health and safety issues is also extremely limited, even among medical practitioners.

**Excerpt from an Interview with a Medical doctor in Kota**

*The human body is god's gift and that god has equipped humans to face all types of challenges.*

**Dust:** *Workers need not worry about the dust at the worksite. Nasal hair is capable of warding off minute particles and save workers from respiratory disorders.*

*To save from inhalation of minute dust particles it was advised that workers face in the opposite direction of the wind. Doing this would save from 90% of dust induced disorders.*

## Wages

Workers employed in the sandstone mines were paid on a piece rate basis. Their wages were calculated on the amount of stone they chipped and sized, measured in square feet (sq ft).

As per the Rajasthan Government notification no./ F5(6) MinWage/ Labour/2000/part/27607 dated 21 December 2015, the Minimum Wage for breaking stones of width 80 mm was Rs. 197 for 3.03 square metre, or Rs. 8 per sq ft.<sup>14</sup>

The reported actual payment to workers was at a rate substantially less than the notified Minimum Wage in the mines of Kota-Bundi area. The ongoing rate during this study was Rs. 3.50 per sq ft, or less than half the notified Minimum Wage. The rate for migrant workers was even lower, at Rs. 3 per sq ft.

Bidding for rates by the contractors and mine owners with groups of workers was a common practice as the work season neared its end and the output of splittable blocks declined. Blocks were then awarded to those *jutkas* who were ready to work for the lowest rates. Migrant workers fall prey to this pressure easily due to their vulnerability. They are housed in the temporary shelters on the mine area, and therefore at the mercy of the mine owners. Loss of work for them means eviction from their temporary homes. This would be an added pressure on them to extend the work duration during the year.

Mine workers were also not paid wages for the preparatory tasks performed prior to hand dressing of tiles, or the tasks after completion of work on the tiles. For example, workers were not paid for breaking and removing the unsplittable stone block to excavate the splittable stone, or for lifting and layering of the splittable stone block. Further, after the

<sup>14</sup> 1 square metre = 10 square feet. Therefore the right equivalence should be "Rs.197 for 3.03 sq.mtr or Rs.6.56 per sq. ft." We do not know the reason for the discrepancy. This may be as more effort goes into making smaller tiles, and therefore the sq. ft. rate used on smaller tiles is higher than the sq.mtr rate used on larger tiles.

tiles were dressed to the required dimension, workers had to transport them to the designated spot for evaluation by the manager.

*Nand Lal who has been hand dressing sandstone tiles for ten years said that separating the layers from the blocks is a tricky task and requires great skill. The layer might break if the chisel is not properly placed. Though experience comes handy, it is totally unpredictable when the layer might break. It is not uncommon that the corner of a tile gets damaged during the very last hit. The worker might have put in half an hour to dress the tile before the last blow damages it. He would get no payment for all the effort that went in to get the tile to that stage of completion.*

Lifting and transporting the tiles was cumbersome and time consuming, but no payment is made for this task.

*Radha a woman worker involved in the task of lifting and moving of chiselled tiles explained that at times the tiles are brittle and broke while being transferred on to the trucks. The managers then blamed the workers for this loss and deducted the cost of breakages from their wages even if they were not involved in the transport.*

There was no fixed date or duration for the payment of wages. Discussion with groups of workers revealed that the wages could be withheld for even months together. Workers complained that contractors delayed payments on purpose to force them to borrow money. All the workers interviewed reported that even while making payments, the entire amount due to them was not disbursed. A part of the payment due was always held by the contractors. This was especially so in the case of migrant workers. A final settlement was made only once the work season was over and the family vacated the mine premises. This would be a further hold the manager/contractor would have over the migrant worker, ensuring that his work was available to the contractor till the end of the season, and he could even be exploited to work for lower than the customary rate towards the end of the season. The migrant worker would also typically lose out while squaring accounts and clearing

the “debt” for the season expenses with the contractor.

As most of the workers were illiterate, discrepancies in the amount of wage was a commonly expressed problem. Managers often deliberately miscalculated the wages and blamed workers for not finishing the work on time.

*I'm illiterate. I have to accept what the manager says. Even if I fill a whole truck with tiles and he says I have only chiselled 100 sq ft, I have to accept payment for only 100 sq ft knowing well that the full truck load is more than 100 sq ft. If I argue he will not give me any work in future. There are people who have been beaten up when they have demanded their rightful wage.*

Ramesh a resident worker in the Bundi mines

With the use of polished sandstone in construction industry, there has been a substantial increase in both demand and value addition for the finished product. The rise in demand means a drive for productivity increase in the mines. This has resulted in mechanisation of many the processes in mining. For instance, heavy machinery in loading and lifting of blocks has been introduced in some mines.

Mines have introduced drills for excavating the splittable blocks, and machine cutters to cut the unsplittable blocks that cannot be cut by manual processes. However this also means replacement of labour. Usage of heavy machinery for earth/debris removal also directly affects women workers in the mines. Workers view introduction of machine cutters as a threat to their job and therefore try to step up their productivity. Thus, by mechanisation the management gets a dual benefit. The workers produce more under threat and mechanisation cuts time and increases profits by making the earlier unusable unsplittable or 'waste' blocks usable.

Table 4 shows the cost of labour as a component of cost of production for the mine owners. The standard rate of Rs.3.50 per sq ft for the Bundi mines was based on discussion with 25 workers in the mines and the stock area. Of them, 15 workers with loans against their names from contractors (all

migrant workers) said their piece rate varied from Rs.1.80 to Rs.3.00 per sq ft. The average for these workers was Rs. 2.80 per sq ft. We see the very low contribution of wage across the supply chain in the sector. The wage levels are depressed by underpaying workers to the extent of less than half the statutory Minimum Wage. The wages are further depressed through practices of debt bondage, particularly in the case on migrant workers. We have not even taken into account here other forms of underpayment through direct cheating of workers in registering less than the actual production output, or further depressing wages through forced bidding of rates towards the end of the season.

Table 4: Labour cost and market prices for sandstone

Market	Government notified minimum piece rate @ Rs. 8 per sq.ft.	Average piece rate @ Rs. 3.50 per sq.ft.	Average piece rate after borrowing money @ Rs. 2.80 per sq.ft.
Domestic - Rs. 35 per sq.ft.	22%	10%	8%
Export market - Rs. 72 per sq.ft. <sup>1</sup>	11.11%	4.86%	3.88%

## Social security

As the mine sites are located outside the municipal areas the government through the Mines Act 1956 has mandated that it should be the responsibility of the employer to ensure that the workers residing within the mine site should get proper health care and access to other amenities. The Act specifies that workers should have access to Provident Fund, gratuity<sup>15</sup> but very few sandstone mine workers are covered by PF and are paid gratuity.

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<sup>15</sup> Mines Act, India, 1952

## Debt trap leading to Bondage

The eastern fringes of Aravalli ranges are the highest rainfall receiving areas of Rajasthan. The Kota-Bundi sandstone mines lie in this zone and receive an average annual rainfall of 55-95 cm. The area is hit by pre-monsoon during mid-June; by the first week of July the mines cease operation due to accumulation of water. Showers last till the end of September and the post monsoon showers drench the region till mid-October. Hence the mines remain non-operational till the end of October. It is in the month of November that water from the mine site is pumped out using sump pumps and the mining work resumes.<sup>16</sup>

During this four month fallow period (July to October) the workers are rendered absolutely jobless. Due to its wilderness the Kota-Bundi area is scarcely populated, hence employment in any other sector such as construction or agriculture work is not easily available. The brunt of this work loss is borne by the migrant workers. As they stay in temporary houses within the mining area, the accumulation and rise in water levels not only results in job loss for them but also results in homelessness.

Evicted from their homes and without a job these families find themselves extremely vulnerable. The situation is not very different for the non-migrant workers who live in the surrounding areas of the mines. The workers employed in the mines live from hand to mouth with no savings possible. Under such circumstances the workers are forced to borrow money for their survival during the four months without work.

Contractors and mine owners readily lend workers money at an interest rate as high as 25-28% per annum (2% per month). This loan benefits the mine owners in two ways. It binds the worker to the owner. It also allows the mine owner to push down further the piece rate for the worker, and to

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<sup>16</sup> Based on interview with mine worker Nand Lal on 06 October, 2015

dictate the conditions work. The piece rate gets reduced from Rs. 3.20 to as low as Rs. 2.60 in some cases. This reduced payment rate becomes applicable till the worker pays off the loans; and the resultant loss in wage is not adjusted against the loan amount. In the circumstance, the worker gets bonded to the mine owner. Workers can work for years at a time at reduced wages with the same mine owner or contractor.<sup>17</sup>

Mines in Rajasthan are largely family owned. The mine owner community is small and well connected. No mine owner or contractor will hire a worker who has outstanding loans from another contractor. If at all a contractor wishes to hire the worker he has to pay off the outstanding loans. In the circumstance the worker gets bonded to the new contractor.

Workers with loans are made to carry a slip which is signed by the contractor containing the amount borrowed by them. If a worker lies about the debt that he has incurred or doesn't reveal the fact that he carries a loan slip in an attempt to escape bondage and find a new employer, he is inevitably caught out and then fined a hefty sum by the mine owner community. This would further push the worker into debt. This form of extra-legal monitoring of workers that exists in the sector forces many workers into debt bondage.<sup>18</sup>

The photo above shows one such debt slip which the workers are made to carry in case they have borrowed money. The text reads: Rs. 50000 is due against worker Hemraj. Please collect the amount from him before hiring him.

Very often, the entire extended family is forced into employment for repayment of a loan. Contractors devise their own tactics to force workers into debt, or prolong the debt bondage. For example some contractors selectively dump *bhatas* (hard stone slabs) at worksites where workers do not have loans, or have garnered some savings to repay loans. It is difficult and time consuming to chip *bhaata*, as compared to normal blocks. A worker said he could chip

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17 Focus group discussions with workers of Bundi Silica Mines 7 October, 2015

18 Interview with workers in Kota stock market 8 October 2015

100 feet on an average work day and earn around Rs. 290-300. But given a bhaata his productivity was down to 60-65 feet and his earning reduced to Rs. 180-190. Another tactic is to delay the payments indefinitely so that the family is forced to borrow money for survival.

## Issues

### Regulation in Industry

The complete absence of regulation in the sandstone mining industry in Rajasthan is a matter of grave concern. We see therefore that while the Minimum Wage regulation specifies the piece rate in the industry to be Rs.8 per sq. ft, the actual payment to workers in the industry is less than half, varying between Rs.2.80-Rs.3.50 per sq. ft. There are three aspects to this absence of regulation that need to be commented on.

First, the industry is dominated by powerful business interests on the one hand, with close ties among the industrial lobby. At the same time workers are vulnerable, many of them migrants from socially and economically sections. They have been employees for generations, often with the same employers. This allows for feudal employment relations, with the exploitative conditions making it difficult for workers to break the feudal bondage. We see therefore that even with sandstone finding a huge export market, and technological changes getting introduced at various stages of value addition, the structure of the industry at the primary level of mining and sizing stones remains the same.

Second, the lack of regulation in the industry is also reinforced by the political apathy of the state. The Rajasthan government has been at the forefront in deregulating industry and promoting “flexible” employment relations. It is not surprising in the event that the Labour Department has shown little interest in enforcing any of the rights of the workers. The fact of many of the workers being migrants from Madhya Pradesh also weakens their political strength to demand for enforcement of their rights.

Third, the lack of any serious unionising effort is evident. Union building in the situation of a largely migrant and

vulnerable workforce dominated by feudal employment relations is difficult. However the apathy of the unions in the region has to be commented on. In the absence of organisation of workers, the workers are left to their own devices to push for their individual rights. Regulation in the context of the hugely asymmetrical is consequently totally absent.

## **Work rationalisation**

A serious consequence of the lack of regulation in the industry is the absence of any scientific attempt at work rationalisation. Workers therefore find that a large portion of their work is unpaid. The linking of payment only to the finished output means that workers will not be able to leave employment, even for emergencies, at will. They will have to wait till completion of work before receiving any payment. The payment cycle also leaves workers at the mercy of the employer/contractor for evaluating the quality and quantum of output. There is no bargaining strength with the worker, as the worker cannot even strike work with all payment linked to the final output.

## **Taking advantage of the supply chain**

The integration of sandstone mining industry to a global market raises the potential for new forms of taking up issues of employment relations in the sector. The global supply chain is vulnerable to campaigns highlighting the absence of regulation and poor working conditions in the sector. International covenants including ILO guidelines can also be brought into effect with countries that are major markets for sandstone. The UK which is the largest destination for exported sandstone can therefore be targeted to campaign on the absence of regulation in the industry. Given the large export profits, with average price of sandstone in the export

market being two times that in the domestic market (see Table 4), the industry would be vulnerable to campaign pressures.

## **Impact of mechanisation**

The booming market for sandstone and consequent requirement of quantum increase in productivity would bring in pressures to mechanise the production processes. There are two possible ways in which the changes in production process from mechanisation would impact the sandstone mine workers. The impact of these changes on the lives of workers should be evaluated. This should become part of any possible efforts to rationalise future regulation in the industry.

First, women would progressively become redundant to the direct production process. This means that their labour on the mines will no longer be able to subsidise the cost of reproduction of labour. Their role will get restricted to the domestic sphere. This could also mean that it becomes uneconomical for migrant workers to come with their families to work. This will impact work relations and character of the workforce, as well as the living arrangement of the working families.

Second, with mechanisation, much of the earlier “unpaid” work, in particular all the preparatory work for removing the “unsplittable” blocks and removing the topsoil and overburden may no longer need manual labour. The consequent rationalisation of the work process could benefit the skilled worker. However, this will also be accompanied by higher productivity demand, and a pressure to further lower the piece rate. There will also be effect of this intensification of work on the mine worker’s health and on incidence of workplace accidents.

## **Workplace safety and health**

The Directorate General of Mines Safety (DGMS) in a circular dated January 21, 2010 has listed out the various occupational safety and health issues for sandstone mining. However, there has been no recent properly designed epidemiological study of the health status of mine workers. There is urgent need for such study to be conducted, under the aegis of the government regulatory authorities. The push for such a study is critical given the sector is poised for structural change, with the possibility of increased productivity demands. The integration of the sector into a global market also raises the possibility of forcefully making a demand for study into the occupational health and safety issues, and for such study to be made the base for formal regulatory measures, including safety measures. The campaign can also push for a Welfare Board that takes care of health insurance and social security in the sector. The Welfare Board can be modelled after the Welfare Board in the construction industry, with a cess on the sector specifically for financing the operational costs. However such a proposal will only be successful if backed by strong organised demand from workers.

We should point out here that there is an entrenched view among the state machinery, and even the medical fraternity who interact with the workers that the workers were the cause of their own ill health, and that if they took the necessary precautions there was no cause for workplace accidents or occupational diseases.

## **Hospital facilities**

The absence of any proper hospital treatment facilities in the region makes it impossible for workers with chronic ailments like silicosis to get any long term treatment. An interview with the doctor at the Kota Government Medical

College who is also a member of the silicosis board revealed the following.

The Kota Medical College has a screening setup for silicosis affected workers. They did find cases of confirmed silicosis patients who were then recommended for compensation under the government of Rajasthan scheme. Apart from silicosis, the medical college also gets patients who are affected with TB and or both with TB and silicosis. The effect of both working conditions in the mines and living conditions with no possibility of good nutrition is evident among the mineworkers.

Since there is no treatment for silicosis the medical college generally provides symptomatic treatment along with advising the patients to not stay within the sandstone mine area so as to delay the disease prognosis. However, according to the doctor “The workers refuse to move away as they state that the sandstone is the only place that they have ever seen in their life as they have been born there and lived there through their life. Moreover, there is no rehabilitation scheme for these workers except for the ‘death compensation’ when a worker dies.”

The doctor also reported that there was a sudden spurt of reporting of silicosis cases after the government announced the compensation scheme. However, the doctor felt that this spurt was partly because there was also an attempt by some people to falsely try and prove silicosis cases. The spurt in cases is not surprising in a situation where there is clearly no social security or health benefit for workers, and they can only try to access all possible health benefits announced by the government.

Given the rise in profitability in the sandstone industry, it would be easy for the government if it had the political will to formulate a cess for the welfare and safety of workers in the sandstone mines. There are many models in the country of industry level welfare boards financed by a tax on the industry output. This can be demand that can be taken up by the workers organisations, and where they can get

national and international solidarity.

## Footnotes

1 <http://www.stonecontact.com/sandstone-prices/india-supplier>

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