Limestone Quarry Workers of Kota, Rajasthan, India

A Report Prepared for

'Beyond the Resource Curse: Charting a Path to Sustainable Livelihood for Mineral-Dependent Communities'
ARC Discovery Project
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Executive Director
ARAVALI
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1 NTRODUCTION

This (Beyond the Resource Curse: Charting a path to Sustainable Livelihoods for Mineral-Dependent Communities) innovative project combines research with participatory action, expands scholarly understanding of mineral-dependence and connects it to neoliberal development, agrarian changes and the informal economy by exploring mineral governance, production and labour organisations, and gender livelihoods in Artisanal and Small-scale Mining (ASM) in India.

The report presented here looks at limestone quarrying in the Kota district of Rajasthan, India. Rajasthan is a mineral rich state. It has 79 varieties of minerals of which 58 are being commercially exploited. Major minerals like wollastonite, lead-zinc, calcite, gypsum, rock phosphate, ochre, silver and minor minerals like marble, sandstone and serpentine (green marble) etc., contribute to almost 90% to 100% of national production.

The State is endowed richly with the occurrence of Kota Stone (Limestone splittable) of greenish-grey colour. It has gained tremendous popularity worldwide and widely used for flooring and cladding purposes. It is available in Ramganjmandi area of Kota and Jhalawar district. Presently leases of Kota Stone of 4 hectare are granted by application method as per the State Government Policy issued on 28.01.2008. This policy will be reviewed.

This study was undertaken to gain insight into the lives of the quarry workers of the Kota Stone mines in Kherabad Block of Kota District of Rajasthan State, India.

Every quarry has its own health, livelihood and safety issues for the quarry workers. The study gives a holistic picture of life of quarry workers and their livelihoods. It also focuses on why of the quarry workers are forced into engaging in the mining activities.

2 STUDY APPROACH, METHODOLOGY AND TOOLS

In line with the objective of the study, ARAVALI constituted and deployed a spearhead team to undertake this task of assessment. Based on the purpose of assignment, the team designed the nature of the assessment which included process and methods to be followed and tools to be used.

Process and methods followed and tools for the impact assessment used were as follows.

(i) Constitution of assignment team: ARAVALI constituted a team for carrying out survey of quarry workers of the limestone mines in Kota. The team consisted of senior programme staff, Programme Assistant and two field staff.

(ii) Desk review: Reports and relevant documents were collected and along with it secondary information and data were collected from secondary sources. A desk review was carried out to understand the already existing information and knowledge available in the secondary documents.

(iii) Field Methodologies: The principle of maximum variance with purposive sampling was adopted to ensure that maximum sub-population groups and contexts are covered during the assessment. For data/information collection detailed study instituted in which following methods and tools were tailored to meet the various information needs of the study.

1. Participatory Focused Group Discussions (PFGDs)
2. Personal Structured Interviews of 25 quarry workers.
3. Reconnaissance of the mines

(iv) Data collation: Data collected from the field were fed into the form of database for further analysis. Further, data cleaning was done to clear the ambiguous data.

(v) Analysis and Report writing: Database was analysed keeping view the field observation and inter-linkages of data. Based on the analysis, desk review and field

observation report has been prepared to give a holistic picture of the lives of the quarry workers of Kota Stone mines.

3 STUDY AREA

Location

The study was conducted in Kherabad Block of Kota District in south-eastern Rajasthan state of India. Kota formerly known as Kotah, is the 25th largest district in the northern Indian state of Rajasthan.

The district is bound on the north and North West by Sawai Madhopur, Tonk and Bundi districts. The Chambal River separates these districts from Kota district, forming the natural boundary. The mining area is in the southern part of the district.

Physiographical feature of the district can be described as the extending ridges of the Aravali, foothills with undulating surface and largely plain lands highly suitable for agriculture. Amongst the vast mineral reserves in Rajasthan, Kota district is well-known for its Kota-stone.

Climate

Kota has a semi-arid climate with high temperatures throughout the year. Summers are long, hot and dry, starting in late March and lasting till the end of June. The monsoon season follows with comparatively lower temperatures, but higher humidity and frequent, torrential downpours. The monsoons subside in October and temperatures rise

again. The brief, mild winter starts in late November and lasts until the last week of February. Temperatures hover between 26.7 °C (max) to 12 °C (min).

The average annual rainfall in the Kota district is 660.6 mm. Most of the rainfall can be attributed to the southwest monsoon which has its beginning around the last week of June and may last till mid-September. Pre-monsoon showers begin towards the middle of June with post-monsoon rains occasionally occurring in October. The winter is largely dry, although some rainfall does occur as a result of the Western Disturbance passing over the region.

Demographic details

As per National Census of 2011, Kota district has a population of nearly 2 million 40% of whom live in rural area. Over the decade from 2001, population growth was 24.%, most of this occurring in the urban areas which expanded by 40% whilst rural growth was only 6%. Population density of the district, as per 2011 Census, is 374 persons per square kilometre.

Literacy Level

The literacy rate of the district is 77% with male and female literacy being 86% and 66% respectively.

Sex Ratio

With regards to sex ratio in Kota, it stood at 911 per 1000 male compared to the average national sex ratio in India of 940 as per Census 2011. Child sex ratio is 899 girls per 1000 boys.

Child Population

There were total 255,056 children under age of 0-6 of which a male and female were 134,341 and 120,715 respectively. Children under 0-6 formed 13.07 percent population of Kota District.

Development in Kota District

The Human Development Index for the district is 0.787 and it ranks 2nd amongst the 33 districts of Rajasthan.

The Scheduled Caste (SC) and Scheduled Tribe (ST)[1] population in the district is around 21% and 9 % respectively, higher than national average of 17% and 8%, respectively. Although SC and ST populations together comprise 30% of the district population, only. However, only 19% of the 186,360 total households in the districts are Below Poverty Line (BPL)[2].

!0% of the households in the district do not have access to electricity and almost half do not have toilet facilities. 99% of the households in the district have access to safe drinking water.

On an average, in the district, one medical institution serves a population of 6482. The infant mortality rate (No. of infant deaths per thousand live births) of the district is 35. The total fertility rate in the district is 3.5.

Economy

The district is largely an agricultural based economy; however, in recent years there has been large spurt in urban development with the population growing by almost 40% in the first decade of the 21st C. The district also has developed into an industrial district.

Kota, district headquarter, is located 240 kilometres (149 mi) south of the state capital, Jaipur. Situated on the banks of Chambal River, and has been identified as a counter-magnet city for the National Capital Region to attract migrants and develop as an alternative centre of growth to Delhi. It is the 47th most populous

[1] The **Scheduled Castes** (SCs) and **Scheduled Tribes** (STs) are various groups of historically disadvantaged people recognized by Indian Constitution.

[2] **Below Poverty Line** is an economic benchmark and poverty threshold used by the Government of India to indicate economic disadvantage and to identify individuals and households in need of government assistance and aid.

city of India. Kota is famous for its coaching institutes for engineering and medical entrance exams, being called "Education city of India". The city is the trade centre for an area in which millet, wheat, rice, pulses, coriander and oilseeds are grown; industries include cotton and oilseed milling, textile weaving, distilling, dairy, manufacture of metal handcrafts, fertilizers, chemicals and engineering equipment.

Agriculture and animal husbandry is the main occupation of majority of the rural households in the district. There are 19% of workers who are cultivators and 18% workers agricultural labourers.

4 INSIGHT INTO THE LIVES OF QUARRY WORKERS

4.1 GENERAL CHARACTERISTICS OF MINE/QUARRY WORKERS

The survey was conducted in 8 Gram Panchayat covering 10 villages of Kota District. The survey was conducted with 25 quarry workers working in the Kota stone mines in Kherabad Block of Kota District. They were all Hindus except one Muslim. The age profile of the people surveyed is listed in Table 1.:

Table 1: Age profile of quarry workers

Age Group (in Years)	No. of quarry workers surveyed
17-20	3
21-25	6
26-30	2
31-35	4
36-40	4
41-45	3
46-50	0
51 & above	3

It can be seen that the age of the quarry workers ranged widely from 17 to 60 years of age. Five quarry workers were bachelors.

Caste and Economic Class

The quarry workers were from all four caste categories. There were 6 SC workers, 15 OBC and 4 from General category. Twenty Four quarry workers were APL (Above Poverty Line category) and remaining one BPL.

Education level of quarry workers

Of the 25 workers, 1 was illiterate, 3 are barely literate, 7 has attended Primary School, 3 Middle school, 10 Secondary school, while there is only one quarry worker who has completed graduation from government collage .

Family Size:

Characteristics of the families of the quarry workers is as follows:

- Of the 25 quarry workers, 16 quarry workers were living in a joint family.
- The average family size is of 5.2. There are 17 families where the total number of members in the household is between 5 and 8 and in the remaining 8 household total number of members are between 3 and 4.
- There are only 4 families which has elderly member.
- Average number of children (below 18 years) per household is 1.6 and the adult is 3.44.

4.2 SHIFT IN OCCUPATION OF THE HOUSEHOLDS

It is evident from this survey, that there has been shift in family occupation. This transition from grandfather to father and father to son has been gradual. Reason for the same, is no doubt, the agriculture being unviable due to fragmented land with meagre land holding. Fragmentations of land were due to division of the land within the family. Apart from this, the other significant factor for this shift, was also the easily available employment opportunity along with no other alternate options. The table below gives details of shift of family occupation.

Table 2: Shift in occupation

Types of occupation	Family Occupation		
	Traditional	Grandfathers'	Fathers'
Agriculture	4	17	9
Foreman / Mechanic	1	-	1
Karigari (Masonry)	2	2	6

Labour	15	5	6
Stone Cutting	2	-	-
Munshi (Record keeper)	1	-	-
Welding work	-	1	-
Jewellery	-	-	1
Pottery	-	-	1
Patwari (land	-	-	1

4.3 MINE LABOURER EMPLOYMENT

17 of the 25 quarry workers have been working as mine labourers for 10 years or more with one having been in the quarry for 40 years. The details of the year since when they have been working as mine labourer is given in the Table 3:

Table 3: Year since working as mine labourers

Year	No. of persons
2011 - 2014	3
2006 - 2010	5
2001 - 2005	12
1996 - 2000	2
1991 – 1995	4
1986 – 1990	2
1981 - 1985	0
1976 – 1980	0
1971 – 1975	1

Age at the time of entry as quarry workers

It is notable that nearly three-quarters of those surveyed began as quarry workers when they were 18 years old or less. Even more notable is that 3 workers entered mining at the age of 15 years or less. Table 4 gives the picture of the age group in which these 25 quarry workers entered in mining. This very likely reflects the severe poverty in these families which pushed them into mining when they should have been in schools and colleges.

Table 4: Age at the time of entry in mining

Age Group	No. of person
13 - 15	3
16 - 18	15
19 - 21	5
22 & above	2

Reasons for enter into mining?

The summary of the reasons is as below.

- The majority of the quarry workers interviewed had either no other source of income or no alternate employment options.
- Opportunity to work in mine as mine labourer is abundant in the geographical area of the Kota Stone mine and is easily available.
- The economic conditions of all the quarry workers were weak with no major source of income. Thus, the adult members of these economically poor families enter into mine labour activities.

4.4 WORK CHARACTERISTICS OF MINE / QUARRY WORKERS

Of the 25 quarry workers under survey, all, except two, are seasonal workers who work on an average for 7.9 months in a year in mines. On an average they have been working in mine for nearly 14 years. There are 4 seasonal quarry workers, who do agricultural work in their fields during the rainy season to cultivate rain-fed crops. However, none of the quarry workers work on non-farming activities. There are only two workers who stay away from home for quarry work for an average 6 months in a year.

<u>Aspects of quarry work liked and disliked by quarry</u>

- Nine workers like the work of masonry *Karigiri* i.e. of work of taking out stone blocks and splitting it into stone slabs.
- Eight workers like the work of cutting of stone blocks in the quarry. Four workers like doing labour i.e. stone slab loading and unloading.
- Three workers like the work of supervision and office work.
- Nearly all the quarry workers have liking for splitting of stone blocks into stone slabs.
- Aspects of the mine work they dislike are as follows:

- 21 of the quarry workers do not like to work as general labour for lifting of stone slabs and it's loading and unloading in truck.
- 1 worker dislikes working in the night.
- 2 workers dislike working on machine that cuts the stone layer or splitting of stone blocks into stone slabs.

4.5 ASPIRATIONS OF MINE / QUARRY WORKERS REGARD TO THEIR SON WORKING IN MINE

None of the 25 quarry workers want their son to work in mine. They site following reasons:

- 12 workers are of the opinion that the work is very risky in terms of long-term health
- There is a constant fear of accidents
- More physical labour which drains the person physically.
- Not adequate income to run the household despite hard labour of more than 8 hours in the blazing sun.
- There is more expenditure on the health problems of miners than their income.
- There is more hardship in this employment.

4.6 VULNERABILITY OF QUARRY WORKERS FAMILIES

Almost all the families or their main bread winner have had major shocks in the family which has pushed them into the poverty trap making the family highly vulnerable. The cause of vulnerability of families of each quarry workers differs from each other. The details of the causes of vulnerability is given in the Table 5. In general, almost all the families are resource poor with no skill set. Therefore, the adult bread winners in the family have largely chosen to work in mine as quarry workers as this employment opportunity is easily available in the area. However, some of these workers have gradually upgraded their skills from general labour to work as machine operators. All the families are living on the edge. Any major health shock in the family, like a severe illness or accident just pushes them into debt leading to severe poverty.

Table 5: Cause of Vulnerability of Quarry Workers

Cause of vulnerability of the families	No. of Families
High health expenditure due to Illness or accident of bread winner in the family	9
Health expenditure on delivery and maternity	2
Resource poor leading to poor economic condition of the family	9
Death of family members leading to expenditure on customs related to death.	2
Separation from joint family and with no skills for employment	1
Orphaned during childhood	1
Family size large with income less than the expenditure	1

4.7 FAMILY HEALTH

Respiratory Disease in the families

It was found from the survey that 4 members from 4 quarry workers households suffer from respiratory diseases. Of these, three cases are of the spouse of the quarry workers and in one case it is father of the quarry worker.

From the survey it was found that none of the members from the households of quarry workers lost their lives due to respiratory disease.

Water:

Water comes from public hand-pumps or piped water supply or both. 8 families fetch or use water for drinking, cooking, bathing and washing from a hand-pump, 4 from a common tap, 2 from both a common tap and a hand-pump while 11 families have water connected to their houses.

The families without water connections have access to water within the village of their residence which requires 5 to 15 minutes to fetch. In the morning and evening there are

long queues for fetching water from the common public points and this entails spending minimum 30 minutes to an hour by every household using public points.

Medical Facilities:

All the quarry workers and their family members use government hospitals for treatment of ailments. Since the quarry workers are from 10 different villages working in different mines, the distance to the hospital varies. The average distance of the nearest hospital accessed by the quarry workers is 8..1 km ranging from 0.5 to 40 km. Of all the 25 households, 21 households have sought medical help in the last three years. Details are as follows

Reason for seeking medical help	No. of Families
Accident	1
Illness of Children	1
General Illness	12
Foot injury	1
Piles	1
Respiratory	2
Skin disease	1
Maternity Delivery	2

4.8 RESOURCES

Nearly all the families are resource poor, with very limited family resources that could support livelihood of the family.

Housing:

There are three quarry workers who are houseless, while two workers have thatched huts, 5 have pucca (concrete) house while 15 workers have kuchcha (Sami permanent house.

Only 20 families have residential land and the remaining families are living on encroached land. Average size of a residential plot is 857 sq ft and it ranges from 100 to 2000 sq ft. On their residential plots they live along with their livestock, if any.

Bathroom and Toilets:

Of the 25 households, only 4 have a bathroom while there is an equal number of household having toilet in their house. Of these 4 household, one has shared bathroom and toilet. Household members of the remaining 21 families, in general, bathe in open and resort to defecation in open.

Land Holding

Only 7 families out of 25 families have land with an average land holding of 0.73 hectare. Of these 4 families have irrigated land with average holding of 0.44 hectare and 5 families have unirrigated land with an average holding of 0.672 hectare. There are two families who have both irrigated and unirrigated land. The source of irrigation for irrigated land is well owned by the family or joint ownership with other family. Land owning families, grow wheat, mustard, coriander and gram in their field. Income from agriculture supplements the household income.

Livestock

Of the 25 families, only 11 families have livestock - 2 families have a buffalo each, 2 families have 1 cow each and 1 family have 1 goat. 14 families have 1- 4 trees, largely neem, acacia and fruit trees. Income from animal husbandry is more like a supplementary income.

Due to uncontrolled disposal of stone slurry on pasturelands and wastelands, large numbers of cattle are moving in to the mines area for water and fodder.

4.9 CASH CAPITAL AND ITS MANAGEMENT

Twenty families have a bank account out but only three quarry workers are using the bank for depositing their surplus income. The deposit in the bank ranges from Rs. 1200 to Rs. 20,000. It was found that three of the quarry workers have lent out money to others. The money lent out is Rs. 20,000 by each of the three workers. Twenty quarry workers are under debt. This debt ranges from Rs. 10,000 to Rs. 900,000 with average of Rs. 106,000.

The cause of these debts are, apparently, due to the fact that they have not much savings to fall back on in times of emergency or crisis. The loans are taken for health expenditure and for adhering to the social customs and rituals including marriage of children entailing

financial expenditure. There is practice of taking loan from private money lenders on a high rate of interest which ranges from 2% to 5% per month. It was also observed, that before clearing the earlier loan, some families take second, third loan for the emergency/family needs. Therefore, the loan amount keeps increasing. Further, in absence of adequate saving, the families, in general, pays the interest amount annually only. Thus, the principal amount reduces insignificantly.

As per the survey, it was found that 2 families had taken loan for marriage of son or daughter or sister, 3 families for *death feast*[3], two families for agricultural purposes and buying of land while 13 families took loan for health expenditure.

4.10 INCOME AND EXPENDITURE

There are 6 families in the surveyed group, where apart from the quarry worker, there was one additional money earner in the family. Out of these six families, in 4 families, there are 3 bread winners including the quarry worker. Six of these additional bread winners work as daily wage labourer, two as machine operator in mines (in same as well as different mines), one as *karigar* (skilled mine labour), one as mechanic, one as driver, and one shopkeeper.

The two tables below provide a picture of the household income and expenditure of the 25 families' survey.

Table 6: Income Source

Details	Occurrence in No. of Families	Income Range (Annual)	Average income from this source
Agriculture	7	5000 -50000	21000
Livestock	1	2000	2000
Wages (Mining)	25	20000 -120000	49200
Wages (Agriculture / Construction/ others)	2	24000 - 60000	42000
Remittance	0	0	0

[3] On the death of family member, family has to organise feast for the community and the extended family and relatives.

Other Income	7	3000 - 68000	35286
Total Income	25	24000 - 180000	68400

Table 7: Expenditure of families

Expenditure Items	Occurrence in No. of Families	Family Expenditure Range (Annual)	Average family Expenditure (for this item)
Food	25	20000 - 60000	38880
Clothing	25	2000 - 20000	8860
House Construction / Repair	17	1000 - 3000	1529
Illness	25	2000 - 100000	14840
Farming	7	3000 -20000	9428
Livestock	2	2000	2000
Social customs	25	4000 -40000	9680
Investment	4	2000 - 108000	34250
Others	9	5000 - 25000	12756
Total Expenditure	25	46000 - 191000	86172

Income from Agriculture, livestock and wages from non-mining activities supplement the household income. If these sources of income, as provided in Table 1, were not available to the families, these families would have suffered from extreme poverty and very high vulnerability.

As for household expenditure, overall, it was found from the survey, food is the takes priority followed by illness, clothing t other expenditure including education of children.

Average difference in annual income of families over annual expenditure is (-) Rs. 17772 and it ranges from (-) Rs. 83000 to Rs.40000. This balance of income over expenditure is in negative in 80% of the families. In one family, income and expenditure is balanced while in the remaining 4% families it is in the range of INR 4000 to 40000. The families are on the edge of financial vulnerability due to constant fear of illness and accidents that may render them non-productive member of the family and lead the family to extreme poverty.

4.11 LINKAGE WITH INSTITUTIONS AND PUBLIC SERVICES

The social capital of the mine workers in general is very weak. The backwardness of the quarry workers is also reflected from the fact that none of the quarry workers have or are member of any social institution.

However, looking at the debt of the quarry workers, it is not surprising that they are not practicing micro-saving. Thus, it was evident from the survey that none of the members of the 25 families surveyed were member of any Self Help Group providing micro-saving and credit services.

Table 8 gives a glimpse of access to public institutions and services

Table 8: Access to Public Institutions and Services

	Average Distance (Km)	Distance Range (Km)	Regular	Occasional	Never	No response
All-weather road	0.15	0 - 3	24	-	-	1
Bus-stop	2.4	0 - 15	8	16	-	1
Government health centre/hospital	2.7	0 - 9	-	25	-	-
Private health clinic	1.4	0 - 7	-	20	2	3
Nearest town	8.4	0 - 20	3	21	-	1
Periodic market (Haat)	2.8	0 - 20	17	8	-	-
Regular market	2.5	0 - 20	13	10	1	1
Tehsil/ Block office	6.0	0 - 25	-	3	22	-
Banks	2.5	0 - 9	-	21	4	-
Credit cooperatives	4.5	0 - 15	-	2	22	1
Post office	2.5	0 - 9	-	2	23	-
Police station	2. 8	0 - 9	-	-	25	-
Primary School	0.7	0 - 4	7	1	17	-
Upper Primary School	0.8	0 - 4	8	-	17	-
Middle School	0.9	0 - 4	2	-	23	-
Secondary School	1.3	0 - 5	3	1	21	-
Senior Secondary School	2.4	0 - 9	2	-	23	-
College	4.3	0 - 25	1	1	23	-

	Average Distance (Km)	Distance Range (Km)	Regular	Occasional	Never	No response
Institute for Skill development	3.1	0 - 10	-	-	24	1

4.12 LINKAGE WITH ENTITLEMENT SCHEMES OF THE GOVERNMENT

There are various national and state government schemes aimed at social security, employment, health, housing, horticulture and other support and welfare schemes. However, it is surprising to note that:

- Only 10 families have availed themselves of the opportunity for employment under Mahatma Gandhi National Rural Employment Guarantee Scheme since the scheme came into existence.
- None the families availed benefit under National Horticulture Mission for establishing orchard in their farm land.
- One family, which is Below Poverty Line (BPL), has received benefit of national housing scheme for BPL titled *Indira Awas Yojana*.
- Five persons are receiving benefit (Rs. 500 per month) under National Pension Schemes for Aged, Widows, and Disabled.

5 IMPACT OF MINING ON THE ENVIRONMENT & LIVELIHOODS

Kota stone mining has a long history. There are many buildings built during the British period prior to 1850 A.D. where Kota stone has been used for flooring. In the past, Kota stone mining was fully manual where mules and donkeys were used for clearing of waste and transporting of finished goods from quarry to the point of sale.

Mining of Kota stone required a huge work force which was later reinforced by women and children. Introduction of mechanization has made some changes with reduction of the size of the labour force. The deployment of mining stone cutter and JCB type of small loading units has brought the workforce down to a minimum. The mining is basically a semi-mechanized operation wherein overlying waste material is removed by mechanized means and the exposed stone layers are worked upon by engaging semi-skilled artisans, largely known as *Kargiars*. Finished material slabs are manually loaded into trucks and

transported to quarry tops, unloaded, sized and collected into different size stacks. Except the overburden removal activity entire operation is manual and need a large workforce.

However, the mechanization created set of environmental problems.

(a) It required virgin land for mining activities, land for large size waste-dumps and diversion of surface water drainage patterns. This also impacted the socio-economic dynamics of the area.

Status of land reserved for grazing of cattle's

(b) Study conducted by Arunima Dasgupta, K L N Sastry and P S Dhinwa of Space Applications centre, ISRO, Ahmedabad (India) on *Impact of Mining on Rural Environment and Economy* in Kota District, which was an integrated study of environment and socioeconomic condition, reveals that

i. There is tremendous pressure on land due to uneven distribution of population with high density in urban areas, growing employment in mining areas, and rural to urban migration.

ii. It has also been observed that land degradation is very significant due to dumping of waste materials and indiscriminate deforestation, in the study area.

(c) Prior to mining, land was primarily used for agriculture and land requirements for mining has made number of farmers unemployed, who to sustain their livelihood has to work in the mining activities with the only left-out alternative in this region. This is a continuous process and loss of farming land and working hands becoming unemployed in farming sector.

(d) The periodontitis is one of the common ailments prevailing in Kota stone mines due to tobacco chewing habit of Kota stone workers. Similarly, alcoholism has become widespread addiction among the mine labourers who consume traditionally brewed cheap local liqueurs which is easily available.

(e) The rain-water accumulated in mines is pumped out and drained to some far distanced waste land to dry-up and absorbed by ground. This action is carried out just after end of the monsoon season so that water submerged productive benches are made free for mining operations. This excessive pumping causes over flooding in some of the agricultural fields lying on the banks of water drainage channels, and loss of crops results. At the same time continuous water pumping lowers down the temporary water table in the nearby areas causing losses to the farming.

6 CONCLUSION AND RECOMMENDATIONS

Majority of the families are poor with meagre land holding, if any, there is no substantial income from agriculture. Livestock holding too is very limited. Therefore, the families in the rural area particularly are turning to more hazardous alternative occupation of quarry work in the stone mines, where there is abundant employment opportunity. Nearly all the families are in debt, the cause of which lies in health expenditure on illness / accident of quarry workers and expenditure on social customs and traditions. On top of it, quarry workers often fall ill due to poor nutritional intake. After the age of 45 years,

they are not able to work in mines due to pain in knee joints. Those who work after 45 years age, their output is less.

Nearly all the quarry workers are in debt due to meeting the household needs, illness and the social obligations (i.e. expenditure on marriage, death feast and other social rituals). These debts continuously get accumulated, and are only able to pay the interest to the lenders.

To improve the lives of the quarry workers and their family, there is an urgent need of

(a) Mines be made safer to work by adoption of safety measures for quarry workers.

(b) There should be regular health check-up of quarry workers and appropriate treatment be provided.

(c) Linkage of the quarry workers with various schemes of the government including labour welfare schemes.

(d) Work with mine labourers on debt redemption.

(e) Education and skill building of children of mine labourers.

(f) Promoting community based micro saving and credit programme like Self Help Group.

It has been established that the rural poor engage in multiple activities to sustain their livelihood and reduce their risk. Livelihood primarily constitutes of total income of family from diversified sources through use and management of available resources (which include financial, human, natural, physical and social) to ensure a decent life for the family. The income that they receive from the multiple activities help them in only meeting their subsistence needs, without surplus income for the family.

ARAVALI's understanding of livelihood augmentation is based on the overall developmental goals set by the country, which includes "growth with equity and stability". To this, additional condition of "sustainability" is added. Based on this understanding livelihood augmentation should lead to the following outputs:

- Increased income at household level
- Diversified sources of income for the household.
- Reduced vulnerability of sand stone quarry workers widow.

- Increased equity and empowerment of the poor and marginalised.
- Increased participation and empowerment of women

To enhance the quality of life and ensuring sustainable livelihoods for sand stone quarry workers the focus should be on the following key aspects:

- The slurry disposal from the stone processing units has to be regulated in lined with state policy. Similarly, the high end heaps of unused lime stone near the quarry should be removed from the area. The waste/unused stone could be used by a local cement plant located 20 km far from mines area. These pastures could be free from stone slurry as well as unused stone particles. This process will give new land for cattle grazing and other agricultural activities. It would also help in biodiversity conservation, which is in danger due to artificial increase in temperature of the area.
- There is need for better targeting approach for selection of poor families for livelihood enhancement and security programmes of the government. Many of the poor families who are on the edge of risks and vulnerability are left out.
- The quarry workers needs to be provided facilitation support for linkage with Government Schemes on social security and welfare. This facilitation could be provided by entitlement facilitator selected from their communities. These facilitator could be trained by capacity building organisation to equip them with knowledge and facilitation skills.
- Livelihoods pilots: An alternative livelihoods pilots will be not only strengthening the livelihoods of the quarry workers family but also create an opportunity for their children to get education.
- Facilitation for the health check-up of all the mine workers
- Skill advancement of stone quarry workers

APPENDIX 1. THE STUDY TEAM

Study Team		
S. No	**Name**	**Role and Functions**
1.	Dileep Kumar Yadav, Regional Coordinator, ARAVALI	Team leader for study design, schedule of assignment, various formats for survey field work, supervision of survey and facilitation of stakeholders engagement, data analysis and report preparation
2.	Divya Kaliya, Regional Coordinator, ARAVALI	Associate team leader for study design, schedule of assignment, various formats for survey field work, supervision of survey, data analysis and report preparation
3.	Varun Sharma, Programmes Coordinator, ARAVALI	Relationship Management, study design, schedule of assignment, various formats for survey field work, supervision of survey and facilitation of stakeholders engagement, data analysis and report preparation
4.	Ambuj Kishore, Executive Director, ARAVALI	Providing over all guidance during the assignment, finalisation of structure of the report and inputs in preparation of report
5.	Jagdish Chand Suthar *Samdarshi Grameen Vikas Sanstha*, Chechat, Kota, Rajasthan	Field Investigators, conducting field work, survey and data collection

APPENDIX 2. BRIEF BACKGROUND OF THE ASSESSMENT ORGANISATION

ARAVALI – Association for Rural Advancement through Voluntary Action and Local Involvement was **established by the Government of Rajasthan** in the year 1994 **to promote voluntary action for socio-economic development of the state.** ARAVALI has been registered as a society under the Rajasthan Societies Act, 1958, under the Foreign Contribution Regulation Act, and also under the relevant Income Tax Acts, as applicable.

It is a member-based organization with representation from voluntary agencies, research institutions and representatives from various Departments of Government of Rajasthan. The Governing Council (policy making body) and the Executive Committee have senior functionaries such as Principal Secretary / Secretaries of the Government of Rajasthan as Ex-officio members (Departments of Finance, Rural Development, Education, Social Justice, Planning, Agriculture and Forests) along with elected members from voluntary organisations. The Chairperson of ARAVALI is nominated by the Government of Rajasthan.

VISION AND MISSION STATEMENT OF ARAVALI

VISION: "All round and large scale development of communities requires a combination of efforts and approaches which cannot be solely provided by any one agency or system. "To ensure that the benefits of development reach the poor in particular, and people in general, it is necessary that different agencies working for development pool their strengths and become partners."

MISSION: Statement of ARAVALI: Within this context, ARAVALI intends to ensure that there are an increased number of effective Voluntary Organisations working closely with marginalised communities in every district of Rajasthan and that an enabling environment is developed within which the government and these organisations can form effective partnerships.

Building, strengthening, and expanding the institutional base of voluntary organisations in the development sector in Rajasthan state is the core of ARAVALI's work since it became operational in 1997. The major segment of ARAVALI's support has been small locally evolved voluntary organisations in small towns and rural areas in the state and which have been set up by people with a keen interest in addressing developmental issues.

ARAVALI has more than two decade of development experience, and experience-based competence in designing and supporting programmes related to the following key themes and sectors relevant to development:

- Training and Capacity Building of Voluntary Organisations in the State of Rajasthan.

- Piloting Innovations for Livelihoods Promotion for rural poors
- Institutionalisation of Innovative Themes and Approaches
- Human Resource Development
- Organisational Development
- Evaluation of Development Programmes & Projects

ARAVALI is a State-level development support organisation, which has been engaged in strengthening the capacities of various development stakeholders – NGOs, GOs, PRIs and CSR wings of corporate agencies. It has monitored and evaluated various development interventions (esp. of the Government) in the past, contributed to State-level programming, and developed State Strategy papers for various Government organisations and donors in Rajasthan. The organisation has designed and piloted interventions in the areas of poverty targeting, organizational governance, personal effectiveness enhancement, and organizational development with various development agencies.

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