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Improving Livelihoods or Intensifying Poverty? Coal Mining in Chattisgarh and Jharkhand



M. Gopinath Reddy
Prajna Paramita Mishra



CENTRE FOR ECONOMIC AND SOCIAL STUDIES
BEGUMPET, HYDERABAD

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Foreword

The Centre for Economic and Social Studies (CESS) was established in 1980 to undertake research in the field of economic and social development in India. The Centre recognizes that a comprehensive study of economic and social development issues requires an interdisciplinary approach and tries to involve researchers from various disciplines. The Centre's focus has been on policy relevant research through empirical investigation with sound methodology. Being a Hyderabad based think tank, it has focused on, among other things, several distinctive features of the development process of Andhra Pradesh, though its sphere of research activities has expanded to other states as well as to issues at the nation level.

The Research Unit for Livelihoods and Natural Resources (RULNR) was established in the CESS in the year 2008 with financial support of Jamsetji Tata Trust. The core objectives of the RULNR are to conduct theoretical and applied research on policy relevant issues on human livelihoods and natural resource management, especially in areas related to river basins, forest and dryland ecosystems and to provide an effective platform for debates on policy relevant aspects for academicians, policy makers, civil society organizations and development practitioners. RULNR intends to adopt a multidisciplinary approach drawing on various disciplines such as ecology, political science, and social anthropology.

The Present monograph titled "Improving Livelihoods or Intensifying Poverty? Coal Mining in Chhattisgarh and Jharkhand" by my faculty colleagues Prof. M. Gopinath Reddy and Dr. Prajna Paramita Mishra (University of Hyderabad), which was undertaken under RULNR-CESS Research programme attempted to analyse the impacts of coal mining operations on the livelihoods of people in the two states, namely, Chhattisgarh and Jharkhand, two important tribal dominated states, where most of the mining activity is taking place. The study, further, tried to elicit the perceptions of the coal communities with respect to mining activity in terms of its impact on the environment and natural ecosystem. In terms of methodology adopted, the study areas are situated in coal bearing areas of Chhattisgarh and Jharkhand. The study covered a sample of 600 households (300 from Chhattisgarh and 300 from Jharkhand). In addition to the primary data, secondary data on the compensation details and the assets lost by the project affected households were collected.

The study mentions that a critical analysis of R&R (Resettlement and Rehabilitation) Policy of Coal India that has been implemented is far from satisfactory as per the most of the project affected households. In Chhattisgarh, most of the respondents were very much dissatisfied with both land and house compensation package, in Jharkhand too a significant number of households were not happy, whereas a small proportion of them were ok with compensation package. A notable feature of Coal India Policy is the complete neglect of land less labor, who were dependent on

thriving agriculture before mining has started, thus robbing them their precious livelihood base. As a result of piecemeal and adhoc R&R Policy adopted of Coal India Limited, except a handful of them who got employment in coal mines, most of them were forced into subsistence and marginal livelihoods. Added to this, the study brought out that severe environmental damages have happened to air, water (surface as well as sub surface) and forests in the surrounding villages, where mining has started and expanded.

Lastly, to correct this situation, the study mentions that the SDF (Sustainable Development Framework) Document prepared by the Ministry of Mines in 2011, which emphasized the need for "Community engagement, benefit sharing and contribution to socio-economic development to address the "historical hurt" that has been inflicted upon their communities".

I hope the findings of the report which includes a 'Way Forward' section which throws light on the recent Act on the Right to Fair Compensation and Transparency in Land Acquisition Rehabilitation and Resettlement 2013 and its main components that need to be implemented to the project affected households.

S. Galab
Director, CESS

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Authors

Chapter - 1

Introduction

1.1 Introduction

In India's energy scenario, Coal happens to be the most dominant energy source meeting around 52 percent of the country's primary commercial energy needs. India is the 3rd largest coal producing country in the world after China and USA (CIL, 2013). Around 66% of India's power generation is coal based. According to the Geological Survey of India, the country has 2, 93,497 Million Tonnes of Geological Resources of Coal. The state of Jharkhand accounts for the highest reserves (27.38%) followed by Odisha (24.34%) and Chhattisgarh (17.32%). Coal India Limited (CIL), as an organized state owned coal mining corporate started operation in November 1975. Today, CIL is the single largest coal producer in the world, producing around 81.1% of India's overall coal production. Further, having been permitted by the Government of India to select state owned enterprises, CIL has subsidiaries operating in all the states of India with coal reserves.

Coal makes a significant contribution to the global economy. For consumers, coal offers an excellent value, as it is cheaper per energy unit in relation to other fuels. Over the years, coal prices have declined significantly. It is the main fossil fuel for electricity generation in many countries. Coal mining provides employment to many partially educated and unskilled people in remote and impoverished areas in addition to generating income and employment in other coal dependent industries. It also drives the development of local infrastructure.

In the Indian context, the existing literature shows that livelihoods of people in the coal mining areas of India are much better than non-coal mining areas (Lahiri-Dutt *et al*, 2012; Bhusan and Hazra, 2008). This is because, the public sector coal mining companies tend to employ more people. Statistics related to the coal-producing districts also show that they rank higher in terms of Human Development Index (HDI) with a lower poverty ratio as compared to the state's average. With this background in view, our

present study tried to look at the impacts of coal mining activity on people's livelihoods in the coal-rich areas of Chhattisgarh and Jharkhand. Our study also tried to explore how 'rich' are these coal-rich areas and whether people's livelihoods are sustainable, interms of a sustainable rural livelihoods framework? India being a mining intensive country, coal mining assumes a greater significance interms of its impacts on the society.

1.2 Review of literature

The first person to question the impacts of coal was William Stanley Jevons (1865). Given that coal is a non-renewable and finite source of energy, he raised the question of sustainability. He also raised other issues like impacting unemployment, drudgery of mining, exhaustibility, pricing of coal, taxation of energy resources and renewable energy alternatives. The conventional view on mining sees mineral reserves that can be mined profitably as part of a country's stock of natural capital, along with agricultural land, forests and other natural resources (Davis and Tilton, 2005; Jevons, 1865). It had been widely assumed that countries endowed with rich mineral deposits were fortunate. However, over the last few decades, a more negative view of mining has emerged that questions the positive relationship between mineral extraction and economic development (Davis and Tilton, 2005). It profoundly impacts the local communities interms of employment, migrant workers, land, water, air and noise, loss of wildlife habitat, increased tax revenue etc.

Bury (2005) shows how livelihoods are being transformed, as household access to economic, human, natural, and social resources is rapidly changing in the areas surrounding gold mining operations in the Cajamarca region of Peru. Bury (2004) argues that while access to human capital resources has increased in the past decade, albeit unevenly, access to natural and social capital resources has declined. Mishra (2009) also arrives at similar results. Her research in the coal mining area of Odisha shows that mining contributes to the enhancement of financial capital, has a mixed impact on physical and social capital and a negative impact on natural and human capital. Adjei (2007) observes an immediate repercussion taking over farmlands by the miners, affecting livelihood in its entirety. The study also finds both positive and negative outcomes with respect to the rural households. Kitula (2006) brings to fore the socio-economic and environmental impacts of mining in respect of Geita District, Tanzania. These impacts include land degradation, damage to water quality, pollution, and harm to livestock and wildlife biodiversity.

Maconachie and Binns (2007) explain how diamond mining makes an important contribution to the national economy of Sierra Leone. They argue that if a meaningful

rural development is to be achieved among desperately poor communities, development strategies must be based on a detailed understanding of the nature of inter-linked livelihoods in the agricultural and mining sectors. McMahon and Remy (2001) explored the economic, social, cultural, health and environmental impacts of medium and large-scale mining operations on the local communities. While comparing the developed countries (Canada and Spain) with the developing countries (Latin American countries of Bolivia, Chile and Peru), they found the relationship between mining operations and the local communities undergoing a significantly positive evolution.

Irawan (2005) carried out a cost-benefit-analysis of mining with respect to Indonesia. The study, while analysing the net social benefits associated with the mining activity, estimates the environmental costs that have to be borne by the society in order to obtain benefits from mining activity. Hajkowicz *et al* (2011) found a positive impact of mining on income, housing affordability, communication access, education and employment across regional and remote Australia. Lagos and Blanco (2010) shows how Antofagasta mining region in Chile has advanced towards development, occupying a high rank in terms of economic indicators, but still far behind in respect of many key social indicators.

Experiences across countries show that the situation of women involved in mining activity is the same the world over. Credit schemes coupled with training measures are introduced by some development organizations as part of encouraging women to pursue alternative livelihood options (Banchirigah, 2008). Increasing the levels of education amongst women could improve their skills and level of participation in farming, trading, and small-scale mining, thereby encouraging them to become more proactive in securing loans, developing businesses, and improving the health of their families. Mining can only be an effective vehicle of economic development if gender concerns are built into every aspect of project development. (Mishra & Reddy, 2012).

Sinha, Bhattacharya and Banerjee (2007) studied the problem of local level sustainability of iron ore mining in eastern India, based on a household survey data. The study found out that the substitution of depleting natural capital by other forms of capital could promote a long-term sustainability of the local economy through certain policy interventions to induce the mine operators to reinvest some part of their resource rent in the natural capital of the region. Bebbington *et al* (2008) highlights through social movement protests against the contemporary forms of mining in Latin America. Taking cases from Peru and Ecuador, their paper argues that the presence and nature of social movements has a significant influence on both forms taken by mining industries, and the effects of this extraction on rural livelihoods. Bury (2002) argues that rural development is co-produced

by movements, mining companies and other actors, in particular the state.

Kitula (2006) observes that marked environmental and socio-economic improvements can be achieved if: the government provides technical support to local operators, regulations are improved, and illegal mining activity is reduced. Sweeting and Clark (2000) offer ways in which the mining industry and governments that regulate that industry can minimise the mining sector's negative environmental and social impacts that increase its overall positive contribution to conservation and community development. McMahon and Remy (2001) suggested that three major stakeholders (the local community, the mining company and the government (central or state) work together to ensure long term sustainable benefits to the local economy.

1.3 Research gap

Around the world, there exist many studies that examine the impacts of mining on livelihoods. However, there is a lack of micro studies, particularly in the context of coal-rich areas of Chhattisgarh and Jharkhand. This study tries to bridge that gap. This study is primarily concerned with whether coal mining operations produce net sustainable benefits to the local communities, and, if so, whether there are policies or processes that can increase positive and reduce negative impacts. In order to determine the net benefits, it is necessary to explore all the relevant impacts - economic, social, cultural, health and environmental. The present study has tried to look into whether people's livelihood status has deteriorated, improved or remained the same. The underlying idea is to take a holistic look at the mining activity beyond the economic cost perse.

1.4 Objectives of the study

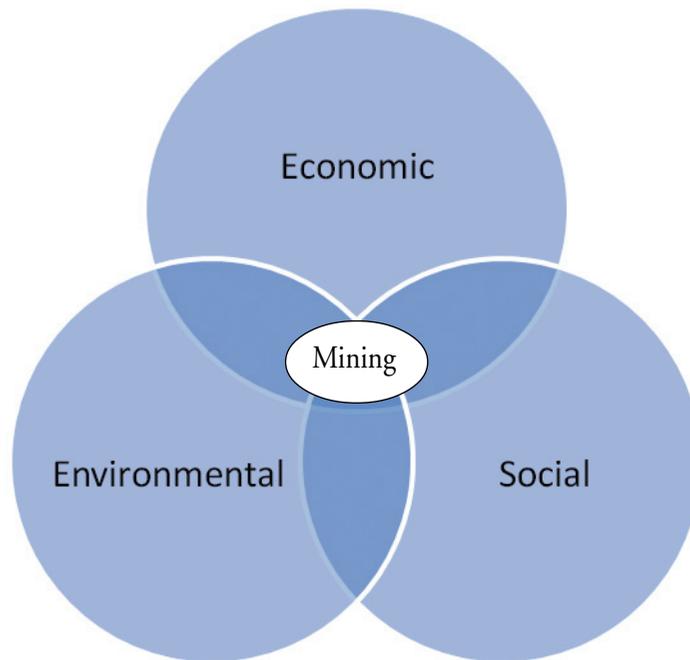
The specific objectives are:

- (a) To analyze the impacts of coal mining operations on the livelihoods of people in these two states (Chhattisgarh and Jharkhand).
- (b) To examine the perceptions of the local communities with respect to mining activity in terms of its impact on the environment.

1.5 Analytical Framework

Mining, as an activity, has both positive and negative impacts on the socio-economic development of a given region. It provides not only employment, but also public services like education and healthcare, public goods like infrastructure, roads, schools, hospitals, and water, but on the other hand, it has other negative externalities associated with it

interms of an adverse impact on health, displacement of community, loss of agricultural land and hence livelihoods. Environmental disruption occurs in all the stages of mining activities. Many mining companies try their best to reduce adverse impacts through afforestation programmes. However, retaining a getting the pre-mining environment is



not possible.

Figure 1.1: An Analytical Framework

A substantial part of the understanding of the links between economic activity, livelihood generation and incentives for and against conservation oriented management of natural resources comes from studies with origins in economics, anthropology and sociology (Fig. 1.1). However, over the years, a largely neglected question that continues to remain unaddressed is, how does coal mining affect the livelihoods of people living nearby? This study deals with this aspect.

1. 6 Study area and sample selection

Information was collected from both the primary and secondary sources for this study. For primary data collection, a survey was carried out in different phases from October, 2012 to December 2014. Our study areas are situated in the coal bearing areas of

Chhattisgarh and Jharkhand. The survey covered 600 households (300 from Chhattisgarh and 300 from Jharkhand). Coal deposits of Chhattisgarh come under South Eastern Coalfield Limited (SECL).

Chhattisgarh

The coal deposits coming under SECL are present/spread over in five districts of Chhattisgarh i.e. Bilaspur, Korba, Raigarh, Surguja and Korea. Out of these, we selected this we have taken three districts i.e. Korea, Surguja and Surajpur (On 1st January, 2012, this district was carved out from Surguja). Based on the secondary data, the research team prepared a list of mine sites belonging to these three districts. The idea was to select a new mining area aged between five to 15 years and if not available, to go in for older mines.

In the Korea district of Chhattisgarh, mines are operational in three blocks (Table 1.1). Out of these three, Manendragarh and Khadgawn were selected. In the Manendragarh block, out of four mining areas, two are operating/running. Out of these two, Palkimada mining area was selected. This area has one UG mine and it also borders an OC mine of Madhya Pradesh. Therefore, the surrounding villagers face the impacts of both the mines. In Khadgawn block, Chirimiri Arrow mining area was selected as it is an OC mine besides not being very old.

In the Surajpur district of Chhattisgarh, mines are operating in three blocks (Table 1.2). Out of these three, Srinagar and Premnagar were selected. In the Srinagar block, Amgaon, the only mining area (surrounding villages come under two Panchayats), was selected. In Premnagar block, Rehar and Gayatri mining areas were selected (Ketki being only five years old).

In the Sarguja District of Chhattisgarh, mines are operating/running in only one block (Table 1.3). It has only two mining areas and both were selected. On the whole, in the state of Chhattisgarh, six mining areas were selected (three OC and three UG).

From these three districts of Chhattisgarh, 100 households were selected from each district making it a total of 300 households (100 hhs from Korea, 100 hhs from Surajpur and 100 hhs from Sarguja) for an intensive study. A socio-economic profile of the sample households of Chhattisgarh is presented in chapter Two.

Jharkhand

The state of Jharkhand is endowed with the highest number of coal deposits in India. Three subsidiaries of CIL operate in Jharkhand. The Bharat Coking Coal Limited (BCCL) operates mainly its operation in Dhanbad district (excepting one mine which is situated in Bokaro district) of Jharkhand. As many studies have been undertaken with respect to

Table 1.1: Coal mines in Korea District, Chhattisgarh

District	Block	Panchayat	Mining Area	Type of Mines				Remark	Sample Mines Selected for the Study	
				UG	Age of Mine	OC	Age of Mine			Total
Korea	Manendragarh	Lediri	BSEAM Colery	1	40 yrs	-	-	1	Closed	--
		Jhagrakhand	Jhagrakhand	1	40 yrs	-	-	1	Closed	--
		Khongapani	West Jhagrakhand	1	30 to 40 yrs	-	-	1	Running	--
			Palkimada	1	30 to 40 yrs	-	-	1	Running	Sample Mine (UG & OC)
Baikunthpur	Churcha	Churcha	Churcha	1	30 to 40 yrs	-	-	1	Running	--
	Khond	Khond	Jilimiri	1	20 to 30 yrs	-	-	1	Running	--
	Katkona	Katkona	Pondapora	1	20 to 30 yrs	-	-	1	Running	--
Katkona			1	30 to 40 yrs	-	-	1	Running	--	
Khadgawn	Chirimiri	Chirimiri	Kurasia	1	30 to 40 yrs	-	-	-	Running	--
			Haldiwada	1	30 to 40 yrs	-	-	-	Running	--
			NCPH	1	30 to 40 yrs	-	-	-	Running	--
			Chirimiri Arrow	-	-	2	10-15 Yrs	2	One is running and the Other one is closed	Sample Mine (OC)
Total	Total	Total	Chilawada	1	30 to 40 yrs	-	-	-	Running	--
				12	-	2	-	14	Out of 14 mines 3 mines have been closed and 11 mines are running	

Source: Field study (2012)

Table 1.2: Coal mines in Surajpur District, Chhattisgarh

District	Block	Panchayat	Mining Area	Type of Mines			Remark	Sample Mines Selected for the Study			
				UG	Age of Mine	OC					
Surajpur	Srinagar	Salhi	Amgaon	-	-	1	7 Yrs (2005)	1	Running	Sample Mine (OC)	
		Amgaon									
	Surajpur	-	Bisrampur		-	-	1	45 Yrs	1	Running	--
			Kumda		35 Yrs	-	-	-	1	Running	
			Balarampur		35 Yrs	-	-	-	1	Running	
	Premnagar	Mani		Rehar	1	15 Yrs	-	-	1	Running	Sample Mine (UG)
				Gayatri	1	15 Yrs	-	-	1	Running	Sample Mine (UG)
			Ketki	1	5 Yrs	-	-	1	Running		
			Total	5	-	2	-	7	All 7 mines are running		

Source: Field study (2012)

Table 1.3: Coal mines in Sarguja District, Chhattisgarh

District	Block	Panchayat	Mining Area	Type of Mines			Remark	Sample Mines Selected for the Study		
				UG	Age of Mine	OC				
Sarguja	Lakhanpur	Getwa	Gayatri ¹	1	15 Yrs	-	-	1	UG is running	Sample Mine (UG)
		Amera		-	-	1	5 yrs	1	OC is running	Sample Mine (OC)
			Total	1	-	1	-	2	Both are working	--

Source: Field study (2012)

¹ Gayatri UG Mines fall under both Surajpur and Sarguja Districts.

Table 1.4: Coal mines in Bokaro District, Jharkhand

District	Block	Panchayat	Mining Area	Type of Mines			Age of Mine	Total	Remark	Sample Mines Selected for the Study
				UG	Age of Mine	OC				
Bokaro	Bermo	Kargali North	Kargali	-	-	2	45 yrs	2	Running	Sample Mine (OC)
				DVC	-	-	1	20 yrs	1	Running
		Katara	Vasari	-	-	1	40 yrs	1	Running	Sample Mine (OC)
			Katara	-	-	1	25 yrs	1	Running	--
		Jarandi	-	-	1	30 yrs	1	Running	--	
Total				-	-	6	-	-	--	

Source: Field study (2012)

Table 1.5: Coal mines in Ramgarh District, Jharkhand

District	Block	Panchayat	Mining Area	Type of Mines			Age of Mine	Total	Remark	Sample Mines Selected for the Study
				UG	Age of Mine	OC				
Ramgarh	Patratu	Sayal	Urimiri	2	30 yrs	1	20 yrs	3	Running	Sample Mine (UG)
		Sounda	CCL Sounda	2	60 yrs (Closed)	-	-	2	Closed, but it is a dumping area	--
				2	40 yrs (Closed)	1	50 yrs (Closed)	3	closed	--
Ramgarh	Aragada	Aragada	Aragada	1	40 yrs	1	60 yrs (Closed)	2	UG Running, OC mining closed	--
				7	-	3	-	10	-	--

Source: Field study (2012)

Table 1.6: Coal mines in Hazaribagh District, Jharkhand

District	Block	Panchayat	Mining Area	Type of Mines				Remark	Sample Mines Selected for the Study	
				UG	Age of Mine	OC	Age of Mine			Total
Hazaribagh	Badkagao	Urimiri		-	-	1	20 yrs	1	Running	Sample Mine (OC)
		Total		-	-	1	-	1	-	--

Source: Field study (2012)

Dhanbad, we did not consider this district for our study. The Eastern Coalfields Limited (ECL), which is mainly in charge of Raniganj Coalfield, is situated in West Bengal and Jharkhand. It has only two coalfields in Jharkhand – Saherjuri Coalfield in Deoghar District and Hurra Coalfield in Godda district of Jharkhand. These coalfields also do not fall under our study areas. The third subsidiary - Central Coalfields Limited (CCL) - operates in Hazaribagh, Ramgarh, Chatra, Palamu and Bokaro districts of Jharkhand. We selected our study areas from Bokaro, Hazaribagh and Ramgarh as they are the mostly mined districts.

In Bokaro district of Jharkhand, mines are functioning in one block (Table 1.4). There are six running mines with all of them being open cast mines. Out of these six, Karagali OC was selected as it is the oldest OC. The others are Katara- DVC, 20 years old and Vasari, 40 years old. In Ramgarh district of Jharkhand, mines are Functioning in two blocks (Table 1.5). In total, there are ten mines (7 UG and 3 OC). Out of 7 UG mines, four have been closed and out of three OC mines, only one is running. We selected Urimiri UG area, where both the types of mines are in operation. Hazaribagh district has only one mine functioning (Table 1.6). Therefore, Urimiri OC was considered for this study.

From these three districts in Jharkhand state, a total of 300 households were selected (50 hhs from Hazaribagh, 65 hhs from Bokaro, 125 hhs from Ramgarh and again 60 hhs from Bokaro) for an intensive study. A socio-economic profile of the sample households of Jharkhand is presented in chapter 3.

1.7: Report structure

The monograph has been divided into five parts including the present chapter, an introduction to this work. The second chapter presents the coal mining and livelihoods scenario of Chhattisgarh. Chapter three presents the same in respect of Jharkhand. Chapter four presents a comparative assessment of the effects of mining on Chhattisgarh and Jharkhand followed by concluding remarks in chapter five.

Chapter - 2

Coal Mining and Livelihoods in Chhattisgarh

2.1 Introduction

The present chapter deals with the effects of coal mining on the livelihoods of the local communities in Chhattisgarh state. Before analysing the various dimensions of the effects of coal mining on the livelihoods, a quantitative assessment of coal mining in Chhattisgarh state is provided. Subsequently, the effects of mining in terms of assets lost - land, houses and livestock followed by effects on environment, health of the communities and coping strategies adopted by them and lastly the compensation details for the assets lost are presented in the following sections.

Chhattisgarh, a state in Central India is very rich in mineral reserves. Jharkhand, Odisha and Chhattisgarh possess almost all the coal deposits in India. The state has also all the tin ore deposits. It houses the best quality of iron ore deposits in the world - Bailadila mines in South Chhattisgarh. The state is also endowed with rich deposits of bauxite, limestone, Dolomite and Corundum. Deposits of Diamond, Gold and Alexandrite, one of the rarest gemstones, are also found in the state (CMDC, 2013).

Chhattisgarh Mineral Development Corporation (CMDC) undertakes scientific exploration, commercial exploitation and trading of minerals in the state. According to CMDC, they undertake partnerships with national and international private sector mineral companies so that the natural wealth of the state can be translated more efficiently into prosperity of its people (CMDC 2013).

2.2 Coal mining in Chhattisgarh

The coal deposits of Chhattisgarh and Madhya Pradesh come under South Eastern Coalfields Limited (SECL), the largest coal producing company in the country. It is one of the eight subsidiaries of Coal India Limited (A Government of India Undertaking) under the Ministry of Coal. In the year 2012-13, the total coal production by SECL amounted to 118.33 million tonnes as against the total coal production of 452.211 million tonnes produced by Coal India Limited (CIL). This is the highest among all

subsidiaries of CIL and among all coal producing companies in India, SECL has been making profits since its inception (SECL 2013).

The coal deposits coming under SECL are located occur in five districts of Bilaspur, Korba, Raigarh, Surguja and Korea in Chhattisgarh and three districts of Shahdol, Umaria and Anuppur in Madhya Pradesh in the Son-Mahanadi river basin. SECL owns 92 mines of which total Under Ground (UG) mines number 70 and total Open Cast (OC) 21 and one mixed mine. Out of these, 42 UG mines, 13 OC mine and one mixed mine are in Chhattisgarh. SECL corporate office is at Bilaspur. SECL manages four major coalfields - Korba coalfield in Korba district, Central coalfield in Surguja and Korea district, Mand-Raigarh coalfield in Raigarh district and Ramkola-Tatapani coalfield in Surguja district (SECL 2013).

Table 2.1: Production and Productivity of SECL

Year	Production (Million Tonnes)			Productivity (Output/man shift)		
	OC	UG	Total	OC	UG	Overall
98-99	41.56	16.00	57.56	9.24	0.92	2.64
99-00	42.75	16.01	58.70	9.36	0.93	2.70
00-01	44.57	15.76	60.33	9.96	0.93	2.83
01-02	48.21	15.91	64.12	10.03	0.97	3.0
02-03	50.44	16.16	66.60	10.70	1.01	3.21
03-04	54.65	16.36	71.01	11.25	1.05	3.49
04-05	61.97	16.58	78.55	12.27	1.11	3.95
05-06	66.50	16.52	83.02	12.76	1.12	4.17
06-07	72.30	16.20	88.50	13.27	1.14	4.51
07-08	77.05	16.74	93.79	14.30	1.19	4.83
08-09	83.58	17.57	101.15	15.76	1.26	5.26
09-10	90.18	17.83	108.01	18.89	1.33	5.96
10-11	95.90	16.81	112.71	20.22	1.32	6.47
11-12	97.43	16.41	113.84	NA	NA	NA

Source: SECL (2013).

The production and productivity of SECL has been increasing over the years (Table 2.1). It also set an all time highest record in the overall performance in respect of off-take/dispatches, production, wagon loading, quality improvements and optimization of overall consumers' satisfaction in terms of meeting their coal requirements.

2.3 Social profile of the sample households in Chhattisgarh state

The following table gives details of the sample households in Chhattisgarh State by region (district/panchayat/ward). It can be seen that in Korea district - under Kongapani

and Chirimiri panchayats (town) - there are a total of fifty five wards, of which four wards were selected for the study. These four wards consist of 1489 households of which fifty sample households from each panchayat were selected, giving due representation to all the social categories (A sample of 29 SC households, 71 ST households, 12 OBC households and 8 'Other' households).

In Surajpur district - Salhi, Podi and Mani panchayats (rural) were selected. Our study covered all the eight wards with 776 households in total, of which 100 households (50 hhs from Salhi, 25 hhs from Podi and 25 hhs from Mani) were selected as sample households (A sample of 3 SC households, 71 ST households and 26 OBC households). There are no households belonging to other category in this area.

In Surguja district - Getra and Amera Panchayats (rural) were chosen for the study. Our study covered all the 9 wards with a total of 479 households of which 100 sample households were selected (11 SC hhs, 70 ST hhs and 19 OBC hhs) for an intensive study. On the whole, in Chhattisgarh State, a total of 300 sample households (43 SCs, 192 STs, 57 OBCs and 8 Others) were selected for the study (Table 2.2).

2.4 Coal Mining, environment and livelihoods in Chhattisgarh

According to Joshi et al (2006), mining causes two main environmental problems in Chhattisgarh- i) pollution of rivers and streams; and ii) alluvial erosion and deforestation. The study shows that forest patches near Korba coal mining area have badly degraded, whereas patches away from the mining sites have registered a relatively less impact. According to them, around 78.49 percent of the forests have been affected because of mining activity. Around 5.93 percent of the forest has been totally converted into industrial setups, While 55.31 percent show medium changes attributed to the formation of barren and waste lands and around 17.25 percent remains degraded. Beg *et al* (2011) shows a high incidence of fluoride in ground water in parts of Raigarh district.

In the district of Korea, in both the study sites, 24 percent of the households are employed in coal mines. The main differences in respect of employment in both these areas relate to agriculture and wage labour. In the Kongapani area, the percentage of wage labour is very high (66 percent). After mining was started there has been an in-migration of outsiders to this area with opportunities available for work. As agricultural lands have been taken over for mining, the percentage of hhs depending on agriculture is less (10 percent). However, in Chirimiri area, still 34 percent of the households are dependent on agriculture. Here mining is mainly going on in the reserved forest area. Therefore, agricultural lands have not been taken over. This also has resulted in a relatively low percentage of households whose primary occupation is wage labour (22 percent) (Figure 2.1 & 2.2).

Table 2.2: Details of the sample households, Chhattisgarh

District	Village/Panchayat	Area	Total Wards	Sample Ward	Total Households					Total Sample Households				
					SC	ST	OBC	Others	Total	SC	ST	OBC	Others	Total
Korea	Kongapani	Kongapani OC and UG Mines	15 (43.0)	2 (52.9)	250 (1.7)	308 (2.4)	10 (100.0)	14 (46)	582 (46)	23 (4)	23 (4)	2 (100.0)	2	50 (100.0)
	Chirimiri	Chirimiri OC and UG mines	40	2	84 (9.3)	635 (70.0)	148 (16.3)	40 (4.4)	907 (100.0)	6 (12)	28 (56)	10 (20)	6 (12)	50 (100.0)
Surajput	Salhi	Salhi amgaom OC mines	3	3	5 (1.8)	198 (71.7)	73 (26.4)	0 (0.0)	276 (100.0)	1 (2)	39 (78)	10 (20)	0 (0.0)	50 (100.0)
	Podi	Gayathri UG mines	4	4	0 (0.0)	180 (90.0)	20 (10.0)	0 (0.0)	200 (100.0)	0 (0.0)	16 (64)	9 (36)	0 (0.0)	25 (100.0)
	Mani	Rehar UG mines	1	1	7 (2.3)	200 (66.7)	80 (26.7)	13 (4.3)	300 (100.0)	2 (8)	16 (64)	7 (28)	0 (0.0)	25 (100.0)
Surguja	Getra	Rehar UG mines	8	8	15 (4.2)	325 (90.5)	19 (5.3)	0 (0.0)	359 (100.0)	11 (22)	35 (70)	4 (8)	0 (0.0)	50 (100.0)
	Amera	Amera OC mines	1	1	2 (1.7)	98 (81.7)	20 (16.7)	0 (0.0)	120 (100.0)	0 (0.0)	35 (70)	15 (30)	0 (0.0)	50 (100.0)
Total			72	21	363 (13.2)	1944 (70.8)	370 (13.5)	67 (2.4)	2744 (100.0)	43 (14.3)	192 (64)	57 (19)	8 (2.7)	300 (100.0)

Source: Field study (2012)

Figure 2.1: Primary occupation in Kongapani OC and UG mines (Korea)

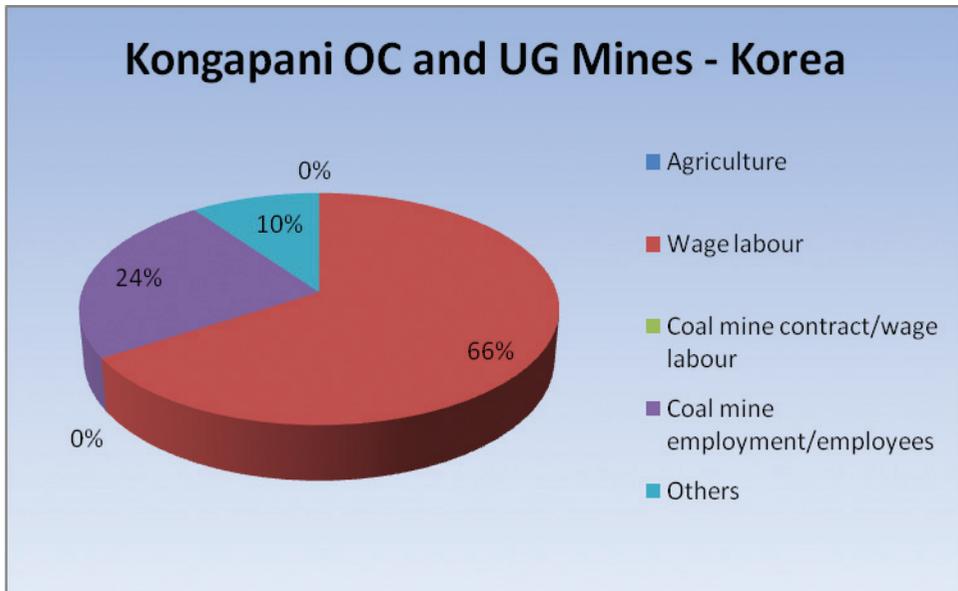
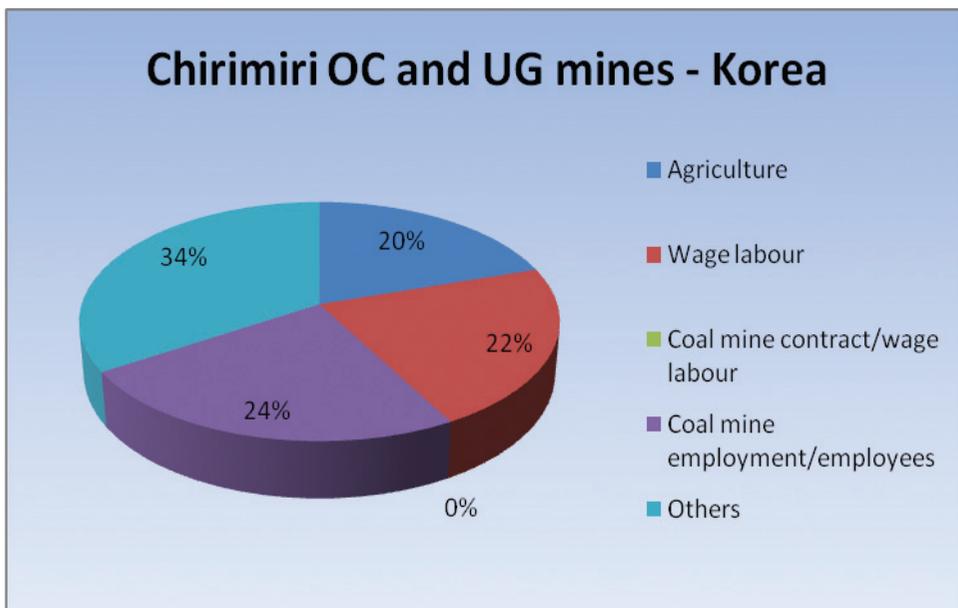


Figure 2.2: Primary occupation in Chirimiri OC and UG mines (Korea)



In Salhi Amgaom OC mines, Surajpur, nearly half of the households are employed in mines (48 percent). Still 36 percent of the households are dependent on agriculture. Here, people are found cultivating lands, already acquired by the mining company. They may lose these lands in future. This aspect also has resulted in a relatively low percentage (10 percent) of wage labour.

Figure 2.3: Primary occupation in Samhi Amgaom OC mines (Surajpur)

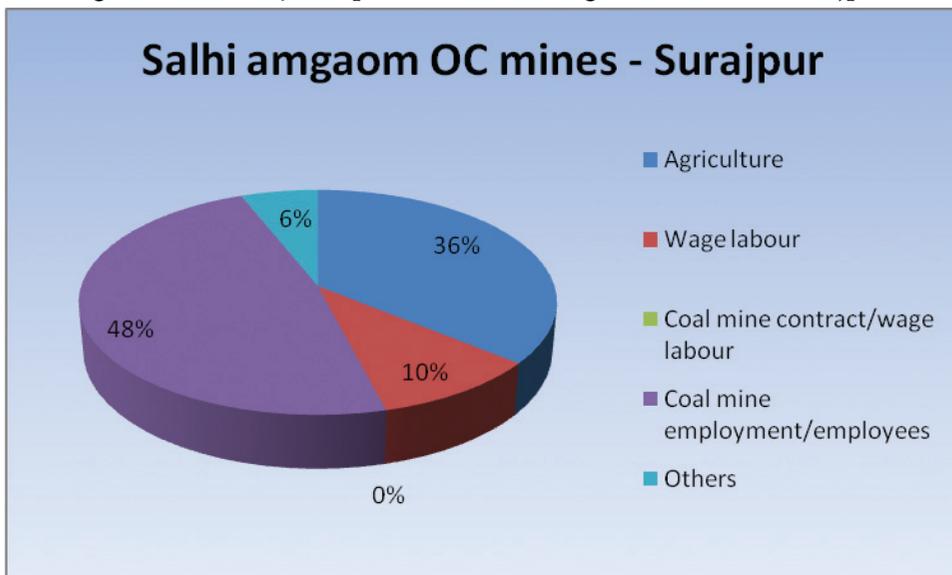
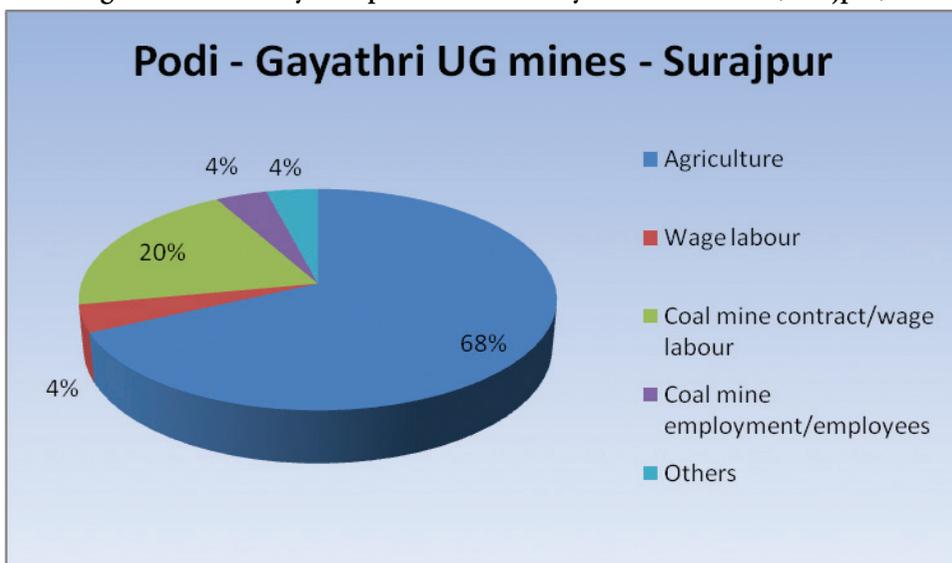
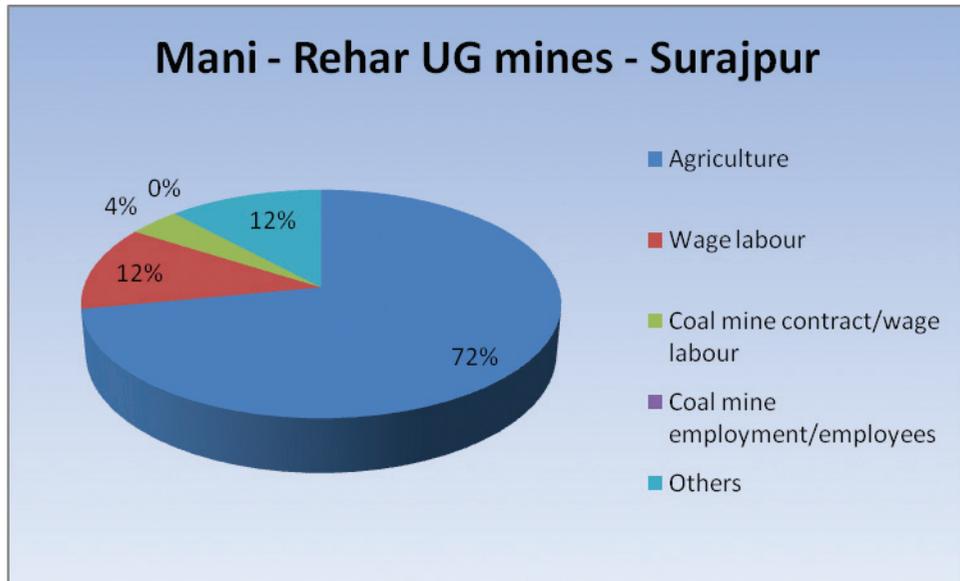


Figure 2. 4: Primary occupation in Podi-Gayathri UG mines (Surajpur)



In Podi-Gayatri UG mines area, agriculture still plays an important role, as this is an underground mine (68 percent). Here the percentage of coal mine employees is less (4 percent), while the percentage of contract wage labour is high (20 percent). As their lands have not been acquired, there is no permanent employment in mines. Same is the case with Mani (Figures 2.3, 2.4 & 2.5).

Figure 2.5 : Primary occupation in Mani-Rehar UG mines (Surajpur)



In Getra-Rehar UG mine, half of the households are employed in agriculture (50 percent). Here also, lands have not been acquired, as this is an UG mine. Some households, whose lands have been acquired, have managed to get employment in the mine (22 percent). Wage labourers account for 14 percent, while contract employees for 4 percent. In Amera area, lands have been acquired, but agriculture continues to be a major occupation (52 percent). That's why the percentage of mining employees is also high (42 percent) (Figures 2.6 & 2.7).

The above explanation is presented in table 2.3 with a gender dimension. The percentage of female workers is very low in the mining villages. The only arena where they form a small part of the workforce is agriculture. In these eight villages only six women are employed in the coal mines. This shows that coal mining as a source of livelihood is very gender biased. Neither has it increased female employment in coal mines nor given them alternative sources of livelihood. A look at the secondary occupation (table 2.4) shows that in Kongapani area, households are not engaged in secondary economic activities. In chirimiri mining area, a few households are engaged in agriculture and a

Figure 2.6: Primary occupation in Getra-Rehar UG mines (Surguja)

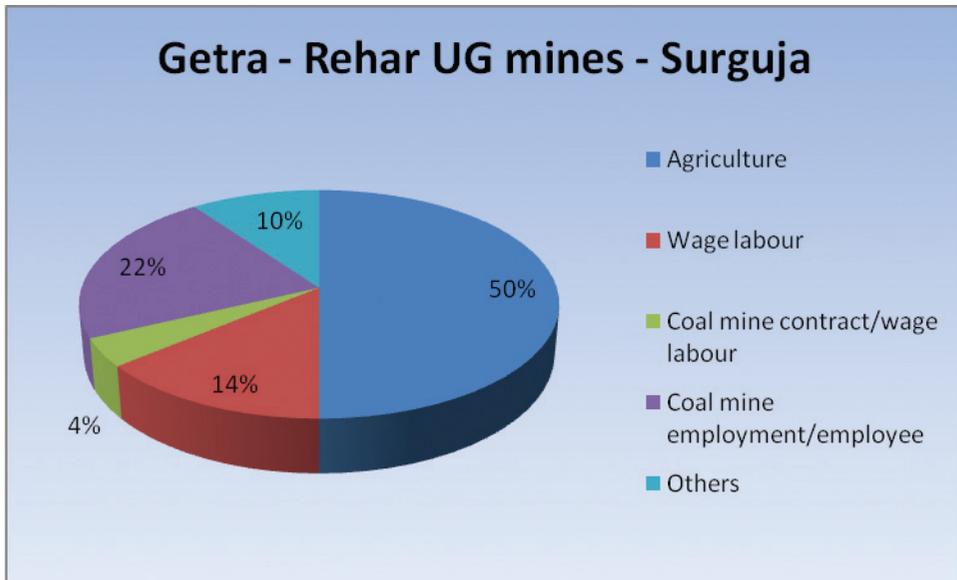
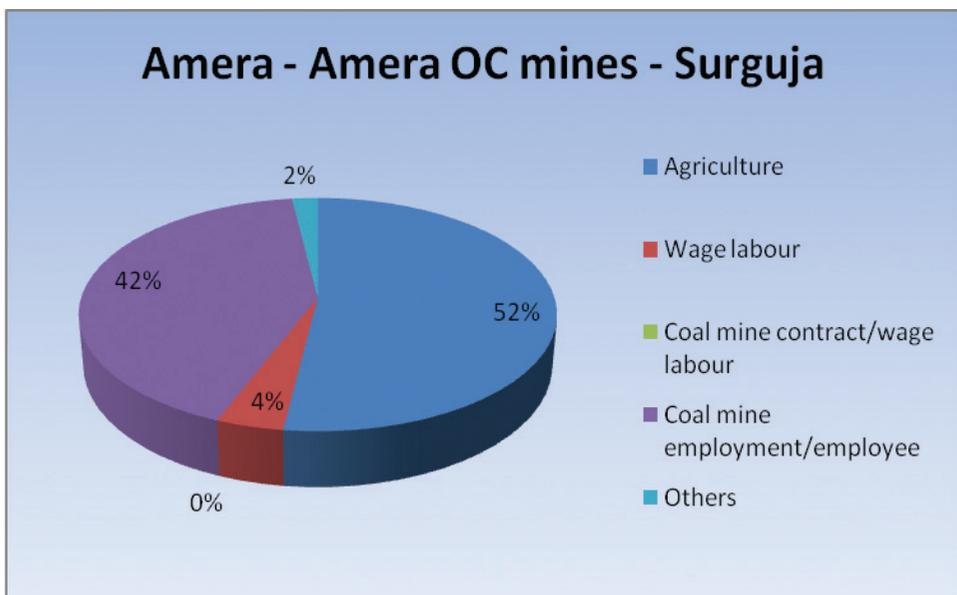


Figure 2.7: Primary occupation in Amera OC mines (Surguja)



few in wage labour. The same situation prevails in all the mining villages. When primary economic activity acts as a strong source of livelihood, then people generally do not go in search of a secondary source of livelihood.

Table 2.3: Primary occupation of individuals

Main Occupation	Korea				Korea				Surajpur								Surguja					
	Kongapani				Chirimiri				Salhi				Podi				Mani				Amera	
	Male	Female	Total	OC mines	Male	Female	Total	OC mines	Male	Female	Total	UG mines	Male	Female	Total	UG mines	Male	Female	Total	Male	Female	Total
Agriculture	2	1	3	35	17	18	35	63	109	30	31	61	25	27	52	36	40	76	43	53	96	
	(2.8)	(1.4)	(4.2)	(31.3)	(15.2)	(16.1)	(31.3)	(38.2)	(66.1)	(34.5)	(35.6)	(70.1)	(39.7)	(42.9)	(82.5)	(27.1)	(30.1)	(57.1)	(31.6)	(39.0)	(70.6)	
Wage labour	43	4	47	24	18	6	24	10	21	3	3	6	2	2	4	14	11	25	2	5	7	
	(60.6)	(5.6)	(66.2)	(16.1)	(16.1)	(5.4)	(21.4)	(6.1)	(12.7)	(3.4)	(3.4)	(6.9)	(3.2)	(3.2)	(6.3)	(10.5)	(8.3)	(18.8)	(1.5)	(3.7)	(5.1)	
Coalmine employees	8	4	12	11	11	1	12	0	30	0	1	1	0	0	0	11	0	11	23	0	23	
	(11.3)	(5.6)	(16.9)	(9.8)	(9.8)	(0.9)	(10.7)	(0.0)	(18.2)	(0.0)	(1.1)	(1.1)	(0.0)	(0.0)	(0.0)	(8.3)	(0.0)	(8.3)	(16.9)	(0.0)	(16.9)	
Coalmine contract/wage labour	0	0	0	0	0	0	0	0	0	8	0	8	1	0	1	4	0	4	1	0	1	
	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(9.2)	(0.0)	(9.2)	(1.6)	(0.0)	(1.6)	(3.0)	(0.0)	(3.0)	(0.7)	(0.0)	(0.7)	
Others	7	2	9	33	33	8	41	2	3	5	7	11	4	2	6	11	6	17	5	4	9	
	(9.9)	(2.8)	(12.7)	(29.5)	(29.5)	(7.1)	(36.6)	(1.2)	(1.8)	(3.0)	(8.0)	(12.6)	(6.3)	(3.2)	(9.5)	(8.3)	(4.5)	(12.8)	(3.7)	(2.9)	(6.6)	
Total	60	11	71	112	79	33	112	76	165	48	39	87	32	31	63	76	57	133	74	62	136	
	(84.5)	(15.5)	(100)	(70.5)	(70.5)	(29.5)	(100)	(46.1)	(100)	(55.2)	(44.8)	(100)	(50.8)	(49.2)	(100)	(57.1)	(42.9)	(100)	(54.4)	(45.6)	(100)	

Source: Field study (2012)

The literacy rate differs across villages in the mining areas. The Illiteracy rate among women is very high in Amera OC mine area (47.8 percent) and reasonably good in Kongapani area (22.2 percent). Among men, it is high in Amera area (23 percent) and low in Kongapani area (9.8 percent). The percentage of those educated above graduation is very low among both men and women (Table 2.5).

As some households in the study areas still practise agriculture, it is important to know the distribution of households⁴ according size-class of landholding. In the district of Korea, percentage shares of landless households are very high as they are OC mines with agricultural lands acquired. In Surajpur and Surguja districts, a majority of the households are marginal and small farmers (Table 2.6). All the sample households own a house each thatched or semi pucca. The percentage of households with pucca buildings is very less, while numbers of rooms are two or more than two. (Table 2.7)

Apart from houses, the households have also other physical assets. The main assets include fans, almirahs, watches, chairs, mobile phones etc, while assets like cars and refrigerators do not account for a high percentage. (Table 2.8).

Increased employment in coal mines is reflected in an increase in the mean household income and mean per capita income (Table 2.9). Villages, where a major section of the population is working in the coal mines, show an increase in the mean household income (for example, in Salhi-Amgaom OC mine, 48% of the sample households are engaged in coal mining, while in Chirimiri mines, 24% of the households are employed in coal mines). The mean household size is five to six across all the villages. In all the three districts, most of the household expenditure incurred (60 percent) goes to food items (Table 2.10), while expenditure on others like education, travel, healthcare, recreation, cloth amounts to has a very low share. As the major percentage of household expenditure is accounted for by food items, it is important to know whether households experience food security or not.

All the households in the study villages are found experiencing food security although they do not enjoy a sufficient food stock for more than a year (Table 2.11).

The percentage of households borrowing over the last twelve months is not very high in the study villages. However, for small borrowers, the major source of borrowing is private money lenders. Households borrowing from banks and self-help groups do not account for a high percentage (Table 2.12). Our study households are in good possession of livestock like cows, buffaloes, bullocks, goats and poultry (Table 2.13).

⁴ Large Farmers (> 10 acres), Medium Farmers (5.1 to 9.9 acres), Small Farmers (2.51 to 5 acres), Marginal Farmers (0.1 to 2.5 acres), Landless (0 acres).

Table 2.5: Educational status of sample households

Educational Status ² & ³	Korea				Surajpur						Surajuja			
	Kongapani		Chirimiri		Salhi		Podi		Mani		Getra		Amra	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Illiterate	12 (9.8)	24 (22.2)	28 (20.6)	39 (32.2)	23 (17.2)	55 (42.0)	15 (20.3)	27 (45.8)	6 (10.7)	19 (35.2)	26 (20.6)	40 (34.8)	28 (23.0)	55 (47.8)
Literate (Non-formal)	10 (8.2)	23 (21.3)	10 (7.4)	7 (5.8)	4 (3.0)	3 (2.3)	9 (12.2)	1 (1.7)	3 (5.4)	2 (3.7)	5 (4.0)	6 (5.2)	8 (6.6)	4 (3.5)
Literate below Primary	1 (0.8)	1 (0.9)	2 (1.5)	7 (5.8)	5 (3.7)	6 (4.6)	8 (10.8)	4 (6.8)	2 (3.6)	1 (1.9)	10 (7.9)	10 (4.3)	0 (0.0)	1 (0.9)
Primary	36 (29.5)	19 (17.6)	23 (16.9)	16 (13.2)	29 (21.6)	33 (25.2)	17 (23.0)	12 (20.3)	12 (21.4)	11 (20.4)	36 (28.6)	22 (19.1)	26 (21.3)	21 (18.3)
Middle	23 (18.9)	23 (21.3)	31 (22.8)	20 (16.5)	36 (26.9)	20 (15.3)	15 (20.3)	8 (13.6)	15 (26.8)	12 (22.2)	20 (15.9)	26 (22.6)	32 (26.2)	19 (16.5)
Secondary	16 (13.1)	8 (7.4)	24 (17.6)	18 (14.9)	15 (11.2)	7 (5.3)	4 (5.4)	3 (5.1)	8 (14.3)	5 (9.3)	15 (11.9)	9 (7.8)	7 (5.7)	7 (6.1)
Inter (10+2)	19 (15.6)	8 (7.4)	14 (10.3)	12 (9.9)	21 (15.7)	7 (5.3)	5 (6.8)	4 (6.8)	7 (12.5)	2 (3.7)	10 (7.9)	5 (4.3)	19 (15.6)	7 (6.1)
Graduation and above	5 (4.1)	2 (1.9)	4 (2.9)	2 (1.7)	1 (0.7)	0 (0.0)	1 (1.4)	0 (0.0)	3 (5.4)	2 (3.7)	4 (3.2)	2 (1.7)	2 (1.6)	1 (0.9)
Total	122 (100)	108 (100)	136 (100)	121 (100)	134 (100)	131 (100)	74 (100)	59 (100)	56 (100)	54 (100)	126 (100)	115 (100)	122 (100)	115 (100)

Source: Field study (2012)

² The working definition of literacy in the Indian census since 1991 is: the total percentage of the population of an area, at a particular time, aged seven years or above, who can read or write with understanding. Here, the denominator is the population aged seven years or more. The same criterion has been retained in the 2011 census. The Present study has considered this definition.

³ According to the 2011 Census, the literacy rate of Korea district is 70.64%, with a male literacy rate of 80.37% and female literacy rate of 60.60%. Surajpur has a literacy rate of 57.79%. The literacy rate of Surguja District is 60.01%, with a male literacy rate of 96.53% and female literacy rate of 50.32%. However, the state of Chhattisgarh has a literacy rate of 70.28%, with a male literacy rate of 80.27% and female literacy rate of 59.58%.

Table 2.6: Land holding Pattern of the sample households (%)

District	Village	Area	Land Less	Marginal Farmer	Small Farmer	Medium Farmer	Large Farmer	Total
Korea	Kongapani	Kongapani - OC and UG Mines	48 (96.0)	2 (4.0)	0 (0.0)	0 (0.0)	0 (0.0)	50 (100.0)
	Chirimiri	Chirimiri - OC and UG Mines	36 (72.0)	4 (8.0)	5 (10.0)	4 (8.0)	1 (2.0)	50 (100.0)
Surajpur	Salhi	Salhi - Amgaom OC Mines	8 (16.0)	19 (38.0)	14 (28.0)	6 (12.0)	3 (6.0)	50 (100.0)
	Podi	Gayathri - UG Mines	3 (12.0)	12 (48.0)	4 (16.0)	4 (16.0)	2 (8.0)	25 (100.0)
	Mani	Rehar - UG Mines	4 (16.0)	6 (24.0)	11 (44.0)	3 (12.0)	1 (4.0)	25 (100.0)
Sarguja	Getra	Rehar - UG Mines	17 (34.0)	15 (30.0)	9 (18.0)	6 (12.0)	3 (6.0)	50 (100.0)
	Amera	Amera - OC Mines	13 (26.0)	28 (56.0)	5 (10.0)	3 (6.0)	1 (2.0)	50 (100.0)
Total			129 (43.0)	86 (28.7)	48 (16.0)	26 (8.7)	11 (3.7)	300 (100.0)

Source: Field study (2012)

Table 2.7: Housing status in the study area

District	Village	Area	Type of House				No. of rooms		
			Thatched	Semi Pucca	Pucca	Total	1	2	>2
Korea	Kongapani	Kongapani OC and UG Mines	32 (64.0)	14 (28.0)	4 (8.0)	50 (100)	3 (6.0)	19 (38.0)	28 (56.0)
	Chirimiri	Chirimiri OC and UG mines	27 (54.0)	22 (44.0)	1 (2.0)	50 (100)	4 (8.0)	14 (28.0)	32 (64.0)
Surajpur	Salhi	Salhiamgaom OC mines	42 (84.0)	8 (16.0)	0 (0.0)	50 (100)	2 (4.0)	9 (18.0)	39 (78.0)
	Podi	Gayathri UG mines	25 (100)	0 (0.0)	0 (0.0)	25 (100)	1 (4.0)	6 (24.0)	18 (72.0)
	Mani	Rehar UG mines	23 (92.0)	1 (4.0)	1 (4.0)	25 (100)	0 (0.0)	5 (20.0)	20 (80.0)
Surguja	Getra	Rehar UG mines	48 (96.0)	2 (4.0)	0 (0.0)	50 (100)	2 (4.0)	13 (26.0)	35 (70.0)
	Amera	Amera OC mines	49 (98.0)	0 (0.0)	1 (2.0)	50 (100)	2 (4.0)	19 (38.0)	29 (58.0)
Total			246 (82.0)	47 (15.7)	7 (2.3)	300 (100)	14 (4.7)	85 (28.3)	201 (67.0)

Source: Field study (2012)

Table 2.8: Physical assets (% of Households)

Particulars	Korea		Surajpur			Sarguja	
	Kongapani	Chirimiri	Salhi	Podi	Mani	Getra	Amera
	Kongapani - OC and UG Mines	Chirimiri - OC and UG Mines	Salhi - Amgaom OC Mines	Gayathri - UG Mines	Rehar - UG Mines	Rehar - UG Mines	Amera - OC Mines
Cycle	9.72	12.50	16.20	12.04	10.19	18.98	20.37
Radio / Transistor	0.00	14.29	28.57	0.00	0.00	14.29	42.86
Fan	24.19	37.10	13.71	3.23	7.26	8.06	6.45
Almirah	20.00	28.33	16.67	5.00	8.33	15.00	6.67
TV	17.86	32.14	16.67	4.76	11.90	14.29	2.38
Scooter / Motorcycle	14.47	21.05	25.00	2.63	6.58	15.79	14.47
Refrigerator	0.00	38.46	30.77	0.00	7.69	23.08	0.00
Car	0.00	0.00	66.67	0.00	33.33	0.00	0.00
Sewing Machine	13.33	50.00	0.00	6.67	10.00	13.33	6.67
Watch /Clock	14.77	23.21	16.88	6.75	9.28	11.39	17.7
Chairs	17.24	26.21	17.01	3.68	10.80	11.72	13.33
Cot	8.51	20.46	17.36	8.74	9.89	16.78	18.28
Mobile	15.31	27.27	17.70	5.26	8.13	11.00	15.31

Source: Field study (2012)

Table 2.9: Mean household income across the sample villages

District	Village	Area	Mean hh income (Rs.)	Mean per capita Income	Mean HH Size
Korea	Kongapani	Kongapani - OC and UG Mines	1,00,186	20,280.6	4.9
	Chirimiri	Chirimiri - OC and UG Mines	1,57,446	28,216.1	5.6
Surajpur	Salhi	Salhi - Amgaom OC Mines	2,16,854	37,132.5	5.8
	Podi	Gayathri - UG Mines	1,14,624	19,362.2	5.9
	Mani	Rehar - UG Mines	79,844	15,842.1	5.0
Sarguja	Getra	Rehar - UG Mines	1,33,730	23,217.0	5.8
	Amera	Amera - OC Mines	1,43,730	27,221.6	5.3

Source: Field study (2012)

Table 2.10: Household expenditure (%)

District	Village	Area	Food Expenses	Education of Child	Travel work Expenses	Health Expenses	Cloths Expenses	Recreation Expenses	Other Expenses	Total
Korea	Kongapani	Kongapani - OC and UG Mines	74.6	3.0	0.8	3.4	7.3	2.9	8.0	100.0
	Chirimiri	Chirimiri - OC and UG Mines	59.9	9.7	4.5	3.1	8.0	4.9	9.9	100.0
Surajpur	Salhi	Salhi - Amgaom OC Mines	61.6	4.3	4.8	2.7	4.6	4.7	17.3	100.0
	Podi	Gayathri - UG Mines	71.2	2.9	4.6	3.3	4.9	4.2	9.0	100.0
Sarguja	Mani	Rehar - UG Mines	64.6	4.3	7.5	3.1	5.0	4.4	11.2	100.0
	Getra	Rehar - UG Mines	64.1	8.8	6.3	2.3	4.1	3.6	10.6	100.0
	Amera	Amera - OC Mines	64.6	5.4	7.6	2.4	4.3	3.9	11.8	100.0

Source: Field study (2012)

Table 2.11: Food security⁵

District	Village	Area	3 to 6 months	6 to 9 months	9 to 12 months	Surplus (above 12 months)	Total
Korea	Kongapani	Kongapani - OC and UG Mines	3 (6.0)	28 (56.0)	19 (38.0)	0 (0.0)	50 (100.0)
	Chirimiri	Chirimiri - OC and UG Mines	1 (2.0)	6 (12.0)	43 (86.0)	0 (0.0)	50 (100.0)
Surajpur	Salhi	Salhi - Amgaom OC Mines	0 (0.0)	5 (10.0)	45 (90.0)	0 (0.0)	50 (100.0)
	Podi	Gayathri - UG Mines	0 (0.0)	0 (0.0)	25 (100.0)	0 (0.0)	25 (100.0)
	Mani	Rehar - UG Mines	0 (0.0)	4 (16.0)	21 (84.0)	0 (0.0)	25 (100.0)
Sarguja	Getra	Rehar - UG Mines	0 (0.0)	7 (14.0)	43 (86.0)	0 (0.0)	50 (100.0)
	Amera	Amera - OC Mines	0 (0.0)	10 (20.0)	40 (80.0)	0 (0.0)	50 (100.0)
Total			4 (1.3)	60 (20.0)	236 (78.7)	0 (0.0)	300 (100.0)

Source: Field study (2012)

Table 2.12: Sources of borrowing

Source	Korea		Surajpur			Sarguja	
	Kongapani	Chirimiri	Salhi	Podi	Mani	Getra	Amera
	Kongapani - OC and UG Mines	Chirimiri - OC and UG Mines	Salhi - Amgaom OC Mines	Gayathri - UG Mines	Rehar - UG Mines	Rehar - UG Mines	Amera - OC Mines
Bank	2 (18.2)	5 (50.0)	1 (25.0)	2 (100)	3 (100)	3 (75.0)	1 (100)
Self-Help Groups	0 (0.0)	2 (20.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Private Lender	9 (81.8)	3 (30.0)	3 (75.0)	0 (0.0)	0 (0.0)	1 (25.0)	0 (0.0)
Total	11 (100)	10 (100)	4 (100)	2 (100)	3 (100)	4 (100)	1 (100)

Source: Field study (2012)

⁵ Food security refers to the availability of food and one's physical access to it. A household is considered food secure when its occupants do not live in hunger and fear of starvation.

Table 2.13: Distribution of the sample households owning livestock

livestock	Korea		Surajpur			Sarguja		Total
	Kongapani	Chirimiri	Salhi	Podi	Mani	Getra	Amera	
	Kongapani - OC and UG Mines	Chirimiri - OC and UG Mines	Salhi - Amgaom OC Mines	Gayathri - UG Mines	Rehar - UG Mines	Rehar - UG Mines	Amera - OC Mines	
Cows								
0 to 5	1	16	13	8	11	25	20	94
More than 5	0	18	0	8	0	22	13	61
Total	1	34	13	16	11	47	33	155
Buffaloes								
0 to 5	0	2	10	1	8	7	2	30
Total	0	2	10	1	8	7	2	30
Bullock								
0 to 5	0	10	24	14	9	18	31	106
More than 5	0	0	0	7	0	12	0	19
Total	0	10	24	21	9	30	31	125
He buffaloes								
0 to 5	0	12	44	22	34	42	29	183
More than 5	0	6	0	0	0	0	18	24
Total	0	18	44	22	34	42	47	207
Goat								
0 to 5	1	13	50	25	27	30	26	172
More than 5	0	56	0	0	12	6	15	89
Total	1	69	50	25	37	36	41	259

Source: Field study (2012)

In most of the under-developed and developing countries, migration is an important livelihood strategy. People leave their home land in search of work. However, this is not the situation prevailing in mining villages (Table 2.14). This implies that people are employed/engaged in coal mining and other related activities. Those few individuals who have migrated to nearby towns, are all involved in coal related work. Therefore, it can be concluded that out-migration is not a serious issue among the sample households. The villagers did not have any idea about migration in the pre-mining phase.

The villagers are also of the view that coal mining has an impact on their livelihoods and 75 to 100 percent of the sample households have this view. However, there is a mixed response about the effects of coal mining on livelihoods. While some households are of the view that coal mining has led to an increase in the livelihood opportunities others

Table 2.14: Details of out-migration of members of the sample households

District	Village	Study site	whether migration Exists	No of Persons	m/f/c	Type of Migration Name	season	Place of Migration distance	Place of Migration	Economic activity	No of days Employment	Wage rate	hours per day work	Out Migration pre mining phase		
														NA	Yes	No
Korea	Kongapani	Kongapani - OC and UG Mines	Yes	1	Male	Seasonal	kharif and Rabi	Bijuri	Less than 50 kms	Construction work	20	120	8	49	0	1
	Chirimiri	Chirimiri - OC and UG Mines	Yes	4	Male	Seasonal & contract & Permanent	kharif and Rabi Summer	Ambikan, delhi, durg and Walk and market in different towns	More than 1000 kms	Coal employee, market seller and Electrician	265	135	8	46	0	4
surajpur	Salhi	Salhi - Amgaom OC Mines	Yes	7	Male & Female	Seasonal contract and Permanent	kharif and Rabi Summer	brishram charsha, Katkna, Korea, Sarguja Karea and Suraj	More than 300 kms	Coal employee, market seller and Agent	230	460	8	44	3	4
	Podi	Gayathri - UG Mines	Yes	2	Male & Female	Seasonal and Permanent	kharif and Rabi Summer	Chadni bihar and chirmiri	200 to 300 Kms	Coal employee	360	700	8	23	0	2
Sarguja	Mani	Rehar - UG Mines	No	0	0	0	0	0	0	0	0	0	0	25	0	0
	Getra	Rehar - UG Mines	Yes	1	Male	Permanent	kharif and Rabi Summer	Kamal Pur	Less than 50 kms	Coal employee	320	800	8	49	1	0
	Amera	Amera - OC Mines	Yes	11	Male	Seasonal and Permanent	0	Ambikapur, Bishama, getra, Jhimili, Latori and Rehan	More than 300 kms	Coal employee	335	657	8	40	3	8

Source: Field study (2012)

Table 2.15: Coal mining impact on livelihoods

District	Village	Study site	Impact on livelihood			Affects		Total
			Yes	No	Total	Livelihoods Increased	Livelihoods Declined	
Korea	Kongapani	Kongapani - OC and UG Mines	38 (76)	12 (24)	50 (100)	17 (45)	21 (55)	38 (100)
	Chirimiri	Chirimiri - OC and UG Mines	39 (78)	11 (22)	50 (100)	17 (44)	22 (56)	39 (100)
Surajpur	Salhi	Salhi - Amgaom OC Mines	48 (96)	2 (4)	50 (100)	29 (60)	19 (40)	48 (100)
	Podi	Gayathri - UG Mines	24 (96)	1 (4)	25 (100)	2 (8)	22 (92)	24 (100)
	Mani	Rehar - UG Mines	25 (100)	0 (0)	25 (100)	2 (8)	23 (92)	25 (100)
Sarguja	Getra	Rehar - UG Mines	49 (98)	1 (2)	50 (100)	19 (39)	30 (61)	49 (100)
	Amera	Amera - OC Mines	50 (100)	0 (0)	50 (100)	22 (44)	28 (56)	50 (100)
		Grand total	273 (91)	27 (9)	300 (100)	108 (40)	165 (60)	273 (100)

Source: Field study (2012)

view that it has reduced livelihood opportunities (Table 2.15). They have also cited a number of reasons for an increase and decline in livelihood opportunities (Table 2.16).

The main reasons cited for an increase in livelihoods increase include work availability at mining areas and allied activities, permanent employment in mines and an increase in business opportunities, while the main reasons for a decline in livelihoods are mining and allied activities, and agriculture suffering a setback. Agriculture was the primary source of income for households before mining, but now accounts for a negligible share. The second reason is that mining has attracted in-migration on a fairly large scale. And because of this, local people are in finding it increasingly difficult to find employment. The villagers were also asked about their coping strategy: If mining has negatively affected their livelihoods, then how are they coping up in a changed environment? The reasons cited by them included working as wage labourers in agriculture (own and leasing land) and others like private jobs, government jobs, out migration etc. (Table 2.17).

Table 2.16: Reasons for livelihood enhancement/decline

District	Village	Area	Livelihoods increased			Livelihoods decline			
			Work availability at mining areas and allied activities	Business	Got job in mines	Total	Due to land occupancy, mining & allied activities, agriculture decreased and works not available	Due to in-migration, people facing work scarcity	Total
Korea	Kongapani	Kongapani - OC and UG Mines	1 (5.9)	3 (17.6)	13 (76.5)	17 (100)	21 (100)	0 (0.0)	21 (100)
			1 (5.9)	2 (11.8)	14 (82.4)	17 (100)	20 (90.9)	2 (9.1)	22 (100)
Surajpur	Salhi	Salhi - Amgaom OC Mines	6 (20.7)	0 (0.0)	23 (79.3)	29 (100)	17 (89.5)	2 (10.5)	19 (100)
			1 (50.0)	0 (0.0)	1 (50.0)	2 (100)	22 (100)	0 (0.0)	22 (100)
Sarguja	Getra	Rehar - UG Mines	1 (50.0)	1 (5.3)	0 (0.0)	2 (100)	23 (100)	0 (0.0)	23 (100)
			7 (36.8)	1 (5.3)	11 (57.9)	19 (100)	29 (96.7)	1 (3.3)	30 (100)
Sarguja	Amera	Amera - OC Mines	0 (0.0)	0 (0.0)	22 (100)	22 (100)	28 (100)	0 (0.0)	28 (100)
			17 (15.7)	7 (6.5)	84 (77.8)	108 (100)	160 (97.0)	5 (3.0)	165 (100.0)

Source: Field study (2012)

Table 2.17: Households' coping strategy

District	Village	Area	Wage Labour	Business	Wage Labour & Farming (Own & Leased land)	Others (business, pvt jobs, govt jobs, out-migration and wage labour works)	Total
Korea	Kongapani	Kongapani - OC and UG Mines	17 (81.0)	0 (0.0)	0 (0.0)	4 (19.0)	21 (100)
	Chirimiri	Chirimiri - OC and UG Mines	9 (40.9)	3 (13.6)	0 (0.0)	10 (45.5)	22 (100)
Surajpur	Salhi	Salhi - Amgaom OC Mines	7 (36.8)	0 (0.0)	8 (42.1)	4 (21.1)	19 (100)
	Podi	Gayathri - UG Mines	6 (27.3)	2 (9.1)	6 (27.3)	8 (36.4)	22 (100)
	Mani	Rehar - UG Mines	6 (26.1)	1 (4.3)	14 (60.9)	2 (8.7)	23 (100)
Sarguja	Getra	Rehar - UG Mines	6 (20.0)	2 (6.7)	17 (56.7)	5 (16.7)	30 (100)
	Amera	Amera - OC Mines	3 (10.7)	0 (0.0)	24 (85.7)	1 (3.6)	28 (100)
Total			54 (32.7)	8 (4.8)	69 (41.8)	34 (20.6)	165 (100)

Source: Field study (2012)

All the sample households believe that coal mining has an impact on the environment. Most of them are also of the view that it has a serious impact on agriculture (Table 2.18). The reasons cited include polluted water flowing from coal washeries and dump yards. This polluted water reduces the soil fertility of agricultural fields. Due to blasting activity, black water flows into agricultural fields, leading to a decline in soil fertility. This has also resulted in water scarcity (Table 2.19). They agree that all these changes have an impact on the cropping pattern as compared to the pre-mining period.

The details of land cultivation of the sample households in the pre and post-mining periods are given in the following table (Table 2.20). The main reason for a decrease in agricultural lands is land acquisition for coal mining. Lands have also been occupied for washeries and dump yards.

Table 2.18: The Impact of Coal mining on environment and agriculture

District	Village	Area	Agriculture Yes	Environment Yes
Korea	Kongapani	Kongapani - OC and UG Mines	49 (98.0)	50 (100)
	Chirimiri	Chirimiri - OC and UG Mines	48 (96.0)	50 (100)
Surajpur	Salhi	Salhi - Amgaom OC Mines	50 (100)	50 (100)
	Podi	Gayathri - UG Mines	25 (100)	25 (100)
	Mani	Rehar - UG Mines	25 (100)	25 (100)
Sarguja	Getra	Rehar - UG Mines	50 (100)	50 (100)
	Amera	Amera - OC Mines	50 (100)	50 (100)
Total			297 (99.0)	300 (100)

Source: Field study (2012)

The villagers believe that there has been a change in the overall incidence of diseases faced by hhs post-mining period. However, there are mixed views, also while some, have reported that there is no change in the incidence of diseases, others have responded that it has increased a lot (Table 2.21). They also agree that health expenses have increased in the post mining period (table 2.22).

Impacts of education are also compared with respect to the pre and post mining periods. The three different levels are primary level, upper primary level and high school level. At the primary level, some facilities have increased in the post mining period (Table 2.23). Now the numbers of teachers are adequate and regular, with the mid-day meal programme running well and toilets constructed in schools. A similar trend is observed for the upper primary and high school levels (Tables 2.24 & 2.25).

The villagers are of the view that now there is an improvement in education and infrastructure facilities and that there is a change in the sources of energy for cooking and lighting of the sample households (Table 2.26). In the pre mining period, firewood was the only source of cooking energy for hhs. Now coal accounts for a substantial share. Similarly, for lighting kerosene was the major source of energy in the pre-mining period. Now it has been replaced by electricity. However, the major problems being faced by

Table 2.19: Impact on agriculture

District	Village	Area	Coal washaries/dump yard, Soil fertility declined and Pollution and Water scarcity and Coal washaries/ Dump yards near to agriculture land and Due to blasting	Soil fertility declined and Pollution and Water scarcity and Black water flows into agricultural fields and Due to blasting	Pollution and Water scarcity and Coal washaries/ Dump yards near to agriculture land, Soil fertility declined, Water scarcity and Black water flows into agricultural fields	Total
Korea	Kongapani	Kongapani - OC and UG Mines	8 (16.3)	33 (67.3)	8 (16.3)	49 (100)
	Chirimiri	Chirimiri - OC and UG Mines	0 (0.0)	48 (100)	0 (0.0)	48 (100)
Surajpur	Salhi	Salhi - Amgaom OC Mines	0 (0.0)	0 (0.0)	50 (100)	50 (100)
	Podi	Gayathri - UG Mines	3 (12.0)	15 (60.0)	7 (28.0)	25 (100)
	Mani	Rehar - UG Mines	2 (8.0)	0 (0.0)	23 (92.0)	25 (100)
Sarguja	Getra	Rehar - UG Mines	17 (34.0)	1 (2.0)	32 (64.0)	50 (100)
	Amera	Amera - OC Mines	28 (56.0)	1 (2.0)	21 (42.0)	50 (100)
		Total	58 (19.5)	98 (33.0)	141 (47.5)	297 (100)

Source: Field study (2012)

Table 2.20: Land cultivation in pre and post-mining periods

District	Village	Study site	Cultivation details		Reasons for a decline in agriculture		
			pre mining land (in acres)	After mining land (in acres)	Land Occupied	Land Occupied, Coal washaries / dumping yards and the resultant Fertility decline	Total
Korea	Kongapani	Kongapani - OC and UG Mines	0.5	0.5	0	0	0
	Chirimiri	Chirimiri - OC and UG Mines	35.67	31.67	0	1	1
Surajpur	Salhi	Salhi - Amgaom OC Mines	238.41	114.08	39	3	42
	Podi	Gayathri - UG Mines	84.7	78.7	19	2	21
	Mani	Rehar - UG Mines	74	71.5	13	0	13
Sarguja	Getra	Rehar - UG Mines	181.09	124.89	33	0	33
	Amera	Amera - OC Mines	150.39	48.14	47	0	47
		Total	764.76	469.48	151	6	157

Source: Field study (2012)

Table 2.21: An overall incidence of diseases faced by households during post mining period

District	Village	Area	Same (No Change)	Increased	Total
Korea	Kongapani	Kongapani - OC and UG Mines	31 (62.0)	19 (38.0)	50 (100)
	Chirimiri	Chirimiri - OC and UG Mines	39 (78.0)	11 (22.0)	50 (100)
Surajpur	Salhi	Salhi - Amgaom OC Mines	32 (64.0)	18 (36.0)	50 (100)
	Podi	Gayathri - UG Mines	12 (48.0)	13 (52.0)	25 (100)
	Mani	Rehar - UG Mines	10 (40.0)	15 (60.0)	25 (100)
Sarguja	Getra	Rehar - UG Mines	23 (46.0)	27 (54.0)	50 (100)
	Amera	Amera - OC Mines	24 (48.0)	26 (52.0)	50 (100)
	Total		171 (57.0)	129 (43.0)	300 (100)

Source: Field study (2012)

villagers because of coal mining are air, water and noise pollution. They have brought it to the notice of the authorities concerned like SECL General Manager, official Concerned, Sarpanch etc. Some villagers also do not know whom to approach and they think that no authority will take any action (Table 2.27).

2.5 Resettlement and Rehabilitation

The South Eastern Coalfield Limited (SECL) has its own Resettlement and Rehabilitation (R&R) Policy. As the mines are of different ages, people are affected at different periods of time. Accordingly during SECL has also changed its old R&R policy by replacing it with and now adopting a new R&R policy (Table 2.28). The table below shows both the old and new R&R policies of SECL.

In the Kongapani Area of Korea District, mining started in the late 1980s. In the late 1970s, SECL had acquired both government and private lands for mining. In this area only agricultural lands had been acquired with home and homesteads remaining unaffected. For acquiring agricultural lands SECL had given Rs. 15 to 20 thousand per acre. Those households whose agricultural lands had been acquired also received a job each as compensation. The compensation package was the same in Chirimiri area.

Table 2.22: Health expenses Incurred by households

District	Village	Area	Health expenses have increased			Reasons		
			Yes	No	Total	Increase in Medicine Cost	Increase in Health problems	Total
Korea	Kongapani	Kongapani - OC and UG Mines	14 (28.0)	36 (72.0)	50 (100)	0 (0.0)	14 (100)	14 (100)
	Chirimiri	Chirimiri - OC and UG Mines	37 (74.0)	13 (26.0)	50 (100)	0 (0.0)	37 (100)	37 (100)
Surajpur	Salhi	Salhi - Amgaom OC Mines	44 (88.0)	6 (12.0)	50 (100)	30 (68.2)	14 (31.8)	44 (100)
	Podi	Gayathri - UG Mines	25 (100)	0 (0.0)	25 (100)	6 (24.0)	19 (76.0)	25 (100)
	Mani	Rehar - UG Mines	25 (100)	0 (0.0)	25 (100)	1 (4.0)	24 (96.0)	25 (100)
Sarguja	Getra	Rehar - UG Mines	46 (92.0)	4 (8.0)	50 (100)	8 (17.4)	38 (82.6)	46 (100)
	Amera	Amera - OC Mines	46 (92.0)	4 (8.0)	50 (100)	32 (69.6)	14 (30.4)	46 (100)
Total			237 (79.0)	63 (21.0)	300 (100)	77 (32.5)	160 (67.5)	237 (100)

Source: Field study (2012)

In the district of Surajpur, Mani and Podi villages are affected by UG mines. Here, villagers have not received any compensation because their agricultural lands have not been acquired. The villagers from Mani Panchayat express that their village is going to be submerged due to Open Cast mine with the village being notified for the compensation process. Podi villagers report that though their lands have been affected due to UG mines, they, have not received any compensation amount for their lands lost. The villagers also observe that, earlier, they used to get good yields from their fields, but due to UG mines crop yields have come down.

Salhi Panchayat is affected by Open Cast Mines (Amgaom OC) started in 2005. A compensation package was given in 2010 according to the modified SECL R&R Policy. For agricultural lands lost, they received the following amount: Good Land: Rs 180000 to 200000 per acre; Medium Land: Rs 85000 to 100000 per acre; Normal Land: 60000 per acre. For house and home stead lost also, they received a compensation amount. Only four houses were affected and they got compensation based on the quality of

Table 2.23: Details related to facilities at the Primary level education Across the Study Districts

Primary School			Korea		Surajpur			Sarguja		Total
			Kongapani - Kongapani - OC and UG Mines	Chirimiri - Chirimiri - OC and UG Mines	Salhi - Salhi - Aangaom OC Mines	Podi - Gayathri - UG Mines	Mani - Rehar - UG Mines	Getra - Rehar - UG Mines	Amera - Amera - OC Mines	
Within the Village	Before	Yes	50 (100)	50 (100)	50 (100)	25 (100)	25 (100)	50 (100)	50 (100)	300 (100)
	After	Yes	50 (100)	50 (100)	50 (100)	25 (100)	25 (100)	50 (100)	50 (100)	300 (100)
Distance	Before	No	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
	After	No	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Transport	Before	By Walk	50(100)	50(100)	44(88.0)	25(100)	17(68.0)	40 (80.0)	49 (98.0)	275 (91.7)
		Cycle	0(0.0)	0(0.0)	6(12.0)	0(0.0)	8(32.0)	10 (20.0)	1 (2.0)	25 (8.3)
	After	By Walk	50(100)	50(100)	44(88.0)	25(100)	17(68.0)	40 (80.0)	49 (98.0)	275 (91.7)
		Cycle	0(0.0)	0(0.0)	6(12.0)	0(0.0)	8(32.0)	10 (20.0)	1 (2.0)	25 (8.3)
teachers adequacy	Before	Less than required	13(26.0)	23(46.0)	50(100)	25(100)	25(100)	50 (100)	50 (100)	236 (78.7)
		adequate and regular	37 (74.0)	27 (54.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	64 (21.3)
	After	Less than required	0(0.0)	20 (40.0)	50 (100)	25 (100)	25 (100)	50 (100)	50 (100)	220 (73.3)
		adequate and regular	50 (100)	30 (60.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	80 (26.7)
Mid Day Meal	Before	No	50 (100)	50 (100)	50 (100)	25 (100)	25 (100)	50 (100)	50 (100)	300 (100)
	After	Yes	50 (100)	50 (100)	50 (100)	25 (100)	25 (100)	50 (100)	50 (100)	300 (100)
Toilet facility	Before	No	50 (100)	50 (100)	50 (100)	25 (100)	25 (100)	50 (100)	50 (100)	300 (100)
	After	Yes	0(0.0)	50 (100)	50 (100)	25 (100)	25 (100)	50 (100)	50 (100)	250 (83.3)
	No		50 (100)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	50 (16.7)

Source: Field study (2012)

Table 2.24: Details related to facilities at the Upper Primary education level Across the Study Districts

Upper Primary School	Korea			Surajpur				Sarguja		Total
	Kongapani - Kongapani - OC and UG Mines	Chirimiri - Chirimiri - OC and UG Mines	Salhi - Salhi - Aangaom OC Mines	Podi - Gayathri - UG Mines	Mani - Rehar - UG Mines	Getra - Rehar - UG Mines	Amara - Amara - OC Mines			
With in the Village	Before	Yes	32 (64.0)	0(0.0)	50 (100.0)	0(0.0)	25 (100.0)	0(0.0)	50 (100.0)	157 (52.3)
	After	No	18 (36.0)	50 (100.0)	0(0.0)	0(0.0)	25 (100.0)	50 (100.0)	0(0.0)	143 (47.1)
Mode of Transport	Before	By Walk	50 (100.0)	43 (86.0)	50 (100.0)	25 (100.0)	25 (100.0)	9 (36.0)	50 (100.0)	300 (100.0)
	After	Cycle	0(0.0)	7 (14.0)	6 (12.0)	0(0.0)	16 (64.0)	41 (82.0)	1 (2.0)	229 (76.3)
Teachers Adequacy	Before	By Walk	50 (100.0)	46 (92.0)	44 (88.0)	25 (100.0)	16 (64.0)	35 (70.0)	49 (98.0)	265 (88.3)
	After	Cycle	0(0.0)	4 (8.0)	6 (12.0)	0(0.0)	9 (36.0)	15 (30.0)	1 (2.0)	35 (11.7)
	Before	Less than required	10 (20.0)	23 (46.0)	50 (100.0)	25 (100.0)	25 (100.0)	50 (100.0)	50 (100.0)	233 (77.7)
	After	adequate but Irregular	7 (14.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	7 (2.3)
	Before	adequate and regular	33 (66.0)	27 (54.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	60 (20.0)
	After	Less than required	0(0.0)	19 (18.0)	50 (100.0)	25 (100.0)	25 (100.0)	50 (100.0)	50 (100.0)	219 (73.0)
Mid day meal	Before	adequate but Irregular	0(0.0)	1 (2.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	1 (0.3)
	After	adequate and regular	50 (100.0)	30 (60.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	80 (26.7)
Toilet Facility	Before	No	50 (100.0)	50 (100.0)	50 (100.0)	25 (100.0)	25 (100.0)	50 (100.0)	50 (100.0)	300 (100.0)
	After	Yes	50 (100.0)	50 (100.0)	50 (100.0)	25 (100.0)	25 (100.0)	50 (100.0)	50 (100.0)	300 (100.0)
	Before	No	50 (100.0)	50 (100.0)	50 (100.0)	25 (100.0)	25 (100.0)	50 (100.0)	50 (100.0)	300 (100.0)
	After	Yes	50 (100.0)	50 (100.0)	50 (100.0)	25 (100.0)	25 (100.0)	50 (100.0)	50 (100.0)	300 (100.0)

Source: Field study (2012)

Table 2.25: Details related to facilities at the High School education level Across the Study Districts

High School		Korea		Surajpur			Sarguja		Total
		Kongapani - Kongapani - OC and UG Mines	Chirimiri - Chirimiri - OC and UG Mines	Salhi - Salhi - Amgaom OC Mines	Podi - Gayathri - UG Mines	Mani - Rehar - UG Mines	Getra - Rehar - UG Mines	Amera - Amera - OC Mines	
Within the Village	Before	50 (100.0)	50 (100.0)	50 (100.0)	25 (100.0)	25 (100.0)	50 (100.0)	50 (100.0)	300 (100.0)
	After	50 (100.0)	0 (0.0)	50 (100.0)	25 (100.0)	0 (0.0)	0 (0.0)	50 (100.0)	175 (58.3)
		0 (0.0)	50 (100.0)	0 (0.0)	0 (0.0)	25 (100.0)	50 (100.0)	0 (0.0)	125 (41.7)
Mode of transport	Before	50 (100.0)	43 (86.0)	5 (10.0)	6 (24.0)	4 (16.0)	4 (8.0)	7 (14.0)	119 (39.7)
	Cycle	0 (0.0)	7 (14.0)	45 (90.0)	19 (76.0)	21 (84.0)	46 (92.0)	43 (86.0)	181 (60.3)
	After	50 (100.0)	41 (82.0)	43 (86.0)	25 (100.0)	3 (12.0)	3 (6.0)	48 (96.0)	213 (71.0)
Teachers Adequacy	Before	0 (0.0)	9 (18.0)	7 (14.0)	0 (0.0)	22 (88.0)	47 (94.0)	2 (4.0)	87 (29.0)
	Less than required	9 (18.0)	22 (44.0)	50 (100.0)	25 (100.0)	25 (100.0)	50 (100.0)	50 (100.0)	231 (77.0)
	adequate but Irregular	0 (0.0)	1 (2.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.3)
	adequate and regular	41 (82.0)	27 (54.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	68 (22.7)
	Less than required	0 (0.0)	19 (38.0)	50 (100.0)	25 (100.0)	25 (100.0)	50 (100.0)	50 (100.0)	219 (73.0)
	adequate but Irregular	0 (0.0)	1 (2.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.3)
Mid day Meal	Before	50 (100.0)	30 (60.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	80 (26.7)
	After	50 (100.0)	50 (100.0)	50 (100.0)	25 (100.0)	25 (100.0)	50 (100.0)	50 (100.0)	300 (100.0)
	Yes	50 (100.0)	50 (100.0)	50 (100.0)	25 (100.0)	25 (100.0)	50 (100.0)	50 (100.0)	300 (100.0)
Toilet Facility	Before	50 (100.0)	50 (100.0)	50 (100.0)	25 (100.0)	25 (100.0)	50 (100.0)	50 (100.0)	300 (100.0)
	After	50 (100.0)	50 (100.0)	50 (100.0)	25 (100.0)	25 (100.0)	50 (100.0)	50 (100.0)	300 (100.0)

Source: Field study (2012)

Table 2.26: Sources of energy Accessed by HHs Across the Study Districts

Energy		Korea				Surajpur			Sarguja		Total
		Kongapani - Kongapani - OC and UG Mines	Chirimiri - Chirimiri - OC and UG Mines	Salhi - Salhi - Angaom OC Mines	Podi Gayathri - UG Mines	Mani Rehar - UG Mines	Getra Rehar - UG Mines	Amera Amera - OC Mines			
cooking	Before	Fire wood	50 (100)	50 (100)	48 (96)	25 (100)	25 (100)	50 (100)	50 (100)	298 (99)	
		Fire wood and LPG	0 (0.0)	0 (0.0)	2 (4)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (1)	
	After	Fire wood	21 (42)	30 (60)	35 (70)	25 (100)	23 (92)	47 (94)	34 (68)	215 (72)	
		Fire wood and LPG	0 (0)	1 (2)	1 (2)	0 (0.0)	2 (8)	2 (4)	0 (0.0)	6 (2)	
lighting	Before	Fire wood and Coal	28 (56)	13 (26)	12 (24)	0 (0.0)	0 (0.0)	14 (28)	0 (0.0)	67 (22)	
		Fire wood and Kerosene	0 (0.0)	0 (0.0)	1 (2)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (1)	
		Fire wood, Coal and LPG	1 (2)	6 (12)	1 (2)	0 (0.0)	0 (0.0)	0 (0.0)	2 (4)	10 (3)	
		Kerosene Electricity	46 (92)	34 (68)	10 (20)	16 (64)	12 (48)	36 (72)	10 (20)	164 (55)	
After	Before	Kerosene Electricity	4 (8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	4 (8)	5 (10)	13 (4)	
		Kerosene and Electricity	0 (0.0)	16 (32)	40 (80)	9 (36)	13 (52)	10 (20)	35 (70)	123 (41)	
		Kerosene Electricity	0 (0.0)	19 (38)	3 (6)	2 (8)	1 (4)	18 (36)	45 (90)	88 (29)	
		Kerosene and Electricity	50 (100)	6 (12)	0 (0.0)	0 (0.0)	0 (0.0)	4 (8)	5 (10)	65 (22)	
After	After	Kerosene and Electricity	0 (0.0)	25 (50)	47 (94)	23 (92)	24(96)	28 (56)	0 (0.0)	147 (49)	

Source: Field study (2012)

Table 2.27: Problems and concerns Voiced by HHs Across the Study Districts

District	Village	Area	Complaint against problem			If No				If Yes, brought to the notice of Sarpanch, SECL General Manager, Other concerned officers in SECL	Results			
			Yes	No	Total	Don't know whom they have to approach	No authority will take action	Not interested	Total		Got job in mines	No result	Pending	Hand pumps provided for drinking water
Korea	Kongapani	OC &UG Mines	0 (0.0)	43 (100)	43 (100)	0 (0.0)	1 (2.3)	42 (97.7)	43 (100)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Chirimiri	OC &UG Mines	44 (91.7)	4 (8.3)	48 (100)	1 (25.0)	1 (50.0)	2 (50.0)	4 (100)	44 (20.0)	1 (2.3)	43 (97.7)	0 (0.0)	44 (100)
Surajpur	Salhi	OC Mines	36 (73.5)	13 (26.5)	49 (100)	1 (7.7)	0 (0.0)	12 (92.3)	13 (100)	36 (16.4)	7 (19.4)	20 (55.6)	4 (11.1)	36 (100)
	Podi	UG Mines	24 (96.0)	1 (4.0)	25 (100)	1 (100)	0 (0.0)	0 (0.0)	1 (100.0)	24 (10.9)	0 (0.0)	24 (100)	0 (0.0)	24 (100.0)
	Mani	UG Mines	24 (96.0)	1 (4.0)	25 (100)	0 (0.0)	0 (0.0)	1 (100)	1 (100)	24 (10.9)	0 (0.0)	16 (66.7)	1 (4.2)	24 (100.0)
Sarguja	Getra	UG Mines	42 (84.0)	8 (16.0)	50 (100)	2 (25.0)	0 (0.0)	6 (75.0)	8 (100)	42 (19.1)	0 (0.0)	41 (97.6)	1 (2.4)	42 (100.0)
	Amera	OC Mines	50 (100)	0 (0.0)	50 (100)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	50 (22.7)	2 (4.0)	42 (84.0)	4 (8.0)	50 (100)

Source: Field study (2012)

Table 2.28: SECL R&R Policy (Old vs New)

Compensation Details and List		SECL R&R Policy (Old)	SECL R&R Policy (New)	Remarks
Job		One person in the affected household (Land loss) will receive one job.	==>For UG Mines; one job offered for 2 acres of patta land for land loss households. ==>For OC Mines; One job offered for every 3 acres of patta land for land loss households.	==>R&R Policy (Old) implemented in the 1980s ==> Updated R&R Policy implemented recently. ==> Recently, Surguja District collector promised that land less households would also receive jobs in coal mines
Land	Good Land (Irrigated land) per acre	Rs. 15000 to 20000	Rs. 100000	-
	Medium Land (Un-irrigated land) per acre		Rs. 75000	-
	Normal Land (Barren land) per acre		Rs. 50000	-
Trees		Rs. 100 to 500	Rs. 500 to 1000	-
Home and Home stead		Rs.1000 to 5000	Rs.50000 to 100000 and above	-
Cattle shed		Rs. 500 to 1000	Rs. 1000 to 5000	-
Transport		SECL vehicle will be provided for household shifting	SECL vehicle will be provided for household shifting	In Amera OC mines area, people, according to people, for transport and shifting to a new area for resettlement, SECL offered Rs. 100000 for each household.

Source: Field study (2012)

house (Rs 100000 to 130000). The remaining houses in the village are going to be affected, but compensation will be given after the acquisition of houses. For trees lost they received Rs 500 to Rs 1000 and above. For patta holders, they have given a job in mines per every loss of 2 acres of land. For households wanting to shift to another place, SECL provided Rs. 100000 for transport and other allowances.

In the village, most of the households have got jobs and those households that lost less than two acres of land, through a mutual agreement, showed two acres of land to SECL

and landed employment in SECL. In this connection, some households got employment and those employed gave an agreed amount to the other households that had added their lands to the employed persons' lands.

In Surguja district, compensation was given 15 years back for agricultural lands lost and also jobs offered for households whose lands had been acquired. For agricultural lands they received Rs 30,000 to Rs. 2, 00,000 per acre based on the quality of land. For trees, they received Rs 500 to Rs 1000 and above. Employment was also offered to one person of the affected households.

In Amera OC mining area, compensation was given in 2007. Most of the villagers received compensation for the loss of their assets and also a job in the mine. But some of the people are yet to receive their compensation amount and jobs in mines. They organised strikes and rallies for justice and approached the District Collector, Local MLA, MP and also the mining authorities several times. The villagers say that the District collector has promised that the remaining affected people will also get their compensation amount and Jobs. So they are waiting for justice.

For agricultural lands, the compensation amount was fixed as follows: Good Land (Irrigated land): Rs 100000 per acre; Medium Land (Un-irrigated land): Rs 75000 per acre; Normal Land (Barren land): 50000 per acre. For houses and home steads: Rs. 50000 was given to all the households and no classification was done. For trees they received Rs 500 to Rs 1000 and above. For patta holders, they have given a job each in mines per every loss of 2 acres of land. For households wanting to shift to another place, SECL provided transport and other allowances. Recently, the District collector has promised that people who have lost their houses also will receive a job each in coal mines. However, it is yet to be implemented. The following table (Table-2.29) shows the compensation details of the study area. The next section presents the details of asset loss.

In all the sample villages, excepting in Korea district, households have lost their agricultural lands. However, the villagers are not satisfied with the compensation amount. In a few cases, they have not received the amount because they do not have a patta. In other cases, it is found pending due to some reasons (Table 2.29). In the case of houses, some households are staying in the coal mining colony while others have received their money as part of land compensation in view of their houses being located within their agriculture lands. Only three households have lost their cowsheds and received their compensation package accordingly. Three households have also lost their wells and compensation towards wells is included in their total compensation package.

Table 2.29: Details of assets lost by HHs across the Study Districts

District	Village	Study site	hhs	Extent of land in acres	Type of Land	Agricultural land				House Loss							
						Compen- sation received by hhs	Amount (in Rs.) Received by each hh (average)	Satisfaction level	Reasons for not receiving compen- sation	hhs	house extent (In acres)	Type of house	Compen- sation received	Amount (in Rs.) Received by hhs	Satisf- action Level by each hh (average)	If Not reason	
Korea	Kongapani	Kongapani - OC and UG Mines	1	5	Dry	1	75000	Dissatisfied	-	-	-	-	-	-	-	-	
			Chirimiri	1	3	Wet	-	-	-	Due to no patta	19	19	Thatched, Tiled and GI Sheet	13	5400	Very much dissatisfied	Coal colony
Surajpur	Salhi	Salhi - Amgaom OC Mines	43	106.24	Dry and Wet	42	365859.9	Very much dissatisfied	Pending	2	2	Tiled	1	130000	Very much dissatisfied	Pending	
			Podi	13	25.5	Dry	-	-	-	Pending	2	2	Thatched	-	-	-	-
			Mani	14	47.2	Dry and Wet	-	-	-	Don't know	1	1	Thatched	-	-	-	-
Sarguja	Getra	Rehar - UG Mines	30	61.11	Dry and Wet	18	155833.3	Very much dissatisfied	pending	-	-	-	-	-	-	-	
			Amera	49	122.57	Dry and Wet	21	153893.4	Very much dissatisfied	pending and not taken due to less compensation	11	11	Thatched and RCC	1	150000	Indifferent	Pending
Total			151	370.62		82	261925.4	-	-	35	35	-	15	23346.67	-	-	

Source: Field study (2012)

2.6 Conclusion

As shown in the previous section, mining has a mixed impact on the livelihoods of people. A discussion with the sample households shows that mining has affected their livelihoods. However, according to fifty percent of the sample households, mining activity has had a positive impact on their lives, while the remaining half point to the negative impacts. The reasons for positive impacts can be attributed to job opportunities in mines and work availability in mining areas and other allied activities, while negative impacts can be attributed to a decline in agricultural assets and in-migration which has reduced work availability for the local people and negative environmental effects on human health and agricultural lands. Therefore, the only work they have is to work as wage labourers. The analysis shows that though coal mining has not increased poverty in the state of Chhattisgarh, it has failed to provide sustainable livelihood options to the local people. Once mining stops everything will come to an end. Therefore, SECL, with the help of the government, should help people go in for diversified livelihood options.

Chapter - 3

Coal Mining and Livelihoods in Jharkhand

3.1 Introduction

The present chapter deals with the effects of coal mining on the livelihoods of local communities in Jharkhand state. Before analysing the various dimensions of the effects of coal mining on the livelihoods, a quantitative assessment of coal mining in Jharkhand state is provided. Subsequently, the effects of mining in terms of assets lost - land, houses and livestock; effects on environment, health of the communities and coping strategies adopted by them; and lastly the compensation details for the assets lost are presented in the following sections.

The state of Jharkhand accounts for the highest number of coal deposits in India. Three subsidiaries of CIL function in Jharkhand. The Bharat Coking Coal Limited (BCCL) runs its operations in Dhanbad district (except one mine which is situated in Bokaro district) of Jharkhand. As many studies have been undertaken with respect to Dhanbad, we have not considered this district for our study. The Eastern Coalfields Limited (ECL), which is mainly in charge of Ranigunj Coalfield, is situated in West Bengal and Jharkhand with only two coalfields in Jharkhand - Saherjuri Coalfield in Deoghar District and Hurra Coalfield in Godda district of Jharkhand. These coalfields are also not our study area. The third subsidiary, Central Coalfields Limited (CCL), operates in Hazaribagh, Ramgarh, Chatra, Palamu and Bokaro districts of Jharkhand.

On 17 August 2011, Coal India emerged as the Most Valued Company in the country in terms of Market Capitalization - the pinnacle of success every business entity dreams of and aspires for. The company's value stood at a whopping Rs.2,51,296 Crore. What made the achievement all the more significant was that a public sector company could attain such lofty heights (CIL).

3.2 Coal mining in Jharkhand

The trends in raw coal production (in million tonnes) both in Jharkhand and at all India level show an improvement starting from the year 2008 - 2009 through to 2013-2014,

while the production of raw coal for coking and non-coking varieties in Jharkhand State shows variations from 2008-09 to 2012-13. There is an increase in the coking variety of raw coal, whereas in the production of non-coking variety of raw coal there exist fluctuations between the years (Table 3.1 & 3.2).

Table 3.1: Raw coal production in Jharkhand and India (2008-2009 to 2014-2015-Upto May, 2014)

State	Year						
	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15*
Jharkhand	96.279	105.917	108.949	109.56	111.3	113.3	18.03
India	492.945	532.042	532.694	539.94	556.4	565.9	91.3

(Figures in Million Tonnes)

Note: *: As of May, 2014 (Provisional).

Source: <http://www.indiastat.com/>

Table 3.2: Production of raw coal (coking and non-coking) in Jharkhand (2007-2008 to 2012-2013)

Production of Raw Coal	Year					
	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Coking	33.566	33.877	43.666	48.945	51.102	51.317
Non-coking	57.329	62.395	62.251	60.004	58.458	59.886

(Figures in Million Tonnes)

Source: <http://www.indiastat.com/>

3.3 Social profile of the sample households in Jharkhand state

The following table gives the region-wise details of the sample households in Jharkhand State (district/panchayat/ward). It can be seen that in Hazaribagh district - under Urimiri panchayat, there are a total of twelve wards, of which two wards were selected for the study. A total of 435 households are there in these two wards of which fifty households were selected for the study, giving due representation to all the social categories (A sample of 29 ST households and 21 OBC households were selected as SC and Other households are not found in these selected areas). In Bokaro district - Katara panchayat was selected and two wards under it (DVC and Vasari OC) were chosen for the study. Thus, a total of 65 sample households were chosen for the study. In Ramgarh district - Sayal South panchayat was chosen for the study. Out of 14 wards, two wards were selected. From these two wards, a total of 475 households were enumerated of which 125 sample households were selected (25 SC hhs, 68 ST hhs, 190 BC hhs and 13 other hhs) for an intensive study. Lastly, in Bokaro district, under Kargali North (town) panchayat, Kargali OC area (two wards) was selected for the sample study. On the whole, in Jharkhand State, a total of 300 sample households (64 SCs, 105 STs, 105 OBCs and 28 Others) were selected for the study (Table 3.3).

Table 3.3: Details of the sample households, Jharkhand

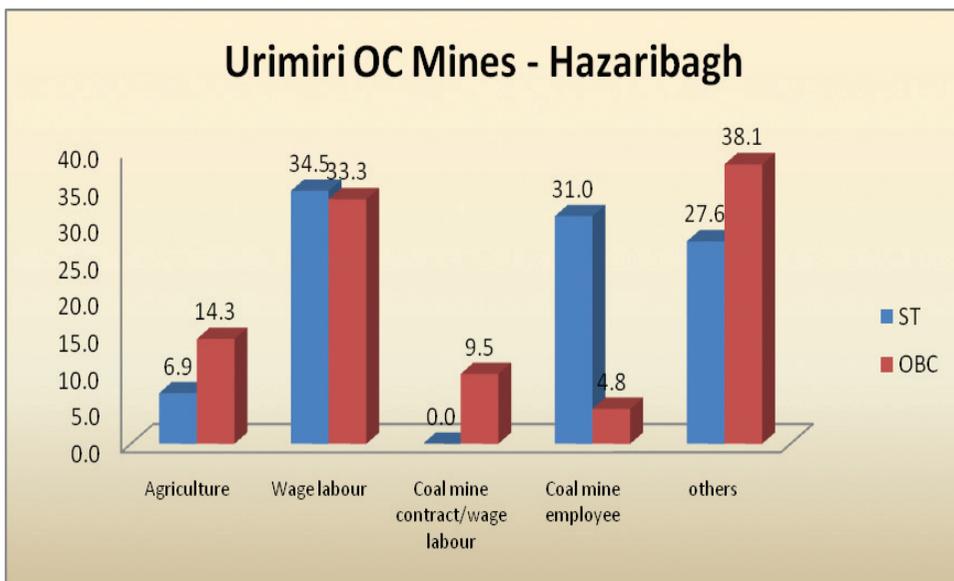
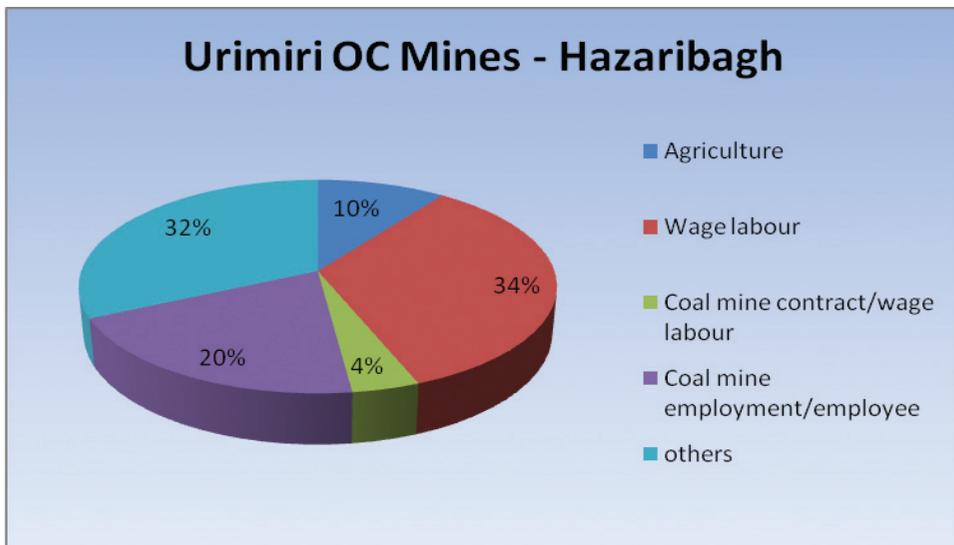
District	Village/ Panchayat	Area	Total Wards	Sample Wards	Total Households						Total Sample Households					
					SC	ST	OBC	OC	Total	SC	ST	OBC	Others	Total		
Hazaribagh	Urimiri	Urimiri OC	12	2	0	255	180	0	435	0	29	21	0	50		
					(0.0)	(58.6)	(41.4)	(0.0)	(100)	(0.0)	(58)	(42)	(0.0)	(100)		
Bokaro	Katara	DVC OC	4	1	0	0	92	0	92	0	0	30	0	30		
		Vasari OC	4	1	0	0	16	0	96	0	0	5	0	0		
					(0.0)	(0.0)	(100)	(0.0)	(100)	(0.0)	(0.0)	(100)	(0.0)	(100)		
Ramgarh	Sayal South	Urimiri UG	14	2	95	280	75	25	475	25	68	19	13	125		
					(83.3)	(0.0)	(16.7)	(0.0)	(100)	(15.8)	(54.4)	(15.2)	(10.4)	(100)		
Bokaro	Karagali North	Karagali OC	10	2	34	24	117	59	234	9	6	30	15	60		
					(14.5)	(10.3)	(50)	(25.2)	(100)	(15)	(10)	(50)	(25)	(100)		
Total			44	8	209	559	480	84	1332	64	103	105	28	300		
					(15.7)	(42)	(36)	(6.3)	(100)	(21.3)	(34.3)	(35)	(9.3)	(100)		

Source: Field study (2012)

3.4 Coal mining, environment and livelihoods in Jharkhand

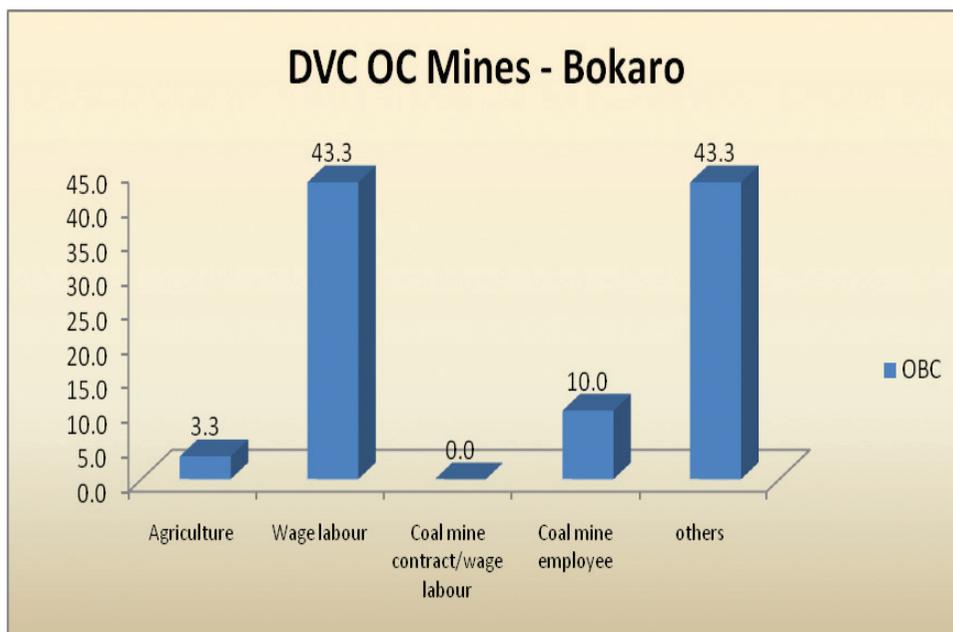
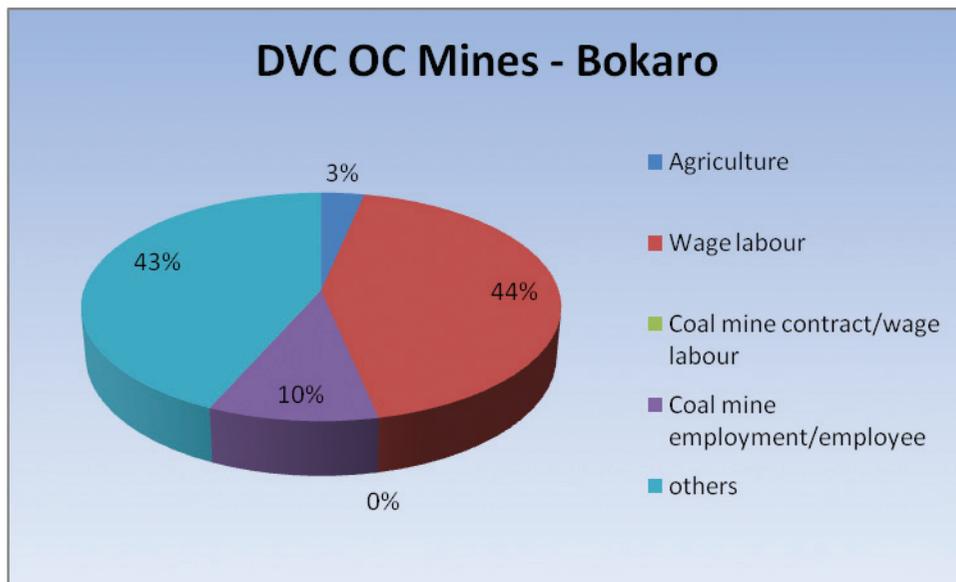
In the districts of Hazaribagh, in Urimiri open cast mines study site, 20 percent of the households are employed in coal mines with a few households working as contract/wage labourers (4 percent). The percentage of wage labour is very high (34 percent) and that of others such as businessmen (Petty business & coal allied activities), artisans, carpenters, masons etc is 32 percent. As agricultural lands are taken for mining, percentage of agriculture is less (10 percent).

Figure 3.1: Primary occupation in Urimiri OC mines (% of Households)



The social category-wise details of occupation reveals that the share of STs among wage labour is high (34.5%) followed by formal employment in coal mines (31.0%) and others (27.6%). However, their share in agriculture is relatively insignificant (6.9%) (Figure 3.1).

Figure 3.2: Primary occupation in DVC OC mines



In Bokaro, 10 percent of the households, are employed in DVC OC mines. In the study area, most of the households are dependent on wage labour and other works. The share of wage labour amounts to 44 percent and 43 percent of the households are dependent on other works for their livelihood. A very few households (3 percent) are dependent on agriculture as their main occupation, but they may lose these lands in future. This has led to a less percentage (10 percent) of wage labour. In this region, all the sample households belong to OBC and are engaged mostly in wage labor (43.3%) or 'Others' (43.3%) as their main livelihood occupation, while a small proportion of them is employed in coal mines (10.0) and agriculture (3.3%) (Figure 3.2).

Figure 3.3: Primary occupation in Vasari OC mines

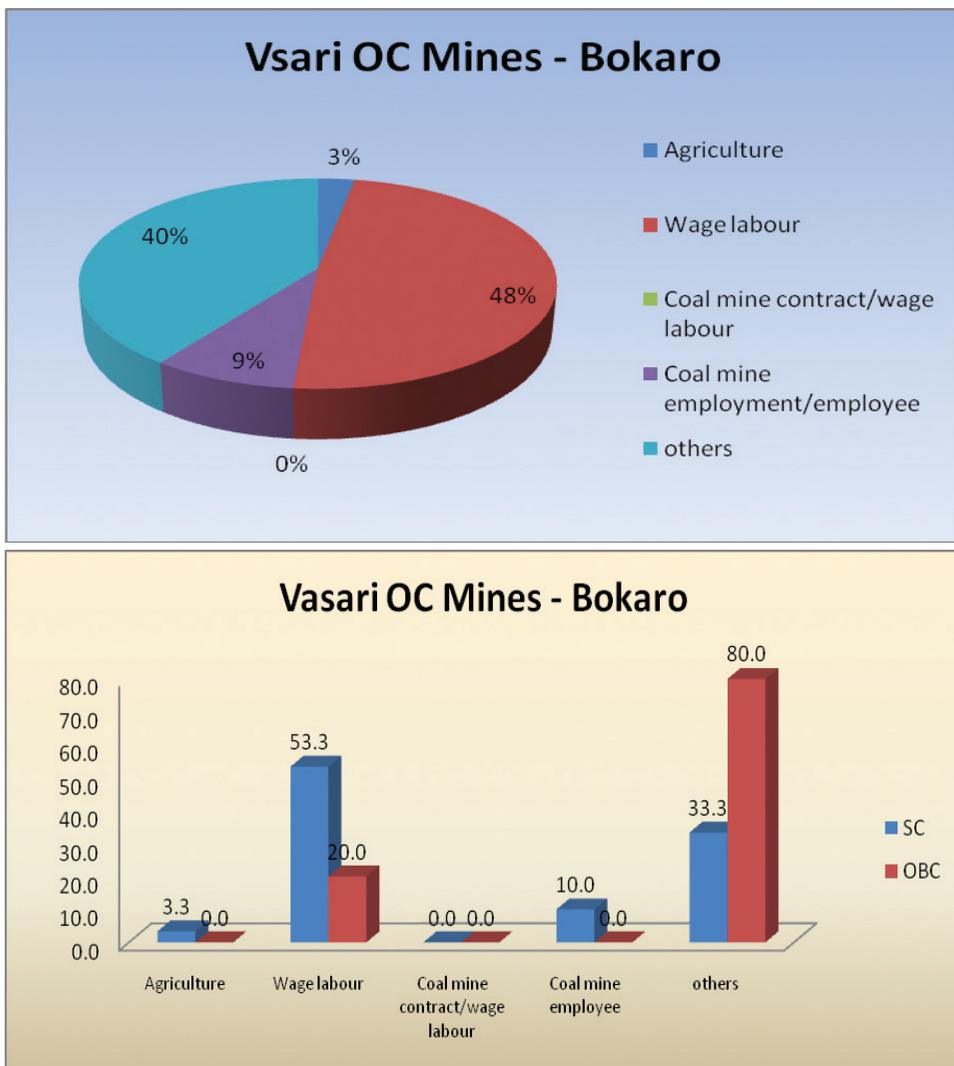
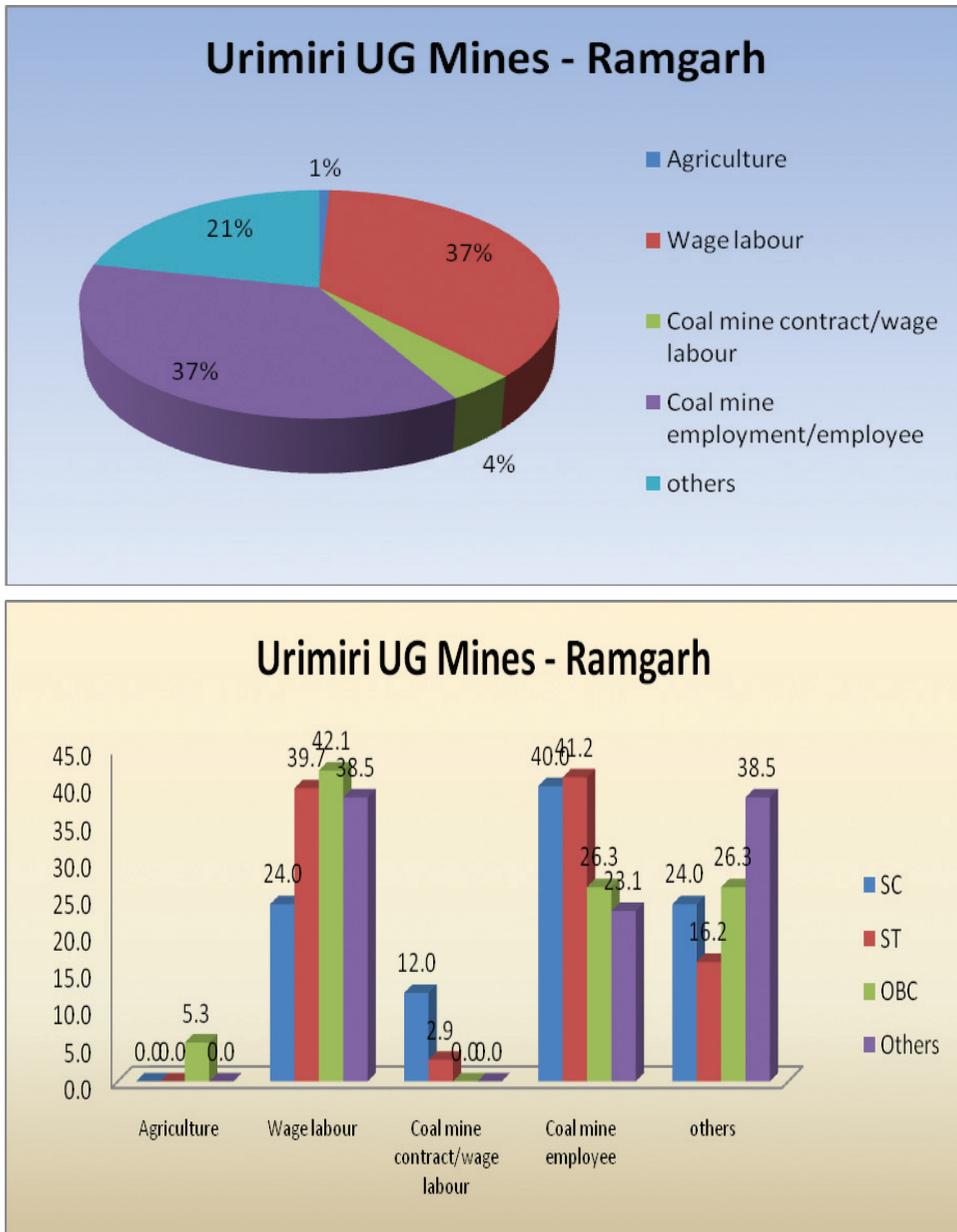


Figure 3.4: Primary occupation in Urimiri UG mines



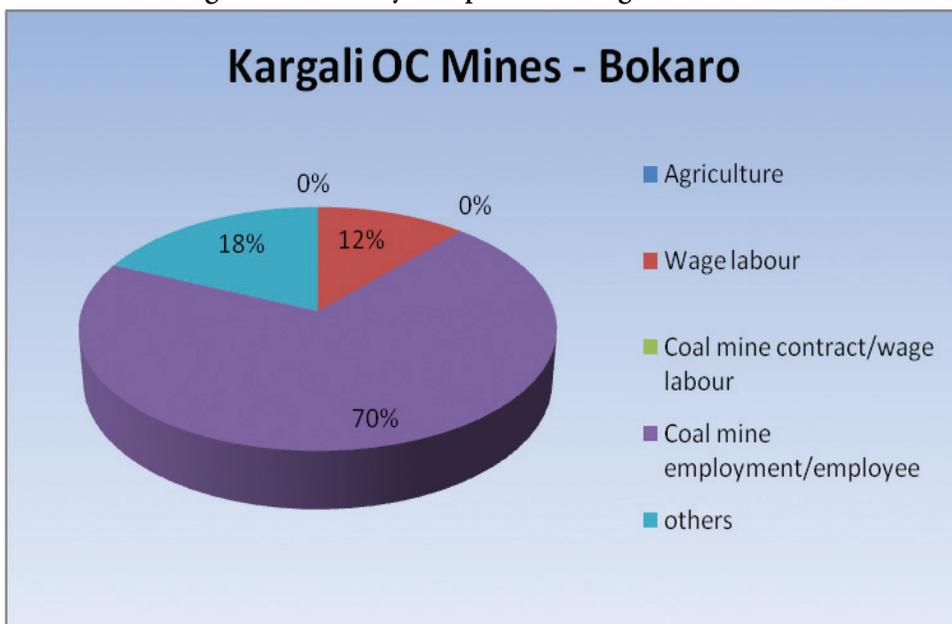
In Katara, only 9 percent of the households are employed in Vasari OC mines-Bokaro. In the study area, most of the households are dependent on wage labour and other works for their livelihood. The share of wage labour amounts to 48 percent, while 40 percent of the households are dependent on other works for their livelihood. A very few

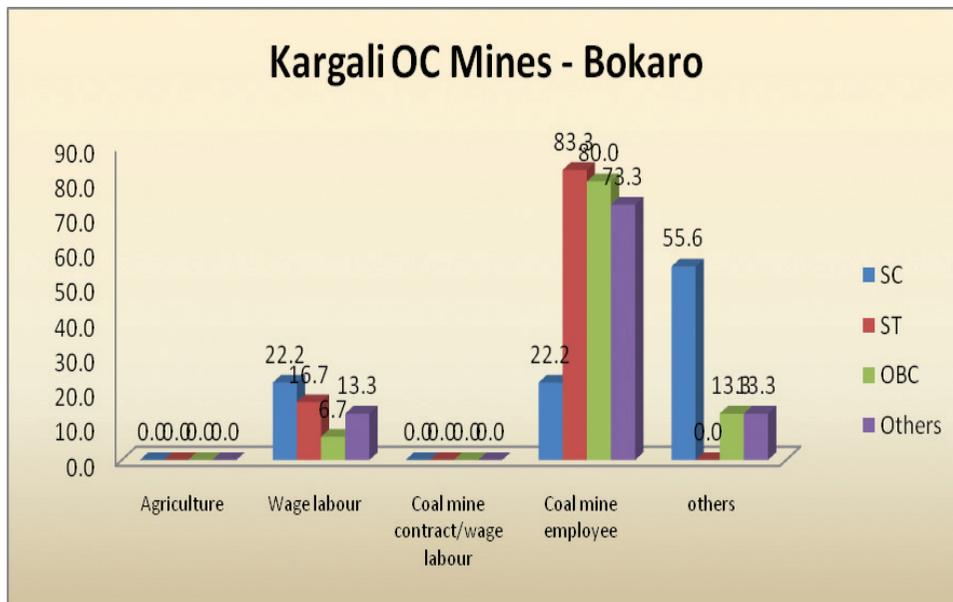
households (3 percent) are dependent on agriculture as their main occupation. There are no STs and Others among the sample households in Vasari OC mines area. Among SC households, 53.3% of them are wage laborers, and 33.3% are engaged in 'others' as their principal occupation and only 10.0 percent of them are employed in coal mines. Among OBCs, a large number of the hhs (80.0%) are engaged in 'Others' as their main occupation (Figure 3.3).

In Sayal South - Urimiri UG mines - Ramgarh, 37 percent of the households are employed in coal mines. In the study area, 37 percent of the households are dependent on wage labour as their main livelihood source and 21 percent of the households are dependent on 'others'. The share of coal mine contract/wage labour is very less (4 percent) and only one household is dependent on agriculture as its main occupation. As regards the occupational structure of the social categories, among wage labor, the share of OBC is highest (42.1%) followed by ST (39.7%), Others (38.5%) and SCs (24.0%). Among coal mine employment, the share of STs is highest (41.2%) followed by SCs (40.0%), OBCs (25.3%) and Others (23.1%) (Figure 3.4).

In Kargali North - Kargali OC mines - Bokaro, most of the households (70 percent) are employed in coal mines. In the study area, 18 percent of the households are depend on 'others' as their main livelihood source and 12 percent of the households are dependent on wage labour. None of the households is dependent on agriculture as their main

Figure 3.5: Primary occupation in Kargali OC mines





occupation because, the whole area remains affected by coal mines. The main occupational profile of the various social categories in this region shows that coal mine employment is the largest sector with the share of STs in it being the highest (83.3%) followed by OBC (80.0), Others (73.3%) and SCs (22.2%). This is followed by 'others' category with the SCs share being higher interms of dependence (55.6%) followed by others (33.3%) and OBCs (13.1) (Figure 3.5).

In the sample villages, the household members - males and females - are engaged in both the primary and secondary economic activities for eking out their livelihood on a day-to-day basis. An analysis of the data on primary economic activities of the individual members (males and females together) shows that in Hazirabagh (Urimiri mines area), wage labour (40.0%) is the main economic activity followed by 'others' (33.61%), while the share of employment in coal mines is not very significant (9.1%). A similar pattern is observed in Bokaro (Katara) region as well. However, in Ramgarh (Sayal South area) and Bokaro (Kargali North), the share of employment in coal mining is higher (21.0% and 41.3% respectively) followed by wage labour (43.3%) in Raigarh and 'others' (34.6%) in Bokaro - Kargali North (Table 3.4).

The data on the educational status of the sample households across the field sites indicates that 14.4 percent of males and 35.5 percent of the females are illiterate. Nearly 30.7% of males and 23.3 percent of females have undergone secondary school (8th to 10th standard) education, which is satisfactory. A small proportion of males (7.6 percent) and females (4.80 percent) does possess graduation and above qualification (Table No. 3.5).

Table 3.4: Primary Occupation of the sample HHs across the Study Districts

Main Occupation	Hazirabagh						Bokaro						Ramgath						Bokaro					
	Urimiri						Katara						Sayal South						Karagali North					
	Urimiri OC Mine			DVC OC Mine			Vasari OC mines			Urimiri UG Mine			Kargali OC			Kargali North			Kargali OC					
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total						
Agriculture	9 (56.3)	7 (43.8)	16 (100)	0 (0.0)	1 (100)	1 (100)	0 (0.0)	1 (100)	3 (100)	0 (0.0)	3 (100)	1 (100)	0 (0.0)	1 (100)	0 (0.0)	1 (100)	1 (100)	1 (100)						
Wage labour	26 (59.1)	18 (40.9)	44 (100)	19 (86.4)	3 (13.6)	22 (100)	9 (29.0)	31 (100)	22 (71.0)	9 (29.0)	31 (100)	63 (62.4)	38 (37.6)	101 (100)	17 (70.8)	7 (29.2)	24 (100)	24 (100)						
Coal Mine Employment	9 (90.0)	1 (10.0)	10 (100)	3 (75.0)	1 (25.0)	4 (100)	0 (0.0)	4 (100)	4 (100)	0 (0.0)	4 (100)	46 (93.9)	3 (6.1)	49 (100)	35 (81.4)	8 (18.6)	43 (100)	43 (100)						
Coalmine wage labour contract/	3 (100)	0 (0.0)	3 (100)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (100)	2 (100)	0 (0.0)	2 (100)	10 (83.3)	2 (16.7)	12 (100)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)						
Others	30 (81.1)	7 (18.9)	37 (100)	28 (77.8)	8 (22.2)	36 (100)	3 (10.3)	29 (100)	26 (89.7)	3 (10.3)	29 (100)	50 (71.4)	20 (28.6)	70 (100)	31 (86.1)	5 (13.9)	36 (100)	36 (100)						
Total	77 (70.0)	33 (30.0)	110 (100)	50 (79.4)	13 (20.6)	63 (100)	12 (17.4)	69 (100)	57 (82.6)	12 (17.4)	69 (100)	170 (73.0)	63 (27.0)	233 (100)	83 (79.8)	21 (20.2)	104 (100.0)	104 (100.0)						

Source: Field study (2012)

Table 3.5: Educational status of the sample households

Educational Status	Hazariabagh		Bokaro		Bokaro		Ramagrh		Bokaro		Total	
	Urimiri		Katara		Katara		Sayal South		Karagli North			
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Illiterate	7	23	13	44	31	43	47	100	10	35	108	245
	(8.6)	(28.8)	(8.8)	(31.0)	(24.8)	(43.4)	(14.6)	(36.2)	(13.0)	(38.9)	(14.4)	(35.5)
Literate (non-formal)	2	1	10	1	14	8	22	17	4	2	52	29
	(2.5)	(1.3)	(6.8)	(0.7)	(11.2)	(8.1)	(6.8)	(6.2)	(5.2)	(2.2)	(6.9)	(4.2)
Literate below Primary	7	5	10	9	7	6	27	20	3	4	54	44
	(8.6)	(6.3)	(6.8)	(6.3)	(5.6)	(6.1)	(8.4)	(7.2)	(3.9)	(4.4)	(7.2)	(6.4)
Primary	8	9	11	8	7	4	24	24	7	1	57	46
	(9.9)	(11.3)	(7.5)	(5.6)	(5.6)	(4.0)	(7.5)	(8.7)	(9.1)	(1.1)	(7.6)	(6.7)
Middle	13	7	19	12	11	9	37	26	10	13	90	67
	(16.0)	(8.8)	(12.9)	(8.5)	(8.8)	(9.1)	(11.5)	(9.4)	(13.0)	(14.4)	(12.0)	(9.7)
Secondary	22	18	51	39	25	20	102	62	31	22	231	161
	(27.2)	(22.5)	(34.7)	(27.5)	(20.0)	(20.2)	(31.7)	(22.5)	(40.3)	(24.4)	(30.7)	(23.3)
Inter (10+2)	11	12	20	15	24	9	40	19	8	10	103	65
	(13.6)	(15.0)	(13.6)	(10.6)	(19.2)	(9.1)	(12.4)	(6.9)	(10.4)	(11.1)	(13.7)	(9.4)
Graduation and above	11	5	13	14	6	3	23	8	4	3	57	33
	(13.6)	(6.3)	(8.8)	(9.9)	(4.8)	(3.0)	(7.1)	(2.9)	(5.2)	(3.3)	(7.6)	(4.8)
Total	81	80	147	142	125	99	322	276	77	90	752	690
	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)

Source: Field study (2012)

Table 3.6: Land holding particulars of the sample households (by social category)

District	Village / Panchayat	Area	Social Category	Landless	Marginal Farmer	Small Farmer	Medium Farmer	Total
Hazari bagh	Urimir	Urimir OC	ST	17 (58.6)	3 (10.3)	9 (31.0)	0 (0.0)	29 (100)
			OBC	18 (85.7)	1 (4.8)	1 (4.8)	1 (4.8)	21 (100)
Bokaro	Katara	DVC OC	OBC	24 (80.0)	4 (13.3)	2 (6.7)	0 (0.0)	30 (100)
			SC	27 (90.0)	3 (10.0)	0 (0.0)	0 (0.0)	30 (100)
		Vasari OC	OBC	5 (100)	0 (0.0)	0 (0.0)	0 (0.0)	5 (100)
Ramagrh	Sayal South	Urimiri UG	SC	25 (100)	0 (0.0)	0 (0.0)	0 (0.0)	25 (100)
			ST	66 (97.1)	2 (2.9)	0 (0.0)	0 (0.0)	68 (100)
			OBC	19 (100)	0 (0.0)	0 (0.0)	0 (0.0)	19 (100)
			Others	13 (100)	0 (0.0)	0 (0.0)	0 (0.0)	13 (100)
Bokaro	Karagli North	Kargali OC	SC	9 (100)	0 (0.0)	0 (0.0)	0 (0.0)	9 (100)
			ST	6 (100)	0 (0.0)	0 (0.0)	0 (0.0)	6 (100)
			OBC	30 (100)	0 (0.0)	0 (0.0)	0 (0.0)	30 (100)
			Others	15 (100)	0 (0.0)	0 (0.0)	0 (0.0)	15 (100)
Grand Total				274 (91.3)	13 (4.3)	12 (4.0)	1 (0.3)	300 (100)

Source: Field study (2012)

An analysis of the land holding particulars of the sample households across the study districts shows that most of hhs (91.3 percent) are landless, followed by marginal farmers (4.3 percent) and small farmers (4.0 percent) respectively. This shows very clearly that mining has affected the land base of the sample households in a significant way. It is evident that landlessness is very high among all the social categories in the all regions followed by the presence of a very few small and marginal farmers (Table 3.6).

Table 3.7: The status of agricultural land ownership among the sample households (by social category) across the Study Districts

District	Village/ Panchayat	Area	SC			ST			OBC			Others		
			Yes	No	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total
Hazari bagh	Urimiri	Urimiri OC	0 (0.0)	0 (0.0)	0 (0.0)	12 (41.4)	17 (58.6)	29 (100)	3 (14.3)	18 (85.7)	21 (100)	0 (0.0)	0 (0.0)	0 (0.0)
			0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	6 (20.0)	24 (80.0)	30 (100)	0 (0.0)	0 (0.0)
Bokaro	Katara	DVC OC	3 (10.0)	27 (90.0)	30 (100)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	5 (100)	5 (100)	0 (0.0)	0 (0.0)	0 (0.0)
		Vasari OC	0 (0.0)	25 (100)	25 (100)	2 (2.9)	66 (97.1)	68 (100)	0 (0.0)	19 (100)	19 (100)	0 (0.0)	13 (100)	13 (100)
Ramagrh	Sayal South	Urimiri UG	0 (0.0)	9 (100)	9 (100)	0 (0.0)	6 (0.0)	6 (0.0)	0 (0.0)	30 (100)	30 (100)	0 (0.0)	15 (100)	15 (100)
Bokaro	Karagli North	Kargali OC	3 (4.7)	61 (95.3)	64 (100)	14 (13.6)	89 (86.4)	103 (100)	9 (8.6)	96 (91.4)	105 (100)	0 (0.0)	28 (100)	28 (100)
		Total												

Source: Field study (2012)

The status of agricultural land ownership (any extent) among the sample households (by social category) shows that, across the sample districts/villages, nearly 95.3 percent of the scheduled caste households do not possess any land and only 4.7 percent do possess some land, whereas among the scheduled tribes, 86.4 percent do not possess any land and the rest (13.6 percent) hold some land. Even among OBCs, 91.4 percent do not possess land, while nearly seven percent possess some land (Table 3.7).

**Table 3.8: Total wet & dry land (in acres) possessed by the sample households
(By Social Category) Across the Study Districts**

District	Village / Panchayat	Area	Social Category	Total HHs	Total Wet Land	Total Dry land	Total Land
Hazari bagh	Urimir	Urimir OC	ST	12	18	1.25	19.25
			OBC	3	6.2	0	6.2
Bokaro	Katara	DVC OC Vasari OC	OBC	6	4.25	3	7.25
			SC	3	1.7	1	2.7
			OBC	0	0	0	0
Ramagrh	Sayal South	Urimiri UG	SC	0	0	0	0
			ST	2	1	0	1
			OBC	0	0	0	0
			Others	0	0	0	0
Bokaro	Karagli North	Kargali OC	SC	0	0	0	0
			ST	0	0	0	0
			OBC	0	0	0	0
			Others	0	0	0	0
Grand Total				26	31.15	5.25	36.4

Source: Field study (2012)

While the previous table shows the number of sample households with and without agricultural land, the data presented in the above table tells us that a total of only 26 households possess land out of a total of 300 sample households (31.15 acres of wet land and 5.25 acres of dry land). A social category-wise analysis reveals that STs account for the highest share of land (18 acres of wet land and 1.25 acres of dry land) followed by OBCs and SCs (Table 3.8).

Type of dwelling units that the sample households possess is a robust indicator of the quality of living. From the above table, one can observe that across all the sample districts, thatched houses, account for nearly 28 percent semi-pucca houses for around 40 percent and pucca houses for nearly 32 percent. On the whole, a considerable no. of HHs still do not have pucca houses (Table 3.9).

Table 3.9: Housing type among the sample households Across the Study Districts

District	Village/ Panchayat	Area	Thatched	Semi Pucca	Pucca	Total
Hazaribagh	Urimir	Urimiri OC	22 (44)	22 (44)	6 (12)	50 (100)
Bokaro	Katara	DVC OC	1 (3.3)	1 (3.3)	28 (93.3)	30 (100)
		Vasari OC	2 (5.7)	5 (14.3)	28 (80)	35 (100)
Ramgarh	Sayal South	Urimiri UG	48 (38.4)	70 (56)	7 (5.6)	125 (100)
Bokaro	Karagali North	Kargali OC	10 (16.7)	24 (40)	26 (43.3)	60 (100)
Total			83 (27.7)	122 (40.7)	95 (31.7)	300 (100)

Source: Field study (2012)

Possession of ration cards by poor and marginal households helps them access basic items under the public distribution system. This, in turn, ensures a minimum level of food security to the poor and needy. In the absence of such protection, the poor become vulnerable to the market forces where price fluctuations affect the household economy of the poor who are normally wage earners engaged in casual and uncertain employment. The data across study villages shows that a majority of the sample HHs (75.7%) do not possess ration cards and that only 24.3% of the hhs have ration cards (Table 3.10).

Table 3.10: Details of ration cards held by HHs across the Study Districts

District	Village / Panchayat	Area	Yes	No	Total	No Card	White	Blue	Red	Green	Yellow	Total
Hazari bagh	Urimir	Urimari OC	7 (14)	43 (86)	50 (100)	43 (86)	1 (2)	2 (4)	1 (2)	0 (0.0)	3 (6)	50 (100)
Bokaro	Katara	DVC OC	15 (50)	15 (50)	30 (100)	15 (50)	0 (0.0)	15 (50)	0 (0.0)	0 (0.0)	0 (0)	30 (100)
		Vasari OC	18 (51.4)	17 (48.6)	35 (100)	17 (48.6)	0 (0.0)	17 (48.6)	0 (0.0)	0 (0.0)	1 (2.9)	35 (100)
Ramgarh	Sayal South	Urimiri UG	22 (17.6)	103 (82.4)	125 (100)	103 (82.4)	2 (1.6)	10 (8)	3 (2.4)	5 (4)	2 (1.6)	125 (100)
Bokaro	Karagali North	Kargali OC	11 (18.3)	49 (81.7)	60 (100)	49 (81.7)	1 (1.7)	8 (13.3)	0 (0.0)	1 (1.7)	1 (1.7)	60 (100)
		Total	73 (24.3)	227 (75.7)	300 (100)	227 (75.7)	4 (1.3)	52 (17.3)	4 (1.3)	6 (2)	7 (2.3)	300 (100)

Source: Field study (2012)

Table 3.11: Details of household physical assets across the Study Districts

Assets	Hazaribagh	Bokaro		Ramagrh	Bokaro
	Urimir	Katara		Sayal South	Karagli North
	Urimiri OC Mine	DVC OC Mine	Vasari OC Mines	Urimiri UG Mine	Kargali OC
Cycle	39 (78)	18 (60)	13 (37.1)	75 (60)	36 (60)
Radio	5 (10)	0 (0.0)	2 (5.7)	13 (10.4)	6 (10.0)
Fan	40 (80.0)	28 (93.3)	31 (88.6)	117 (93.6)	55 (91.7)
Almarah	9 (19.0)	17 (56.7)	14 (40.0)	36 (28.8)	39 (65.0)
TV	37 (74.0)	27 (90.0)	31 (88.6)	106 (84.8)	55 (91.7)
Scooter	18 (36.0)	13 (43.3)	15 (42.9)	50 (40.0)	31 (51.7)
Fridge	6 (12.0)	6 (20.0)	8 (22.9)	20 (16.0)	27 (45.0)
Car	2 (4.0)	0 (0.0)	2 (5.7)	3 (2.4)	1 (1.7)
Bull Cart	0 (0.0)	6 (20.0)	1 (2.9)	0 (0.0)	0 (0.0)
Sewing Mechine	3 (6.0)	9 (10.0)	5 (14.3)	25 (20.0)	13 (21.7)
Watch	39 (78.0)	28 (93.3)	31 (88.6)	114 (91.2)	52 (86.7)
Auto	1 (2.0)	0 (0.0)	1 (2.9)	0 (0.0)	1 (1.7)
Chairs	39 (78.0)	23 (76.7)	24 (68.6)	107 (85.6)	50 (83.3)
Cot	2 (4.0)	0 (0.0)	1 (2.9)	7 (5.6)	2 (3.3)
Mobile	9 (18.0)	3 (10.0)	5 (14.3)	15 (12.0)	3 (5.0)

Source: Field study (2012)

The economic well being of the sample households is reflected in possessing of physical assets such as Television sets, Fridges, Scooters, Cars, Cycles, Radio, Mobile phones etc besides fixed assets like land, house etc.,. The data shows that in all the five mining villages, a significant number of households do possess Television sets (between 74.0 and 92.0 percent) followed by Scooters (between 36 and 52.0 percent), Fridges (between 12.0 percent and 45.0 percent) and Mobile phones (between 5.0 and 18.0 percent) (Table 3.9).

Table 3.12: Mean household income across the sample villages (by social category)

District	Village / Panchayat	Area	Social Category	Mean hh income (Rs.)	Mean per capita Income	Mean HH Size	
Hazari bagh	Urimir	Urimir OC	ST	124186.6	22094.5	5.6	
			OBC	91844.05	18545.4	5.0	
Bokaro	Katara	DVC OC	OBC	132524.4	21965.4	6.0	
			Vasari OC	SC	77343.33	13894.0	5.6
				OBC	129600	23142.9	5.6
Ramagrh	Sayal South	Urimiri UG	SC	140800.2	27286.9	5.2	
			ST	161614	31132.4	5.2	
			OBC	102205.3	20228.1	5.1	
			Others	101846.2	18137.0	5.6	
Bokaro	Karagli North	Kargali OC	SC	92777.78	18555.6	5.0	
			ST	359500	61628.6	5.8	
			OBC	219550	42769.5	5.1	
			Others	329266.7	66743.2	4.9	
Grand Total				152561	31048	5.3	

Source: Field study (2012)

After having analysed the various sources of income accruing to the households in the sample villages, the mean household income as well as percapita income reveals that in Bokaro area (Kargali north), the mean household income and percapita income is the highest (Rs. 245208 and Rs. 47767 respectively) followed by Ramgarh (Sayal South) (Rs. 144950 mean household income and Rs. 27832 mean percapita income), Bokaro (Katara-DVC) where the mean hh income is Rs. 134323 and the mean percapita income is Rs. 22263. The highest hh and percapita income recorded in Kargali North of Bokaro is due to the fact that nearly 70% of the sample households are employed in coal mines. Among the social categories, STs account for a higher hh income (Rs.124186) than OBCs in Urimiri-OC and in Urimiri-UG, STs account for a higher hh income than OBC and others. Lastly, in Kargali OC, it is again the STs whose hh income is greater than others, OBC and SCs (Table 3.11).

Table 3.13: Monthly household expenditure of the sample HHs on food and non-food items (in Rs.) across the Study Districts

District	Village/ panchayat	Area	Food Exp	Education	Travel	Health	Clothing	Recreation/ Entertainment	Others	Total Exp
Hazari bagh	Urimir	Urimiri OC	124600 (56.4)	39100 (17.7)	8250 (3.7)	17350 (7.9)	30950 (9.5)	2200 (1.0)	8500 (3.8)	220950 (100.0)
		Karara	DVC OC	75400 (52.8)	23550 (16.5)	6700 (4.7)	8400 (5.9)	26300 (18.4)	2550 (1.8)	0 (0.0)
Bokaro			Vasari OC	108500 (55.9)	51400 (26.5)	6150 (3.2)	10650 (5.5)	14150 (7.3)	3400 (1.8)	0 (0.0)
		Sayal South	225600 (42.2)	76900 (19.7)	12350 (4.6)	21000 (10.0)	25030 (18.7)	7170 (3.1)	0 (1.6)	368050 (100.0)
Bokaro	Karagli North	Kargali OC	225600 (61.3)	76900 (20.9)	12350 (3.4)	21000 (5.7)	25030 (6.8)	7170 (1.9)	0 (0.0)	368050 (100.0)
		Total Percent	787600 (51.6)	309000 (20.2)	61340 (4.0)	117650 (7.7)	199030 (13.0)	33885 (2.2)	18200 (1.2)	1526705 (100.0)

Source: Field study (2012)

An analysis of the monthly household expenditure incurred by the sample households indicates, food expenditure being at 51.6 percent, followed by 20.2 percent on education, 13.0 percent on 'others' and 7.7 percent on health etc., (Table 3.13).

Table 3.14: Food security⁶ (by social category)

District	Village / Panchayat	Area	Social Category	Less than 3 Months	3-6 Months	6-9 Months	All the 12 months	Surplus (above 12)	Grand Total
Hazari bagh	Urimir	Urimir OC	ST	0 (0.0)	1 (3.4)	19 (65.5)	9 (31.0)	0 (0.0)	29 (100)
			OBC	0 (0.0)	0 (0.0)	19 (90.5)	2 (9.5)	0 (0.0)	21 (100)
Bokaro	Katara	DVC OC	OBC	0 (0.0)	9 (30.0)	17 (56.7)	4 (13.3)	0 (0.0)	30 (100)
			SC	0 (0.0)	3 (10.0)	19 (63.3)	8 (26.7)	0 (0.0)	30 (100)
		OBC	0 (0.0)	3 (60.0)	1 (20.0)	1 (20.0)	0 (0.0)	5 (100)	
Ramagrh	Sayal South	Urimiri UG	SC	0 (0.0)	2 (8.0)	3 (12.0)	20 (80.0)	0 (0.0)	25 (100)
			ST	0 (0.0)	8 (11.8)	27 (39.7)	33 (48.5)	0 (0.0)	68 (100)
			OBC	0 (0.0)	0 (0.0)	8 (42.1)	11 (57.9)	0 (0.0)	19 (100)
			Others	0 (0.0)	0 (0.0)	4 (30.8)	9 (69.2)	0 (0.0)	13 (100)
Bokaro	Karagli North	Kargali OC	SC	0 (0.0)	0 (0.0)	3 (33.3)	6 (66.7)	0 (0.0)	9 (100)
			ST	0 (0.0)	0 (0.0)	1 (16.7)	5 (83.3)	0 (0.0)	6 (100)
			OBC	0 (0.0)	2 (6.7)	4 (13.3)	24 (80.0)	0 (0.0)	30 (100)
			Others	0 (0.0)	2 (13.3)	2 (13.3)	11 (73.3)	0 (0.0)	15 (100)
Grand Total				0 (0.0)	30 (10.0)	127 (42.3)	143 (47.7)	0 (0.0)	300 (100)

Source: Field study (2012)

⁶ Food security refers to the availability of food and one's physical access to it. A household is considered food secure when its occupants do not live in hunger and fear of starvation.

In the study area, out of 300 sample households, 47.7 percent of the households have reported food security for the entire year followed by 42.3 percent of the households reporting food security for 9 - 12 months and 10 percent of the households for 3-6 months in the year. In Urimir - OC, among STs, a majority of them (65.5%) experience food security for 6-9 months and the remaining (31.0%) for the entire year. As against this, 90.5 of the OBCs have food security for 6-9 months and only 9.5% of them for the entire year. In Sayal South - Urimiri UG, only 48.5 of the STs have food security for the

Table 3.15: Sources of borrowing (by social category) across the Study Districts

District	Village / Panchayat	Area	Social Category	Bank	Cooperative Bank	SHGs	Money Lenders	Total	
Hazari bagh	Urimir	Urimir OC	ST	4 (66.7)	0 (0.0)	0 (0.0)	2 (33.3)	6 (100)	
			OBC	1 (12.5)	0 (0.0)	2 (25.0)	5 (62.5)	8 (100)	
Bokaro	Katara	DVC OC	OBC	3 (60.0)	0 (0.0)	0 (0.0)	2 (40.0)	5 (100)	
			Vasari OC	SC	3 (42.9)	0 (0.0)	0 (0.0)	4 (57.1)	7 (100)
			OBC	1 (50.0)	0 (0.0)	0 (0.0)	1 (50.0)	2 (100)	
Ramagrh	Sayal South	Urimiri UG	SC	4 (57.1)	2 (28.6)	0 (0.0)	1 (14.3)	7 (100)	
			ST	11 (84.6)	0 (0.0)	0 (0.0)	2 (15.4)	13 (100)	
			OBC	1 (100)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100)	
			Others	2 (100)	0 (0.0)	0 (0.0)	0 (0.0)	2 (100)	
Bokaro	Karagli North	Kargali OC	SC	4 (100)	0 (0.0)	0 (0.0)	4 (0.0)	4 (100)	
			ST	2 (50.0)	0 (0.0)	0 (0.0)	2 (50.0)	4 (100)	
			OBC	8 (72.7)	0 (0.0)	0 (0.0)	3 (27.3)	11 (100)	
			Others	7 (100)	0 (0.0)	0 (0)	0 (0.0)	7 (100)	
Grand Total				51 (66.2)	2 (2.6)	2 (2.6)	22 (28.6)	77 (100)	

Source: Field study (2012)

entire year and 42.1% of them for 6-9 months only. As against this, a large member of the SCs hh (80.0%) have food security for the entire year and only twelve percent of them for 6-9 months. Among OBCs, only 48.5% of them have food security for the entire year and 39.7% of them enjoy food security for 6-9 months (Table 3.14).

The data on the sources of borrowing by households reveals that, in Hazirabagh, money lenders are the biggest source (50 percent) followed by banks (35.7 percent) and SHGs (14.3 percent); in Bokaro (Katara - DVC area), banks are the chief source (60.0 percent) followed by money lenders (40.0 percent) and in katara - Vsari mines area, money lenders are the main source (55.6 %) followed by banks (44.4 %); in Ramgarh (Sayal South - Urimiri), banks are the biggest source (78.3 %) followed by money lenders (13.0 %) and cooperative bank (8.7%). Lastly, in Bokaro (Kargali North), banks are the most important source of borrowing (80.8%) followed money lender (19.2%). On the whole, it appears that 28.6 percent of the sample households continue to be dependent on money lenders for borrowing. Interestingly, a social category-wise picture shows that for STs, Banks are the major source of borrowing, whereas for SC, OBC and Others, money lenders are a bigger source of borrowing followed by banks (Table 3.15).

Table 3.16: Details of livestock possessed by the sample households Across the Study Districts

District	Village/Panchayat	Area	Yes	No	Total
Hazaribagh	Urimir	Urimiri OC	28 (56)	22 (44)	50 (100)
Bokaro	Katara	DVC OC	18 (60)	12 (40)	30 (100)
		Vasari OC	11 (31.4)	24 (68.6)	35 (100)
Ramagrh	Sayal South	Urimiri UG	41 (32.8)	84 (67.2)	125 (100)
Bokaro	Karagli North	Kargali OC	11 (18.3)	49 (81.7)	60 (100)
Total			109 (36.3)	191 (63.7)	300 (100)

Source: Field study (2012)

The details of livestock, (which generally act as a supplementary source income to the households) indicate that only 36.3 percent of the households possess livestock, whereas a majority of them (63.7 percent) do not have any sort of livestock asset. This is understandable as the land base of the sample households is quite low and most of them work in coal mines or as wage labourers (Table 3.16).

Table 3.17: Distribution of the selected livestock ownership among the sample households Across the Study Districts

Livestock	Hazari bagh Urimir	Bokaro Katara		Ramagrh Sayal South	Bokaro Karagli North	Total
	Urimiri OC Mine	DVC OC Mine	Vasari OC mine	Urimiri UG Mine	Kargali OC Mine	
Cows						
0	43 (86)	20 (66.7)	31 (88.6)	112 (89.6)	58 (96.7)	264 (88)
0 - 5	7(14)	10 (33.3)	4 (11.4)	13 (10.4)	2 (3.3)	36 (12)
More than 5	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Total	50 100)	30 (100)	35 (100)	125 (100)	60 (100)	300 (100)
Buffalos						
0	49 (98)	30 (100)	35 (100)	125 (100)	60 (100)	299 (99.7)
0 - 5	1 (2)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.3)
More than 5	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Total	50 100)	30 (100)	35 (100)	125 (100)	60 (100)	300 (100)
Bullocks						
0	49 (98)	24 (80)	35 (100)	125 (100)	60 (100)	293 (97.7)
0 - 5	1 (2)	5 (16.7)	0 (0.0)	0 (0.0)	0 (0.0)	6 (2)
More than 5	0 (0.0)	1 (3.3)	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.3)
Total	50 100)	30 (100)	35 (100)	125 (100)	60 (100)	300 (100)
He-buffaloes						
0	39 (78)	22 (73.3)	32 (91.4)	123 (98.4)	59 (98.3)	275 (91.7)
0 - 5	11 (22)	8 (26.7)	3 (8.6)	2 (1.6)	1 (1.7)	25 (8.3)
More than 5	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Total	50 100)	30 (100)	35 (100)	125 (100)	60 (100)	300 (100)
Goats						
0	40 (80)	24 (80)	28 (80)	111 (88.8)	55 (91.7)	258(86)
0 5	8 (16)	6 (20)	7 (20)	11 (8.8)	5 (8.3)	37 (12.3)
More than 5	2 (4)	0 (0.0)	0 (0.0)	3 (2.4)	0 (0.0)	5 (1.7)
Total	50 100)	30 (100)	35 (100)	125 (100)	60 (100)	300 (100)
Sheep						
0	50 100)	30 (100)	35 (100)	125 (100)	60 (100)	300 (100)
0 - 5	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
More than 5	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Total	50 100)	30 (100)	35 (100)	125 (100)	60 (100)	300 (100)

Source: Field study (2012)

3.18: Details of out-migration of the sample households Across the Study Districts

District	Village/	Area Panchayt	Whether Migrated	No. of persons	Gender	Type of Migration	Season	Place of migration		Economic Activity	Employment and wage rate			Out migration in pre-mining phase
								Place	km		No. of Days	Wage rates (per day)	Working Hours (per day)	
Hazari bagh	Urimir	Urimiri OC Mine	Yes	4	Men	Seasonal & Permanent	Kharif & Summer	Bangalore, Mumbai & Delhi	More than 1000 km	Construction work & Bricklin etc	30-60 days	150 to 300	8 to 10 hrs	No
Bokaro	Katara	DVC OC Mine	No	-	-	-	-	-	-	-	-	-	-	No
		Vasari OC Mine	Yes	3	Men	Seasonal & Permanent	Summer	Delhi, Goa & Himachal Pradesh	More than 1000 km	Construction work & others	30 days	150 to 300	8 to 10 hrs	Yes
Ramagrh	Sayal South	Urimiri UG Mine	Yes	4	Men	Seasonal, Contract & Permanent	Kharif, Rabi & Summer	Odisha, Ramgarh & Udipi	100 - 300 km	Construction work & Driving etc	30 to 45 days	150 to 300	8 to 10 hrs	Yes
Bokaro	Karagli	Kargali North	Yes	2	Men	Contract	Kharif	Chhattisgarh & Ranchi	100 km	Construction work & Driving etc	30 to 45 days	150 to 300	8 to 10 hrs	No

Source: Field study (2012)

Across all the field sites, a majority of the households do not possess any livestock barring a small percentage (12% & 12.3%) that possess cows and goats (Table 3.17).

The details of out migration of the sample households indicate that not many household have migrated to other places in search of employment excepting a handful of male members, that too for a small duration (ranging from 30-60 days) earning Rs 150-300 per day. In two of the three sites, the respondents have reported that they used to migrate to other places in the pre-mining phase, whereas, in the three sites, migration started in the post mining phase (Table 3.18).

Table 3.19: Coal mining and its impact

District	Village/ Panchayat	Area	Impact on Livelihoods			Affects		
			Yes	No	Total	Livelihoods Increased	Livelihoods Declined	Total
Hazari bagh	Urimir	Urimiri OC Mine	48 (96)	2 (4)	50 (100)	20 (41.7)	28 (58.3)	48 (100)
Bokaro	Katara	DVC OC Mine	30 (100)	0 (0.0)	30 (100)	17 (56.7)	13 (43.3)	30 (100)
		Vasari OC Mine	35 (100)	0 (0.0)	35 (100)	15 (42.9)	20 (57.1)	35 (100)
Ramagrh	Sayal South	Urimiri UG Mine	122 (97.6)	3 (2.4)	125 (100)	54 (44.3)	68 (55.7)	122 (100)
Bokaro	Karagli North	Kargali OC Mine	60 (100)	0 (0.0)	60 (100)	13 (21.7)	47 (78.3)	60 (100)
Total			295 (98.3)	5 (1.7)	300 (100)	119 (40.3)	176 (59.7)	295 (100)

Source: Field study (2012)

As regards the impact of coal mining on livelihoods, on the whole, according to 98.3 percent of the hhs, coal mining has impacted their lives (either positively or negatively) whereas, as per only 1.7 percent of the hhs, there has been 'no impact' at all. Further, according to 40.3 percent of the households across all the mining zones there has been an improvement in their livelihood situation, whereas, nearly 60 percent of the hhs have stated that there has been a decline in their livelihood situation (Table 3.19).

When the respondents were asked to mention the reason for livelihoods enhancement/curtailment, it may be observed that out of 119 respondents reporting an enhancement in their who mentioned that livelihoods, 106 of them (89.0%) observed that work availability in coal mines and allied activities were the chief reasons behind the positive impact. A similar situation was observed across all the coal mining sites. On the contrary, out of 176 respondents reporting a decline in livelihood opportunities due to mining

Table 3.20: Reasons for livelihood enhancement/curtailment

District	Village/ Panchayt	Area	Livelihoods Enhanced				Livelihoods Curtailed		
			Work availability in coal mines & Allied activities	Business	Coal selling (Illegal)	Total	Work scarcity due to in- migration	Land Occupancy and agriculture declined	Total
Hazari bagh	Urimir	Urimiri OC Mine	19 (95)	1 (5)	0 (0.0)	20 (100)	0 (0.0) (0.0)	28 (100)	28 (100)
Bokaro	Katara	DVC OC Mine	13 (76.5)	1 (5.9)	3 (17.6)	17 (100)	0 (0.0)	13 (100)	13 (100)
		Vasari OC Mine	12 (80)	0 (0.0)	3 (20)	15 (100)	0 (0.0)	20 (100)	20 (100)
Ramagrth	Sayal South	Urimiri UG Mine	50 (92.6)	2 (3.7)	2 (3.7)	54 (100)	10 (14.7)	58 (85.3)	68 (100)
Bokaro	Karagli North	Kargali OC Mine	12 (92.3)	0 (0.0)	1 (7.7)	13 (100)	0 (0.0)	47 (100)	47 (100)
Grand Total			106 (89.0)	4 (3.4)	9 (7.6)	119 (100)	10 (5.7)	166 (94.3)	176 (100)

Source: Field study (2012)

Table 3.20.1: Factors influencing the coping strategies adopted by the sample hhs across the study districts

District	Village/ Panchayt	Area	Depend on wage work in coal mines	Wage labour	Others (Depend on wage works, debts, out migration, Petti business)	Total
Hazari bagh	Urimir	Urimiri OC Mine	2 (7.0)	0 (0.0)	23 (93.0)	28 (100)
Bokaro	Katara	DVC OC mine	0 (0.0)	0 (0.0)	13 (100.0)	13 (100)
		Vasari OC Mine	0 (0.0)	0 (0.0)	20 (100)	20 (100)
Ramagrth	Sayal South	Urimiri UG Mine	6 (8.8)	22 (32.4)	40 (58.8)	68 (100)
Bokaro	Karagli North	Kargali OC Mine	7 (14.9)	7 (14.9)	33 (70.2)	47 (100)
Grand Total			15 (8.5)	29 (16.5)	132 (75.0)	176 (100)

Source: Field study (2012)

Table 3.20.2: The impact of coal mining on livestock holding across the study districts

District	Village/ Panchayat	Study Site	hhs' livestock holding compared to pre-mining			Reason for Decline				
			Same	Declined	Total	Died due to diseases	No Grazing lands & water pollution	People do not have interest	Others (Grazing lands not available, less man power, died in accidents, livestock stolen etc)	Total
Hazari bagh	Urimir	Urimiri OC Mine	5 (10.0)	45 (90.0)	50 (100)	12 (26.7)	4 (8.9)	2 (4.4)	27 (60.0)	45 (100)
Bokaro	Katara	DVC OC Mine Vasari OC Mine	4 (13.3) 8 (22.9)	26 (86.7) 27 (77.1)	30 (100) 35 (100)	11 (42.3) 9 (33.3)	3 (11.5) 5 (18.5)	0 (0.0) 5 (18.5)	12 (46.2) 8 (29.6)	26 (100) 27 (100)
Ramagrh	Sayal South	Urimiri UG Mine	60 (48.0)	65 (52.0)	125 (100)	16 (24.6)	22 (33.8)	7 (10.8)	20 (30.8)	65 (100)
Bokaro	Karagji North	Kargali OC Mine	16 (26.7)	44 (73.3)	60 (100)	16 (36.4)	7 (15.9)	3 (6.8)	18 (40.9)	44 (100)
Total			93 (31.0)	207 (69.0)	300 (100)	64 (30.9)	41 (19.8)	17 (8.2)	85 (41.1)	207 (100)

Source: Field study (2012)

activity a majority of them (54.3%) cited land occupancy and a decline in agricultural land as the main reasons followed by work scarcity due to in-migration (5.7%). The next issue probed was to know as follow the 176 households, more livelihoods opportunity were curtailed as a result of mining, with respect to the coping strategies, adopted a majority of them (75.0%) responded that it depended on wage works, borrowings, migration to other places outside and running of petti business, followed by wage labour (16.5%) and wage works in coal mines (8.5%) (Table 3.20 & 3.20.1).

In any displacement scenario, the key effects on the population will be in the form of losing land, houses and livestock. With respect to the impacts of coal mining on livestock holding, the qualitative data indicates that only 31.0% of the hhs find livestock holding remaining the same, while nearly 69.0% of the hhs have observed that there has been a decline in the livestock holding. The primary reasons for the decline as cited by the households are: 'no grazing lands and water pollution' (19.8%), 'died due to diseases (30.1%), 'other reasons' (41.1%) etc; (Table 3.20.2).

Mining activity tends to impact ecosystems in numerous ways. Besides impacting the environment, which is the most common negative externality associated with coal mining, its impact on agriculture is no less significant with regard to the impact on agriculture, nearly two thirds of the hhs (73.3%) have reported 'Yes', while 26.7% of the hhs have reported 'No' (Table 3.21). An analysis of the household data with respect to the impact of coal mining on the environment reveals that all the households across all the mining

Table 3.21: Impact of coal mining on environment and agriculture across the study districts

District	Village/ Panchayt	Area	Impact on Agriculture			Environment
			Yes	No	Total	Yes
Hazari bagh	Urimir	Urimiri OC Mine	39 (78)	11 (22)	50 (100)	50 (100)
Bokaro	Katara	DVC OC Mine	26 (86.7)	4 (13.3)	30 (100)	30 (100)
		Vasari OC mine	30 (85.7)	5 (14.3)	35 (100)	35 (100)
Ramagrh	Sayal South	Urimiri UG Mine	80 (64)	45 (36)	125 (100)	125 (100)
Bokaro	Karagli North	Kargali OC Mine	45 (75)	15 (25)	60 (100)	60 (100)
Grand Total			220 (73.3)	80 (26.7)	300 (100)	300 (100)

Source: Field study (2012)

Table 3.22: Impact of coal mining on agriculture across the study districts

District	Village/ Panchayat	Area	Reasons for Impact							Total
			Pollution	Water Scarcity	Coal Washeries/ Due to yards being near to agricultural lands	Black water flows on agriculture fields	Due to blasting	Pollution, soil fertility decline, water scarcity and other problems		
Hazari bagh	Urimir	Urimiri OC Mine	3 (7.7)	1 (2.6)	2 (5.1)	0 (0.0)	1 (2.6)	32 (82.1)	39 (100)	
		DVC OC Mine	4 (15.4)	0 (0.0)	1 (3.8)	1 (3.8)	0 (0.0)	20 (76.9)	26 (100)	
Bokaro	Katara	Vasari OC Mine	5 (16.7)	0 (0.0)	1 (3.3)	0 (0.0)	1 (3.3)	23 (76.7)	30 (100)	
		Urimiri UG Mine	5 (6.3)	6 (7.5)	1 (1.3)	0 (0.0)	1 (1.3)	67 (83.8)	80 (100)	
Bokaro	Karagli North	Kargali OC Mine	2 (4.4)	0 (0.0)	1 (2.2)	1 (2.2)	3 (6.7)	38 (84.4)	45 (100)	
		Grand Total	19 (8.6)	7 (3.2)	6 (2.7)	2 (0.9)	6 (2.7)	180 (81.8)	220 (100)	

Source: Field study (2012)

sample villages have experienced the 'impact' in one sense or the other (either due to pollution of air, water, crop changes etc).

According to a majority of the hhs, 81.8% mentioned mining has resulted in a large scale pollution with a resultant decline in soil fertility and also water scarcity (Table 3.22).

Table 3.23: Perceptions of hhs regarding on environmental changes due to mining activity across the study districts

District Village/Panchayt		Hazari bagh	Bokaro		Ramagrh	Bokaro	Total
		Urimir	Katara		Sayal South	Karagli North	
Study Site		Urimiri OC Mine	DVC OC Mine	Vasari OC Mine	Urimiri UG Mine	Kargali OC Mine	
Air Pollution	Increase	26 (52)	21 (70)	19 (54.3)	80 (64.0)	38 (63.3)	184 (61.3)
	Significantly increased	24 (48)	9 (30)	16 (45.7)	45 (36.0)	22 (36.7)	116 (38.7)
	Total	50 (100)	30 (100)	35 (100)	125 (100)	60 (100)	300 (100)
Water Pollution	Increase	50 (100)	17 (56.7)	12 (34.3)	1 (0.8)	5 (8.3)	85 (28.3)
	Significantly increased	0 (0.0)	13 (43.3)	23 (65.7)	124 (99.2)	55 (91.7)	215 (71.7)
	Total	50 (100)	30 (100)	35 (100)	125 100	60 (100)	300 (100)
Noise Pollution	Increase	44 (88.0)	30 (100)	34 (97.1)	112 (89.6)	60 (100)	280 (93.3)
	Significantly increased	6 (12.0)	0 (0.0)	1 (2.9)	13 (10.4)	0 (0.0)	20 (6.7)
	Total	50 (100)	30 (100)	35 (100)	125 (100)	60 (100)	300 (100)
Overall Climate Pollution	Increase	50 (100)	9 (30.0)	24 (68.6)	90 (72.0)	56 (93.3)	229 (76.3)
	Significantly increased	0 (0.0)	21 (70.0)	11 (31.4)	35 (28.0)	4 (6.7)	71 (23.7)
Total		50 (100)	30 (100)	35 (100)	125 (100)	60 (100)	300 (100)

Source: Field Study (2012)

In any mining related activity, environment-related problems are the core issues that affect the population residing in the vicinity. Air pollution, water pollution (both surface and ground water) and noise pollution are the main environmental effects that the households face on a day-to-day basis. The data on households' perceptions regarding environmental changes indicate that, with regard to Air pollution, according to 61.3% of the hhs, it has 'increased; while as per 38.7% of the hhs it has 'significantly increased'. Regarding water pollution, nearly two thirds of the hhs feel (71.7%) that it has 'significantly increased' and regarding noise pollution, a overwhelming majority express that it has 'increased' (93.3%), while a small proportion i.e., (23.7%) of the hhs feel that it has significantly increased (Table 3.23).

Mining, in particular, open cast mining activities bring in unforeseen problems to the affected population. One such problem is restriction on the mobility of people in the area where open cast mining operations take place. The data shows that, according to a majority of the hhs (93.0%), their mobility has been restricted now (Table 3.24).

Generally, the most significant impact of mining activity will be on land, especially, if it is an open cast mining area where acquiring land is a prerequisite. In our study villages, not all open cast mining areas and some of the UG (underground mines) have been affected where land acquisition is nil. Area-wise cultivation details show that in Hazaribagh - Urimiri, the extent of cultivated land (premining) has got reduced to 26.25 acres in the post mining phase. The reason for a decline in the cultivated land area according to 64.9% of the hhs, has been the presence of coal washaries, while as the reason for a

Table: 3.24: Restrictions on mobility due to mining activities across the study districts

District	Village/Panchayt	Area	Yes	No	Total
Hazari bagh	Urimir	Urimiri OC Mine	50 (100)	0 (0.0)	50 (100)
Bokaro	Katara	DVC OC Mine	29 (96.7)	1 (3.3)	30 (100)
		Vasari OC Mine	35 (100)	0 (0.0)	35 (100)
Ramagrh	Sayal South	Urimiri UG Mine	107 (85.6)	18 (14.4)	125 (100)
Bokaro	Karagli North	Kargali OC Mine	58 (96.7)	2 (3.3)	60 (100)
Total			279 (93.0)	21 (7.0)	300 (100)

Source: Field study (2012)

Table 3.25: Impact on land cultivation in pre and post mining periods across the study districts

District	Village/ Panchayat	Area	Cultivation details		Reasons for a decline in land cultivation		
			Pre- mining	After mining	Land Occupancy	Due to Fertility Decline, Pollution, Coal washaries/ dump yards	Total
Hazari bagh	Urimir	Urimiri OC Mine	120.44 (66.7)	26.25 (80.6)	1 (6.7)	14 (93.3)	15 (100)
Bokaro	Katara	DVC OC Mine	27.2 (15.1)	3.8 (11.7)	5 (50.0)	5 (50.0)	10 (100)
		Vasari OC Mine	29 (16.1)	1.5 (4.6)	6 (60.0)	4 (40.0)	10 (100)
Ramagrh	Sayal South	Urimiri UG Mine	2 (1.1)	1 (3.1)	0 (0.0)	1 (100)	1 (100)
Bokaro	Karagli North	Kargali OC Mine	2 (1.1)	0 (0.0)	1 (100)	0 (0.0)	1 (100)
Total			180.64 (100)	32.55 (100)	13 (35.1)	24 (64.9)	37 (100)

Source: Field study (2012)

Table 3.26: Perceptions of individuals regarding changes in the overall incidence of diseases

District	Village/ Panchayat	Area	Same	Increased	Significantly Increased	Total
Hazari bagh	Urimir	Urimiri OC Mine	13 (16.0)	50 (61.7)	18 (22.2)	81 (100)
Bokaro	Katara	DVC OC Mine	5 (13.5)	21 (56.8)	11 (29.5)	37 (100)
		Vasari OC Mine	11 (24.0)	20 (45.5)	13 (29.5)	44 (100)
Ramagrh	Sayal South	Urimiri UG Mine	79 (44.1)	91 (50.8)	9 (5.0)	179 (100.0)
Bokaro	Karagli North	Kargali OC Mine	16 (22.9)	54 (77.1)	0 (0.0)	70 (100)
Total			118 (28.7)	236 (57.4)	51 (12.4)	411 (100)

Source: Field study (2012)

decline in agricultural land more than one fourth of the respondents (35.1%) have cited the acquisition of land for mining (Table 3.25).

The perceptions of individuals regarding changes in the overall incidence of diseases indicate a 'significant' growth in the incidence of diseases (12.4 percent) followed by an 'increase' (57.4 percent) and 'no changes' (28.7 percent) (Table 3.26).

It is generally expected that mining activity causes increased health hazards to people living in vicinity, due to high levels of pollution of various hues. According to nearly two thirds (71.5%) of the respondents, health expenses have increased, while as per the rest (28.5%), there has been no increase. The main reasons cited for an increase in health expenses include increased diseases (42.5%), followed by mosquito related problems (21.1%) and a high cost of medicines (17.0%) (Table 3.27).

It is generally expected that there will be some improvement/ deterioration in the common facilities in the context of mining activity. The data on certain facilities available in schools - primary, secondary and high school levels such as toilet facilities and mid-meal meals shows that according to more than 3/4th of the hhs, (83.3%) such facilities existed (pre-mining) at the primary school and upper primary school levels (83.3%) and at high school level (100%). In a similar fashion, the data on toilet facility before and after situation reveals that this facility is available at the primary level (53.3%), at the upper primary and at high school levels (63.3%) and that such facility was available before mining and this situation has improved drastically (cent-percent) at all levels in the post mining phase (Table 3.28).

Improvements in the educational infrastructural facilities interms of the presence of primary, upper primary, high school and college level facilities in the post mining phase reveals that all the regions have primary schools; excepting one region, all of them have UP schools and the same is the case with high school facility and none of the regions has access college facility (Table 3.29).

Displacement may causes the loss of resources to the affected population in a number of ways besides the major assets such as land, houses, livestock etc. In addition to the above resources, the loss of energy sources is also important as HHs have to spend a considerable amount on procuring these sources both for cooking and lighting purposes.

The data shows, with regard to cooking needs, that before the mining phase, a majority of the HHs were dependent (82.3%) on coal followed by firewood (12.0%) and LPG (2.0%). This situation has not altered significantly post mining activity. This may be due to the fact that coal is freely available to the households, whereas in the case of lighting purpose, the situation-before and after mining - has undergone a radical change.

Table 3.27: Impact on Health expenses incurred by HHs across Study Districts

District	Village/ Panchayt	Area	Increase in Health Expenses			Reasons					
			Yes	No	Grand Total	Increased Diseases	Increased Medicine cost	Increased Pollution	Mosquito bites	Increased Disease & Medicine cost	Grand Total
Hazari bagh	Urimir	Urimiri OC Mine	68 (84.0)	13 (16.0)	81 (100)	45 (66.2)	11 (16.2)	0 (0.0)	9 (13.2)	3 (4.4)	68 (100)
			Bokaro	Katara	DVC OC Mine Vasari OC Mine	31	6	37	13	1	0
83.8 (83.8)	16.2 (16.2)	100 (100)				41.9 (41.9)	3.2 (3.2)	0 (0.0)	45.2 (45.2)	9.7 (9.7)	100 (100)
Ramagrh	Sayal South	Urimiri UG Mine	35 (79.5)	9 (20.5)	44 (100)	14 (40.0)	6 (17.1)	0 (0.0)	12 (34.3)	3 (8.6)	35 (100)
			112 (62.6)	67 (37.4)	179 (100)	22 (19.6)	31 (27.7)	40 (35.7)	12 (10.7)	7 (6.3)	112 (100)
Bokaro	Karagli North OC Mine	Kargali OC Mine	48 (68.6)	22 (31.4)	70 (100)	31 (64.6)	1 (2.1)	1 (2.1)	15 (31.3)	0 (0.0)	48 (100)
			294 (71.5)	117 (28.5)	411 (100)	125 (42.5)	50 (17.0)	41 (13.9)	62 (21.1)	16 (5.4)	294 (100)

Source: Field Study (2012)

Table 3.26: Availability of facilities in the schools (post mining phase) across the study districts

Status of the School/Facility	Hazari bagh		Bokaro		Ramagrh		Bokaro		Total
	Urimir		Katara		Sayal South		Karagli North		
	Urimiri OC Mine	DVC OC Mine	Vasari OC Mine	Urimiri UG Mine	Kargali OC Mine				
Primary Level									
Mid day meals	Before	Yes	0 (0)	30 (100.0)	35(100.0)	125 (100.0)	60 (100.0)	250 (83.3)	
		No	50(100.0)	0 (0)	0 (0)	0 (0)	0 (0)	50 (16.7)	
Toilet Facility	Before	Yes	50(100.0)	30 (100.0)	35(100.0)	125 (100.0)	60 (100.0)	300 (100.0)	
		No	0 (0)	0 (0)	35 (100.0)	125 (100.0)	0 (0)	160 (53.3)	
	After	Yes	50 (100.0)	30 (100.0)	0 (0)	0 (0)	60 (100.0)	140 (46.7)	
		No	50 (100.0)	30 (100.0)	35(100.0)	125 (100.0)	60 (100.0)	300 (100.0)	
Upper Primary Level									
Mid day meals	Before	Yes	0 (0)	30 (100.0)	35(100.0)	125 (100.0)	60 (100.0)	250 (83.3)	
		No	50 (100.0)	0 (0)	0 (0)	0 (0)	0 (0)	50 (16.7)	
Toilet Facility	Before	Yes	50 (100.0)	30 (100.0)	35(100.0)	125 (100.0)	60 (100.0)	300 (100.0)	
		No	0 (0)	30 (100.0)	35(100.0)	125 (100.0)	0 (0)	190 (63.3)	
	After	Yes	50 (100.0)	30 (100.0)	0 (0)	0 (0)	60 (100.0)	110 (36.7)	
		No	50 (100.0)	30 (100.0)	35(100.0)	125 (100.0)	60 (100.0)	300 (100.0)	
High School Level									
Mid day meals	Before	No	50 (100)	30 (100.0)	35(100.0)	125 (100.0)	60 (100.0)	300 (100.0)	
		No	50 (100)	30 (100.0)	35(100.0)	125 (100.0)	60 (100.0)	300 (100.0)	
Toilet Facility	Before	Yes	0 (0)	30 (100.0)	35(100.0)	125 (100.0)	0 (0)	190 (63.3)	
		No	50 (100)	0 (0)	0 (0)	0 (0)	60 (100.0)	110 (36.7)	
	After	Yes	50 (100)	30 (100.0)	35(100.0)	125 (100.0)	60 (100.0)	300 (100.0)	

Source: Field study (2012)

Table 3.29: Improvement in educational infrastructure facilities (post mining phase)

District	Village/ Panchayt	Area	Improvement in educational infrastructure facilities			Level of improvement			
			Yes	No	Total	Primary level	Upper primary level	High school level	College level
Hazari bagh	Urimir	Urimiri	10 (20)	40 (80.0)	50 (100)	Yes	No	No	No
		OC Mine							
Bokaro	Katara	DVC	29 (96.7)	1 (3.3)	30 (100)	Yes	Yes	Yes	No
		OC Mine							
		Vasari OC Mine	33 (94.3)	2 (5.7)	35 (100)	Yes	Yes	Yes	No
Ramagrh	Sayal South	Urimiri	114 (91.2)	11 (8.8)	125 (100)	Yes	Yes	Yes	No
		UG Mine							
Bokaro	Karagli North	Kargali	58 (96.7)	2 (3.3)	60 (100)	Yes	Yes	Yes	No
		OC Mine							
Total			244 (81.3)	56 (18.7)	300 (100)	-	-	-	-

Source: Field study (2012)

Table 3.30: Sources of energy across the study districts

Energy	Hazari bagh		Bokaro		Ramagrh	Bokaro	Total
	Urimiri		Katara		Sayal South	Karagali North	
	Urimiri OC Mine	DVC OC mine	Vasari OC Mine	Urimiri UG Mine	Kargali OC Mine		
Cooking	Fire wood	17 (34)	5 (16.7)	4 (11.4)	9 (7.2)	1 (1.7)	36 (12.0)
	Crop Residue	2 (4)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (0.7)
	Coal	31 (62)	25 (83.3)	31 (88.6)	108 (86.4)	52 (86.7)	247 (82.3)
	Electricity	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.8)	0 (0.0)	1 (0.3)
	Solar	0 (0.0)	0 (0.0)	0 (0.0)	6 (4.8)	2 (3.3)	8 (2.7)
	LPG	0(0.0)	0 (0.0)	0 (0.0)	1 (0.8)	5 (8.3)	6 (2.0)
	Crop Residue	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.8)	0 (0.0)	1 (0.3)
	Coal	46(92.0)	29 (96.7)	35 (100.0)	103 (82.4)	32 (53.3)	245 (81.7)
	Kerosene	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.8)	0 (0.0)	1 (0.3)
	Electricity	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.8)	4 (6.7)	5 (1.7)
Light	Solar	0 (0.0)	0 (0.0)	0 (0.0)	7 (5.6)	5 (8.3)	12 (4.0)
	LPG	4 (8.0)	1 (3.3)	0 (0.0)	12 (9.6)	19 (31.7)	36 (12.0)
	Kerosene	21 (42.0)	9 (30.0)	10 (28.6)	22 (17.6)	5 (8.3)	67 (22.3)
	Electricity	29 (58.0)	21 (70.0)	25 (71.4)	103 (82.4)	55 (91.7)	233 (77.7)
	Kerosene	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.8)	0 (0.0)	1 (0.3)
	Electricity	50 (100.0)	30 (100.0)	35 (100.0)	124 (99.2)	60 (100.0)	299 (99.7)

Source: Field study (2012)

A considerable number of hhs (22.3%) were dependent on kerosene earlier and today this dependency has declined significantly (less than 0.3%) with close to 100 percent of the hhs being depend on electricity (Table 3.30).

3.5 Coal India Limited (CIL) R&R Policy

The table below reveals how CIL (Coal India Limited) has compensated the Coal Mining affected people for their loss of assets. And also the study tried to look at what policy they have adopted to compensate the affected people. (Table 3.31)

In Jharkhand State, coal mines started functioning in the early 1970s, and the compensation package paid to the coal mines affected people, according to the CIL R&R policy, is as follows:

Table: 3.31: Implementation of R&R compensation

Compensation Details and List		Compensation
Job		One person from each of the affected households (Land loss) received a job in CIL.
Land	Wet land per acre	Rs. 10000
	Dry land per acre	Rs. 5000
House and Home	stead	Rs. 1500 to 2000 and above
Cattle Shed		Rs. 1000
Trees		Rs. 100 to 500
Transport		CIL vehicle will be provided for household shifting
<i>Source:</i> Field study (2012)		

An analysis of the loss of assets due to coal mining reveals that a total 41 households across all the sample villages have lost about 147 acres with 25 households receiving an average compensation amount of Rs. 39,573.6. As regards houses, the data shows that about 20 households have lost houses (thatched, tiled) with 18 households receiving an average compensation amount of Rs.1,900. The reason that not many households have lost their agriculture lands or houses is because there are a few underground mines in our sample villages where displacement is very minimum. A social category-wise analysis indicates that STs (numbering 15) are the primary losers of their lands (84 acres nearly) followed by OBC (18 of them lost 40 acres) and SCs (8 of them lost 24 acres). As regards the average compensation amount received by households for agricultural lands in Urimiri OC mines area, ST households (11) have received an average compensation amount of Rs.54,121.82 and 1 household belonging to OBC, has received an average compensation amount of Rs. 22,000. In DVC area, OBC households (5) have received an average compensation amount of Rs. 31,000. In Vasari OC mines area, SC households (6) have received an average compensation amount of Rs. 27,500 and 1 household

Table 3.32: Details of assets lost by hhs (by social category) across the study districts

District	Village/	Area	Social Category	Agriculture land						Houses				
				House Holds	Extention of land in Acres	Type of Land	Compen-sation received hhs	Amount Rs. received by each hh (average)	Satisfaction level	hh	Type of house	Compen-sation received hhs	Amount Rs. received by each hh (average)	Satisfaction level
Hazari bagh	Urimir	Urimir OC	ST	15	83.44	dry & wet	11	54121.82	Satisfied	10	Thatched & tiled	9	2133.33	Satisfied
			OBC	5	8		1	22000	Satisfied	2	Thatched	1	2000	Satisfied
Bokaro	Katara	DVC OC	OBC	10	23	dry & wet	5	31000	Dissatisfied	5	Thatched & tiled	5	1600	Satisfied
			SC	8	24	dry & wet	6	27500	Dissatisfied	2	Thatched	2	2000	Satisfied
Ramagrh	Sayal	South Urimiri UG	OBC	2	7		1	20000	Dissatisfied	1	Thatched	1	1000	Satisfied
			SC	0	0	0	0	0	0	0	0	0	0	0
			ST	0	0	0	0	0	0	0	0	0	0	0
			OBC	0	0	0	0	0	0	0	0	0	0	0
Bokaro	Karagli	North Kargali OC	Others	0	0	0	0	0	0	0	0	0	0	0
			SC	0	0	0	0	0	0	0	0	0	0	0
			ST	0	0	0	0	0	0	0	0	0	0	0
			OBC	1	2	dry	1	32000	Dissatisfied	0	0	0	0	0
Grand Total				41	147.44	dry & wet	25	39573.6		20	Thatched & tiled	18	1900	Satisfied

Source: Field study (2012)

belonging to OBC, has received an average compensation amount of Rs. 20,000. In Kargali OC mines area, only one household belonging to OBC, has received an average compensation amount of Rs. 32,000. With regard to house compensation, in Urimiri OC mines area, ST households (9) have received an average compensation amount of Rs. 2,133.33 and 1 household belonging to OBC has received an average compensation amount of Rs. 2,000. In DVC area, OBC households (5) have received an average compensation amount of Rs. 1,600. In Vasari OC mines area, SC households (2) have received an average compensation amount of Rs. 2,000 and 1 household belonging to OBC has received an average compensation amount of Rs. 1,000 (Table.3.32).

3.6 Conclusions

The above analysis presents a mixed picture as a as effects of coal mining on the livelihoods of communities are concerned in Jharkhand State. The land lost by the sample households is significant (In the pre mining stage the sample hhs had held 180.64 acres of agri land and it got reduced to 32.55 acres post mining) because as our sample villages consist of some OC mines where land acquisition is significant. The employees in coal mines followed by wage (casual) workers constitute a major chunk of the labor force in the sample regions/sample households. It is striking to note that female employment in coal mines is very minimal or insignificant. Agriculture is no longer a major occupation. As a result of the shrinking land base, landlessness is high among the sample households. In fact, a majority of them depend on employment in coal mines, while there are wage workers in coal mines and casual labourers and those engaged in 'other' occupations like petty trade and small business. The environmental effects on the communities in terms of air, water and noise pollution have significantly increased according to the perceptions of the sample households. Even issues such as mobility of the population in the sample villages is restricted due to open cast mining as it is not safe to move around because of a continuous blasting of the mine sites. On the whole, it is evident that a sustainable livelihood has not been secured in the coal mining areas. Although agriculture has shrunk, employment in coal mines, to some extent, has increased. However, what is disconcerting to note is that negative environmental effects continue to offset whatever benefits that are accruing to the communities.

Chapter - 4

Mining in Chhattisgarh and Jharkhand: A Comparative Assessment

4.1 Introduction

The present chapter presents a comparative assessment of the effects of mining on the livelihoods of communities in both the states. The main points discussed are asset loss (land, houses and livestock); effects on the environment in terms of human health as well as nature; compensation details offered in both the states in order to assess which state has performed better or worse in mitigating the hardships faced by the communities due to mining.

4.2 Socio-economic profile of the sample households for Chhattisgarh and Jharkhand

The study has covered 600 sample households - 300 each in Chhattisgarh and Jharkhand. A social category wise picture of the sample households shows that in Chhattisgarh, our sample households are dominated by Schedule Tribes (64 percent) followed by OBC (18 percent), Scheduled Castes (14 percent) and others (2.7 percent). In Jharkhand, OBC and ST are equally dominant (35 percent and 34.3 percent respectively) followed by SCs (21.3 percent) and others (9.3 percent) (Table 4.1). This shows that the social composition of communities in both the states is very different.

Table 4.1: Demographic Features of Sample Households

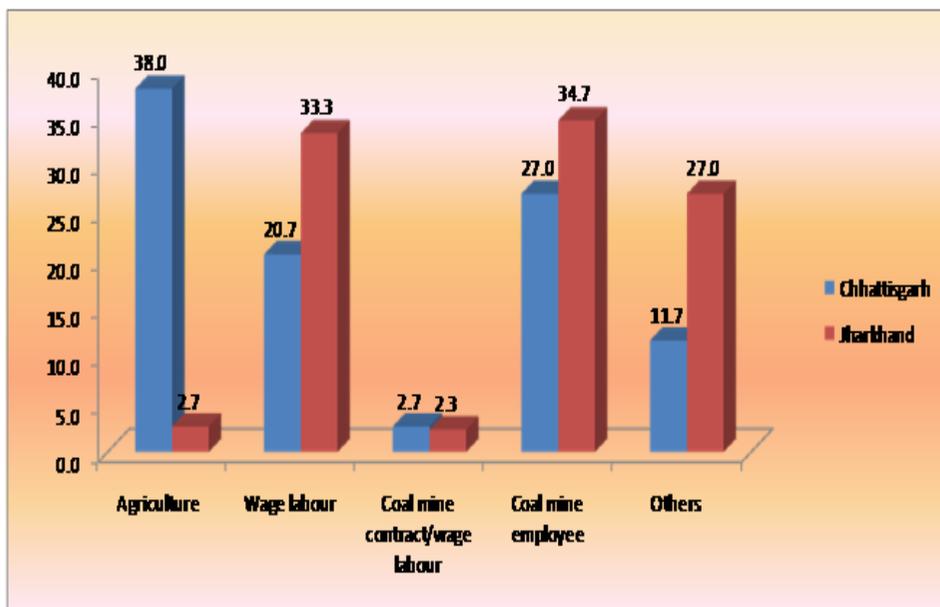
State	SC	ST	OBC	Others	Total
Chhattisgarh	42 (14.0)	192 (64.0)	54 (18.0)	8 (2.7)	300 (100)
Jharkhand	64 (21.3)	103 (34.3)	105 (35.0)	28 (9.3)	300 (100)

Source: Field study (2012)

A comparison of the sample households' main economic activity in the study area reveals that the percentage of households employed in coal mines is relatively high in Jharkhand (34.7%) as compared to Chhattisgarh (27%). The households that depend on agriculture in Jharkhand are very few (2.7%), but in Chhattisgarh, the percentage of households

dependent on agriculture is high (38%), the reason being that in Chhattisgarh, most of the coal mines are younger i.e., they were commissioned in the 1990's Households whose main occupation is wage labour account for 33 percent in Jharkhand and for 20.7 percent in Chhattisgarh. The percentage of households engaged in coal mine contract/wage labour is almost equal in both states (2.7 & 2.3). (Figure 4.1)

Figure 4.1: Occupational details of the sample households



The educational status of the members of sample households in the study area shows that the percentage of illiterates in Chhattisgarh (26.9%) is higher than Jharkhand (24.5%). The data on individuals possessing primary level (1st to 5th) education in

Table 4.2: Educational status of the sample hhs across the study states

Educational Status	Chhattisgarh	Jharkhand
Illiterate	26.9	24.5
Literate (Non-formal)	6.5	5.6
Literate below Primary	3.6	6.8
Primary	21.3	7.1
Middle	20.4	10.9
Secondary	9.9	27.2
Inter (10+2)	9.5	11.7
Graduation and above	2.0	6.2
Total	100	100

Source: Field study (2012)

Chhattisgarh is higher (21.3%) than in Jharkhand (7.1%); with respect to those with the middle level (6th to 7th) education, Chhattisgarh shows a higher percentage (20.4%) than Jharkhand (10.9%); while with regard to those the members possessing secondary level (8th to 10th) education, Jharkhand accounts for a higher percent (27.2%) than Chhattisgarh (9.9%). As regards higher education (inter and graduation), Jharkhand is better placed than Chhattisgarh (Table 4.2)

Table 4.3: Land holding particulars of the sample hhs across the study states

Land holdings	Chhattisgarh	Jharkhand
Land Less	43.0	91.3
Marginal Farmer	28.7	4.3
Small Farmer	16.0	4
Medium Farmer	8.7	0.3
Large Farmer	3.7	0
Total	100.0	100.0

Source: Field study (2012)

The land holding particulars of the sample households in both the states indicate that the share of land less households is very high in Jharkhand (91.3%) as compared to Chhattisgarh (43 %) because in Jharkhand, most of the lands have been acquired for mining activity, while in Chhattisgarh, the mining has recently started and hence people have access to agricultural land, but in future, they may lose these lands once mining activity intensifies. In Chhattisgarh, 28.7 percent of the sample households belong to the marginal farmer category, but in Jharkhand, this figure is very less (4.3%), while 16 percent of the households from Chhattisgarh come under the small farmer category, whereas in Jharkhand, only 4 percent of the households are small farmers. The medium farmer and large farmer households are few (8.7% & 3.7%) in Chhattisgarh, but in Jharkhand, the medium farmers and large farmers are almost non-existent (0.3% & 0%) (Table 4.3).

The data on sample households having agriculture lands (social category-wise) shows that in Chhattisgarh, out of all the households, ST households account for a high percentage among the land holding households (73.7%) while landless households for 52.2%. Their percentage is also high among our total sample households. In Jharkhand, the percentage of land holding households is very less. In the case of land less households, all the social categories are nearly equally distributed (Table 4.4).

The data on housing status of the sample households shows that in Chhattisgarh most of the houses are thatched (82 %), but in Jharkhand, it is quite opposite, in that most of the houses are semi pucca (40.7%) and pucca (31.7%), with only 27.7 percent of houses being thatched (Table 4.5)

Table 4.4: Land holding particulars of the sample HHs by social category across the study states

Social Category	Landholding Households		Landless Households	
	Chhattisgarh	Jharkhand	Chhattisgarh	Jharkhand
SC	10 (5.8)	3 (11.5)	35 (27.1)	61 (22.3)
ST	126 (73.7)	14 (53.8)	66 (51.2)	89 (32.5)
OBC	33 (19.3)	9 (34.6)	22 (17.1)	96 (35.0)
Others	2 (1.2)	0 (0.0)	6 (4.7)	28 (10.2)
Total	171 (100)	26 (100)	129 (100)	274 (100)

Source: Field study (2012)

Table 4.5: Type of housing across the study states

Housing Status	Chhattisgarh	Jharkhand
Thatched	246 (82.0)	83 (27.7)
Semi Pucca	47 (15.7)	122 (40.7)
Pucca	7 (2.3)	95 (31.7)
Total	300 (100)	300 (100)

Source: Field study (2012)

Table 4.6: Details of household income and family size across the study states

Income & Household Size	Chhattisgarh		Jharkhand		Mean Difference	t-stat
	Mean	Coefficient of Variation	Mean	Coefficient of Variation		
Mean Household Income	141530	120	152561	156	11031	0.65
Mean per capita Income	26383	118	31048	167	4665	1.33
Mean HH Size	5.48	42	5.34	41	0.14	0.75

Source: Field study (2012)

The above table shows that both the mean household income and mean per capita income, are very high in Jharkhand. The t-stat of mean difference is not found significant, thereby implying that there is not much difference with respect to the average income of

both the states. However, the coefficient of variation shows that in respect of Jharkhand income is more unequally distributed than Chhattisgarh. The average household income is the same for both the states.

Table 4.7: Food security details across the study states

Food Security	Chhattisgarh (%)	Jharkhand (%)
Less than 3 Months	0.0	0.0
3-6 Months	1.4	10.0
6-9 Months	19.5	42.3
9 to 12 months	79.2	47.7
Surplus (above 12 months)	0.0	0.0
Total	100	100

Source: Field study (2012)

In the study areas, most of the sample households (79.2 percent) in Chhattisgarh have access to food security for the entire year, while in Jharkhand it is low at 47.7 percent. For a substantial section (42.3 percent) of the sample households in Jharkhand, there is food security for 6 - 9 months and it is the same for 19.5 percent of the households from Chhattisgarh. Further, a small section - 1.4 percent of the hhs from Chhattisgarh and 10 percent of the households from Jharkhand enjoy food security for 3 - 6 months and the reason being that some of the households' main occupation is livestock rearing besides being single headed families (Table 4.7).

Table 4.8: Source of borrowing across the study states

Source	Chhattisgarh	Jharkhand
Bank	17 (48.6)	51 (66.2)
Cooperative Bank	0 (0.0)	2 (2.6)
SHGs	2 (5.7)	2 (2.6)
Money Lender	16 (45.7)	22 (28.6)
Total	35 (100)	77 (100)

Source: Field study (2012)

The percentage of households borrowing from different sources is very less in respect of both the states. The main sources of borrowing are bank and money lender. Other sources like cooperative bank and SHGs play an insignificant role (Table 4.8).

Table 4.9: Details of livestock possession across the study states

Livestock	Chhattisgarh	Jharkhand
Yes	173 (57.7)	109 (36.3)
No	127 (42.3)	191 (63.7)
Total	300 (100)	300 (100)

Source: Field study (2012)

The details of livestock (a supplementary source of income to the households) indicate that only 57.7 percent of the households from Chhattisgarh possess livestock, while 42.3 percent of the households do not whereas, a majority of the households 63.7 percent from the Jharkhand do not have any sort of livestock assets, while 36.3 percent of the households do possess livestock. This is understandable as the land base of the sample households is quite low with most of them employed in coal mines or working as wage laborers (Table 4.9).

Table 4.10: Monthly household expenditure on food and non-food items across the study states

Expenditures on various items	Chhattisgarh (%)	Jharkhand (%)
Food expenses	51.6	64.6
Education of Children	20.2	5.4
Travel for work	4.0	7.6
Health expenses	7.7	2.4
Cloths expenses	13.0	4.3
Recreation/ Entertainment	2.2	3.9
Others	1.2	11.8
Total expenses	100	100

Source: Field study (2012)

An analysis of the monthly household expenditure of the sample households indicates that food expenditure accounts for at 51.6 percent in Chhattisgarh and for 64.6 percent in Jharkhand. For child education, the expenditure amounts to 20.2 percent in Chhattisgarh, whereas in Jharkhand, to as low as 5.4 percent. The expenses on cloths in Chhattisgarh amount to 13.0 percent and to 4.3 percent in respect of Jharkhand. The expenses on travel for work accounts for 7.6 percent in Jharkhand and for 4 percent in Chhattisgarh, while the expenses on health for 7.7 percent in Chhattisgarh and for 2.4 percent in Jharkhand. For recreation and other expenses, in Jharkhand it is 3.9 & 11.8 and in Chhattisgarh, 2.2 & 1.2 percent (Table 4.10).

Table 4.11: Impact of mining on livestock rearing across the study states

Impact on livestock	Chhattisgarh (%)	Jharkhand (%)
Decreased	29.0	69.0
Same	61.0	31.0
Increased	10.0	0.0
Total	100	100

4.3 Coal mining and its impact on communities in Chhattisgarh and Jharkhand

As regards the impact of coal mining the livestock in Jharkhand according to 31% of the hhs, the livestock holding has remained the same and as per 69% of the hhs it has declined. The primary reasons for the decline, as cited by the households, include the non availability of grazing lands and pollution of water which has a bearing on the health of animals. As regards the situation in Chhattisgarh, according to 61% of the households, the livestock holding has remained the same, which while as per 29% of the households, the same has declined and as per 10% of the households, the livestock holding has increased with the reason being that some of the households have purchased new livestock and also that the forest is more accessible to them as compared to Jharkhand (Table 4.11).

Table 4.12: Details of land cultivation in pre and post mining (in acres) possess across the study states

Land Cultivation in Pre and Post Mining	Chhattisgarh	Jharkhand
Pre Mining - Cultivation (in acres)	764.76	180.64
Post Mining - Cultivation (in acres)	469.48	32.55

Source: Field study (2012)

The data on land cultivation in respect of pre and post mining periods shows that in Chhattisgarh, in the pre mining phase the extent of land under cultivation was 764.76 acres, but in the post mining phase, it has declined to 469.48 acres and the reasons include land acquisition for mining and the creation of dump yards etc. The situation in Jharkhand reveals that in the pre mining phase, the extent of land under cultivation was 180.64 acres, while post mining phase, the same has decreased to 32.55 acres with the understanding reasons being land occupancy for mining and the presence of allied activities (Table 4.12).

4.4 Conclusion

A comparative assessment of the effects of mining on the livelihoods of people in Chhattisgarh and Jharkhand states presents similarities as well as contrasts. The quantum of land held by the sample households in pre mining phase in Chhattisgarh was 764.78

acres which got reduced to 489.48 acres (38.6 % decline), whereas in Jharkhand, 180.64 acres of land was held by the sample respondents in the pre mining phase which got reduced to 32.55 acres in the post mining phase (82 % decline). Regarding coal mining effects on agriculture, it is 'yes' by an overwhelming majority, both in Chhattisgarh and Jharkhand. Further, the land holding particulars of the sample hhs reveal that in Chhattisgarh, 43% are landless, whereas in Jharkhand, this figure goes up to 91.3% with only 8.7% of them holding some pieces of land. Employment in coal mines has been provided to 27% of the households in Chhattisgarh and in Jharkhand to 34.7% of the hhs. The housing conditions, on the contrary, show that in Chhattisgarh, an overwhelming majority (82.0%) live in thatched houses, while this figure is relatively low in Jharkhand (only 27.7%), and 40.7% and 31.7% of the hhs live in semi-pucca and pucca houses. The mean household income and per capita income are slightly higher in Jharkhand, but their income is unequally distributed.

Chapter - 5

Conclusions

5.1 Conclusions

The present study is primarily concerned with whether coal mining operations generate net sustainable benefits to the local communities, and, if so, whether there are policies or processes that can increase the positive and reduce the negative impacts. The focused study areas are situated in the coal bearing areas of Chhattisgarh and Jharkhand states. Coal deposits of Chhattisgarh come under South Eastern Coalfield Limited (SECL) and in Jharkhand, three subsidiaries of CIL operate (which are: The Bharat Coking Coal Limited (BCCL), The Eastern Coalfields Limited (ECL) and Central Coalfields Limited (CCL)).

The study covered 600 sample households - 300 each from Chhattisgarh and Jharkhand. A social category-wise picture of the sample households shows that in Chhattisgarh, 64 percent of the sample households belong to Schedule Tribes followed by OBC (18 percent), Scheduled Castes (14 percent) and others (2.7 percent). In Jharkhand, 35 percent of the sample households belong to OBCs followed by STs (34.3 percent), SCs (21.3 percent) and others (9.3 percent).

The sample households' main economic activity in the study areas Chhattisgarh and Jharkhand - reveals that the percentage of households employed in coal mines is relatively high in Jharkhand (34.7%) as compared to Chhattisgarh (27%). The households dependent on agriculture in Jharkhand are very few (2.7%), but in Chhattisgarh, the percentage of households dependent on agriculture is high (38%); the reason being that in Chhattisgarh, most of the coal mines are younger ones started in the 1990s, but in future, agriculture is expected to be affected adversely. The percentage of households engaged in coal mines' contract/wage labour is almost equal in both states.

The educational status of the members of sample households in the study areas shows that the percentage of illiterates in Chhattisgarh is high as compared to Jharkhand. The

percentage of individuals possessing primary level (1st to 5th) education in Chhattisgarh is higher than in Jharkhand; as regards the middle level (6th to 7th) education, Chhattisgarh shows a higher percentage than Jharkhand, while with regard to those possessing secondary level (8th to 10th) education, Jharkhand shows a higher percent than Chhattisgarh. As regards higher education (inter and graduation), Jharkhand is better placed than Chhattisgarh.

The land holding particulars of the sample households in both the states indicate that the number of land less households is very high in Jharkhand (91.3%) as compared to Chhattisgarh (43 %) because in Jharkhand, most of the lands have been lost to huge mining activities while in Chhattisgarh, the mining has recently started and hence, people have access to their agricultural lands but in future, they may lose these lands once mining activity intensifies. In Chhattisgarh 28.7 percent of the sample households come under the marginal farmer category, but in Jharkhand, this figure is very low (4.3%); while 16 percent of the households in Chhattisgarh come under the small farmer category, in Jharkhand, only 4 percent of the households are small farmers. The medium farmer and large farmer households are few in Chhattisgarh, but in Jharkhand, they are almost non-existent.

The data on sample households having agriculture lands (by social category) shows that in both the states, ST households possess more land as compared to OBC, SC and other households. Between the two states, 73.7 percent of ST households in Chhattisgarh hold agricultural lands as compared to 53.8 percent in Jharkhand. With regard to OBC households, 34.6 percent of them in Jharkhand possess agricultural lands as compared 19.3 percent of the OBC hhs in Chhattisgarh. Among SC households, only 5.8 percent of the households in Chhattisgarh have agricultural lands but in Jharkhand, this percent is a little higher at 11.5 percent. The data on landless households in the study areas (social category-wise) shows that among the STs, 51.2 percent of the households do not have any land in Chhattisgarh, while 32.5 percent of them in Jharkhand do not have any land. The landless SC households in Chhattisgarh constitute 27.1 percent, while 22.3 percent of the SC households in Jharkhand do not possess any land; among OBC households, 17.1 percent of the households in Chhattisgarh and 35.0 percent in Jharkhand are landless households and among others, the landless households in both the states constitute 4.7 percent in Chhattisgarh and 10.2 percent in Jharkhand.

The data on housing status of the sample households shows that in Chhattisgarh most of the houses are thatched, but in Jharkhand, it is quite opposite in that most of the houses are semi-pucca and pucca with only 27.7 percent of the houses being thatched.

With regard to the mean household income and mean per capita income (Rs) in the study areas the data reveals that in Jharkhand, mean household income and per capita income are relatively high relative to Chhattisgarh. The mean household size in both the states is the same.

Regarding food security, most of the sample households in Chhattisgarh enjoy food security for the entire year, but in Jharkhand, it is low at 47.7 percent. For a substantial section (42.3 percent) of the households in Jharkhand food security lasts for 6 - 9 months and also for 19.5 percent of the households in Chhattisgarh. Further, for a small section - 1.4 percent from Chhattisgarh and 10 percent of households from Jharkhand food security lasts for 3 - 6 months and the reason is that some of the households' main occupation is livestock rearing and also that there are single headed families.

The accessibility of the sample households to credit sources shows that for most of the households in Jharkhand, Banks are the prime source followed by money lenders, SHGs and Cooperative Bank, whereas in Chhattisgarh it is a slightly different situation in that Banks and Money lenders happen to be equally important sources of credit.

The details of livestock indicate that only 57.7 percent of the households from Chhattisgarh possess livestock and that 42.3 percent of the households do not, whereas a majority of the households 63.7 percent from Jharkhand do not have possess any livestock asset. This is understandable as the land base of the sample households is quite low with most of them working in coal mines or as wage laborers.

As regards the impact of coal mining on livelihoods, on the whole as per 98.3 & 91 percent of the hhs, in both the states there has been an impact-either positive or negative. Further, the data shows that in Jharkhand, 40.3 percent of the households have observed an enhancement in their livelihoods situation, whereas a majority of the hhs find their (nearly 60 percent) mentioned livelihoods curtailed in the post mining phase similar perceptions prevail in Chhattisgarh as well.

With regard to the impact of coal mining on livestock holding, in Jharkhand only 31.0% of the hhs think that livestock holding has remained the same, while nearly 69.0% express that livestock holding has declined. The primary reasons for the decline as cited by the households include non availability of grazing lands and pollution of water which has a bearing on the health of animals. The situation in Chhattisgarh shows that according to 61.0% of the households livestock holding has remained the same and as per 29.0% of the households livestock holding has declined and as per 10% of the households, livestock holding has increased; the reasons being that some of the households have

purchased new livestock and also that the forest is more accessible to them as compared to Jharkhand.

With regard to the impact of coal mining on agriculture in the study area, according to almost all the households from Chhattisgarh and nearly two thirds from Jharkhand there has been an impact ('Yes') while as per a few households in Jharkhand there has been a negative impact. The data on land under cultivation in the pre and post mining phases shows that in Chhattisgarh, in the pre mining phase, the extent of land under cultivation was 764.76 acres but in the post mining phase the same has declined to 469.48 acres; the reasons being land acquisition for mining, creation of dump yards etc. The situation in Jharkhand reveals that in the pre mining phase, the extent of land under cultivation was 180.64 acres and in the post-mining phase the same has decreased to 32.55 acres; the common reasons being land occupancy for mining and the presence of allied activities.

In most of the under-developed and developing countries migration is an important livelihood strategy. People leave their home land in search of work. However, this is not the situation in the mining villages. This implies that people are engaged in coal mining and other related activities. Those few individuals who have migrated to nearby towns, are all involved in coal related work. Therefore, it can be concluded that out-migration is not a serious issue facing the sample households. The villagers did not have any idea about migration in the pre-mining phase. Whereas in Jharkhand, out-migration of the sample households indicates that not many households have gone out in search of employment excepting handful of male members, that too for a short small duration (ranging from 30-60 days) earning - Rs 150-300 per day.

The perceptions of the individuals regarding changes in the overall incidence of diseases indicate that in Chhattisgarh, people believe that there is a change in the overall incidence of diseases after mining. There are mixed views. While some observe that there is no change in the incidence of diseases, others think that there has been an increase in the incidence of diseases. On the other hand, in Jharkhand, most of the people think that the overall incidence of diseases has increased. It is expected that mining activity may cause more health hazards to the people living in the vicinity due to high levels of pollution of various hues. In Jharkhand, nearly two thirds of the respondents have reported that health expenses have increased, while the rest do not think so. In Chhattisgarh also the same situation exists as most of the respondents agree to the fact that health expenses have increased in the post mining period.

A critical analysis of R&R (Resettlement and Rehabilitation) policy of coal India that has been implemented in both the states for project affected households reveals that in Chhattisgarh most of the people are very much dissatisfied with the land compensation package as well as house compensation, whereas in Jharkhand, most of the households are dissatisfied with respect to the land compensation package, but a few households feel satisfied. As regards the house compensation, all the affected households are satisfied with the amount they have received.

It is also clear that Coal India R&R policy did not provide any R&R package for the landless people who were earlier dependent on thriving agriculture in the pre-mining phase. Only those households that lost land, livestock and houses that have been compensated for further, it is all monetary compensation and no-land-to land compensation that has driven many households as workers in coal fields, and leading a very marginal life.

5.2 Way Forward or Backward?

It is common knowledge that minerals, forests and tribal tracts are concentrated in the same geographic areas - most central and eastern India. Further, several areas with a very high mining activity belong to the poorest districts. This brings home the reality that in the recent decades, mining activities have resulted in a few benefits to the local communities, but at the cost of environmental degradation. This situation has greatly contributed to a general social dissatisfaction and unrest in these mining belts, exacerbated further by the perception of an inadequate compensation for lands that were acquired by the government for the development of mines, (ERM & MoM, 2011).

While there may be some economic benefits gained by the communities living in and around mining areas in terms of employment and business, it is the vulnerable sections - women, children and old people - who are exposed to several negative impacts with limited coping mechanisms. Our study regarding coal mining and its effects on livelihoods and natural environment in the states of Chhattisgarh and Jharkhand has aptly brought out similar effects mentioned above. Although in both the states, it is coal India and its subsidiaries that have undertaken mining and not the private companies, the Resettlement & Rehabilitation policy adopted for the project affected population has been far from satisfactory, piecemeal and adhoc. As a result, except for a handful of families that have got secured employment in coal mines, majority of them have very subsistence and marginal livelihoods. Added to this, severe environmental damages have happened to air, water (surface as well as sub-surface) and forest resources in the surrounding villages where mining has started and expanded.

The recent 'Ordinance' The Mines and Minerals (Development and Regulation) Amendment Ordinance, 2015 which was consented by the president of India has tried to address some of issues raised above.

One of the objectives of the said Ordinance is to get more revenue for the state governments through auctioning of mineral concessions. But this objective needs to be strictly moderated to discourage mining in ecologically fragile and socially sensitive areas (CSE Policy Brief, 2015).

Another policy issue which assumes critical importance is sharing of wealth accrued from mining activities, given the fact that India's mineral-rich states and districts are faced with high levels of poverty. The SDF (Sustainable Development Framework) Document prepared by Ministry of Mines in 2011 emphasised the need for "community engagement, benefit sharing and contribution to socio-economic development" to address the "historical hurt" that has been inflicted upon their communities. However, the issue of people's participation in mining has been poorly addressed in the Ordinance. There is also a huge roll-back on the benefit - sharing provisions proposed in the MMDR Bill, 2011 (CSE Policy Brief, 2015).

Regarding the institutional arrangements for sharing the mineral wealth with the local communities, the Ordinance of 2015 (section 9B) provides for the establishment of District Mineral Foundations (DMF) by state governments in the mining districts. A DMF will be the nodal authority entrusted with the day-to-day matters of benefit sharing. It mentions that holders of mining leases are required to pay DMF 'not exceeding one third of the royalty rates' of the respective minerals, in addition to the royalty paid to the state. However, contrary to what was contained in the Ordinance, the lapsed MMDR bill had progressive provisions for addressing the sharing of mining profits with the affected communities. The bill (section 43[2]) mentions that holder of the mining lease shall pay the DMF "an amount of equivalent to the royalty paid during the financial year" annually. For coal and lignite, it was to be an amount equal to 26 percent of the profit after tax (Brinda Karat, 2015). The present Ordinance of 2015 now considerably dilutes such equal rights. The reduced percentage will also lead to a significant reduction in the amount of money that will be available for the mining-affected communities.

The other important issue contained in the Ordinance is that along with the changes that are being proposed with respect to mechanisms of green clearances, land acquisition and dilution of provisions for the settlement of rights under Forest Right Act, 2006, will further alienate the local communities, fuelling more social unrest, according to the policy brief of the Centre for Science and Environment (CSE) 2015.

There is another disturbing trend observed recently regarding the dilution of public hearing provisions for various development projects, especially coal mining. This is further compounded by the proposed Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (Amendment) Ordinance, 2014, which exempts land acquisition for infrastructure projects from public hearing. MMRDA bill makes a reference to "consultation" (not consent), is for the grant of licenses for minor minerals (but not major) in Fifth and Sixth Schedule areas where "the gram sabha or the district council, as the case may be, shall be consulted." Thus even the provisions under other laws such as the Panchayat Extension to Schedule Areas (PESA), which mandates consultation with the gram sabhas, are violated by the complete absence of any consultative process prior to the granting of lease for major minerals, which are the main sites of tribal deprivation, (Brinda Karat, 2015).

In the ultimate analysis, it is clear that with above changes occurring (by bringing MMDR Ordinance, 2015 in conjunction with RFCTLARR (Amendment) Ordinance) neither are the benefits from the mining going to be shared adequately with the affected people, nor will they be consulted before their lands are acquired for mining activities, (Brinda Karat-2015, CSE Policy Brief- 2015).

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