

CSE Working Paper

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May 2018

Centre for Sustainable Employment

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Murli Banjara¹, who had a greying moustache and wore a red gamcha around his neck, looked up and squinted at the sun which was now almost overhead.

Banjara, a hamaal worker, who loads sandstone on mining trucks, had stood in a crowd of men at Shakkargarh *chauraha* in Bijolia panchayat samiti in Rajasthan's Bhilwara district, since six thirty on that January morning.

Like other casual workers in town, Banjara had reached Shakkargarh labour *chowk* early in the morning to look for work. Employers came to the chowk every day and offered to those willing to work on a casual basis tasks ranging from manually processing the sandstone in smaller mines, to loading sandstone on trolleys and trucks. For nine days in a row now, Banjara had failed to find work. Now, close to noon, after five hours of wait, Banjara had resigned that there would be no daily jobs that day too.

Banjara owns a small plot of land in Mobatpura village, 10 kilometers from the town. For the last 20 years he has supplemented his unreliable income from ploughing the arid land by lifting sandstone slabs in the quarries in Bijolia.

Eight workers usually lifted 60 to 70 kilo-slabs on their shoulders together to load one truck a day. The men bore scars on their shoulders from the relentless lifting. For this backbreaking work, they earned Rs 4,000, which they divided Rs 500-400 each at the end of the workday. This came to twice the farm wage in the village. The trouble, however, was that even in good weeks, they managed to load a truck only every three-four days, earning on an average only Rs 150 a day. And things were worse now, with not a single loading opportunity in over a week.

Stranded at the crossroads at Shakkargarh, amid other men who were getting increasingly impatient, Banjara blamed the government's economic policies for the drying up of daily wage work in sandstone quarries around Bijolia. "GST *mazdoor se cut rahi hai*, (the worker is paying for the GST)," he remarked, claiming work had dried up as an effect of the new Goods and Services Taxes.

The Goods and Services Tax, introduced by the central government in July 2017, is a measure to simplify taxation by replacing by all indirect taxes with a single tax. But its implementation has been marred by confusion and delays. The workers say this has badly impacted businesses and subsequently, daily wage work available in Bhilwara's sandstone quarries.

The men gathered around the road said that usually this month – January – was the peak period for sandstone quarrying in Bijolia. "Every year, at this time, over a thousand of us gather at Shakkargarh chowk daily," said Heera Lal Meena, also works as a hamaal worker loading stones. "This year, only 200 of us are coming here, and even of that, 100 return home empty-handed."

Ram Lal Gujjar, who had accompanied Banjara from Mohbatpura village to look for work, added that for workers, there had been continuous trouble starting with demonetization or *notebandi*, when the central government withdrew high currency notes, triggering a cash crunch in November 2016: "First, *notebandi* wiped out all work for over three-four months," He continued, "After GST, the cost of building material went up and small traders were struggling. *12 aane stocks ab bandh hai* (Nearly 75 percent sandstone "stocks" have shut down now).

Ranjit Banjara, who works as a local stone supplier, explained. "Earlier, anyone could source stone from the quarries," explained the young man. "They would open a "stock" of sandstone, and hire 10 to 15

¹ Names and photographs have been used only after the explicit consent on part of those interviewed. Some names have been changed on the request of the respondents.

kaarigar(artisanal miners) and *hamaal*(freight workers). But local purchasers and traders of sandstone stocks that operated only in cash were wiped out in the months after *notebandi* and are struggling still.”

Ram Lal Gujjar explained the worst effects had been on those who worked for daily wages. “*Jab chhote vyaapari ka kaam bandh hai, toh kaun le jaega hamaal ko kaam par?*” (When the small entrepreneur has no work, then who will employ daily wagers?).”

Gujjar, an elderly hamaal worker, who wore a blue turban that added height to his tall, gaunt frame lamented the effects of other policy measures also under way. The government, both at the center and in the state, have been pushing for a switch to use of bank accounts and Aadhaar, a biometrics ID the government wants all residents to have. The transition had disrupted even the access to social support of meagre pensions of Rs 500 a month and subsidised grains.

“For every small thing, they say “Go to the banks”, but there is no *taawar*(network) at the banks,” Gujjar rued. “At banks as well as ration shops, they ask us give our fingerprints on point of sale machines over and over. If there is even a small cut on our fingers, the authentication fails. Then, they deny us even grains.”

Murli Banjara, who had been quietly listening, opened a green cheque handkerchief he held in his hands containing the meal he had packed that morning – a lunch of plain, dry roti, with nothing to eat with the bread.

Identifying mining and quarrying households

Despite India being one of the major miners of the world, its poorest of communities engaged in mineral-resource extraction remain invisible in official surveys and reports.

The census of India categorises mining and quarrying as the same economic activity, equating those employed by in the formal sector mine management staff with low income workers toiling in smaller mines and quarries. That workers who own small plots of land or work on others farms and work in mines and quarries for some months of the year to support the incomes are often listed as “farmers” by enumerators further adds to their invisibilization.

The Report on Conditions of Work and Promotion of Livelihoods in the Unorganised Sector in India of 2007, a comprehensive study and policy recommendation on the unorganised sector defines the unorganised sector as “all unincorporated private enterprises owned by individuals or households engaged in the sale and production of goods and services operated on a proprietary or partnership basis and with less than ten workers.” It defines unorganised or informal employment as “those working without employment/social security benefits provided by the employers”, which should cover workers doing piece-rate and seasonal work in small mines and quarries as well. But the NCEUS did not include small mines and quarries within its purview, and mentions quarrying only with regard to sub-contracting practices and poor physical work environments (2009).(Siddiqui, Lahiri-Dutt, 2015).

Minerals are classified as major or minor minerals under the Mines and Minerals (Regulation and Development) Act 1957 (‘MMRD Act’). Mineral concessions for major minerals are administered by india’s central government, whereas minor minerals fall under the authority of individual state governments which hold the power to make rules and regulations, grant mineral concessions and prescribe and collect royalty rates and taxes, as well as the responsibility to control illegal mining.

But the Directorate General of Mines Safety (DGMS), a central enforcement agency created by the Indian Mines Act, 1952, holds the authority to regulate safety and work conditions in all India’s mines, regardless of the major/minor mineral distinction contained in the MMDR. So, in case of a minor mineral such as stone in quarries, the rules are framed by the state government but the enforcement of workers’ well-being and safety is with a central agency. This creates overlapping layers of administration and accountability in the management of these quarries.

These definitional difficulties as well as lack of specific data on this economic activity makes lakhs of quarrying workers invisible and obscure, despite the sector's significant role in the economy. The poor attention paid by trade unions to protecting the interests of quarry workers have further pushed the welfare of this labouring group away from development policy (Roy 2013).

As per one estimate, 43 percent of 1.42 million households are marginal mining and quarrying households, and extremely vulnerable (Siddiqui and Lahiri-Dutt, 2015). An analysis of the 68th round of the National Sample Survey on consumption expenditure data (2011-12) by the authors of households that reported non-petroleum mining as their primary income source shows that Rajasthan has the highest number of marginal and quarrying households (165,670), followed by Andhra Pradesh (93,960).

Most of these marginal households are involved in sand and stone mining and quarrying. Incidence of marginality is highest (65 percent) in this sector – 88 percent of the 6,10,000 marginal mining and quarrying households are in it.

The poorest households engaged in small scale mining and quarrying are absent from official statistics and analysis, and there is little understanding of the effect of policies on these workers.

Methodology

This study examines the state of working of and the effects of policies on these marginal quarrying households by focusing on workers in Bijolia, a panchayat samiti and mining center in Rajasthan's Bhilwara district.

It is a field-based study based on a qualitative and quantitative survey of 30 workers, in different occupations in mining resource extraction activities as casual workers, as stone cutters, carvers, as mining and construction labour, and transport workers and freight handlers. It is a survey men and women workers in Berisal, Nayanagar, Aaroli and Sukhpura, which are among the largest quarries in Bijolia and have been operational since over two decades.

The survey's aim was to learn about quarry workers' lives, why they chose this work, if they saw a choice at all, the terms of work, how they organised themselves to demand better conditions, their work and the links to health and nutrition, and what the workers thought the government should do to improve law and policy regulating this work.

Besides the survey questionnaire, the study also included over 60 open-ended interviews with workers, their family members, quarry owners, labour contractors, mining officials, the health department, private local medical practitioners, and representatives of non government organisations in Rajasthan to better understand the work relations, as well as the regulation of work and social policies.

Between October 2017 and January 2018, the workers were surveyed on themes of age, education, disability or illness, the social group of workers such as caste, gender, workers' income and economic characteristics, access to social benefits, health and well being, especially of those living with injuries and ailments.

Examples of questions in the survey included, "What is your occupational history of the last 12 months, and how much did you earn from each work", "Do you know who is the employer/mining company?", "Do you get a weekly off", as well as questions on health and wellness such as, "Did you visit a health facility in the past 12 months?". Focusing on work and wellness, a part of the survey asked what the workers thought of the source of their disease, whether they thought it was linked to their work, whether they felt they could afford nutrition, and their access to social support and basic amenities.

A harvest of stone

Bijolia in Rajasthan's Bhilwara district lies at the heart of massive deposits of Lower Red and Blue Bhandar sandstone deposits of the Vindhyan and Trans-Aravalli-Vindhyan ranges, exposed over an area of 5,000 square

kilometers. It is one of the largest centers of sandstone production, along with Jodhpur, Karauli, Dholpur, and Bundi districts.

Most rural families here work as labourers for precarious wages in what they call “*paththar ki kheti*”, harvesting stone, quarrying the sloping plateau in south east Rajasthan, the Pathar and Uparmal region. The main quarries are Berisal, Navanagar, Baniyon Ka Talab, where sandstone has been mined since several decades.

On the outskirts of Bijolia, sprawling opencast quarries stretch as far as one can see, some nearly hundred meters deep. Each quarry is separated by heaps of several meters high excavated overburden, boulders, and debris.



A sandstone quarry in Nayanagar, Bijolia

Besides the quarries, open fields in and around hamlets have been converted in to “stocks” of sandstone, where the grey-brown grainy slabs are stacked on top of one another, and inside villages, the sandstone slabs are stacked and erected as fences around farms and houses.

Rajasthan’s sandstone is chiseled easily, and has acid and alkali resistant properties which allow it to weather saline sea winds easily. Thousands of tonnes of sandstone excavated and processed here makes its way through Gujarat’s Kandla port to the United States of America, western Europe (to the United Kingdom, Germany, Belgium, Italy), Canada, Australia, and the United Arab Emirates, as cobbles, tiles for use in streets, sea faces, and buildings.

Rajasthan contributes 10 percent of the world’s production of sandstone. Domestically, Rajasthan is the largest sandstone-producing state by value, followed by Madhya Pradesh. It accounts for 80 percent of India’s sandstone output.

While it is not clear to what extent was demonetisation a cause for it, sandstone production slowed down in Bijolia in the past year. Production increased from 19,63,556 lakh tonnes in 2014-15 to 21,01,040 tonnes in 2015-16, and then it fell sharply by almost 50 percent to 11,42,989 tonnes, in 2016-17 (Table 2).

Local traders say it has further declined in the past few months after a Supreme Court order in November 2017 restrained 82 large sand and *bajri* mining lease holders in Rajasthan from further mining as they were violating environmental laws. This ban affected construction which in turn has affected the demand for dimensional stone.

The value of exports of sandstone from India though has nearly tripled in the last five years, from Rs 386.5 crore in 2012-13 to Rs 1016.18 crore in 2016-17. The Ethical Trading Initiative, a UK-based organisation, notes that the majority of sandstone produced in Rajasthan stays within India’s domestic market, although at least 280,000 tonnes is shipped each year to the UK alone.

Table 1: Exports of ores and minerals 2011-'12 till 2016-'17

Value (In Rs crore)					
	<u>2012-'13</u>	<u>2013-'14</u>	<u>2014-'15</u>	<u>2015-'16</u>	<u>2016-'17</u>
All minerals	175309	160101	194783	178076	170946
Sandstone	386.5	515.7	757.9	852.3	1016.18

Source: Minerals Yearbook, Government of India

In 2015-16, Rajasthan produced 1.5 crore tonnes sandstones, worth sale value Rs 788 crore. The following year, in 2016-17, though sandstone production dipped to 1.2 crore tonnes, and was valued at Rs 625 crore, more than half the value of all sandstone produced in India.

Bijolia is locally known as a center of pilgrimage for Hindus, with several old Shiva temples dotting the town. In recent years, it has also had a steady stream of international visitors coming to inspect its sandstone and strike business deals.

“It is in fashion to install the stone we make here in Bijolia, in the parks and gardens in foreign countries,” Om Prakash Regar, a Dalit worker living in Arjipura village in Bijolia explained how he viewed the production chain.

Missing workers

The international trade links have, however, not changed the informal nature of production and the lack of recognition of those labouring in sandstone quarries.

As per the Department of Mines and Geology(DMG), Rajasthan, the principal agency for mineral exploration and mineral administration, there were 33,375 mining licenses (138 major mineral leases, 15,136 minor mineral leases and 18,249 quarry licenses) in 2015, earning the state a revenue of Rs 3,635 crore in 2014-15.

In Bijolia, there are 1,556 sandstone quarries that contributed a revenue of Rs 117.34 crore between 2013-14 and 2016-17. But officials admit, that like in mines and quarries in other districts in the state, this is an under-counting. A significant portion of quarries and mining “stocks”, where the stone is processed, simply do not register, they say, and as a result, the workers in these units remain invisible in records.

Kameshwar Baregamah, mining engineer in Government of Rajasthan responsible for Bhilwara division, put the number of workers engaged in sandstone quarries at “at least 25,000”. Based on its surveys, Gramin and Samajik Vikas Sanstha, a non Governmental Organisation working with quarry workers in Rajasthan estimate the number of local workers and those who migrate to Bijolia for the eight to nine month-long quarrying season at much higher, at 1.1 lakh.

As can be seen in Table 2, while production fluctuates enormously over the years, the number of workers between 2013-14 and 2016-17 though, is shown stagnant at 12,000 for over four years, with not even a single unit change in the number of workers recorded in quarries over past four years.

The department records do not capture the actual number of workers, or fail to record any changes in the number of workers or employment.

Table 2: Sandstone Production in Bijolia, Bhilwara (2013-2017)

	<u>2013-'14</u>	<u>2014-'15</u>	<u>2015-'16</u>	<u>2016-'17</u>
Production(Tonnes)	2251738	1963556	2101040	1142989
Sale value(in Rs)	1576216600	1963556000	2101040000	1142989000
Revenue (in Rs)	322755000	347473000	275033000	228152000
Employment	12000	12000	12000	12000

Source: Department of Mines and Geology, Rajasthan

One of the regulatory gaps is that the definitions in Mines and Minerals (Regulation and Development) Act 1957 (MMRD Act) and the Mineral Conservation and Development Rules(MCDR) of 1988 of “large scale” and “small scale” mines prescribes varying norms as per size of operations. This limits the recording of these workers in official records.

The Mines Act, 1952 requires employer to register quarry operations with the labour department, submitting a notice of opening, filling Form 1 for registration.

But under section 3(a)(b) of the Mines Act, three categories of operations are exempt from submitting a notice of opening to the government. These categories are, 1) based on depth, if the gap between the highest and lowest point is less than six meters, then a unit is not required to submit a notice. 2) on employment, if the establishment employs fewer than 20 workers, 3)if it does not use any explosives for blasting, drilling etc.

Most quarry owners claim exemption from registering by falsely claiming eligibility under one or more of these three provisions, say officials.

The exemptions were meant for distinguishing between quarries and very small operations such as for digging wells, pointed out BP Ahuja who recently retired deputy director general(North Western Zone) of Director General Mines Safety, the agency under the Ministry of Labour and Employment responsible for carrying out inspections for mine safety. “But in collusion with state officials, a large proportion of quarrying operations use these as pretext to avoid registering,” said Ahuja. “For years, the same practice has gone on. The DGMS cannot carry out effective inspections when lease owners simply do not submit a notice of opening the operations.”

More recently, the National Democratic Alliance government, as part of streamlining of labour laws and to bring them on par with current technological production processes, is in the process of amalgamating the Mines Act, 1952, into the draft Labour Code on Occupational Safety, Health and Working Conditions. The stated aim is to simplify implementation, from more than 44 labour laws into four labour codes.

On March 23, 2018, the Ministry of Labour and Employment published the draft code which amalgamates the Mines Act, 1952 with nine other laws, pertaining to other categories of workers, such as plantation workers, transport workers, journalists, and beedi workers.

But the new draft labour code in its current form in section 63 retains the section 3 exemptions of Mines Act. It simply reproduces the three categories of exemptions which have been widely misused for under-reporting.

Policy measures, such as demonetisation, that purported to bring under greater transparency to informal economic sectors, such as the quarrying and processing of stone in Bijolia, have thus far had no effect on how workers are recorded in the area. Though measures like demonetisation aimed to formalise enterprises, this did not on its own lead to formalising work relations. In quarries in Bijolia, workers have continued to remain invisible and obscure from protection in several ways.

The new draft labour codes too simply reproduces several existing provisions, besides making superficial changes such as replacing the term labour “inspector” with “facilitator”, to assuage concerns around labour departments officials abusing the powers of inspections, and little to directly address the under-reporting of workers.

It fails to address a systemic problem of understaffing and lack of resources in the departments governing mines and other establishments.

In fact, officials from the Directorate General Mines Safety have on record stated that they were under pressure from the Union government to carry out only web-based “randomised inspections”, which the officials believed were not appropriate to high-risk mines and quarries with dynamic operations. (Yadav, 2017)

Miners’ ways and seasons

Nearly 600 kilometers from Delhi, the site of these decisions, in Bijolia in Bhilwara, a din of hammers echoed through the day as an army of miners used chisels and hammers to slice sheets and tiles out of stone in the quarries.

The workers excavate sandstone manually with hammer and chisels, and through partially mechanized processes using wire saws.

First, the miners remove the overburden of soil, rubble, non-splittable stone, and then they drill the hard non-splittable sandstone underneath to expose splittable sandstone. They use natural vertical joints present in sandstone, splitting the stone using drills, as well as steel wedges (“*taanki*”). If the vertical joints are absent, the expert miners of Bijolia drill closely spaced (15 cm apart) oblong, or eye-shaped holes of 8 to 10 cm depth to open a “*jhiri*”, a line and then hammer in steel wedges in these holes. They then hammer continuously till a crack develops along the holes.

The quarrying rhythm turns with the seasons. Sandstone is mined for around nine months, from October till the onset of monsoon in June, with peak work done in January-February under clear skies.

Later, around June-July, as the monsoons set, and the rain water begins to fill the deep-set quarries, the miners store the excavated slabs in open yards known as sandstone “stocks”. In these open plots, the miners and stone carvers further process the sandstone using hammers and wedges.

At the end of monsoons, in October-November, as the mining season begins in full swing quarry owners spend upto Rs 10-11 lakh to hire machines to drain rain water from several meters deep, opencast quarries. Marginal farm workers migrate to Bijolia from neighbouring districts of Rajasthan and Madhya Pradesh usually immediately after Diwali to seek temporary work in the quarries in lean farming months.

There are several changes underway, especially with use of more machines.

Quarry owners say they prefer to use electrically powered loader cranes to load stones, and there is less need for *hamaal* and other workers now. Arvind Rao, the head the Uparmal Pathar Khaan Vyavsaayi Sangh, an association of owners of sandstone quarries, said that the work done traditionally by *hamaal* workers of lifting sandstones slabs was now increasingly being done by machines such as loader cranes.

At Berisal chowk, a labour *naaka* near the quarry, the workers waiting by the road also frequently spoke of the availability of daily wage work reducing also as a result of mechanising. “The seth use loader cranes to lift stone crates, and then use these machines to also unload the material,” said Kalu Khan, who loads tractor trolleys. “This is why the *mazdoori* (wage rates) has decreased.”

Mohan Banjara, a middle-aged stone miner in Nayapura, the site of the oldest and largest quarries in Bijolia, some that have been active for over 80 years, said as the mines were expanding, so was the use of machines. “What it took 10 donkeys and five men to do earlier, is now done by machines,” he said.

Shankar Singh Daroga, a 50 year old miner, who had worked in Bijolia’s sandstone quarries since the age of 15, agreed this has been the trend since the last three decades. “Loader cranes to load the stones, and wire saws to cut large blocks, – these machines have increased in number over a period of 20 years,” he said. “Though in the last 10 years, I would wager, the numbers have probably been about the same.”

Daroga was emphatic though that the quarry owners would still have to continue to rely on miners and stone carvers for many years. “What a *kaarigar*(artisanal miner) can do with finesse, slowly and flexibly, the machine cannot...”

“The sandstone would break if only machines were used,” he said. “*Chiraai, fadaai, tipaai* (finer processing) – all this is still best done by the *kaarigar*.”

The wretched of Bijolia’s earth

In a quarry in Sukhpura, one such *kaarigar* Subhash Mehr sat perched on the edge of the large piece of sandstone that he was trying to split into half. The hot afternoon sun beat down on his back, as his shadow on the red-brown rock lengthened. Placing a taanki, a chisel in the center of the stone, with his other hand he brought the hammer down with all his force.



Subhash Mehr has been processing sandstone blocks by hand in quarries since 11 years since he was a child

From time to time, Mehr would measure the rock with an iron scale, draw a vertical across its width with a piece of chalk, and then hit the line again with his hammer. He did this deliberately and carefully for more than eight hours till the rock slabs had split into two.

Mehr is 27, and has worked in sandstone quarries in Bijolia for the past 11 years, since he was a teenager. He joked that after he dropped out of school after studying till class sixth, and instead earned a "*bhataa ki degree*", an honours in studying stone.

As per Rajasthan government notification of January 2018 on minimum wages in various schedules of employment, a "stone dresser" is considered semi skilled worker, and after three years of work would qualify for skilled work wage. Anyone such as Mehr who has done skilled work for five years is considered fit for minimum wages in "highly skilled" category. That day, Mehr had negotiated Rs 3 for each foot of sandstone he cut. By the evening, he had cut 80 feet stone, earning Rs 240, much less than the government minimum wage for "highly skilled" work, which is Rs 283 a day.

The negotiation over wage rates varied with the age and skill of the workers, and other factors. But several workers, who migrate to Bijolia in distress, saw little choice in the work and how wages were fixed.

In Nayanagar, Mukesh Chand Jatav, a Dalit, in his mid-30s who had migrated to Bijolia earlier that month from Karoli, 300 kilometers away, had managed to negotiate a higher than average rate for himself, at Rs 5 per foot. He had done so by offering to work in "wastage", sandstone that had been discarded by mine owners as it was harder to process. But he had managed to chisel and cut only 100 feet sandstone by the end of the day, making Rs 500 which he would split half with a co-worker, still not making even a minimum wage for the strenuous work.

Jatav saw little choice in doing the sandstone work, he said, as he had no savings even though he had started the annual migration to the quarries in Bijolia with his father years back when he was 15. Now, at 36, he had returned to work in the quarries after a gap when he remained ill for five years.

He recounted that back home, in Hindon, the family has witnessed three of their neighbours, who also worked in the quarries, die of tuberculosis. "*Khoon daal daal ke mar gaye*(They coughed up blood, and died)." Two of them were his age, and one had been younger than him, he said.

"My father who has worked as a stone carver and knows the conditions of work, warned me "Don't go back to the *khadaan*(quarry) even if we starve", but I had to come back to earn two rupees...to eat," said Jatav. Jatav's family owns no land. The previous year they had sharecropped with another Dalit Jatav family in Karoli in exchange for one-fourth share of the wheat and barley crop, he said, but the produce was already exhausted.

In another part of Bijolia, under a sky laden with monsoon clouds, in a field converted into a sandstone "stock" in Sukhpura, Madan Lal Bhil a frail Adivasi farm worker who looked older than his 52 years said that in the last farming season, he had spent Rs 13,000 growing wheat as a sharecropper with a Gujjar farmer. But the yield had been only half of the usual, he said, leaving the family with just five sacks of grains at the end of the season. Bhil had a farm loan of Rs 7000 and had sown paddy this time, but he too felt compelled to work as a quarry labourer till at least the crop was ready.

Precarious lives

The pattern of these "multiplex livelihoods"(Bryceson, 2002) as both farmers and workers, in quarry and some weeks in construction, was recounted by a large section of workers, in interview as well as a survey. Most said they earned small but unreliable incomes from both farm work, and quarrying, with neither being sufficient to keep up with even basic expenses.

A 2005 ILO working paper suggested 95 per cent of the labourers in Rajasthan's mines were from Scheduled castes and Scheduled tribes. (Srivastava, 2005)

In our survey, conducted between October 2017 and January 2018, two thirds of the quarry workers – 73 percent – were Dalit and Adivasi men and women.

Nearly 36 percent of the workers owned some non-homestead land with significant average landholdings of 5.2 bigha, or three acres, but only 3 percent had access to any irrigation on their farm. This meant recourse to a single crop and unreliable yields and on an average, the workers worked as agricultural labourers for two months in the kharif agricultural season, and in sandstone mining doing casual labour for part of the year.

Table 3: Respondents’ Background

Age profile		Social background		Gender		Years of school		Accident injuries, or illness	
Below 17	2	SC	10	Female workers	11	None	14	Illness	11
18-40	20	ST	12	Male workers	19	1-5	9	Injuries	4
41-55	8	OBC	3			6-10	6		
		Others	5			More than 10	1		

Of the respondent workers, less than one fourth earned a fixed monthly salary working inside a quarry as a miner or stone cutter. The rest were employed on piece rate or on daily wage rates.

The more able-bodied workers usually worked in quarries that pay on a monthly wage system, with payments made on the fifth of each month based on the number of days worked.

In “stocks”, the workers earned on a piece rate basis, currently at the rate Rs 3 per square foot of stone cut. They usually laboured with their families, or in groups of two to three to process 100-150 feet sandstone per day.

Both, workers in quarries and “stocks”, frequently took advances “*kharchi*” to tide over expenses. While many workers narrated experiences where taking a loan themselves or witnessing a colleague taking a large advance of Rs 20,000 to Rs 30,000 had led to even condition of forced labour on the workers (Yadav, 2013), they also referred to availability of easy informal advances for weekly expenses as a factor drawing them to working in the sector, vis-a-vis seeking other work in other sector in city centers such as Kota and Bhilwara.

More than half, 53 percent of the workers, said they had started working in the quarries as minors. Nearly 83 percent had family members who were also engaged as casual workers by the quarry owners and contractors.

Nearly half, or 53 percent workers, earned a minimum wage in the quarries, mostly men workers, though the workers say the minimum wage set between Rs 213 to Rs 271 a day itself was too low to manage basic expenses of rent, electricity, school fees etc.

Of those who did not get a minimum wages, a majority, or 64 percent, were women. Another way the numbers stacked up against women workers was that 81 percent of workers who reported not getting paid even minimum wages were women.

Table 4: Conditions of work

Earning Minimum wages		Denial of minimum wages, by gender		‘Do you know name of employer?’		‘Do you get drinking water at work-site?’		‘Do you have a loan?’	
Yes	16	Women	9	Yes	19	Yes	21	Yes	9
No	14	Men	5	No	11	No	9	No	21
Total	30	Total	14	Total	30	Total	30	Total	30

Workers' agency

Three of the largest quarrying and processing centers within Bijolia are in the quarries at Berisal, Nayanagar, and Aaroli.

In mid-October, a day after Diwali which marks the start of the new quarrying season, workers were beginning to return and look for employment, though with water still filling the quarries, production had not yet picked up.

Several young men workers described how they had learned the skills to do both quarrying and processing work. In different years and sometimes even within the same mining season, they switched fluidly between jobs excavating blocks sandstone and processing it into slabs by hand in the quarry "stocks".

The payments system was one of the criteria by which the miners and stone carvers chose where to work – for a fixed monthly pay in the quarries, or on piece rate in "stocks", where sandstone is hand-processed. But payments were not the only factor.

A few workers described the work of excavating as being "more intense" than processing, as the hammers they used inside the quarries weighed more. Quarry pay is more regular but these also have a worse physical environment with more dust and debris than the open plots of "stocks", argued others. Rajkumar Yadav, a 31-year old man working in a "stock" in Berisal described the per foot in processing as more "relaxed" as it was on a piece rate. Yadav said once he had negotiated the rate – Rs 5 for working on "difficult stone" during the ongoing work season – and the quantity of stone he was going to process, he had flexibility in work hours and the pace of work. "This is not a government job where I must turn up at a fixed time everyday," he grinned. "I come to the "stock" when I decide to, 8 or 830 am, I take a lunch break for an hour, though the time I usually work till varies.."

Pushkar Yadav, 29, working in Krishna Pavings, a "stock" in Chhoti Bijolia, also compared working in a "stock" to being self-employed, such that he could take a few days off if family member or an emergency so required.

Older workers, however, did not enjoy the same flexibility.

In Nayanagar, Mohan Banjara, a 40 year old, older worker who had injured his thumb when he hit his left thumb instead of the slab of stone six months back had negotiated to process sandstone in Nayanagar at just Rs 3 per foot, with his wife working along him as a "labour coolie". Banjara felt more vulnerable because of his age and the injury. He said he worked continuously through his joints pained. He said he was allowed by the contractor, for whom he has worked for the last 20 years, to break for lunch for an hour in the afternoon, but he had no control over his hours, or the days of work.

All respondents – whether in quarries or in "stocks" – worked without a weekly off. Work went on every day of the month, except on *amaavas*, the new moon day, when the quarries and "stocks" closed for the monthly Shiv mela in Tilasva, a few kilometers from Bijolia.

None of the workers surveyed were members of a trade union, or a work-related organisation, or a non-profit. Only one worker had reached out to an NGO to apply for a building and construction workers' card which provides certain facilities such as life insurance, scholarships for children of workers.

Not a single worker held a written contract for work. Nearly a third of workers did not know who employed them.



Bhil women workers in a sandstone mines get assigned the lowest paying jobs, usually carrying head-loads, and clearing debris

Though they were not members of unions, those working in quarries said they frequently tried to informally negotiated a higher rate of themselves when they switched from one quarry to the next.

Those working in “stocks” said they pushed for a better piece rate based on the degree of difficulty – whether it required to be processed by “opening” the sandstone from two sides or all four – and sometimes, also on the phase of quarrying season.

Several workers tried to negotiate rates just before the monsoons set in. “With heavy monsoon clouds in the sky, we ask for a higher rate,” said Yadav, the Berisal miner. “When the owners see the quarries are about to flood with rains, they are desperate to get all stone quarried and stored away. At that point, two-three of us go and ask to increase rate by 50 paise or a rupee per foot, and they often agree.”

Who got ahead?

A few contractors and tractor owners said they had started out as miners and stone carvers on a piece rate. But had got ahead to a position where they now employed others on a piece rate to process or load sandstone.

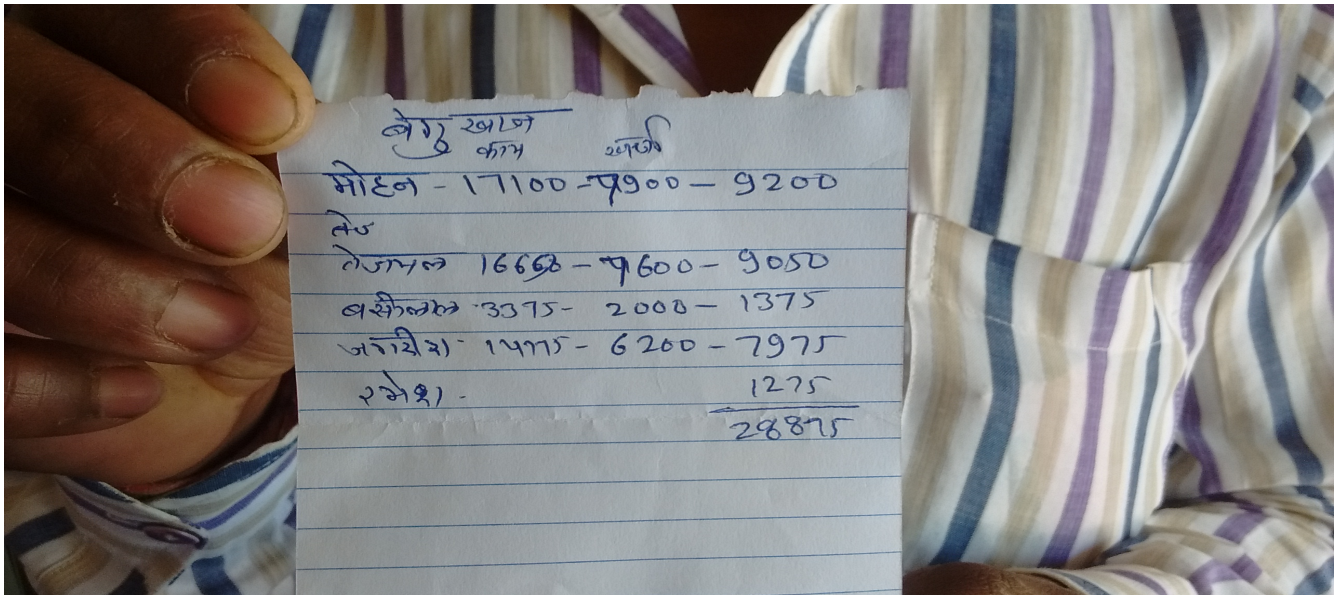
Om Prakash Meghwanshi, a 36-year old supervising contractor in Sukhpura, said he had worked as a stone carver for more than 15 years before he opening his own “stock”. For his business, he usually bought sandstone worth Rs 1 lakh in installments which yields about 5000 feet stone, and sold it at Rs 25 per foot, on a Rs 2 per foot margin, earning upto Rs 10,000 a month. Though there were high risks if the stone turned out to be “faulty” and not easy to process, or sudden shocks such as the primarily cash-based businesses suffered during demonetisation, he added. He said his rise from a piece rate worker to a contractor was a result of his own acumen and skills. “*Dimaag lagana padta hai*. One has to apply one’s brains,” remarked Meghwanshi.

Shaitan Singh Meena, who started out as a labour coolie and worked for piece rate wages for five years had graduated to being a trolley owner transporting 20-21 tonnes sandstone a month, and now employed labourers on a piece rate basis. Meena, however, said this had been possible as his father had a regular income as a government employee in Bijolia.

Prabhu Lal Regar, a Dalit daily wage labourer in Berisal was categorical that a labourer could not become a contractor. “*Mazdoor thekedaar nahi ban saktā,*” he said. He believed a worker need initial capital to get ahead, not just “brains”. “*Badi machchli choti machchli ko khaa jaati hain.* The moment someone makes some money, they want to profit off the workers.”

He said contractors often denied paying labourers as per their full number of days worked, as they recorded attendance informally recorded in the quarry and manipulated it.

Several workers held small slips of paper with wage records written by hand by the contractors.



Tejmal Bhil, a young miner, holds a hand-written payslip from the contractor, the only proof that he is owed Rs 9,050 in wages

The employers withheld paying on time and also routinely denied bonuses for Diwali, and on festivals to workers, said Regar.

Gender played a significant role in how well the workers worked and earned. Inside the quarries, the men operated machines such as compressors, cranes, tractors, and women and girls were relegated to the lowest paying jobs, such as sorting through debris inside the quarries, carrying head-loads, and working as transport labour on a piece rate basis. Only a few women workers, usually migrants from Jhalawar and Bundi districts, processed sandstone slabs in the stocks. A third of the workers in the survey were women workers. But none of them worked directly excavating or processing sandstone.

Kailashi Bai, who had started working as a hamaal worker loading stones for Rs 30 a day when she first came to Bijolia as a child bride 30 years back, now earned upto Rs 200 a day loading stones, Rs 100 lower than what men got paid for the same work. “They argue that men pick heavier loads than women do, but this is not true,” she said.

Prem Devi Daroga, a Rajput woman, who started working as a hamaal worker two years back after her husband, a quarry worker, was diagnosed with silicosis, a fatal respiratory disease, said men and women were paid equally, upto Rs 300 on days when they could find work, if they were loading a tractor together. “But if it is only a group of women loading the stones, then they will pay a third less.”

“The *muneem*(accountant) keeps a watch, even he can see we are not sitting idle. **They pay women less because they do not value our labour,**” added Kailashi.

Lack of wellness

In Nayanagar, Seema Regar, a young Dalit woman, who works as a freight labourer in a sandstone “stock”, was loading cobbles into cubical wooden crates on a piece rate basis. Sandeep Kumar, who was the supervising contractor at the site, said the sandstone consignment had been sourced by Minestone Exports, a Jaipur firm, to sell to buyers in United Kingdom, though Regar was not aware who employed her.

She was paid piece-rate, Rs 60 per for each crate she loaded, along with a co-worker. That morning, she had reached the “stock” at 9 am after finishing cooking and cleaning at home, and lifted and arranged sandstone cobbles in rows in wooded crates, over the next nine hours till sundown.



Seema Regar, a Dalit worker, said lifting sandstone blocks, she frequently scraped and injured her hands

Regar and her co-corker usually loaded eight to 10 crates in a day, earning between Rs 480 to Rs 600, which they split earning Rs 240-Rs 300 for a day’s work. Nearly 22 crates fill one trailer, which is dispatched to Kandla port in Gujarat, from where sandstone cobbles are exported to the UK.

While Regar stood at one corner of the crate, lifting and placing the stone cobbles inside, the thumb of her right hand was tied in yellow cloth bandage. The work with stones frequently scraped and made her fingers bleed. This is why even though Regar found the payment rates alright – she could earn a skilled minimum wag rate – she was not able to work continuously for even a month and had to take breaks in between. “It takes almost 10 days usually to heal, and because of the pain, can only work 10 to 15 days in a month,” she said.

Even when work was available, and the wages were decent, by its nature, the difficulty of working in pain and with bruises made it difficult for her to work for more than part of the month.

Among women workers, all of whom worked as casual labourers loading crates and trailers in the mines and stocks, 81 percent complained of chronic pain in joints and chronic stomachache, and only a few had been to a clinic to seek treatment for chronic pain.

A third of the women workers said they had started working after their husbands who worked in quarries died from respiratory diseases such as tuberculosis and silicosis, or had a serious accident while working.

Several spoke of the compulsion to work as their husbands who worked in the quarries drank alcohol excessively. “I go with Geeta in “loading”,” said Seeta Regar, in her late 30s, whose husband had died seven months earlier. “He had tuberculosis and he was an alcoholic. He would hit me regularly. My limbs still hurt from the beatings.” Regar was struggling to pay for medical expenses for her 20-year old daughter who complained of a chronic stomach ache.

A large number of workers – both women and men – reported the same conditions of working in pain, in ill health, distress, or even when the rate was good, not being able to go to work all days to work.

Among the workers, 63.3 percent said they had visited a health facility at least once in past 12 months. Nearly 67 percent said they had spent on medical treatment on themselves, or on a family member. Over 66 percent reported they had ailments, and medical conditions, suffered chronic pain, they had not yet not sought treatment for.

Table 5: Lack of wellness among workers

Visited a health facility in last 12 months		‘Is there a link between your illness and your work?’		‘Is illness cured?’		‘Do you know a close family member or colleague who has fallen seriously ill in last five years?’	
Yes	19	Yes	17	Yes	2	Yes	18
No	11	No	2	No	18	No	11
Total	30	Total	19	Total	20	Total	30

The average spending on medical treatment in the previous 12 months was Rs 15,957. The highest a quarry worker had spent on treatment was Rs 90,000, and the least was Rs 500. The median medical expenses were Rs 10,000 a year.

Sixty percent of the workers surveyed, and nearly 95 percent of those who had visited a health facility in last 12 months said they had been not been treated fully yet.

A large majority of workers viewed their illness and pain as being linked to their work. Of the workers, 89.9 percent of those who had visited a health facility in last 12 months said they saw their illness as being linked to their occupation.

The effects of the harsh conditions of work on their health are worsened by the poor access to food and nutrition. Nearly a fifth – 16.6 percent – of the workers surveyed had not had dal even once the previous week. Mukesh Chand Jatav, the Dalit worker in Nayanagar who had returned to working in the quarries after remaining ill for five years, said that that day he had eaten dal after eight days. Other workers joked that dal in the meal was for “for festivals.”

Ninety percent quarry workers had not had egg, or milk even once during the previous week.

Broken bodies and injuries

The workers said that accidents were common. In case of accidents, the workers said, only a few labour contractors helped, “compensating Rs 50-100 for treatment” of minor injuries, or allowing the injured worker a day off. “If a worker has no money, then the contractor helps with basic treatment,” said Kailashi Bai Khatig. “But some contractors do not help at all, nor do they allow any leave. If a worker has taken a *kharchi*, an advance, then the worker has to work off the advance by sending a relative in their place.”

She said the workers frequently came to each other’s assistance. She described helping her neighbour, a Bhil Adivasi mine worker, with small amounts while he was unwell. “And in the same way, sometimes I have borrowed money from Bhil for treatment when I have to go to the doctor,” she said.

Khatig added that she did not know of any instance of contractors helping women workers with compensation for their work injuries or illnesses.

In case of serious accidents, most workers recounted ordeals of being left to fend for themselves and their family members.

Six months back, Mohan Banjara, a middle-aged miner recounted, he had got into an accident which was very common with “stock” workers when he had hit his thumb with all force with a hammer instead of the stone surface. “My wife, who works with me in the “stock”, tied a towel on my bleeding thumb and we started walking to the bus-stop to go to Bilwara,” he recounted walking for five kilometers from the quarry to the bus stand while in intense pain. The couple had spent Rs 12,000, two months’ wages, on getting Banjara treated and received no help from their employer.



Rohru Lal Khatig who now works in a “stock” on a piece rate lost his right arm when a sandstone block fell on him while he worked. His arm was amputated. He remained out of work for two years without any compensation before starting work again in the quarries. He said when he asked for compensation, the quarry owner threatened him

The weight of sand

Many workers in Bijolia live with tuberculosis, and with what they termed “*pathar ki bimaari*”, or silicosis, a fatal respiratory illness caused by inhaling fine silica dust through prolonged exposure in the quarries.

Working in mines and stone quarries, the workers inhale dust powder which deposits in their lungs. A fibrosis sets in which makes the lungs stiff. Slowly the workers' breathing capacity reduces, till one day they cannot breathe at all.

While silicosis has no cure, it can easily be prevented if mine and quarry owners adopted wet drilling which reduced the amount of dust in the air, and provide workers with protective masks.

The wet drilling equipment costs only between Rs 10,000 to Rs 15,000, not even a tenth of the amounts of Rs 10-12 lakh the quarry owners spend on draining monsoon water from the quarries at the start of every mining season.

But mine owners were reluctant to spend even this small amount, as they claimed that the use of wet drills slowed down production.

Banwari Lal Sharma who owns a sandstone mine in Champapur in Bijolia and is the secretary of stock owners' associations said though the equipment was not very expensive, it slowed down the rate of production significantly. "If a compressor machine is operated all day, it can drill up to 500 holes in the uncut stone," he said. "If we apply wet drilling method, then a worker will only drill 100 holes, much less production would get done, and the costs would go up by Rs 2000 per day for me of hiring more workers to do the same."

At the public squares at Berisal, Nayanagar, Sukhpura, where the workers chatted over tea between work breaks, several of them described they had lost weight, grown weaker, and developed breathing difficulties in the course of working in the quarries.

Nand Lal Bhil, who started working in the quarries as a child and has worked as a sandstone miner for 40 years, said he suffered severe weight loss and started having difficulty breathing in his middle age. "Five years back, I was diagnosed with tuberculosis, and I completed the treatment," he said. "But two years back the doctor told me, 'Stop the TB treatment, you now have "silicosis"."



Nand Kumar Bhil, who has worked in the sandstone quarries since he was a child was diagnosed first with tuberculosis then silicosis, a fatal respiratory illness, two years back.

Bhil had unknowingly endangered his life working in the quarries over the years. “Who knew what silicosis was back then? We were young, we worked, we could not be deterred by any fear of any illness...” Now, he described struggling with routine chores the last two years since his diagnosis. “It is difficult to drink even water,” he said. “When I eat, I cannot swallow. I take one bite, and cough 11-12 times, and spit all food out.”

“My throat burns. I can barely breathe. They say my lungs are packed with sand.”

Other workers described anxiety over whether they had contracted silicosis, and if their life was going to be cut short by the disease.

Holding a hammer while sitting on his haunches inside a “stock” in Berisal, Chotu Lal Bhil, a migrant from Rajsamand district, chipped at a sandstone slab to carve tiles out of sandstone.

Seven years back, bothered that his hearing was affected by the sound of the continuous hammering, he had approached an unregistered medical practitioner. Instead of being cured, he had partially lost hearing in Noise Induced Hearing Loss in both ears in the course of the treatment.



After losing hearing in both ears in the quarries, Chotu Lal Bhil, an Adivasi migrant, was worried he may have also contracted silicosis

But Chotu Lal Bhil's problems had not ended then. He had contracted tuberculosis last year. He added that he had been losing weight and was working through a low-grade fever and cough. "Do you think I may still have TB?", he asked this surveyor. "I still take a pill every night, but I am worried it is spreading, and has become silicosis," Bhil expressed his dread.

Prabhu Lal Regar, a Dalit miner in Berisal, described how witnessing the condition of those living with silicosis in their neighbourhood and their community, it was natural that workers would suffer from some anxiety. "*Mann mein tension zaroor ho jaati hai, ki apne ko bimaari hai, apan 2-5 saal se zyada nahi jiyenge* (For sure, a worker wonders, 'I too have silicosis, I may not survive more than two to five years.')

Badri Lal Bhalai, who has driven a tractor trolley for a Dhakad upper caste quarry owner at the same wage rate of Rs 170 a day since 12 years had watched his brother, who also worked as a driver in a quarry, die of silicosis last Diwali. "He was also a driver on tractor in Gopalji's mine, in Sukhpura," said Bhalai. "I have had a lot of musculoskeletal pain and problems in my right side of my body from the constant jolts from driving the tractor. Now, I also feel a lot of tension and anxiety around dying, all the time."

No fair compensation

From 2013 till August 2017, the government of Rajasthan has certified 9,278 persons, largely miners and stone carvers working with dimensional stones, as living with silicosis. Of them, more than 700 of these workers were recorded to have died after they were certified with the fatal disease.

The government has announced a compensation Rs 1 lakh to those diagnosed with this, and Rs 3 lakh on the death of a worker from this disease.

An emergency response

Silicosis is among the list of occupational diseases recognised by the Factories Act, 1948 and the Employees Compensation law of 1923. The law mandates that employers pay compensation to workers who suffer injury or disease that may result in a worker's death or disability.

A study at the Department of Chest Diseases of D. SN Medical College Jodhpur conducted radiological investigations on 82 mineworkers. Of them, a majority, 56 percent had silicosis, or silica-tuberculosis. (Malik, 2005). Researchers have noted that if the few studies carried out are indicative of conditions in mines throughout Rajasthan, then up to 800,000 workers might be affected.

The government of Rajasthan framed the Rajasthan Workmen's Compensation (occupational diseases) Rules in 1965. The Rules require every employer must present any new worker before medical boards for an examination. The provision is for a check-up after every five years to prove that the worker is not suffering from silicosis (certificate B), or Certificate 'D' for the worker who is suffering from silicosis.

In 1993, 28 years after it notified the Rules, the Department of Labour, government of Rajasthan constituted the Pneumoconiosis Medical Board for the first time with three doctors. But the medical board remained largely dysfunctional till about eight years back when the National Human Rights Commission (NHRC), a non-judicial body, responded to a complaint about quarry workers suffering from silicosis in 2010, and started interacting with the High Court of Rajasthan and the state government to provide compensation for the victims.

In 2012, the Rajasthan State Human Rights Commission (SHRC) started a legal process of compensation announcing the payments of Rs 1 lakh to patients certified by the hospital boards, and Rs 3 lakh to families of those who died after being diagnosed. The compensation was to be paid out of the Rajasthan Environment Health and Administrative Board (REHAB) of the mines department.

With the setting up of the District Mineral Foundation Trusts – a trust to administer development funds in affected districts based on contributions from miners – in 2016, REHAB was wound up in 2017, and it was decided that the government would continue to pay the same rates of compensation to silicosis victims from the DMFT funds instead.

Dr MK Devarajan, a former member of the Rajasthan SHRC, who initiated the process of compensation in 2013 through the SHRC during his tenure, said till July, 2017, they had sanctioned Rs. 146.02 crore, out of which Rs. 89.32 crore was distributed to the affected.

With compensation awarded to more than 9,000 workers in the past five years, Rajasthan now stands as an exemplar of a state-based model for providing some level of compensation to silicosis victims and their families.

No one killed the worker

In interviews, employers denied responsibility for workers' injuries and for protecting their health and wellness.

Ramphool Dhakad, a who owns a sandstone business, Jagdamba Stone, and is member of the Upanwas Sandstone Exports Association Development Society, a registered union of 110 "stock" businesses, in Bijolia said workers' safety was "being made into an issue in Bijolia."

"Silicosis occurs among those working with softer stone or sand, not sandstone," said Dhakad, whose firm has export orders from buyers in the US, Canada, and the UK. "Farm workers migrate from here to Maharashtra to

dig wells there. They contract silicosis while working there with finer dust. Then, they return to Bijolia in quarrying around Diwali, and claim they got silicosis here, so that they can claim state compensation.”

Arvind Rao, who heads the Uparmal Pathar Khaan Vyavsaayi Sangh, and owns several sandstone quarries said over the years “thousands” had worked in the quarries he owns, but formally, on record, his firm did not hire a single of those workers. “We hire a *choudhary* (labour contractor) who then hires the workers,” said Rao. “The contractor is responsible for any worker hired by him, not the mine owner.”

Rao flatly denied that sandstone workers in Bijolia’s quarries were contracting the disease because of work. “We have open-cast quarries where sand does not collect the same way,” he said. “It is a rubbish being propagated by the NGO-industry that the work in quarries is leading to workers falling sick.”

Labour activists say that though the state is taking some responsibility for relief to victims, it is failing to enforce the norms of compensation on the employers which ought to be much tougher.

The Employers Compensation Act, 1923 gives a “factor” for working out the actual legal compensation to be paid to mine workers. This is based on the worker's age, monthly wage, and degree of disability. For instance, in the case of a mine worker who contracted silicosis when he was 30 years old, a “factor” of 207 will be multiplied by half the monthly wage. For the mine workers in Bhilwara, this comes to around Rs 3,000, making a worker eligible for Rs 6.2 lakh as compensation in case of death or disability. It would be higher for the workers who got the disease at an even younger age.

The amount of compensation from the state government ranging from Rs 1 to 3 lakhs is a fraction of what legal compensation to the workers would come to.

Rana Sengupta, the managing trustee of the NGO Mine Labour Protection Campaign, said “not a single case has been registered in Rajasthan’s courts under the Employers Compensation Act in the past 12 years” and not a single employer had been penalised for a worker having contacted silicosis working in the quarries. “No one is able to establish that an employer-employee relationship in records,” said Sengupta.

Further, compensation by the state does not increase the operating cost for businesses in the same way as court cases against mining businesses would. It does not, therefore, address supply chain dynamics, nor does it address wider problems that cause human rights injury. (Balaton-crimes, Marshall and Taylor, 2016).

After decades of degradation of local areas from mining across the country, the District Mineral Foundation Trusts have been set up with the aim of mitigating the harm from pollution and other harmful effects on local communities, and to streamline the funds of mining specifically for the development of local communities. Under the DMFT Rules, 10 percent of the royalty for minor mineral and 30 percent of the royalty of major minerals is to deposited into the district fund.

Rajasthan has a corpus of Rs 14,028 crore in its DMFT, with the highest among all districts – Rs 557 crore – collected from mining in Bhilwara till this February. The state’s government’s decision to use another state fund, this time the DMFT, to provide compensation from silicosis again does little to mitigate the effects of mining on workers, while employers get away with no pressure to switch to safer mining practices.

Shrinking facilities for treatment

In Jaipur, the state capital, Dr Devendra Sharma, the officer in charge for silicosis, agreed that by not penalizing the quarry and mines owners the same patterns of work and diseases continued. “The government may have made a mistake by taking on the entire burden of compensation on to only itself,” he said.

In the public community health center in Bijolia, for those seeking treatment for respiratory illnesses, not much has improved. In fact, the frequency of screening check-ups have reduced.

Dr Manish Saxena, one of three doctors attending to the Out Patient Department patients that day said, on any day, out of the 200-odd patients who at the daily OPD, 25 to 30 complained of persistent cough, breathlessness, and haemoptysis(coughing up blood).

Dr GV Diwakar, a senior specialist of Chest and Tuberculosis Medicine, at the Government Hospital in Bhilwara said he believed “90 percent” of the cases would not occur if the quarry owners were made to adopt wet drilling, and if workers were provided with and educated about using protective gear. He said the number of patients from across Bhilwara district was found to be so high that, at first, the hospital administration organised a silicosis and tuberculosis screening camps every Tuesday. “But the number of those trying to get themselves screened was too high and we had to stop the weekly screenings as we just could not manage so many patients,” he added. The government had then shifted the site of camps from the district center in Bhilwara to organising “mobile camps” in medically-equipped vans in different blocks.

In Bijolia, medical camps for respiratory patients were to be organised every week. But between five months, between September 2017 till January 2018, only five camps had been organised through an ambulance sent to Bijolia from Bundi, on irregular schedules.

Dinesh Dhakad, a medical official supervising tuberculosis camps at the health sub center said the staff found it difficult to cope with patient load. “Two hundred people land up for the OPD, when we can do only 40 to 50 X-Rays in the van,” he said. “I believe the workers are lining up because they hope to get the silicosis diagnosis and the relief money.” “Even women workers who work with spades inside quarries land up at the camps claiming that they are also miners, and want to be tested,” he continued. “What can we do? We have to satisfy everyone.”

This irregularity of the health camps over the months also reflects in the data from the health centers. Over five months between September 2017 and January 2018, silicosis camps were no longer organised weekly or even monthly, and nor was there any public schedule of when the camps would be held available. The number of patients recorded in the out-patient department too had steadily gone down.

Table 6: Special medical camps organised in Bijolia between September 2017-January 2018

	Tilaswa Camp January 12, 2018	Aaroli Camp January 5, 2018	Bijolia Camp October 13, 2017	Kasiyan Camp, September 22, 2017	Makredi Camp September 1, 2017
OPD Patients	43	63	17	66	101
X-rays (Cough)	26	36	6	39	75
Sputum Test	22	22	3	49	38
Silicosis suspected	8	12	1	2	17
Other(gastroenteric, joints pain)	4	4	3	10	10
Tuberculosis detected	0	0	0	2	8

Source: Health Sub Center, Bijolia, Bhilwara

Bijolia’s marginal miners who continue to work with life-threatening risks increasingly faced barriers in even accessing certification of their status and condition. They said they could not fathom a time when employers too would be held responsible for endangering their health or rightfully sharing the gains from the business.

Nand Kumar Bhil, who had stopped tuberculosis treatment two years back after being diagnosed with silicosis, still struggled and worked in the “stocks” in Berisal a few days to earn Rs 100-200 a week for basic expenses as he has few savings despite working since he was a child.

“Our employers nurtured their families with the profits, we barely ate two meals,” said Bhil.

Bhil said after the diagnosis of silicosis, he worked in the same conditions even now. “If one some days, there is too much discomfort, then I struggle and go to the Silvatia government sub-center and get an injection for relief.”

Lack of monitoring over safety and work conditions

Arvind Kumar, Director (Mining) DGMS, in Ajmer region, which Bijolia falls under, said the Mineral Conservation and Development Rules(MCDR) 1988 distinction between “large scale” and “small scale” mines was originally meant to promote smaller quarrying operations to promote local livelihoods was now becoming an obstruction to effective monitoring. “Now, conditions have changed,” said Kumar. “The size of these leases is still small, upto one hectare, but they have become more mechanised operations, using drilling equipment, compressors, that raise more dust and have become riskier operations for the workers and anyone regularly in the same environment.”

Both the DGMS and the state mining department face a chronic lack of resources and staff to implement the regulations.

Kumar, in DGMS, Ajmer, said his office, which has three officials, was responsible for supervising 18 districts across Rajasthan. “There are 12,000 sandstone just in one district, in Jodhpur,”he said, adding that it was simply not feasible to effectively monitor the quarries spread over interior areas.

Similarly, in Bijolia, three department officials – two foremen and one engineer – monitor 1,556 sandstone mines, of which 140 are large mines spread over 4 to 5 hectares.

An official of the mines department said, “Recently, the state government permitted panchayat officials, gram sewak to also monitor and ensure that mines use wet drilling methods to prevent silicosis.”

However, Rameshwar Berwa, the panchayat extension officer in Bijolia panchayat samiti said he had not received any such instructions from the Panchayati Raj department. “Such orders cannot be just issued by the labour or mine department,” he said. “Anyway such inspection would not be possible for the panchayat.”

Access to amenities

All mine workers with a wage less than Rs 15,000 a month (except in coal mines -The Coal Mines Provident Fund Act applies to coal mines) are entitled to a provident fund to which employers contribute for their pension fund. But, the survey showed, the absence of employment records, none of the workers surveyed were getting a provident fund.

Mine workers in sandstone mines are considered to be a building and construction workers as they work with building material. Any worker who has completed the age of 18 years and is less than 60 years of age; and has worked for not less than 90 days in the last 12 months can register with the Rajasthan Building and Other Construction Workers Welfare Fund, and become a member of the Welfare Board. This entitles the workers to protection, such as Rs 5 lakh in case of death from accident at the work-site, Rs 2 lakh in case of death from natural causes, treatment coverage of Rs 30,000 to Rs 3 lakh in case of injury from an accident at the work-site, as well as, scholarships for their children, annual stipends to buy work-tools such as chisels etc.

In the survey, only one out of 30 workers surveyed held a Building Workers card or a “worker’s diary” as the card is commonly called, and 97 percent of workers lacked any protection.

Suresh Bhil, an activist with Gramin and Samajik Vikas Sanstha, a non Governmental Organisation, who supports Bijolia’s “stock” miners and workers registered with the building workers’ board said that organisation had applied for compensation for death of one worker from natural causes, but were yet to hear back on this claim.

Records from the panchayat samiti office in Bijolia show that in nearly three years, or the previous 34 months, only 650 workers’ applications for registration had been accepted, this is only 5 percent of official count of workers in the quarries and stocks.

Nearly 50 percent claims for welfare support were pending, or rejected.

Table 7: Rajasthan Building and Other Construction Workers Welfare Fund registration in Bijolia

(From March 2015 till January 2018)	
Applications received	1281
Approved	650
Sent for clarification	471
Applications pending	66
Applications rejected	94

Source: Panchayat Samiti, Bijolia

All workers in the survey had an Aadhaar. The government wants all residents to have this biometrics-linked proof of identity, and has argued that the ID will lead to inclusion of the poor into social schemes. But in Bijolia, there was no evidence that having an Aadhaar had facilitated the access of low income workers to social welfare. Having an Aadhaar number had now additionally been made a pre-condition for accessing any social schemes.

Mathura Lal, a middle aged miner had sunken cheeks and a thin frame. Lal has lived with silicosis for three years, and was in the process of applying for a workers’ diary registration. “I doubt if Aadhaar has any relevance in the *khadaan*, the mine, I have not got any benefits from it,” he said. “What is new is that Aadhaar has been made mandatory in several government schemes,” he said.

To get registered in the Rajasthan Building and Other Construction Workers Welfare Fund, workers now have to show Aadhaar as proof of identity. The miners are also required to show proof of having enrolled in Bhamashah(a biometrics-linked resident identity Rajasthan government has built using Aadhaar infrastructure), produce their ration card, bank passbook, and show a proof of employment. A worker can apply for the card only with the employer or contractor’s verification, but employers are often reluctant to provide this.

The Bhamashah card, the state biometrics-linked identity, also provides a health insurance cover upto Rs 30,000 for general illness and Rs 3 lakh for critical illness for households living below poverty line.

Among the respondent workers, only 20 percent had a Bhamashah card, and even those who had the card were unsure how to use it. Only one worker, an elderly miner living with silicosis, reporting having used it had used it successfully, for his daughter-in-law’s delivery.

Ninety seven percent workers held a ration card which entitled them to subsidised foodgrains at fair price shops under the National Food Security Act. A third of all workers, 36 percent, said they could not get any grains as they had been wrongly categorised in cards as having higher income than they did, or because they faced problems in linking Aadhaar to their ration cards, or in biometric authentication at fair price shops as their fingers were calloused from the work in the quarries.

Nearly a fourth, 26 percent workers, did not have access to electricity in their homes. Almost the same number did not have access to clean drinking water in their homes or village, they said.

Table 8: Workers' access to basic amenities

'Do you have a ration card?'		'Are you getting subsidised grains on this card?'		Access to clean drinking water near home		Access to a toilet at home		'Do you have an electricity connection at home?'	
Yes	29	Yes	11	Yes	22	Yes	19	Yes	22
No	1	No	18	No	8	No	11	No	8
Total	30		29		30		30		30

What is priority?

When asked what was most important to improve the conditions of work, most workers were unanimous that the wages and rates of payment must increase.

Most workers said they believed that a fair wage would be at least two or three times what the employers paid them now, given the risks and the hardship of their work. "If teachers and officers get paid Rs 50,000, should we not get at least Rs 15,000?" said Mohan Banjara, the miner recovering from a thumb injury.

A few workers in Berisal expressed a worry that their wages had stagnated as migrant workers from nearby districts were willing to work for low pay. Other workers disagreed and contended that there were workers willing to work more or fewer hours and at varying pay even among the local workers. In interviews, the workers stressed that as a priority, the government ought to increase and protect a minimum wage, which currently was not enforced at all.

Women workers who carry head-loads, load 10-11 trollies a day earning Rs 60 per trolley or Rs 150 a day on an average, lower than the minimum wage, said at the least they ought to be paid better, at last Rs 250 and at the same rate as the men. Banna Banjara, a Adivasi woman worker expressed her anger at the growing inequality she observed around herself. "How is it that some people are sitting on bags of currency and we do not have Rs 10,000 to start a kirana shop?" she said. "The rich get richer. When I see all this, I wonder what is our sarpanch doing, and also the prime minister, Modi. Can't they see what goes on?"

Mukesh Chand Jatav, the Dalit worker who witnessed three of his neighbours in Hindon die of tuberculosis the past year, was more skeptical of any intervention for workers from the government. "A labourer works all the time and yet struggles to save even *do rupay*, Rs 2 for their children from paltry wages, while others celebrate festivals regularly," he said. "This shows what can a government do? Has it ever done anything," he concluded.

Many workers described their efforts to negotiate higher wages in piecemeal attempts, with a the help of colleagues who changed frequently. While none of the respondents were members of a union, several said they believed that bargaining collectively through organised ways through a union etc could help. They referred to existing unions in Budhpura quarries near Bijolia, though the presence of any unions could not be verified independently.

The workers joked about a quarry worker holding only a "10-15 years ki degree", a qualification to work that lasted only 10-15 years, before the hardship made it too difficult, or in some cases, impossible to continue.

The workers suggested a government old age pension and assistance for workers who could no longer continue working in the quarries because of chronic pain and musculoskeletal injuries would be a helpful measure.

During a break from work in Nayanagar, one of the oldest quarries, a few workers who had gathered for tea said they were convinced that conditions and pay would not change unless there were new forms of ownership of the mineral resources. "If this village land produces the sandstone, then why can we not harvest and quarry the stone

ourselves?” said Shankar Singh Daroga, a miner in his 50s with a wrinkled skin and a busy grey moustache who had worked in the quarries since he was 15.

“Right now, we work all day for others but save nothing,” said Daroga, who stopped work inside the quarries after he contracted silicosis five years back but continues to carry head-loads. “If the government allowed the worker to be the owner, then maybe we would be on to something, we too could have some savings.”

Other workers intervened that they believed it may not be feasible for workers, to manage the quarries and operate the machines and heavy equipment, and also that collective ownership may lead to conflicts in the village. But Daroga continued with making the case. “They are 50 families in the village and we all invest Rs 5,000, then we could easily manage to do the quarrying collectively.” A few younger workers now nodded in agreement. “If we worked in quarries we owned ourselves, we would save on labour costs,” they speculated, and discussed till the tea break had ended.

Conclusions

This study examined the work and living conditions of workers for whom mining is casual employment, who are marginal or extremely vulnerable, without secure jobs. As the caste of these workers show, Dalit and Adivasi households with small plots or no land constitute the single largest group, nearly two-thirds of the workers interviewed. Being marginal, these households are unable to spend adequately on health, and nutrition. Many workers suffer from occupational diseases related to poor air quality, dust inhalation, and fatigue, and that there is limited access to medical assistance.

Though mining is viewed as a source of economic progress and jobs in India, the acute poverty of marginal mining and quarrying households makes it evident that the industry is standing largely on labour extracted at lower than minimum wage rates from lower-caste quarry workers from very poor households.

Policy measures, such as demonetisation, push for the use of Aadhaar and digital payments, that purported to bring under greater transparency to informal economic sectors, such as the quarrying and processing of stone in Bijolia, have thus far had no effect on how workers are recorded and protected in the area. These measures have not on their own lead to formalising work relations, or strengthening workers’ rights. In quarries in Bijolia, more than a year after these measures, workers have continued to remain invisible and obscure from protection in several ways. The proposed changes in occupational safety laws leave several regulatory gaps as they are in existing laws, and fail to address the ways these workers remain invisible and marginal.

The measures that respondent workers unanimously supported – higher minimum wages, universal old age and disability pensions, experiments with new forms of resource ownership – for now did not appear to be a high priority on the government’s policy table.

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