Socio-economic Impact of Mining on Rural Communities

Presented by
Dr. Nihar Ranjan Mishra
Assistant Professor & Head
Department of Humanities & Social Sciences
National Institute of Technology, Rourkela Odisha
Introduction

Natural resources are available naturally and being undistributed in nature.

These resources are interrelated in such a way that life will be helpless without their existence.

Thrust for modern amenity: the commercial populace is continuously exploiting the tranquillity of these resources.

While being the substance of economic activity and development, these resources are often undervalued and mismanaged (OECD, 2011).

Natural resources are of two types i.e., renewable and non-renewable.

Minerals being non-renewable in nature are instrumental for global economic development.

Minerals: Metallic & Non-metallic.
Coal holds an important place for economic development, it also is the main fuel for electricity generation.

Energy from coal is accountable for 30.1 percent of worldwide primary energy needs, 40 percent of global electricity and the major portion of it is responsible for the production of steel.

Coal is also the most abundant fuel resource in India.
In the due course of time, it has become the largest contributor to the industrial growth of the country.

While coal has a fundamental role in global development, at the same time it is associated with several social and environmental challenges to demonstrate its role in sustainable development.

Even the community acceptance of its role in society has become a serious issue.

Whatever may be the form of coal mining, surface or under ground; it causes a wide range of social and environmental problems such as break down of social structure, degradation of health, air, water and noise pollution, decline in agricultural production, deforestation, and changes in the traditional form of livelihood, displacement etc.
Introduction

* Unfortunately for India, almost all its minerals are in the same regions that hold its greenest forests and most abundant river systems.

* These lands are also largely inhabited by India’s poorest and most marginalized people.

* Mining in India, is not a simple ‘dig and sell’ proposition rather a highly complex socio-economic and environmental challenge.

* In the context of social question rise-Does mining improved social condition?

* The mineral dependent states/districts also have higher levels of poverty, lower growth rates and higher levels of mortality, malnutrition and morbidity as well as a well-armed leftwing guerilla movement.

* The first problem and cocequence of mining is displacement.
Main causes of development-induced displacement and resettlement (as of 2000)

- Creation of dams and reservoirs (26.6%)
- Water supply (12.3%)
- Development of urban infrastructure (8.2%)
- Creation of national parks and reserves (3.4%)
- Deforestation (1.4%)
- Development of communication networks (24.6%)
- Mining/extraction of mineral resources (10.3%)
- Irrigation projects and artificial channels (4.8%)
- Development of industry (2.7%)
- Other causes (5.5%)
Magnitude of Displacement in Development Projects

* In India, more than 25 million people have been displaced due to development projects and about 12% are due to mining industries-2.5 million (1951-2000).
* Only 24.7% persons got rehabilitation.
* The size of its coal mines has grown from an average of 150 acres in the 1960s to 800 acres in the 1980s. Open cast mines require more land and displace more persons but create fewer jobs than underground mines do.
* Among affected 70% are tribals in Industrial / Mining Projects.
* 1.64 lakh hectare forest land is being diverted for mining in our country. Around 34.72% of forest land got converted to non-forest use due to mining in Odisha.
* By 2007 CIL has acquired 1,54,386 hectares of land. Out of which 73,371 hectare is tenancy land and rest is Govt. land and CPR.
* In AP the total land under mining is bound to exceed 2,00,000 acres.
* The International Labour Organisation estimates that 12 million jobs were lost in India during the first six years of liberalization mostly in mining sector because of mechanisation.
The uprooting of millions of people to new unknown places is a matter that is now becoming increasingly contentious. Such displacement results in profound socio-economic and cultural disruption to the people affected as well as the disturbance of social fabric of local communities. And the displacement, rehabilitation and resettlement are not by choice but mostly by compulsion.

All mining projects have immense impact on the physical, social, cultural, and psychological life of human societies and biodiversity irrespective of the country in which they live and whether they are urban or rural, tribal or non-tribal.

The mining industries have produced many environmental refugees, caused a massive livelihood displacement.

The social impact of mining goes far beyond loss of land. “Failure to mitigate or avoid these risks have generated ‘new poverty’, as opposed to the ‘old poverty’ that peoples suffered before displacement.”
* The CPR dependents who have lived on that land for centuries before this law was enacted, are considered encroachers. Many of them are thus evicted and are not counted among the displaced.

* Development for Whom? For what and at what cost.

* Profit for capitalist….protection of right of marginal communities…..prosperity of large section……..prosperity of all…..Politics of vote banks?
* If you are to suffer, you should suffer in the interest of the country’

Jawaharlal Nehru,
Speaking to oustedes
of Hirakud Dam
In 1948
When a developmental project commences, all public eyes are on the `development', not on the cost. More significantly, since this is just a `cost', statecraft and governmental procedures reduce cost to compensation, rehabilitation and resettlement, thus turning the entire thing into a game with the government and the plant/mine owners etc., trying to minimise `cost'. 
* As an outsider we support Development...
* As an insider we think about….tomorrow…what next…….
* Imagine. that a multinational company arrives one day with your national or state government's approval and seizes your lands, destroys your environment, local farms and the agricultural system, your religious places, pollutes your river, creates hazardous waste dumps through- out your town, blocks your efforts to seek justice through the courts, and threatens to get people and activists arrested for trying to resist this destruction of your way of life……..
* What will be your reaction…………..
* What is our reaction…when we got transferred in our job…..
Perspectives on displacement

**The State Perspective**

* Displacement is justified in national interest
* The long term good of the projects merits the sacrifice of a few in favour of the larger good

**The Displaced Peoples’ Perspective**

* What the displaced person have received….even after 50 years…?
* Displacement is the systematic alienation of the individual’s and community’s customary and legal rights to livelihood and their habitat rather than a mere physical relocation
* It is not an event that occurs at a single point of time
* It is not an event that is suffered individually, but by the community as a whole
* Most of the time the affected people are the weaker sections of the society
The occurrence of impoverishment and its prevention i.e., how can the livelihoods of displaced people be reconstructed
The acquisition of land for industry is an issue which many think is critical to India’s development today.

Large-scale acquisitions have now given rise to fierce farmer protests against development projects.

There is no major development project today that is not in trouble over the land issue.

The loss of life in clashes at Kalinganagar, Singur and Nandigram epitomize the intensity of this resistance.

Farmers are not the only ones resisting land acquisition.

In the fray are the NGOs (long associated with such movements), and lately even political parties have lent their support to protests against projects that involve displacement.
The acquisition of land with its displacement implications has emerged as a formidable challenge to investors. Investors are finding it almost impossible to get land for project purposes and some are even planning to move elsewhere. Investment worth millions of dollars is either on hold or limping at a snail’s place. Such a situation does not send out the right signals and can indeed scare away potential capital inflows, upsetting India’s growth plans. It is important to address this issue upfront if development is to proceed at the desired speed and achieve the targeted growth objectives.
But why these protests?
The past has not be good for the displaced

* It is first important to understand the real reasons for land owners’ resistance to part with their land
* The reason is not merely the strong support that their struggles are getting from NGOs, and now politicians and sundry other ‘do-gooders’ (novelists, other celebrities, etc)
* Experience with past resettlement does not inspire confidence.
* Land losers have no trust in either government or industry and their resettlement policies and promises
But why these protests?
Only compensation is no longer enough

* Farmer has enjoyed through generations a kind of security that only land can provide and he is unwilling to lose it
* Resettlement packages, based on compensatory approaches, have proved inadequate (land, cash, jobs, skills training etc)
* But projects are still following such flawed approaches even when studies have shown that compensatory approaches have often led to impoverishment
* The fact is that under the present laws and policies the compensation that they get does not reflect the real value of their land
* For example, the price paid for land acquired is for the land as agricultural land, whereas use for industrial purpose will multiply the value many times and the farmer, deprived from this gain, is reluctant to part with his land for a pittance
But why these protests?
Land valuation flawed

- Much opposition to land acquisition can cease to be a serious obstacle to new investments only if the land value is realistically assessed and farmers compensated accordingly.
- The recognition of true value of the land will be an important step.
- It also needs to be recognized that without land no project can get off the ground and farmers are major shareholders because they contribute share in the form of land.
- New approaches to resettlement that are being currently followed (in Brazil, Canada, China, Colombia, Japan, Norway and elsewhere) recognize the importance of land in the lives of farmers and treat them differently from those whose business is to buy and sell land like any other commodity.
Eight Impoverishment Risks from the Risk Assessment Model

1. Landlessness
2. Joblessness
3. Social Disarticulation
4. Homelessness
5. Marginalization
6. Food Insecurity
7. Loss of Access to CPR
8. Increased Morbidity and Mortality
The intervention of the mining activities and the relocation of the villages have affected community structures in rural areas.

Impact of mining on local communities: damage to homes, culture, and the destruction of the social structure has been observed.

Coal mining imposes many external costs on its surroundings and the people who reside in these areas.

Mining has lethal consequences on the traditional lifestyle, culture and behaviour of the people.


## Impact on Family

- In rural India, land is considered as a prime source of sustenance which connects the family members beneath one roof.

- Loss of land due to mining disturbed the philosophy and necessity of living jointly.

- The R & R Policy of MCL that providing job to a single member of each entitled family has forced others either to migrate or work as wage labourer under a contractor.

- Development of individualism attitude-employed siblings to stay separately.

<table>
<thead>
<tr>
<th>Type of village</th>
<th>Nuclear family structure</th>
<th>Joint family structure</th>
<th>Total</th>
<th>Pre-mining family structure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Nuclear family structure</td>
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<td></td>
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<td></td>
<td></td>
<td>Joint family structure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>Affected</td>
<td>300(66.7%)</td>
<td>150(33.3%)</td>
<td>450</td>
<td>64(14.2%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>386(85.8%)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Total 450</td>
</tr>
<tr>
<td>Control Villages</td>
<td>41(22.3%)</td>
<td>109(72.7%)</td>
<td>150</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td>N/A</td>
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<td></td>
<td>N/A</td>
</tr>
</tbody>
</table>
Functions of Family

- Change in the family structure also influences the functional aspects of family. procreation, economic support, social placement, socialization, and emotional security.
- Example, the busy schedule of the parents, absence of senior household members, increased cost of living and development of self-centric attitude, etc. are the causes behind the restriction on procreation.
- Family regulates the biological necessity of society.
- Absence of other kins and busy schedule of parents are the factors which makes it difficult for their children to develop family values, morals etc.
- In addition to this the growing children are engaging themselves in various socially restricted promiscuities.
- Similarly, prior to mining, family was considered as the production as well as consumption unit.
- All the members of a family were directly connected with agriculture and cultivation to meet the financial requisites of their family.
Old Age Population

- The offspring’s preferred to live in nuclear families rather to continue in the joint family system.
- In case of migration, they exhibit little concern to take their parents with them.
- Even their parents feel reluctant to leave their ancestral habitation with which they are emotionally involved.
- Old age population had a strong hold in the village level decision making process.
- They used to participate in all social and political affairs of their village.
- At present, the authoritative power has got transferred to the so called elite groups, i.e. political leaders, social activists, MCL authorities and the newly emerging contractor communities.
- They continue to hold all the elite positions i.e. president of village development committee, secretary of Self Help Group and Gram Sabha etc.
Although Government emphasize gender equality on all other aspects but it is gender-biased on extending R&R benefits to the girls above 18 years age as is applicable to their male counterparts.

* The clause of proving herself as divorcee to get R&R benefits is real problem for the women from lower social strata in whose case no formal divorce is sought. Even nothing mentioned about separated women.

* The complex role a woman is not properly counted.

* Though unmarried daughter above the age of 30 years, widow and divorced are considered as separate family at the time of compensation but they are not considered separately at the time of providing employment opportunities.
Women lost their economic security due to loss in agriculture. Here most of them are daily wage labourer.

The work conditions, work timings, leave facilities, etc have significant impact on women’s health. Children are also unsafe and indirectly affected right from conception and birth as women are forced to take their children to the mining areas and expose them to high levels of dust, pollution, mine explosives and accidents.

Child labour also increases where parents do not get work as a result of displacement.

Women trafficking and prostitution has become a hidden problem.
Problems with Compensation

* Compensation is calculated as an average of the registered sale prices of land of similar quality and location in the preceding 3-5 years. Most land transactions are grossly undervalued.
* Compensation is only for persons with undisputed legal title.
* Tenants, sharecroppers, and wage labourers are not considered eligible for compensation.
* Loss of access to community assets like grazing lands and forests, which are critical for the livelihood of the poorest are not compensated.
* Land acquisition does not take into account rise in market value between the time of notification and the date of actual possession.
* Resettlement packages, based on compensatory approaches, have proved inadequate (land, cash, jobs, skills training etc)
Experience of displacement and rehabilitation in India

* Inability to handle cash compensation: most rural people, particularly tribals have little experience in handling cash. Cash received is depleted by fraud, repayment of old debts and in liquor.

* Failure to acquire alternative cultivable lands and alternative livelihoods: oustee is forced to migrate to slums in the cities in search of work or to neighbouring wastelands/ forest tracts and clears them for cultivation

* Problems in resettlement areas: resettlement sites are inhospitable and their location is selected without reference to availability of livelihood opportunities.

* Multiple displacements: Most oustees are displaced again and again on account of lack of planning and coordination between engineers and project officials

* Problems of host communities: There is usually an unwillingness in the host communities to accept resettled oustees on account of competition for scarce resources and jobs and due to social and cultural incompatibility.

* Loss of trust: Land losers have no trust in either government or industry and their resettlement policies and promises
Land, which is the prime determinant of Jajmani system, is also considered as the main source of power (Beidelman, 1959). Land is the prime source of socio-political status and power (Beteille, 1965:204; Sarkar 1971:297). It is observed that the landholders not only maintain a better standard of living but also exercise direct control over the land less (Sivakumar 1978). Political power and economic hegemony in Indian village revolve around land ownership.

- Till mining’s intervention, the Brahmin and khandayat communities were playing an important role. They used to take all the political decisions in the village.
- After getting compensation, most of them migrated towards nearby resettlement sites & other villages.
- As most of the lands are being grabbed by the mining companies, the land based power structure lost its relevance.
- Presently class rather than caste has taken the power in to their hand.
- Rise of contractor class. Contractor became a center of power.
- At the time of different Panchayat and general elections the contractor class people are seen wooed by different political parties as they have numerical strength in the villages and also having political connections outside of the villages.
- In contrary to this scenario, the traditional power structure of control villages are still in the hands of upper caste population.
Impact on Marriage

* Caste and clan rigidity gone.
* Dowry has increased.
* Parents have lost their control at mate selection.
### Impact of Mining on the Observance of Rituals and Festivals

<table>
<thead>
<tr>
<th>Impact on Rituals</th>
<th>Type of Village</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Affected Village</td>
<td>Control Village</td>
<td></td>
</tr>
<tr>
<td>1. Performance of Rituals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prevalent</td>
<td>73(16.23)</td>
<td>107(71.33)</td>
<td></td>
</tr>
<tr>
<td>Declining</td>
<td>377(83.77)</td>
<td>43(28.67)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>450</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>2. Spirit behind Observing Rituals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prevalent</td>
<td>39(8.67)</td>
<td>124(82.66)</td>
<td></td>
</tr>
<tr>
<td>Declining</td>
<td>411(91.33)</td>
<td>26(17.34)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>450</td>
<td>150</td>
<td></td>
</tr>
</tbody>
</table>
The dances, songs, stories, memories, myths and customary ways of behaviour, which are commonly called as culture also lose their meaning and vitality.

Loss of cultural identity.

Religious life of the displaced people gets transferred. The sacred places and trees or rocks uprooted by industries or mines that undermine people’s sense of sacredness in nature, which lies at the heart of traditional tribal religion.

The village material culture is altered beyond recognition by displacement. From making most of their own food, tools and houses, villagers become dependent on factory-made goods.
As it is a agro based relationship it has lost its significance along with the loss of agricultural land.

The patronage relationship is being replaced by a contractual relationship.

Cash is taken over the space of kind in the case of payment.

Secular service is no more exist. Only ritual service is still prevalent

The service provider might have changed but the core idea of taking service at time of ritual is still prevalent.

<table>
<thead>
<tr>
<th>Type of village</th>
<th>Not Prevailing</th>
<th>Prevailing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affected village</td>
<td>435(96.6%)</td>
<td>15(3.33%)</td>
<td>450</td>
</tr>
<tr>
<td>Control village</td>
<td>52(34.66%)</td>
<td>98(65.33%)</td>
<td>150</td>
</tr>
</tbody>
</table>
The philosophies of development turn out to be a challenge, unless and until it secures the livelihood of project affected peoples.

Transformation is necessary to fortify the country in the annexe of progress, still it should not harm the livelihood of uncountable mass.

The first and foremost duty of the development authorities is to safeguard the livelihood in a sustainable way.
Impact on Human Capital

- In the SL framework human capital refers to the skills, knowledge, ability to get job and good health which jointly empowers the people to develop dissimilar livelihood policies and for the attainment of livelihood objectives (DFID, 2000).
- Mining companies are not providing any substantive health care facility to the non-employee of the mining affected communities.
- Rise of health problem due to pollution has forced some employees to hand over their job to their wives because of health problems.
- Much initiations are not taken place to improve the educational qualification as well as any formal training to improve the skill and knowledge of the mining affected mass.
- As matric or diploma is minimum qualification required to get a job in mining companies, few villagers are motivated to secure those qualifications.
- With the intervention of mining activities, local people have lost their traditional occupation with which they were acquainted since ages.
- Henceforth, it is clear from the field study that mining has a mixed impact on human capital.
Financial capital is considered as the most important of capitals, which reflects the economic status of a person in the society.

During pre-mining period the major source of income was agriculture, livestock and forest resources, but after mining the source of incomes became only mining centric.

Agriculture which was a major source of livelihood is being replaced by non-farm activities.

The diversified source of income has lost its importance in post mining period.

There are different mining related means adopted for the improvement of financial capital by the respondents.

### Occupational distribution of the Respondents in the sample villages

<table>
<thead>
<tr>
<th>Main occupation of Household Head</th>
<th>Mining affected villages</th>
<th>Control villages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cultivation</td>
<td>10 (2.2)</td>
<td>71 (47.3)</td>
</tr>
<tr>
<td>Diary</td>
<td>5 (1.1)</td>
<td>2 (1.3)</td>
</tr>
<tr>
<td>Agricultural Labour</td>
<td>...</td>
<td>39 (26)</td>
</tr>
<tr>
<td>Skilled wage labour</td>
<td>12 (2.67)</td>
<td>2 (1.3)</td>
</tr>
<tr>
<td>unskilled non-farm wage Labour</td>
<td>156 (34.67)</td>
<td>28 (18.67)</td>
</tr>
<tr>
<td>Service- Private Sector</td>
<td>22 (4.89)</td>
<td>5 (3.3)</td>
</tr>
<tr>
<td>Service-Government Sector</td>
<td>227 (50.4)</td>
<td>3 (2)</td>
</tr>
<tr>
<td>Trade/Business from fixed Premises</td>
<td>18 (4)</td>
<td>...</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>450 (100)</strong></td>
<td><strong>150 (100)</strong></td>
</tr>
</tbody>
</table>
* The traditional economy of the displaced people is completely changed- the cultivators turned into an industrial labour force.
* Loss of food security
* Though the diversified sources of occupation have lost its importance in the mining affected villages, still up to some point the financial condition is quiet better than the residents of control villagers.
* Though 9231 households are affected, 8365 persons have received the employment in MCL.
* It signifies that mining has a positive impact on financial capital.
* In spite of lots of social cost, mining has brought an economic gain for the villagers. However, this is not uniform.
Huge differences were observed in the case of annual income between workers & Non-workers.

Class differences have increased in both pre and post-mining period.

The overall situation shows that irrespective of caste and communities all are financially benefited after the introduction of coal mining in this region.

While the expenditure on education and health was 1.66 and 3.30 percent respectively during the pre-mining period, it has gone up to 15.54 percent on education and 5.97 percentages on health in the post-mining period.

The current market price is forcing both the parents to earn, and while both of them are going out, their children are either taking care of their other siblings or stealing coal from the nearby mining sites.
Though mining occurred with mass scale displacement, still it credited some major financial changes in the mining affected villages.

<table>
<thead>
<tr>
<th>Caste of the Households</th>
<th>Total Annual Income in pre-mining period</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Below 20000</td>
<td>20000- 30000</td>
</tr>
<tr>
<td>General</td>
<td>51 (11.3)</td>
<td>13 (2.9)</td>
</tr>
<tr>
<td>OBC</td>
<td>108 (24)</td>
<td>47 (10.4)</td>
</tr>
<tr>
<td>SC</td>
<td>50 (11.1)</td>
<td>27 (6)</td>
</tr>
<tr>
<td>ST</td>
<td>0</td>
<td>1 (.2)</td>
</tr>
<tr>
<td>Total</td>
<td>209 (46.4)</td>
<td>87 (19.3)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Caste of the Households</th>
<th>Total annual income in post-mining period</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Below 50000</td>
<td>50000- 1 Lakh</td>
</tr>
<tr>
<td>General</td>
<td>7 (1.6)</td>
<td>23 (5.1)</td>
</tr>
<tr>
<td>OBC</td>
<td>24 (5.3)</td>
<td>85 (18.9)</td>
</tr>
<tr>
<td>SC</td>
<td>8 (1.8)</td>
<td>41 (9.1)</td>
</tr>
<tr>
<td>ST</td>
<td>0</td>
<td>1 (.2)</td>
</tr>
<tr>
<td>Total</td>
<td>39 (8.7)</td>
<td>150 (33.3)</td>
</tr>
</tbody>
</table>
Impact on Social Capital

- Social Capital has a distinct identity as it designates “networks together with shared norms, values and understandings that facilitate co-operation within or among groups” (OECD, 2001).
- Egalitarian social structure replaced by a low place in an extreme hierarchy.
- Splits in the community between people for and against the project/company.
- Deterioration in community values, corruption and oppression by goons.

- Massive acres of land have been disturbed and thousands of households have been displaced from their homestead as well as agricultural lands. This has disturbed their ethnic relation, social network.

- In search of employment opportunity, clusters of migrants are coming to the mining regions and during their stay the amalgamation of cultural identity is taking place which in turn disturbs the actual ethnic identity of the region.
Physical capital denotes the basic physical amenities and some production entity which fabricates to sustain a livelihood.

Mining has significant impact on physical capital.

In the case of household asset most lost.

In case of traditional technology most lost.

Few may gain procuring modern amenities due to rise in income.
Impact on Natural Capital

- In the sustainable livelihood framework natural capital implies the access of natural assets like land, forest, wild resources, water, air quality, minerals and so on.
- The first major impact of mining on natural environment is pollution.
- The emission of coal wastes and the radiation coming out at the time of operation are the primary causes of air pollution in this belt.
- Under CSR activity it has been clearly mentioned that at the time of transportation the coal loaded trucks must be covered through tarpaulins, but authorities are not paying serious attention towards this issue.
- Because of the radiation of extreme heat the water level in mining region goes down.
- Mining operation has disturbed the age old traditional tanks.
- Decrease of forest based products is also an important impediment for the project affected communities.
- Mining has a severe negative impact on the natural capital of project affected communities.
Agriculture which was the prime source of livelihood for the rural mass have lost its relevance.

A small cluster of households in mining affected areas are doing cultivation.

Intrusion of mining activities forced them to shift their attention towards mining based activities.

Loss of land, non availability of agricultural labourers, climatic condition & soil fertility, destruction of traditional source of water, rise of cost of production have discouraged.

Only 32 (10.6 percent) households are practising agriculture as a secondary means in our study.

- Input is comparative more in the mining affected villages than the control and pre mining villages.
- The average expenditure in agriculture per acre was rupees 4434/- in pre mining period, 12515 in post mining period and in control village it is rupees 7157/-
While during pre-mining period the average production of paddy per acre of land was 12.09 quintal it is now 6.88 quintal.

The average production in control villages is more or less similar to the pre-mining age (11.54 quintal).

Though the agricultural inputs such as seeds, fertilizer, and pesticides were used more in quantity in the mining affected villages, the production is comparatively less.

**Shift of output:**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mining Affected Village</th>
<th>Control Village</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Production per Acre</td>
<td>6.88</td>
<td>11.54</td>
</tr>
<tr>
<td>Market Price of Paddy</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>Loss of Production</td>
<td>4.66×1000</td>
<td>---------------</td>
</tr>
<tr>
<td>Loss in Rupees</td>
<td>4660</td>
<td>---------------</td>
</tr>
</tbody>
</table>
Coal mining has a negative impact on air quality.

Coal mining and its related activities have posed serious pollution problems due to the release of particulates and harmful gases.

It was observed that airborne emissions occur during each stage of the mine cycle, but especially during exploration and operational activities.

The biggest sources of air pollution in mining operations are: Particulate matter transported by the wind as a result of excavations, the loading and unloading of overburden and coal, size reduction, blasting, drilling and transportation.

Apart from this, the haul roads and huge quantities of open air coal burning by the villagers and shopkeepers.

Stocked coal lead to combo stone, fire and smoke.
Villagers in the affected villages claimed that coal related waste and coal sludge are often injected in the nearby water bodies which makes the water unfit for domestic use.

The ponds which the villagers earlier used as a bathing ghat exists no more. It has either dried up or the water bodies have been filled by the coal associated waste materials.

Water table gone down.

The impacts of heaps of waste materials, waste rock can be severe in the mining areas.

Villagers also expressed that they experience a change in the taste of the water that they now consume.

For all these things villagers have no role but they are victimised.

The neighbouring villagers who are not part of this project also victimised.
Abandoned Mine

- As per the guidelines issued by the Ministry of coal, Government of India, after the exhaustion of coal the mines should be properly closed as per the Mining Closure Plan.
- So, that the society can use and benefited in future. Plantation density observed is very less in mining area.

Abandoned Mining Scenario in MCL Talcher.
The Improper ecological restoration of mining areas created a base for mosquito breeding, live stock and human loss. It raised a question what next after mining.
Mining has affected the local environment and associated biota through the removal of vegetation and topsoil, the displacement of fauna, the release of pollutants, and the generation of noise.

In Angul-Talcher region in Odisha, for instance, forest cover has reduced by 11% between 1973 and 2007 due to coal mining (Singh P., 2010).

Destruction of forests during mining operation is invariably accompanied by an extensive damage and loss to the system. The overburden of coal mines when dumped in unmined areas creates mine spoils which ultimately affects the surrounding vegetation.

The destruction of ecosystem in post mining period has brought a great loss to the wildlife and their habitat.

Mobile wildlife species, birds, and predators have left the study areas.

The fragmentation of habitats due to mining activities has made difficult for some animals for their ecological move.

Villagers lost various fruits, mushrooms and herbal plants and medicines.
Coal mining activities are loud, day- and night-long process that includes, blasting, drilling, and constant moving of heavy vehicles.

These mining related activities have resulted in the emission of loud noise which has disrupted the lives of those in the surrounding, communities and has reduced the quality of life.

During the field investigation there were clear evidences that the ill effects of mining not only affected the environment but human habitats as well.

It has created problems like hearing, mental disturbance and house cracking.

In this regard villagers were interviewed.

### Causes of Noise Pollution

<table>
<thead>
<tr>
<th>Cause of noise pollution</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moving of heavy vehicle</td>
<td>42</td>
<td>9.3</td>
</tr>
<tr>
<td>Blasting</td>
<td>408</td>
<td>90.7</td>
</tr>
<tr>
<td>Total</td>
<td>450</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Starting from its inception, mining involves different stages which begin from mineral ore exploration and windup with post-closure period. Each stage implicates dissimilar environmental impacts as it comprehends the release of toxic materials, pollution of water & air, degradation of biodiversity etc. All these are shading negative impacts on the environment which has a direct negative impact on health of every living being including flora and fauna. The mining activities are stirring towards national development by encountering the environmental stability which in turn accustoms the foundation for inimical health. Unfavourable environment: chronic & acute health problems.
HEALTH PROBLEMS IN THE TALCHER COALFIELD

Major Health Problems faced by Households in Talcher Coalfield

<table>
<thead>
<tr>
<th>Diseases</th>
<th>Households affected in Mining Villages</th>
<th>Households affected in Control Villages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>63 (14.93)</td>
<td>15 (45.45)</td>
</tr>
<tr>
<td>Gastric Disorders</td>
<td>180 (42.65)</td>
<td>10 (30.30)</td>
</tr>
<tr>
<td>Skin Diseases</td>
<td>73 (17.29)</td>
<td>Nil</td>
</tr>
<tr>
<td>TB</td>
<td>9 (2.13)</td>
<td>Nil</td>
</tr>
<tr>
<td>Eye allergy</td>
<td>34 (8.05)</td>
<td>Nil</td>
</tr>
<tr>
<td>Asthma</td>
<td>22 (5.21)</td>
<td>3 (9.09)</td>
</tr>
<tr>
<td>Arthritis</td>
<td>41 (9.72)</td>
<td>5 (15.15)</td>
</tr>
<tr>
<td>Total Households suffer</td>
<td>422 (100)</td>
<td>33 (100)</td>
</tr>
</tbody>
</table>
## Frequency of occurrence of diseases in study areas

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Mining villages</th>
<th>Control villages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Daily</td>
<td>Weekly</td>
</tr>
<tr>
<td>Arthritis</td>
<td>B 4</td>
<td>A 29</td>
</tr>
<tr>
<td></td>
<td>......</td>
<td>......</td>
</tr>
<tr>
<td>Asthma</td>
<td>B 15</td>
<td>A 40</td>
</tr>
<tr>
<td></td>
<td>......</td>
<td>......</td>
</tr>
<tr>
<td>Gastrointestinal disease</td>
<td>B 5</td>
<td>A 137</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Skin disease</td>
<td>B 5</td>
<td>A 48</td>
</tr>
<tr>
<td>TB</td>
<td>B 7</td>
<td>A 2</td>
</tr>
<tr>
<td>Fever</td>
<td>B 2</td>
<td>A 1</td>
</tr>
</tbody>
</table>
Total Cost per Household (Pre Mining): = Rs 189.49/Month
Total Cost per Household (Post Mining): = Rs 3016.37/Month
Total Cost per Household (Control Village): = Rs 302.6/Month
The asthma, allergies and gastro problems got increased after mining, which is usually common in all industrial areas.
Women and children are more victims from these diseases.
It can be concluded that mining has both positive and negative impact on the people’s way of living.

While in one hand, with the introduction of mining the economic standards of the people has increased as they have better opportunities to work.

But on the other hand, they are staying in highly polluted environment and suffer from diseases directly related to mining and so on.

Along with pollution the pain of displacement has ruined their life and livelihood.

Though MCL has constructed schools, health centres, clubs, they are mostly meant for their employees.

The impact on biodiversity, agriculture and health sector is equally negative.

All most all the villagers in mining affected areas have lost agricultural land.

Few households are having few dismals of land, they are not regularly engaged in agricultural activities.
The rise of SPM and RPM is the serious issue in all most all the mining areas of Talcher.

Even the rise of SS, COD and partially BOD has created problem for aquatic life.

No doubt MCL has taken lots of innovative mechanisms to control pollution. But it should be speed up.

The introduction of mining has disturbed the age old social structures.

Customs, rituals, caste and kin based relations, which are quite prevalent in control villages.

Though as part of CSR activities MCL has done lots of infrastructural work and supplying safe drinking water to all villagers, but it should work for sustainable development of villagers especially enhancing capacity building of villagers.

It became very area specifics, where people and Sarapanch are influential and having voice.

The role of various institutions in ecological restoration and reclamation shows that all most all the rural institutions except FD are quite inactive in case of ecological restoration.

Though in case of ecological restoration of abandoned mining MCL has done lots of work, but it is not so first.
The intervention of mining has posed a serious question on sustainable livelihoods.

As all most all are depending on mining and allied areas for their survival, what will happen once the mining activities are over in these areas.

Destruction of ecosystem and habitats has brought a question mark on sustainability of wildlife.

Though DFO, Anugul has done lots of work under utilization of CAMPA fund, it has to work more area specific.

Literacy regarding the modalities of CAMPA fund is very low amongst the forest officials.
RECOMMENDATION

- MCL may consider of providing some cost of health expenditure of mining affected villagers who non-employees of MCL;
- MCL should try to organize village wise health check-up camps as well as awareness camps;
- Development of green belt along the roads or barren and waste land can help in combating some of the environment related ills.
- Administration should properly monitor the working of health camps and provide technical support for the same;
- More measures should be taken to prevent Dengue and Malaria;
- Appointment of village health workers in surrounding villages;
- Establishment of water treatment plants in all mining affected villages to separate coal associated pollutants if possible;
- Appointment of women health workers in surrounding villages to look after the health of the women;
- Provisions should be made for a buffer zone between the local habitation and the mine lease in the form of a green belt of suitable depth. Restricted entry, use of sirens and cordoning of the blasting area are some of the good practices to avoid accidents.
Both the land acquisition and land possession activities should carry out simultaneously and all disputes should be resolved as soon as possible in consultation with public. Giving much time gape between land acquisition and land possession giving an opportunity to the villagers to go for agitation in future;

Rehabilitation and Compensation issues should be dealt. The company should provide all infrastructure facilities to the rehabilitation colony. They should take into consideration the plight of landless households. They should give much emphasis on rehabilitation rather resettlement;

There should not be any communication gap between public and Government/company officials. They should develop trust among villagers. It should not give any scope to media and activists to polarise and misguide the public;

Land less residents of the affected village should be compensated and provisions should be made for employing them;

Compensation related disputes should be solved and compensation should be with respect to the present market rate;

At the time of giving jobs in lieu of compensation gender discrimination should not be made.
RECOMMENDATION

- Regular water spraying as well as proper monitoring to deter dust air pollution;
- Plantation near to (on both side) of the road to improve the quality of air;
- Implementation of noise and hassle free blasting technology with low intensity everywhere to prevent noise pollution and cracks in the house;
- Regular addition of bleaching powder into surrounding water bodies as well as domestic water supply and proper monitoring by the administration;
- Issues of post-mine closure like unemployment, income potential, migration, environmental clean-up should be discussed and taken care much in advance;
- Higher administration should look into the effective utilization of CAMPA fund in the affected villages;
- A proper monitoring mechanism should be developed to monitor the activities of mining companies keeping all the mining and mining closer policies in the mind; Unless and until Gram Sabha send its consent on satisfaction of ecological restoration and reclamation of abandon mining, Government should not permit the companies to go-ahead with further extraction;
- Pollution control board should more vigilant and should take the public opinion regularly in the context of pollution;
RECOMMENDATION

☐ NGO’s should come up in the affected villages to advocate the cause for the rural people and to bridge the gap between the mining companies and the people;

☐ Gram Sabha/ Gram Panchayat should function efficiently and the mining companies should not try to bias its functioning, administration should have a direct contact with the Gram Sabha on a daily basis;

☐ Forest department and Tribal department should come into action and create awareness amongst the people;

☐ Higher administration should look into the effective utilization of CAMPA fund in the affected villages.
RECOMMENDATION

- CSR programs based on health, education, infrastructure and other social sectors should be implemented for both employees as well as non-employees, inclusive development should be the agenda.
- Community driven development should be ensured by the mining companies, people should be involved at each level of development, there is a need for bottom to up approach.
- CSR programs based on livestock should be implemented with due consultations.
- Need assessment and Impact assessment of CSR activities should be carried out periodically.
- Emphasis should be given on vocational education of the villagers through CSR programs.
- Formation of youth groups for village development;
- Provision for bore wells, community toilets, girls education;
- Irrespective of party politics State Government should extend administrative support to MCL for speedy implementation of CSR projects.
- An initiation should be taken from both State Government and MCL side to neutralise the local conflict; and formation of various local level committee to select the demand of the villagers.
CRITICAL ISSUES TO BE LOOKED AT WHILE SETTING UP A MINE / MINE RELATED INDUSTRIAL PROJECT

- Stakeholders consultation * - Win hearts and minds
- Communication strategies – customized*

- Provision of public hearing
- Approval of local bodies – villages, tribal organisations
- Land acquisition through mutual consent
- Recognition of customary land rights of tribals
- Culturally compatible R & R strategy
- Project activity to start only after R&R issues are resolved
- Benefit sharing arrangements
- Explore possibility of government leasable land
- Provision of integration of displaced with the host
- Preferential R&R Package for the ST and Persons experiencing Multiple Displacement
- Higher Allocation of Funds for R&R
• Incorporate and integrate mining development plans into the development plans of local government
• Enhance the capacity of local government units
• R&R Issues should be seen from Livelihood Restoration Angle

* Resettlement must be planned and implemented as a development project over a minimum of two generations and include not only protective measures, but also the provision of new rights, resources and strategies.

* One of the most critical problems that the review brings to light is the absence of comprehensive baseline studies enumerating the precise numbers of people who may be negatively affected and also providing a comprehensive picture of their socioeconomic organisation and standards of living.

* Exclusive information regarding displacement and rehabilitation should be given to the public before taking any initiation.