

Socio-psychological approach in rehabilitation for sustainable coal mining: a case study of Rajmahal mine

Coal is a natural resource and is the main stay in energy security of the nation. Sustainable development of coal sector involves conservation of coal, mitigating environmental impact, inclusive development of local population etc. With induction of technology and economic scenario, need is felt for expansion of mining projects and such brown field development is facing the issue of rehabilitation of affected families due to various reasons. Despite addressing economic factors and environmental concerns, companies are facing challenge in rehabilitation of project affected families. Socio-psychological factors plays an important role in addressing the need of project affected families (PAFs) and convincing to shift to other site to ensure continuation of existing mining projects. Rajmahal mine is a prestigious mine of Easter Coalfields Limited in Jharkhand and is planning to expand its mining operations. Taljhari village has come very near to mine and the mine is facing problem of rehabilitation of PAFs and the mining operation is stopped. The village is mostly populated with the tribal families who are very hesitant to talk. A study has been made to understand the present status of mine and the challenges being faced. After analyzing the situation since 2019, it is felt that the psychological issues such as negative perception of people towards mining, threat in their mind such as loss of identity and cultural heritage and lack of trust among the villagers towards outsiders are major reasons hindering rehabilitation. While analyzing the problem, it has been felt that this is due to illiteracy, lack of knowledge and resistance to change in the villagers. The study will help in preparing a suitable model to improve happiness index of PAFs by identifying psychological factors affecting rehabilitation and analyzing response of PAFs.

Keywords: Sustainability, coal mining, rehabilitation, socio-psychological approach, expansion projects.

1.0 Introduction

Coal is the oldest form of energy and is the main source of energy in the present era. At present, about 55% of energy requirement of the country is being met

through coal. Approach of sustainable coal mining is very important to ensure availability of coal for future generations as well. There have been many factors affecting coal mining such as geological factors, mining feasibility, economic constraints, environmental impact and impact to local community on account of uprooting the population from their ancestral properties and land. In past not much consideration have been made for conservation of this valuable exhaustible energy mineral but with depletion of coal resource at lower depth, lot of concerns have been made on this account and policies have been framed to ensure maximum extraction of resource. Through mining projects are taken up after due consideration of economic viability and environmental concerns, major challenge in implementation of such projects comes from availability of land and rehabilitation of affected population specially in opencast projects in coal sector.

The issue of rehabilitation becomes more challenging in case of expansion of existing projects [1-2]. The expectation from local community increases and the environmental and social impact plays a major role in satisfying the need of affected families. Though a lot of studies have been made on economic, environmental and social aspects and are addressed during Environment Impact Assessment (EIA, preparation of Environment Management Plan [EMP] and conducting public hearing [PH], coal projects are facing challenge in rehabilitating families in expansion projects. As such, there is a need to take socio-psychological approach which may help coal companies in successful rehabilitation and faster implementation of project.

2.0 Methodology: literature review on rehabilitation of coal expansion projects

In order to meet the energy demand of the country, Coal India Limited has envisaged a production programme of 1 BT by 2024-25 and about 50 million tonnes is expected to be increased from completed projects. The issue of rehabilitation in existing projects is challenging and the present production trend of Coal India Limited subsidiaries shows only Eastern Coalfields Limited showing negative trend in 2021-22. The analysis of production performance of ECL areas shows Rajmahal colliery as the major reason for this trend. Accordingly, the study has been aimed to analyze the issues

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and identify the factors affecting the production.

Information has been collected from various presentations made by ECL on their production performance, implementation of projects in project review meetings and telephonic conversation with mine officials, officers dealing with rehabilitation of villages in Rajmahal, management of ECL and their perception and analysis of problem.

A lot of work has been done wherein it has been established that the issue of rehabilitation in critical especially in expansion projects. This is mainly on account of degradation of land, impact on environment and also the higher expectation on financial compensation of local community. Land acquisition in expansion projects becomes important due to idling of existing resource deployed in the mine and the investment made. In some cases it has also been found that providing social and economic security is not sufficient to convince the population for rehabilitation. Accordingly, study is aimed at understanding the actual factors affecting the rehabilitation process and to suggest the change in approach of local management in dealing with the issue of rehabilitation.

3.0 Results

Rajmahal colliery is a prestigious mine in ECL. It is located in Godda district of Jharkhand. The nearest railway station is at Pirpainti on the Sahibganj loop of Eastern Railway. The project report of Rajmahal OCP was sanctioned in Aug 1980 for a capacity of 5.0 million tonnes per year. The project was later expanded to a rated capacity of 10.5 Mty, the project report of revised capacity was sanctioned in November 1988. This was based on report submitted by METCHEM, Canada Inc in September 1987 for Rajmahal – A opencast mine (10.5 Mty). Further, a revised cost estimate of Rajmahal OCP (10.5 Mty) was sanctioned by the government in July 1993 and the project was completed in the year 1994-95.

The Rajmahal OCP is linked to Farakka and Kahalgaon power plants of NTPC. To meet the increased demand of these STPS, Rajmahal OC expansion (10.5 Mty to 17.0 Mty) was thereafter prepared. The project report for Rajmahal OC expansion (17.0 Mty) was approved by Government of India on 22.09.09. It was envisaged to run the mine on partial outsourcing mode with an incremental capital outlay of Rs.153.82 crores. The project is in production and has already achieved coal production capacity. The project has been declared to be completed in May-17 with a delay of 38 months at a capital outlay of Rs.153.82 crores.

The salient features of the project is as mentioned in Table 1.

DETAILS OF LAND IN DIFFERENT MAUZA AT RAJMAHAL OPENCAST PROJECT

As per project report, rehabilitation of Bara Bhorai, Charantola, Chota Bhorai, Taljhari, Bansdiha, Paharpur

TABLE 1

Particulars	Project parameters
1 Target capacity (Mty.)	17.0
2 Capital outlay/expenditure (Rs. Crs.)	153.82
3 Date of sanction	22.09.2009
4 Estimated year of achieving target capacity	3rd 2012-13
5 Schedule date of completion	March 2014
6 Manpower	2618
7 OMS	24.60
8 Mineable reserve (Mt.)	251.10
9 Average stripping ratio (cum/t)	2.01
10 Life (years)	16
11 Grade	Grade 'F' (G13)
12 Cost of production (Rs./t), (i) at 100% (ii) at 85%	393.93432.81

villages was to be done. The start of rehabilitation process got delayed due to inordinate delay in acquisition/possession of tenancy land (46.47 ha) of Ranidihmauza which was originally identified for rehabilitation site. Seeing the delay, ECL management identified alternative rehabilitation sites namely Bara Simra, Lalmatia dumping, Lalmatia colony and Lohandia sites which were acquired under CBA Act. Permission from MoC was granted for development of this land as rehabilitation sites. So far, all PAFs of Bara Bhorai and Charantola villages have been shifted. Out of 3650 nos (apprx.) of total PAFs, 1455 PAFs have been shifted till date.

Shifting of Taljhari (500 PAFs) and Bansdiha (1000 PAFs) village is planned during 2019-20 and 2020-21 respectively. A rehab site in Dakaitamouza has been identified. But since the land of proposed rehab site is acquired under CBA Act, application for permission from MoC was submitted after approval from competent authority of ECL (Table 2).

4.0 Discussions

4.1 CASE EVALUATION

Rajmahal project has successfully achieved its rated capacity of 17 Mty coal productions during 2018-19 and 2019-20. During 2020-21, the project could produce 15.72 Mt due to shortage of working space because of non-physical possession of CBA acquired land at Taljhari Mauza for expansion of the project owing to vehement opposition from a group of miscreants.

Mining operation of the project is planned in the Taljhari and Bansdiha (total land involved: 278 ha). The land of the both villages has already been acquired under CBA (A&D) Act, 1957 but physical possession of land yet to be taken. In spite of sincere effort made by Rajmahal area management for physical possession of land of said mouza, positive result could not come out. Raiyats of the both villages are refusing to hand over physical possession of the land to the area management. They are even not attending meetings organized by local administration and ECL.

TABLE 2

Particulars		Mauza wise			
		Bansdiha	Taljhari	Paharpur	Bharanda
Land acquired	Tenancy	134.53	122.65	69.26	43.20
	Govt.	11.56	8.87	1.72	10.69
	Total	146.09	131.53	70.98	53.89
No. of direct employment	Sanctioned	166	290		
	Actual	75	18	-	-
Compensation paid for tenancy land (Rs crore)		70.85	9.17	-	-
R&R benefits provided on land areas	Tenancy land on which direct employment provided (Ha)	60.70	14.75	-	-
	Compensation paid on tenancy land (Ha)	111.56	36.42	-	-
	Compensation paid on government land (Ha)	11.56	8.87	1.72	10.69
	Compensation paid on total land (Ha)	123.12	45.30	1.72	10.69
	Physical possession on tenancy land (Ha)	111.56	-	-	-
Total no. of Jamabandi (GT)		79	39	30	23
No. of GT authenticated by state government		78	36	-	-
Compensation paid for government land (Rs. Crore)		20.50			

MoC, GoI has recently issued guidelines under RFCTLARR-2013 for possession of CBA acquired land. ECL requested DC, Godda to issue necessary directives for entitlements for the different types of CBA acquired land for preparation of compensation pay roll. On the basis of clarification from MOC, ECL made effort with villagers in consultation with district authority to enter into fresh agreement with land owners for fixing compensation u/s 14 (1) of CBA Act. On advice of DC, Godda, a gramsabha was also organized on 04.04.18 in Taljhari village but no positive result could be achieved due to very poor response of villagers.

Award of land compensation in Bansdiha and Taljhari was published and district authority was requested to help in getting acceptance of the award by villagers. Further, authentication of 79 GTs was required for Bansdiha out of which. 77 GTs were got prepared and authenticated.

In Taljhari mouza, compensation was paid to the landowners for approximately 33 ha. However, physical possession could not be obtained because a small group of villagers in Taljhari has terrorized other villagers in such a manner that the persons who have received compensation are not handing over possession of their lands and rest villagers are afraid to come forward for accepting the awarded compensation and other benefits.

Attempts were made to deploy equipment several times at Taljhari Mouza but due to violent opposition with arms and ammunitions, the machines had to be withdrawn as per advice of law and order authorities.

4.2 IDENTIFICATION OF FACTORS AFFECTING REHABILITATION

Taljhari village has about 500 families and is mostly tribal from Santali region consisting of Soren, Hansda, Murmu,

Hembram, Marandi tribes. The population mostly consists of young generation with heavy drinking habit. There is a primary school and a high school nearby but the illiteracy rate is high. The population mostly depends for their livelihood on forest produces and agriculturals. They have a strong cultural affiliation. Tribal traditions are maintained and there is strong trust deficit. There is no strong political leadership among them and there are much infighting among them on several issues. They do not have much aspiration and mostly satisfied with their present status.

Twerefou, Tutu, Afriyieand Mantey [13] in their studies have identified factors such as lack of interest, pursuance of self-interest by community representatives and divide and rule tactics used by the companies sometimes make it difficult for communities to unite around issues while poor consultation and inadequate involvement of affected families affect the rehabilitation process.

After going through various reports and discussions with project officials, corporate management and village representatives the major psychological factors identified for unsuccessful implementation of rehabilitation programme is identified as illiteracy, lack of awareness, threat to loss of identity and cultural heritage and lack of trust among the villagers towards outsiders which they call them "DIKTU".

4.3 PROPOSED SOLUTIONS

In spite of offering best economic package, the rehabilitation project is mostly unsuccessful and the first attempt to discuss the issues with villagers failed in 2019 when about 150 villagers (mostly ladies) made company officials hostage which could be made free with assistance from police officials. The attempt of state government again failed in January 2021 when about 600-700 police personnel

tried to restrict unlawful activities of some villagers.

It has been felt that a direct channel of communication is must between company officials and villagers. Once the channel is established, there is a need to educate and share information with a view to improve awareness. The aspirations need to be captured and trust building exercise needs to be undertaken. The R&R package needs to be modified suited to the requirement and implemented with sincerity.

5.0 Conclusions

Expansion of ongoing coal mining projects are very important considering conservation of coal in mind and utilization of assets created for future use in mining operations. The expectation of villagers increases many folds and need to be addressed to ensure timely rehabilitation.

Economic, social and environmental challenges are responsible for mining communities having unfavourable attitude with mining operations. Though economic and environmental challenges are addressed in the R&R packages proposed by mining companies, the social and psychological factors such as illiteracy, lack of awareness, mistrust, loss of identity and loss of cultural heritage plays an important role in resettlement of population from the project site.

In order to break the dead lock and engage residents for discussions, ECL management needs to start socio psychological approach to understand the root cause of the problem and to have a direct channel of communicated. Government land (22 ha) has already been acquired and compensation has been paid against 92 acre of land and employment has been provided. Direct communication can be established with villagers and some of their concerns can be addressed such as changing rehabilitation site, health and other issues of the villagers. Villagers to be effectively told about the R&R schemes, its benefit, and information sharing of earlier rehabilitation works completed in the company.

5.1 LIMITATIONS OF THE STUDY

The study has been made for one project and the social, educational and psychological aspirations of the local villages cannot be interpolated to all coal field areas due to vast geographical diversity. However, similar study needs to be made for giving right importance to these factors.

5.2 SCOPE OF FUTURE RESEARCH

Suitable model needs to be developed taking identified socio psychological factors such as illiteracy, lack of awareness, mistrust, loss of identity and loss of cultural heritage with a view to create Happiness index [5]. The model can be tested with other mines to understand the impact of each factor and to assist management in taking right decision while dealing with rehabilitation issues..

6.0 References

1. Daniel K. Twerefou, Kwadwo Tutu, John Owusu-Afriyie, Kwame Adjei-Mantey. (2015): Attitudes of

- Local People to Mining Policies and interventions. International Growth Center. May; E-33107-GHA-1: p.76
2. John R Owen, Deanna Kemp. (2015): Mining-Induced displacement and resettlement: a critical appraisal. *Journal of Cleaner Production*. January 15; Vol.87: p.478-488.
3. Mancini, L. (2018): Social impact assessment in the mining sector: Review and comparison of indicators frameworks. *Resources Policy*. Aug; Vol.57, p.98-111
4. Kathrin Böhling, Diego I. Murguía, Julieta Godfrid. (2017): Sustainability Reporting in the Mining Sector: Exploring Its Symbolic Nature. *Business & Society*. 10.1177/0007650317703658: p.1-35
5. Parul Oberoi, Shalu Chopra, Yukti Seth, (2020): A Comparative Analysis of The Factors Affecting Happiness Index. *International Journal of Scientific and Technology Research*. 2020 March; vol.9, issue 03, p.1671-78
6. Michael R. Betz, Mark D. Partridge, Michael Farren, Linda Lobao, (2015): Coal mining, economic development, and the natural resources curse. *Energy Economics*. April 29; vol.50: p.105-116
7. Fernando P. Carvalho, (2017): Mining industry and sustainable development: time for change. *Food and Energy Security*. vol 6(2): p.61-77
8. Front. Psychol. (2017): The Psychology of Sustainability and Sustainable Development for Well-Being in Organizations. *Frontiers in Psychology*. September 19; vol.8: Art 1534
9. AnđelaIvic. (2020): Thesis for MSc degree in Environment and Natural Resources : Trends in the sustainability reporting: A case study of European mining industry. *School of Social Sciences*, University of Iceland October.
10. G. Walser. (1916): Economic Impact of World Mining. World Bank Group, Mining Department, Washington, D.C., United States of America.XA020, IAEA-SM-362/7,
11. Hasanuzzaman, Chandan Bhar, (2019): Development of a framework for sustainable improvement in performance of coal mining operations. *Clean Technologies and Environmental Policy*. April 9; <https://doi.org/10.1007/s10098-019-01694-0>
12. Gavin Hilson, Barbara Murck. (2020): Sustainable development in the mining industry: clarifying the corporate perspective, *Resource Policy*; vol.26: p.227-238
13. Daniel K. Twerefou, Kwadwo Tutu, John Owusu-Afriyie, Kwame Adjei-Mantey, May 2015, Attitudes of Local People to Mining Policies and interventions, p.76.