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Impact of Opencast Coal Mines on Nearby Settlements A Case Study On Lajkura Mines, Brajrajnagar

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***Abstract*— The extraction of coal and minerals is now a requirement for both economic and social development. Additionally, it may have an impact on the local communities close by in terms of social and environmental issues. Before, the majority of coal-bearing areas were situated in typically underdeveloped forest-agricultural zones. socially and economically, however settlements have started in the last 10 to 15 years to meld into the Open Cast Coal Mines Precinct and suffer the repercussions. In this work, we investigate the effects of local coal surface mining communities. It tries to investigate various socioeconomic indices. Issues that the adjacent local community is affected by because of the coal mining. The implementation of a specific keyword-based search strategy ensures that all papers Observations are typical and illustrative. Various case studies and related for the purpose of defining the indicators, information on the socioeconomic effects of coal mines on surrounding settlements is gathered and reviewed from Indian as well as foreign journals. This report highlights the areas that require attention and indicates the indicators that are impacted, resulting in bad livelihood.**

***Keywords*— (PMAY)Pradhan Mantri Awas Yojana. (LK)Likert Scale. (IHSDP) Integrated Housing for Slum Development Program. (MCL)Mahanadi Coalfield Limited.**

I. INTRODUCTION

Since the dawn of recorded history, humanity has existed as a vast and diverse sociocultural entity. One of the most complex social systems, it encompasses all facets of social interaction in humans. It is being rethought as a system where the operation of one component affects all aspects of social gatherings as a result. It is a force that no one can change, yet it has complete control over everyone's way of life. This well-designed autonomous organism can therefore carry out a range of functions. All social interactions and connections start out within the social sphere. Human existence and society are closely entwined, and man could not survive without civilization. Frequently, it is viewed as a complex social system that has been shaped by the intersection of communication and reciprocal social interactions. India has 87 mineral resources, including three atomic minerals, four distinct fuel mineral kinds, 10 different metal substance types, 47 non-affluence mineral types, and various secondary minerals. They don't have enough energy resources Human progress depends on natural resources. They are linked to all democratic actions and are entangled with them. The entire development network is built on it.

Due to their rarity and lack of renewable resources, minerals continue to be a major priority, as stated in the introduction by the Ministry of Mines. India has a lot of natural resources, but lacks all the necessary minerals. As a result, a precise and scientific technique is needed for its economic and beneficial use. This successfully embodies the idea of economic autonomy. The electrical, steel, cement, and liquid petroleum sectors all use coal substantially.

Although mining has aided in the rise of financial capital and the improvement of infrastructure, it has also been connected to a number of socio-economic issues. The long-term financial viability of a region can be attributed to mining. But it ignores justice for those who will be impacted by the programme. Due to the various work opportunities that mining provides, the environment is also able to spend on a variety of things like housing and health care. The installation of coal mining activities has led to a number of new socioeconomic issues, including the loss of agricultural land, contaminated water, housing issues, and an increase in local landless people, among others. The survival of those who reside in urban areas is entirely dependent on land. However, the expansion of mining operations is forcing them to abandon their primary sources of income and force them to become landless farmers. The Lajkura coalfields in Odisha are the main focus of the study.

There are two opencast mines in the Brajrajnagar: Lajkura Opencast Project (LOCP) and Samaleswari Opencast Project (SOP) (SOCP). Lajkura Opencast, the oldest mine, has been operating since 1984. The burden of the potential repercussions falls on those who reside close to the Lajkura mines. They are driven from their home and the forest they had a cooperative relationship with. Their primary source of revenue has suffered significant damage. Numerous initiatives have been put in place by the governments of India and Odisha to improve the living conditions of those who reside in the affected cities. A very limited number of government programmes and

policies benefit the study area. Even the total quantity of benefits is lower under current policies. A similar problem to instability is introducing new programmes to the municipality and expanding the benefits covered by such programmes

II. LITERATURE REVIEW

A. The Mining and the socio economic features

Mining frequently maintains sizable zones for its operations, provoking conflict among neighbours. Although it is true that social factors have an impact on how a mining operation turns out, profit is still prioritised despite the drawbacks. Locals were frequently persuaded by the positive effects of achieving economic success to the point where they overestimated the project's drawbacks. The majority of the time, the upper residents showed little care regarding the laws governing public participation in decision-making. The mining sector is defended by mining communities, while those who are only adversely affected by mining are unable to speak up against the injustice.

When a lot of people from adjacent ecosystems are hired to work in nearby mining operations, it frequently leads to modest population changes, which is an issue. In fact, unacceptable interruptions start to appear, such as changes in lifestyle, the breakdown of common beliefs, conventions, democratic structures, moral standards and dialect, native customs, interruptions into prehistoric hunting and fishing methods, changes in family dynamics, rising preference for assets and native capitals, ongoing worry about the water system and neighbourhood drainage system, the beginning of amplified affordability, and so on.

Particularly in developing nations, mining has become a great symbol of national economies. The traditionally dominant realms build this resource extraction business, which clearly successfully finances the increase in domestic product while also earning a big part of foreign currency (GDP). Although the economic spillover from a mining operation is beneficial to the nation, it also has a number of detrimental effects on the local population and their means of survival.

B. The Mining and the Health Aspects

The Mining calls for sufficient preparation, acceptable execution, apparent affects (negative and good), and practicable mitigating measures since it balances long-term consequences with short-term gains. A controversial phenomenon addressing the extraction of mineral resources and environmental sustainability occurs at the same time as growing uncertainty over the health consequences of the mining industry. Therefore, mining activities support environmental stability, which establishes the foundation for poor health.

C. Mining, The Neighbourhood, and General Welfare

In the name of progress, the environment that provides energy is being destroyed, and those who depend on natural resources suffer as a result. It leads to widespread social, economic, and environmental issues such pollution, diminished agricultural output, physical and mental health issues, forced dislocation, and the disintegration of social networks, whether it takes place above or below ground.

III. BACKGROUND STUDY

The majority of the temples in Brajrajnagar, a small, peaceful town on rocky terrain near the IB River, were constructed by the Birla family. After the closure of the Orient Paper Mills of Birla in 1999, it later gained notoriety for coal mines owned by MCL.

The majority of people in this city were employed at the Birla Group of Industries' Orient Paper Mills. Numerous open-cast and underground coal mines of the government-owned Mahanadi Coalfields Limited's IB Valley Coalfield and Orient Colliery Area are located close to Brajrajnagar.Two opencast mines, Lajkura Opencast Project (LOCP) and Samaleswari Opencast Project, are located in the Ib Valley Area (SOCP).

BRAJRAJNAGAR MUNICIPALITY		WARD 13 & 14
Population	80411	8449
Area	42.7 sq. Km	6.27 sq.km
Gender ratio	922:1000	932:1000
Literacy rate	82.48	62.7
Gross density	1881.6 sq.km	1347.2 sq.km

Table 1.1 Demographics of Brajrajnagar and Ward 13,14.

The Brajarajnagar Municipality's two vulnerable wards provided the study's sample locations. The opencast mine sites at Lajkura are just two kilometres away from the mining-affected wards. Considering the severity of the effects, two wards near to Lajkura OCP, an opencast mine, were selected.

Si.no	Study area	The distance from mines	Effected by
1	WARD NO 13	1.9 KM	LAJKURA MINES
2	WARD NO 14	790 M	LAJKURA MINES

Table 1.2 Distance of Wards from Mines

IV. METHODOLOGY

- Identifying the problem
- Aim of the study
  -To study the the impact of coal mines on built environment of nearby settlements
- Formulation of the objectives
  a. To identify the area and its surroundings
  b. To identify different impacts of coalmines to the surroundings
  c. To analyse all identified parameters
  d. To mitigate and propose plan for action

- Primary and secondary data collection
- Data Analysis
- Proposals and Recommendations

V. QUANTITATIVE ANALYSIS OF THE HOUSING, WATER SUPPLY AND SEWERAGE ASPECTS

The cosmos is viewed as a vast collection of units on which the investigation is concentrated in research methods. Depending on the goal of the study, the population may be the entire nation, a specific geographic area, or those with a comparable economic level. A sample is collected from the universe that has been chosen. Data collection is completed before sample design.

The formula with a 95% confidence level and a 7% margin of error was used to determine the sample size for the questionnaire survey. 100 samples were produced in total. However, 82 household data were examined after the survey was completed.

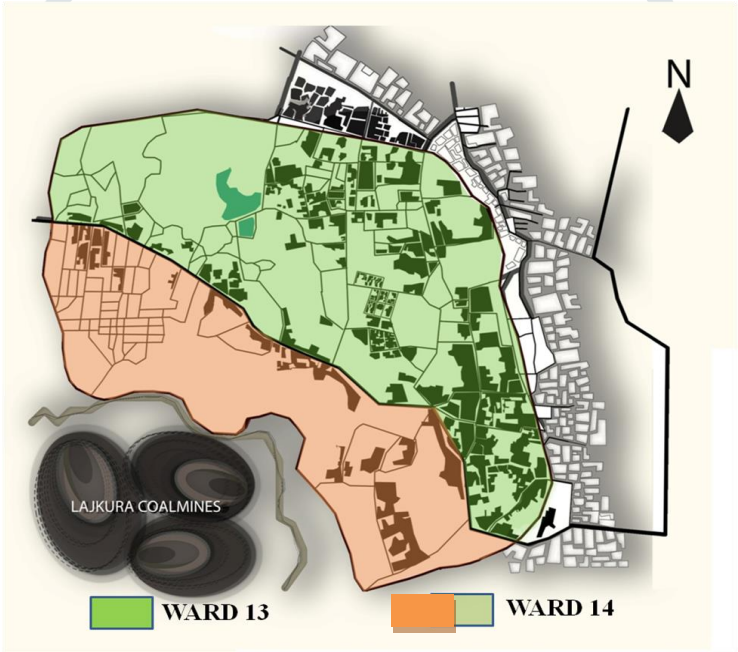

Fig. 1 Showing the wards of the survey area which is situated near the mine.

A.HOUSING

Data were gathered using structured and semi-structured questionnaire interviews. As part of the procedure, locals and other government and non-governmental officials were questioned. Basic information about the families' characteristics (family, age, gender, education, activity status, and occupation), as well as data on income sources and land, was the main focus of the first chapter. The second section focuses on the sources of family income. The final portion contains the expense details. The fourth section included Mining, Displacement, and Livelihood. The impact of mining on housing is covered in the sixth section. The effects on the physical infrastructure are covered in section six. In the seventh section, the effects of mining on health are covered.

The researchers employed a five-point LK scale, with 1 denoting a significant disagreement or level of dissatisfaction and 5 denoting a high level of agreement.

Households on the basis of wall type	
Types of House	**Percentage of House**
Mud wall	36
Mud and cement wall	34
Burnt brick wall	30
Housing Typology	
Pucca	19
Semi- Pucca	23
Kutcha	58

Households by types of roofs	
Thatched	16
Clay Tiles	35
Adbestors	29
Clay tiles and Adbestors	20
Damage of House due to Mining Activities	
<20% Damage	20
20-40% Damage	33
>40% Damage	47

Table 1.3 Housing demography and characteristics

Due to a lack of natural light and ventilation, 77 percent of Kutcha houses and Semi-Pucca dwellings are in very poor condition. They are damaged and in poor shape. Every home lacks the necessary physical infrastructure. Despite having the highest population, these wards are lagging behind in all forms of development. Kutcha home accounts for 58% of the study area.

47 percent of the households in the survey have more than 40 percent of their homes damaged as a result of drilling, blasting, and quarrying that produce unforeseen accidents and mishaps. The state of the study area's kutcha house. 26 percent of the households surveyed have one room, followed by 35 percent who don't have any room.

Household benefited from the plan.

In the Pucca House (17) section.PMAY beneficiaries numbered 13, while IHSDP beneficiaries numbered 3.One self-built pucca house In the academic year 2015–16, Brajarajnagar Municipality was made aware of the Pradhan Mantri Awas Yojana (Urban). Beneficiaries from the municipality area border had been verified and classified as vertical Beneficiary-led Individual Housed Construction or Enhancement by the year 2018. It is clear that there are fewer resources available for infrastructure development in the post-mining age than there were before. The uncontrolled growth of MCL, however, has led to inadequate infrastructure. Utilization of labour in construction In order to conserve money, 58 percent of the beneficiaries did not engage any labour. spending on oneself to finish the structure Less than one lakh has been used to complete the structure by 58% of the beneficiaries. Duration needed to complete each housing unit 75% of the beneficiaries finished the building in more than a year.

B.WATER SUPPLY AND SANITATION

All of the mining-affected communities experience a water deficit in the summer as a result of the falling water level. According to a survey, the sole source of safe water available to ward 13–14 residents is the municipality pipeline, which only supplies the main highways. Due to a shortage of sufficient drinking water, residents of the study region experience more hardships. MCL and municipal water trucks don't always supply drinkable water. Only once or twice a week, which is insufficient to fulfil the needs of the requirements of families, especially in the summer. Residents wrote to MCL authorities and a local organisation in this area to get the right water, but the officials' reaction was unfavourable. Despite the presence of some conventional bore-wells, other inhabitants used to gather drinking water from the source, which is inconsistent.

Water sources	
Borewell	18%
Community tap	31%
Pond	20%
Well	31%
Consumption of water	
Community tap	61%
Others	39%
Overflowing of the drains on monsoon	
Yes	27%
No	73%
Types of drain	
Closed	37%
Semi closed	20%
Open	43%
Drainage condition	
Good	34%
Dilapidated	66%

Table 1.4 Water and Drainage Characteristics

The study area's natural terrain and drainage have been altered by mining. The drainage system has become less effective as a result of storm water overflow during rain. In the research location, standing water after a rainstorm is extremely typical and can be unhealthy. Additionally, no home is connected to the drains. The only important drainage line runs alongside the all-weather road. Due to storm water on the main being stagnant during the rainy season accidents and the deterioration of the quality of the road. Homes close by may occasionally be seriously endangered by flooding and waterlogging brought on by clogged open drains. Oversaturated soils can expand as a result of too much water, harming the substructure and eroding the strength.

In Lajkura, extracting coal causes negative health effects. The entire neighbourhood has been impacted. The local populace has endured economic and social hardships ever since mining first began. The most important effect of mining appears to be social vulnerability. Relationships, family division, and other circumstances all affect mental health. Particularly the local community has a

strong bond with the environment, natural resources, and agricultural land. The entire framework of rural life has historically been intertwined with the local environment. The loss of this land and its riches, however, has left the local population feeling unhappy, hopeless, and alone.

VI. RECOMMENDATIONS

HOUSING AND WATERSUPPLY

- Examine current legislation to spot problems and propose fixes for those that prevent the availability of affordable housing. safety precautions.
- Support for development incentives that encourage mixed-use developments with a variety of housing options, multifunctional transit networks, energy efficiency, open space, and other pertinent ideas.
- Monitor, coordinate, and evaluate community development initiatives.
- Increasing the number of mobile toilets, making them available at the household level, communal toilets, and public toilets for the ward.
- Providing a water source for the bathroom.
- Regular septic tank maintenance and toilet cleaning.

SEWERAGE AND SOLID WASTE

- Establishing a drainage connection to the unserviced area.
- Increasing the frequency with which drains are cleaned and the amount of bleach used.
- Ensuring that drains are in good condition and that the responsible ULB monitors drains and other sewerage system components on a weekly basis. Adequate measures should also be taken to maintain the sewage system's quality.
- Providing septic tanks to every household and performing regular septic tank cleaning and maintenance.
- It is important to discharge wastewater properly from every home, especially during the rainy season.
- Encouraging community involvement in sewer system quality maintenance
- The Swachh Bharat Mission should increase the frequency of door-to-door collection while properly classifying waste at the elementary level.
- Increasing the frequency of communal trash can cleanings and street sweepings.
- Providing households with bins and waste disposal points spaced out regularly along streets, every 10 to 20 metres.
- Preventing the production of waste at several stages, including the creation, use, and recycling of products (SBM).
- The system of trash management being decentralised.
- Encouraging both household and neighbourhood composting programmes for organic waste
- Participation of the community in raising awareness of solid waste management and garbage disposal.

HEALTH

- Supplying the PHCs that the government has already developed (location, building, equipment, and supplies).
- Appointing full-time employees, including a specialist, a registered nurse, or a physician's assistant to perform the initial computer screening. personnel training in cutting-edge technologies and a comprehensive strategy.
- The team should educate patients about their health by using audiovisual demonstrations and posters.
- Connect locals to tools for promoting community health.
- Determine and advocate for increased funding for primary care.

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VII. CONCLUSION

The study seeks to raise the general welfare standing of those who live close to open cast coal mines. The transcribed information will be used to enhance techniques for addressing issues that affect people's quality of life, like the socioeconomic impacts of adjacent mining on local residents. Based on the analysis of numerous socioeconomic factors' impacts and the study of these factors, it has been determined that coal mining has put local residents' wellbeing in an alarming condition.

At the same time, it has had an impact on the residents' way of life, notably the productivity of the agricultural sector, which has led to instability in their source of income. Numerous new socioeconomic, environmental, and health issues were brought on by the progress's shadow. To be more explicit, it significantly harmed the agricultural, physical infrastructure, social structure, health, and livelihood habits of the study area's population. .

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REFERENCES

[A]. Appiah, D. O., & Buaben, J. N. (2012a). Is gold mining a bane or a blessing in Sub Saharan Africa: The case of Ghana, 1(3), 1033–1048

[B]. Aragon, M., & Juan, P. R. (2012). Mining, Pollution and Agricultural Productivity: Evidence from Ghana. Retrieved from https://www.dartmouth.edu/~neudc2012/docs/paper_7.pdf

[C]. Badera, J., & Kocon, P. (2014a). Local community opinions regarding the socio environmental aspects of lignite surface mining: Experiences from central Poland. Energy Policy, 66, 507–516. http://doi.org/10.1016/j.enpol.2013.11.048

[D]. Bell, S. E., & York, R. (2010). Community Economic Identity: The Coal Industry and Ideology Construction in West Virginia. Rural Sociology, 75(1), 111–143.

[E]. Binns, J. A. (1982). Agricultural Change Sierra Leone. Geography, 67(2), 113–125.

[F]. Christison, R. (2003). The cultural inheritance of coalmining communities Prepared by: Bogor, Indonesia. Retrieved from http://www.higround.com.au/docs/coalm.pdf

[G]. Gualnam (2008). The Social and Environmental Impacts of Mining activities on Indigenous Communities- The case of Newmont Gold (Gh) Limited (Kenyasi) in Ghana, https://core.ac.uk/download/pdf/225885401.pdf

[H]. Downing, T. (2002a). Avoiding New Poverty: Mining-Induced Displacement and Resettlement". MMSD Working Paper (Vol. 58). Retrieved from http://naturalresourcecharter.org/content/downing-t-2002-" -new-poverty mining-induced-displacement-and-resettlement

[I]. Hilson, G., & Banchirigah, S. M. (2009). Are alternative livelihood projects alleviating poverty in mining communities? Experiences from Ghana, 45(2), 172–196. http://doi.org/10.1080/00220380802553057

[J]. Kitula, A. G. N. (2006a). The environmental and socio-economic impacts of mining on local livelihoods in Tanzania: A case study of Geita District. Journal of Cleaner Production, 14(3-4), 405–414. http://doi.org/10.1016/j.jclepro.2004.01.012

[K]. Mélanie, J., Penney, K., Austin, A., Rumley, C. and Curtotti, R. (2007). Sustainable development of the minerals sector in the APEC region. Canberra. Retrieved from http://s3.amazonaws.com/zanran_storage/www.abare.gov.au/ContentPages/22502443 81.pdf

[L]. Mishra, P. P., & Reddy, M. G. (2012). Gender Mainstreaming in Mining: Experiences across Countries, (109), 1–17.

[M]. Petkova, V., Lockie, S., Rolfe, J., & Ivanova, G. (2009). Mining developments and social impacts on communities: Bowen Basin case studies. Rural Society, 19(3), 211– 228. http://doi.org/10.5172/rsj.19.3.211

[N]. Rolfe, J. B., Miles, S., & Lockie, G, I. (2007). Lessons From the Social and Economic Impacts of the Mining Boom in the Bowen Basin 2004 - 2006. Australasian Journal of Regional Studies, 13(2), 134–153.

[O]. Scoons, I. (2009). Livelihoods perspectives and rural development. Journal of Peasant Studies, 36(1), 171–196. http://doi.org/10.1080/03066150902820503

[P]. Downing, T. (2002a). Avoiding New Poverty: Mining-Induced Displacement and Resettlement". MMSD Working Paper (Vol. 58). Retrieved from http://naturalresourcecharter.org/content/downing-t-2002-" -new-poverty mining-induced-displacement-and-resettlement