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Mining Led Industrialisation and Its Impact on Human Development in Odisha: A critical Analysis of the Role of DMF in the State

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ABSTRACT

High economic growth has been one of the primary objectives of India for which different strategies have been adopted. But in the post reforms period exploitation of mineral resources has been seen as a source of economic growth in many states of India including Odisha. While this has opened a vast scope for mining led industrialization, the unethical aspects is that the unsustainable and noneconomic exploitation of these resources not only retards economic growth but also affects human development adversely by displacing a major share of labour from production process and by destroying the sources of livelihood. This paper examines these impacts of mining induced displacement by different mines in different localities on human development among the rural tribal households of Odisha. Further the role of DMF for boosting the development of mining affected households as well as mining affected areas is discussed with poor and negligible performance in the State.

1. Introduction[1]

A nation can adopt different strategies to achieve the twin major objectives of growth and social justice where industrialization[2] in general and mining led industrialization in particular, play a major role in the economic development and an indispensable pillar in the process of structural transformation of the underdeveloped countries (Kuznet, 1973). Odisha being rich in mineral resources has opened a vast scope for mining led industrialization in the State where mineral resources play key role for industrialisation and thereby boost the economic growth as well as employment and hence can reduce the poverty but the unethical aspects is that the unsustainable and noneconomic exploitation of these resources not only retards economic growth but also affects human development[3] adversely by the process of displacement from land and livelihood. In this context, the relationship between mining and development is termed as contentious[4] and ambiguous[5] (Bebbington et al. 2008). Mining has been considered well for growth but due to poor government capacity, poverty has been arisen where the present patterns of industrialisation are more displacing, exclusionary (exclusion of labour in lieu of technology) and undemocratic in nature which produces immediate gainers[6] but permanent losers[7] (Bhaduri and Patkar 2009). As a result, there is simultaneous increase in corporate profit as well as human misery. It has paved away the happy, peaceful and group co-operative society of poor tribals leading simple agrarian life through displacement from their land as well as the only source of livelihood. The absence of proper rehabilitation and resettlement of the displaced poor from their land and livelihood has led them to hunger and deprivations, where SCs/STs are most disadvantaged. Hence it has led towards human under development (Kumbhar, 2012; Mishra, 2010; Khatua and Stanley, 2006 and Naidu, 1976). Thus the development process in the State has deviated from an eco-friendly to environmental and human hazardous process and becomes a common feature of the Odisha Economy.

The scale of mining induced displacement in Odisha is one of the highest in the country (Ray and Saini 2011). Major industries in Odisha have grown in those areas where there is availability of raw-materials, water and power basing on which the state is divided into twelve industrial zones. Among the major minerals, coal has covered two industrial zones: Talcher area and IB valley area which is about 7.6% of total area of the state (2723 Sq. K.M.). The other major minerals include Bauxite, Chromite, Iron, Limestone and Nickel etc where the production trends are rising due to increasing marketing demand but other minerals have declining trend because of unorganized manner of mining, low grade mineral ores, lack of environmental clearance and interference of politics. The present study is an attempt to explore the conditions of the

[1]The authors are thankful to the faculty members of PG Department of Economics, Sambalpur University for their valuable comments and suggestions while the earlier version of the paper has been presented in the department.
[2]Querying, processing and export activities are performed in mining led industrialization which not only earns revenue for India but also generates employment that can reduce poverty and boost the economic growth.
[3] Human development is an alternative ways of assessing development. Traditionally, development has been measured uni-dimensionally, that is through increase in wealth or output of a nation but based on human development, the 'development' of an economy has been expressed with a composite index of wealth, health and knowledge.(Human Development Report,1990)
[4]The relationship between mining and development is termed as contentious due to more adverse effect and less positive effect of mining on society, environment and economy.
[5]The above relationship is termed as ambiguous due to hope for a possibility of mining contribution.
[6]Immediate gainers in this article refer to the foreign investors, the World Bank and the International Monetary Fund.
[7]Here permanent losers are the poor (the inhabitant) working in the unorganized agricultural sector; losing their land, livelihood and home in the process of industrialisation. They never get back the resources that they have loose and hence their fourth coming generation also become loser.

mining affected households in Odisha with a special focus on human development measuresin the three different mining affected villages (Coal affected village – Darlipali, Bauxite affected village – Damanjodi and Limestone affected village – Dunguri from Jharsuguda, Koraput and Bargarh districts of the State respectively) which are selected basing on differentiation of mining and different geographical location of the State.

The main objectives of the paper is to understand the conditions of the mining affected in the pre and post mining period in the studied area by examining the human development indicators like health, wealth and education. Further the role of DMF[8] for boosting the development of mining affected households as well as mining affected areas is analysed below. Based on the above objectives, the following hypotheses are proposed to test in the sample villages.

- Mining led industrialization has no impact on human development indicators in the mining affected localities.
- Role of DMF has no impact on improvement of the mining affected areas.

2. Methodology

Observational descriptive analyses of primary data are used for comparing the human development indicator variables. The secondary data analyses of mining revenue, mining output and employment are discussed by their respective indexes and shown in tabular form and figures.

Darlipali village was selected from Lakhanpur area of MCL where 26 numbers of villages are affected. The village was selected as the sample village where all types of land (cultivable land, homestead land, forest land and other government land) were now acquired by MCL for Lakhanpur OCP and Belpahar OCP, though possession of all types of land was not taken physically. Belpahar OCP has started its extraction in the village on 23 March 1988 on the basis of notification on 20 May 1983 for 257.94 acre land. Before that, the mine has acquired completely the government forest land of 311.85 acre land on 04 September 1981. The second phase notification was on 07 September 1988 for Lakhanpur OCP for 89.89 acre land and the land possession was taken place by MCL on 22 March 1991. The third phase notification was being carried out on 26 October 1991 for both the mines for 17.25 acre land and physical possession was not completed yet. But the field survey shows that are 102 households staying in that sample village with possession of 114.92 acres of land (both homestead and cultivable), since MCL has not acquired all the land physically.

In the case of bauxite mines of NALCO, no household was being displaced but for the establishment of Alumina Refinery at Damanjodi[9] of Koraput district of the state, thirteen villages[10]were fully displaced. Nalco has made a rehabilitated colony for the displaced households and resettled them in the new colony named Ambedkar Nagar in 1980. Later on two villages (Champapodar and Khoraguda) were displaced for the establishment of ash pond and red mud pond[11] which were resettled in a new rehabilitated colony, SahidLaxmanNayak Nagar in 2004. 304 households[12] from the two rehabilitated colonies were being taken for field survey.

Dunguri village was mostly affected among all affected villages by Limestone mines for which it was the selected village for Primary Survey. In 1955 ACC cement factory acquired 735 hectares from 1435 hectare of Dunguri village for limestone mining lease (As per village sarpanch). Primary survey works has taken seven years before starting the mines and hence first mining activity was carried on by ACC cement from Dunguri village in 1962. The total population of the said village was about 2619 as per census, 2011 which consists of 581(22.18%), 435(16.61%) and 1603(61.21%) number of population in SC, ST and Others categories respectively. 152 households of the village were taken for field study comprising of 38, 43 and 71 households from ST, SC and Others category.

The secondary data on mineral output, revenue and employment which are mostly in time series nature, collected from Census of India, CSO, NSSO, Directorate of Economics and Statistics, Directorate of Mines, OMC and other published reports of the central and state Government as well as different websites. Data on DMF (both time series and cross sectional) are collected from Odisha minerals websites.

The rest of the paper is divided into four sections where first section deals with back ground of mining in Odisha. Second section discusses the micro studies based on field surveys which is further divided into three sub-sections as per human development index i.e. health, education and per capita income. The third section attempts to explore the role of DMF in Odisha and last section concludes the paper.

3. Back ground of Mining in Odisha

The mineral activities in India started since 1774, where as in Odisha, it can be trace back to 1857 when it started in Talcher (Khatua and Stanley, 2006). However, in the post-reforms period, the mining activities have been increasing rapidly. Given the accessibility of minerals resources either on the surface or interior of the earth, both open cast and underground types of mining have been done in Odisha as well as in India.

[8]District Mineral Foundation Funds are the statutory bodies established in every district by the State Government in 2015 keeping the prime objective of working for the interest of the benefit of the persons and areas affected due to mining operations in the State.

[9]Among the displaced villages,largest no of household displaced from Damanjodi village and so the company and the place was named on Damanjodi.

[10]Thirteen affected villages are Damanjodi, Goudoguda, Barangaput, Patiasil, Sugriguda, Kantaguda, Mali-Dumriguda, Gadipabli, Sargiguda, Jhadiguda, Dengajaniguda, Sindhipar and Ambogaon.

[11]Ash and Red Mud are two types of wastes at the time of preparation of liquid Alumina from Bauxite mineral. These wastes are collected in the liquid form and deposited in the ash pond and red mud pond and then after purification of these wastes that water is used as safe drinking water.

[12]Household selection is being done on population census 2011 of Koraput district of the state. The total population of the district Koaput is 1379647 and the social category wise division is 196540, 697583 and 485524 as SC (15 per cent), ST (50 per cent) and others (35 per cent) respectively. Sample households are selected for the field survey are as such from 304 households.

The share of minerals resources of India in the world and that of Odisha in India has been presented in table – 1, which represents that while India is having substantial share of minerals resources of world and ranked in top 3rd to 6th position, Odisha possesses lion's share of the Country's mineral reserves (92 percent of total Nickel, 83 percent chromite, 55 percent Bauxite and so on) (Geology and mineral resources in Odisha, Odisha reference annual, 2011).

TABLE – 1, Mineral Resources in India, Odisha, 2010

Mineral	Contribution of India in World In (%)	India's rank in world	Contribution of Odisha in India. In (%)
Nickel	-	-	92
Chromite	14.2	3rd	83
Bauxite	5.8	6th	55
Iron	8	4th	38
Coal	8	3rd	26

Data Source: Indian Mineral Industry and National Economy (2011)

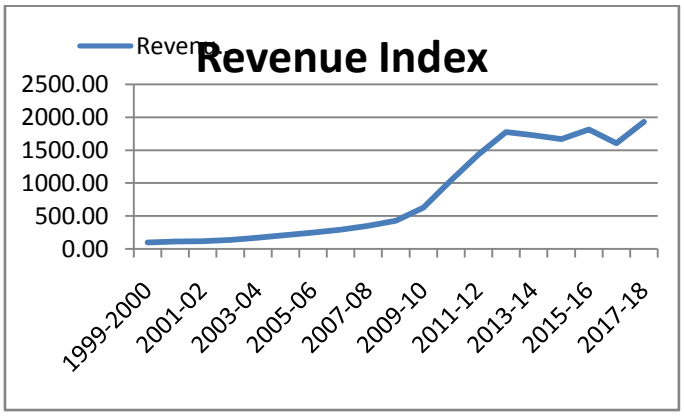
Table – 2, Mining Revenue collection in Odisha, 1999-2000 to 2017-18

Year - Wise Mining Revenue Collection (in RsCrores)		Index of Mining Revenue	Growth Rate
Year	Revenue		
1999-2000	320.08	100.00	-
2000-01	360.32	112.57	12.57
2001-02	378.31	118.19	4.99
2002-03	443.54	138.57	17.24
2003-04	550.76	172.07	24.17
2004-05	670.51	209.48	21.74
2005-06	805.00	251.50	20.06
2006-07	936.56	292.60	16.34
2007-08	1126.09	351.82	20.24
2008-09	1380.59	431.33	22.60
2009-10	2020.72	631.32	46.37
2010-11	3330.47	1040.51	64.82
2011-12	4586.65	1432.97	37.72
2012-13	5679.35	1774.35	23.82
2013-14	5519.58	1724.44	-2.81
2014-15	5335.05	1666.79	-3.34
2015-16	5797.79	1811.36	8.67
2016-17	5134.18	1604.03	-11.45
2017-18	6176.91	1929.80	20.31

Source: www.odishaminerals.gov.in

Hence, several mineral based industries have already come up in the state and the state has also earned some revenue from the mineral sector (the state's mining revenue is touched to Rs. 6176.91 crore in 2017-18 which was Rs. 1380.59 crores during 2008-09 is presented in table - 2) (www.orissaminerals.gov.in) but it has not produced a significant impact for the upliftment of the grassroot level people. Since the trend for mining revenue is increasing but growth rate for mining revenue is fluctuating over the years and sometimes it becomes negative growth (in 2016-17, highest negative growth showing 11.45 per cent). Figure – 1 and 2 represent for mining revenue trend and growth rate respectively. While the trend has smooth and steady pathup-to 2008-09 and then starts hasty increase and becomes stagnant during 2012-13 to 2017-18, the growth rate depicts the zigzag path over the years. The poverty ratio (head count ratio) is still at 37% in Odisha compared to 29.8 % in India (http://www.undp.org.in). In case of human development index, Odisha ranks 22nd position in all India level (ibid). Further the level and growth rate of the per capita income and Net State Domestic Product of the state remained lower compared to other Indian states (ibid).

Figure – 1, Trend of Mining Revenue in Odisha, 1999-2000 to 2017-18



In the mining employment scenario of the State, it exhibits miserable image which is reflected in Table - 3. Since number of mining employment has increased from 49837 in 2004-05 to 52405 in 2016-17, the annual growth rate is not satisfactory as during 2006-07, 2008-09, 2011-12 and 2013-14 the growth rate figures are negative. This is due to improvement of mechanization and modern instrument and reduction of man-power employment over the time.

Figure – 2, Growth Rate of Mining revenue in Odisha, 1999-2000 to 2017-18

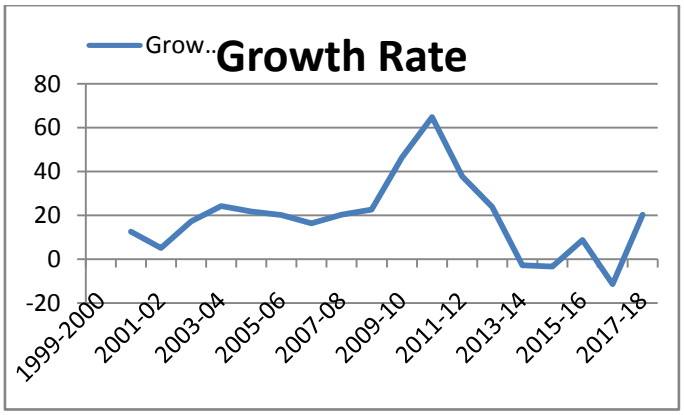


Table – 3, Number of mining Employment in Odisha

Year	No of Employment	Annual Growth of Employment
2004-05	49837	
2005-06	55764	11.89
2006-07	47376	-15.04

2007-08	49176	3.80
2008-09	44167	-10.19
2009-10	43705	-1.05
2010-11	51877	18.70
2011-12	48239	-7.01
2012-13	59417	23.17
2013-14	47370	-20.28
2014-15	47370	0.00
2015-16	49086	3.62
2016-17	52405	6.76

Source: Economic Survey (2017-18)

On the other hand, in the increasing development of industrial sector, agriculture sector is neglected in terms of reduction in gross cropped area and size of land holding as well as reduction in agricultural employment (Mishra, 2010). But in the process of industrial development and particular in mining led industrial development, land acquisition, displacement from land and livelihood, improper rehabilitation and resettlement are the major issues (Kumbhar, 2012; Mishra, 2010and et al.). In the context of reduction of manpower employment in both agricultural and industrial sector and with the advent of mining led industrialization and displacement fromland and livelihood with non-satisfactory rehabilitation and resettlement, the study of those affected in the process of development is inevitable. The following section briefly discusses about the human development aspects in pre and post mining period in the studied areas.

4. Micro Studies based on Field Survey

Impact of Mining led Industrialisation on Health:

While studying the health aspect in the sample villages, the bad impacts of mining led industrialization on environment in terms of soil erosion, shortage of water and polluted atmosphere cannot be unnoticed. This section describes how the affected people are living in such a hazardous environment in the studied areas.Darlipali villagers are most affected among the three studied villages in terms of polluted water and water scarcity. The tube wells are out of order where the water levels of the open wells are gone down because the mines are excavated very dip to the earth in the village. The colour of the water is black everywhere. The people have to wait for supply of tank water in alternative of four days interval which is insufficient for using. They are suffering from scarcity of water for drinking, bathing themselves and also for animals, for daily needs and for agriculture. They maintained their lives in a very aggravating condition where life sustenance is impossible without water. Box 1 shows how the poor villagers are using polluted water from Lilarinala endangering their life with serious health problems.

BOX – 1, LilariNala in Darlipali

The sample village was covered by dense forest and large cultivable land and a natural water reservoir before mining. The natural reservoir and the common wells in the village were the source of drinking water. The forest is completely destroyed and directly affected the livelihood of the people after extraction of coal from this area. The people have also lost the natural water reservoir. Due to mines, the water level of the wells and tube wells goes down and also is polluted. Mostly the people are suffered from acute shortage of water (both drinking and for all other purposes). There is supply of tank water but that is coming with interval of 4 days which is not sufficient for the people. The people are using chua water for drinking and black polluted water for all other purposes. This will be clear from the above photograph.

Comparable condition is realized in Damanjodi also with acute shortage of water after establishment of mining led plant. The villagers are of the opinion that during the commencement period of plant establishment, when the displacement and resettlement procedure was carried on firstly, 70 per cent of the people of their village died due to polluted water. Here the colour of water is red due to red mud (waste product of

Alumina Refinery). Before establishment of mining led plant there, the poor STs/SCs used the purified water from natural reservoir, common wells of the village which are not available in the new rehabilitated colony. They have to use the tube well or tank supplied water from NALCO which is largely insufficient for the poor for their daily needs i.e. for drinking and cooking and using for other homestead purpose. The new colonies are not provided with any natural as well as artificial reservoir and wells.

In the third village, Dunguri, similar situation is also observed. But there is a stock of purified water at the disposal of ACC Cement Factory after quarrying of limestone ores to the dip into the earth and the Plant is reluctant to supply the same for use of the same by the poor villagers which is reflected in box – 2.

Box – 2, Shortage in the midst of Plenty in Dunguri

Mr. Suresh Chandra Pradhan, one of the household in the sample village, told that like all the mines area here also acute shortage of water is seen. But that water problem could be solved if the company personnel desire. Because when mines are dug sufficiently, water level of the village goes down but in mines there is stock of purified water, as that water comes from the limestone digging naturally. He has made request for full utilisation of the stock water for the sake of villagers for solving water shortage problem in daily use and for cultivation.

Thus mining led industrialization does not solve the water problem in the mines affected villages. The air pollution adds fuel to water pollution for making hazardous environment which is clearly visible from the photographs.

Box – 3, Belpahar Open Cast Mines

In all the three studied villages, the atmosphere is abundant with visible dust particles. Hence, the environment is badly affected by air pollution endangering chronic health diseases like fever, gastritis, skin diseases, joints pain, TB and bone problems etc. The greenery surroundings with dense forest in the pre-mining period have lost its significance. The emissionof green-house gases causes serious environmental

cost to the local poor in terms of small health impact as well as chronic disease.

Box – 4, Dunguri Lime Stone Mines

The explosions in the mines area also cause earthquakes in the affected villages. Box – 3 and 4 demonstrates the air pollution in Darlipali and Dunguri respectively.

Above all, there is no improvement in hospital facilities in the sample villages as the Govt. hospitals are running with shortage of staffs and the mining plant based hospitals, with full of staffs and sufficient availability of beds, are only reserved for mining employee. Mining employees are availing of free medical check-up whereas the poor are deprived of that creating social exclusion. The doctors in these hospitals look after the mining employees with a priority basis ignoring the emergent poor patients who are not employed in the mining led plant. In Darlipali, only 18 per cent of the households, who got MCL regular service, are satisfied with the prevailing hospital facility where the rest 82 per cent are harassed, but in Damanjodi, nobody is satisfied with the hospital facility provided by NALCO. Similarly only 4 per cent householdsare satisfied whereas 96 per cent are not satisfied with the hospital facility in Dunguri.

Impact of Mining led Industrialisation on Education:

Similar situation is observed in case of educational development also. There is no such visible development in the mining led plant locality. In the pre mining era, the Govt schools and colleges are far away from the sample villages so that the households are deprived of getting higher education. But in the post-mining situation, Govt primary and high schools are opened in the sample villages with shortage of teachers. Like hospital facility, free education facilities are only meant for children of mining employees in the plant based schools. Besides a very few households out of all mining affected poor of all the sample villages are not satisfied with the prevailing education facility. The literacy position of the sample villages are divided in terms of below 5, illiterate, Primary, Secondary, Higher Secondary and Graduate and above which are explained in table – 4.

As per census 2011, the literacy rate of the state is 72.9 percent, but Darlipali consists of 136 (31.7 per cent) illiterate persons and 5 (1.4 per cent) graduate persons where 50 per cent people are in secondary or higher secondary category showing low rank in human development indicator.

Table – 4, Educational Status in the studied area

Educational Status	Darlipali	Damanjodi	Dunguri
Below 5	41 (9.5)	140 (10.3)	21 (3.5)
Illiterate	136 (31.7)	530 (38.9)	172 (29)
Primary	84 (19.5)	308 (22.6)	144 (24.2)
Secondary	127 (29.5)	139 (10.2)	173 (29.1)
Higher secondary	36 (8.4)	232 (17)	60 (10.1)
Graduate & above	5 (1.4)	15 (1)	24 (4.1)
Total	429 (100)	1364 (100)	594 (100)

Source: Field Survey

In Damanjodi, the number of illiterate person (530) is high with highest percentage (38.9) of illiteracy among the three sample study area. NALCO being a Navaratna Company, it has not undertaken any necessary step for educational development for the displaced tribal that only one per cent population of the study area has completed their graduation. There is lack of awareness among the affected people where they have set up their mind to work as contractual maintenance worker in the plant after completion of matriculation and ITI with a salary of Rs 8000 to Rs 10000 per month.

Dunguri village is comparatively higher among the three sample villages based on educational status and literacy rate, as the literacy rate of the studied area is equivalent to state literacy rate[13] as per census 2011. But only 5 per cent people have qualified graduation in the village showing a low rank in human development indicator.

Though the literacy rate is comparatively higher in post mining than pre mining, there is lack of high qualified persons in the studied area. There is lack of awareness about the education and positive impacts of education. Thus mining led industrialisation does not bring human development in terms of education.

Impact of Mining led Industrialisation on Per Capita Income:

Per Capita Income is the major economic indicator of human development which is shown in table – 5. In Darlipali, 24.5 per cent households are coming in the per capita income group of below Rs 1000 whose conditions are severe and they do not get food three times a day properly. They maintain a very difficult livelihood in such low income without fulfilling their basic minimum needs[14]. The second income group ranges from Rs 1000 to Rs 2000 which covers 36.3 per cent households of the above said village. These groups of people have ability to arrange food but they are also facing lots of difficulty for fulfilling the minimum needs. The third and fourth income group ranging from Rs 2000 to 3000 and Rs 3000 to 5000 include11.8 and 9.8 per cent households, are also facing lots of difficulty for maintenance of their livelihood due to nearby MCL quarters[15]. Only 17.6 per cent households are in the income range above Rs 5000, who have availed MCL jobs, are somehow in the better condition. But they are also not satisfied with mining led income and in a view that mining has paved away their happy agrarian life.

In Damanjodi, 27.6 and 23.7 per cent of households are below Rs 1000 and in Rs 1000 to 2000 respectively who are the most sufferer of mining based plant. 17.4 per cent households are coming in the income range Rs 2000 to 3000 whereas 25.3 per cent have Rs 3000 to 5000. Only 5.9 per cent households have more than Rs 5000. The displaced people are resettled in the new colonies with better shelter which are nearer to plant made quarter lines where only high income group people are living. But they have not forgotten their old habitat that they have money but they did not utilize it in proper way. Due to lack of education and awareness, they spent their money in drinking liquor instead of taking nutritious food. There is no change in their standard of living in pre and post mining situation. In the post mining era, the poor tribal has increased per capita income which does not mean to their mere development but decaying human development. Thus mining led plant does not lead to local development of the common people who have lost everything for the sake of plant establishment.

Table – 5, Per Capita Income of the Studied Areas

Per Capita Income	Darlipali	Damanjodi	Dunguri
Below Rs 1000	25 (24.5)	84 (27.6)	61 (40.1)
Rs 1000 to Rs 2000	37 (36.3)	72 (23.7)	41 (27)
Rs 2001 to Rs 3000	12 (11.8)	53 (17.4)	22 (14.5)
Rs 3001 to Rs 5000	10 (9.8)	77 (25.3)	19 (12.5)
Above Rs 5000	18 (17.6)	18 (5.9)	9 (5.9)
Total	102 (100)	304 (100)	152 (100)

Source: Field Survey

In Dunguri, 40.1 per cent households have per capita income below Rs 1000 and only 5.9 per cent have more than Rs 5000 who have got regular employment in the mines where the rest are coming in the range of per capita income between Rs 1000 to 5000. But, the people who have per capita income more than Rs 3000 are somehow better compared to that of Darlipali and Damanjodi village which implies 18.4 per cent households are better off at the cost of 81.6 per cent households. Most the people are daily labourers working in the construction of road, canal, repairing ponds etc. in Govt work and private works like mason work and agricultural labourer. Thus increase in per capita income does not increase living standard of the households of the affected village.

In all the three studied villages, more than 50 per cent households[16] have per capita income less than Rs 2000 which justifies that less than 6 per cent households are bestowed happiness at the cost of these poor showing low human development indicator. Moreover, the displacement from land and livelihood with improper rehabilitation and resettlement in the process of mining or mining led plant establishment has cut down the income source of the affected in the studied areas. Thus, mining led industrialisation is not leading to human development in terms of health, education and per capita income but is enhancing poverty and human misery. In this context, the role of DMF is important which is discussed in the next section.

5. Role of DMF

In Odisha, DMF Fund had opened its account since 2015-16 and the fund touched the amount of Rs 6088.45 crore till 31st December 2018. The district-wise allocation of funds and collected amount are depicted in Table – 6. From the aforesaid table, it is observed that among the districts of Odisha, Keonjhar has the highest contribution (Rs2463.21 Crore) to DMF fund followed by Sundergarh (Rs1178.39 crore) and Angul (Rs953.15 crore).

From the collected amount of DMF Fund, the utilisation for the sake of mining affected areas is very poor. Till 2018-19, the total allocation amount is Rs 6438.20 crore for the development projects in mining affected areas but out of the allocated amount, only Rs 1011.04 crore is sanctioned and spent in the State of Odisha. The sector-wise allocation and sanction of funds is shown in table – 7 that the Government has given top priority to Drinking Water Supply (Rs 252.48 crore) in the

[13]State literacy rate is 72.9 per cent as per 2011 census.
[14]The three basic minimum needs include food, clothing and shelter.
[15]Living standard of MCL regular employee who is living in the quarters is very high due to high income.
[16]In Darlipali, the situation is more aggravated that more than 60 per cent households of the village have less than Rs 2000.

mining affected areas next to physical infrastructure (Rs 189.78 crore) and health care (Rs 184.11).

Table – 6, Total DMF Fund in Odisha

Name of the Districts	Total Allocated (in RsCrore)	Total Collected (in RsCrore)
Angul	975.56	953.15
Balasore		1.56
Baragarh	5.32	7.42
Bhadrak		0.04
Bolangir		0.84
Boudh	0.03	0.25
Cuttack		2.05
Deogarh		0.09
Dhenkanal	3.27	19.94
Gajapati		0.67
Ganjam		11.75
Jagatsinghpur	0.25	0.53
Jajpur	1029.90	658.83
Jharsuguda	679.04	531.21
Kalahandi	5.96	9.19
Kandhamal	0.15	0.50
Kendrapada	0.05	0.20
Keonjhar	1605.64	2463.21
Khurda	0.21	0.69
Koraput	81.59	125.30
Malkangiri		0.44
Mayurbhanj	7.27	37.99
Nawarangapur	1.16	1.19
Nayagarh		0.35
Nuapada		0.26
Puri	0.04	0.11
Rayagada	46.32	79.53
Sambalpur	2.03	2.65
Sonepur		0.12
Sundargarh	1976.45	1178.39
Odisha	**6420.24**	**6088.45**

Source: www. dmf.orissaminerals.gov.in

Table – 7, Sector-Wise DMF Fund Allocation in Odisha

Sl No	Sectors	Allocated Amount (in RsCrore)	Sanctioned Amount (in RsCrore)
1	Environment Preservation & pollution Control	95.48	12.40
2	Road Connectivity	9.29	2.97
3	Skill Development	80.08	15.29
4	Energy	76.63	40.48
5	Irrigation	669.40	64.02
6	Health Care	652.58	184.11
7	Livelihood Programme	623.48	59.00
8	Education	529.61	120.14
9	Housing	5.41	0.66
10	Other Social Development activities	46.90	38.93
11	Sanitation	27.06	1.99
12	Afforestation	21.59	12.56
13	Women & Children Welfare	107.29	16.23
14	Physical Infrastructure	1961.85	189.78
15	Drinking water Supply	1531.55	252.48
Total		6438.20	1011.04

Source: www. dmf.orissaminerals.gov.in

But in Centre, role of the State is very significant. Odisha being the highest contributor, adds a sum of Rs 4453 crore to PMKKKY Fund (Branch of DMF Fund) in India which is presented in table – 8. But the proportion of utilisation from the collected amount for those marginalised poor who sacrifice everything is much important. The district-wise collection and utilisation of DMF Fund in Odisha is reflected in table – 9.

The collection of DMF Fund in the State has been increased from Rs 189.05 crore in 2015-16 to Rs 2260.53 crore in 2018-19 and for the year 2019-20, till 26th June 2019, the DMF collection of the State has reached to Rs 622.55 crore. But out of the above collection, a dismal picture is visualised in the form of fund utilisation. There is no utilisation of the fund in 2015-16 since the collection towards DMF fund was started in the same year. In 2016-17, a sum of Rs 23.61 crore was utilised by Angul and Sundergarh and a negligible amount was spent by Jharsuguda, Mayurbhanj, Sambalpur and Khurda which reflected that the DMF Fund acts as a store where no affected poor are benefited.

Table – 8, PMKKKY Fund Collection in India

PMKKKY Fund Collection in India	
States	**Amount (in RsCrore)**
Andhra Pradesh	469.00
Telengana	1620.00
Bihar	20.20
Chhatisgarh	2746.00
Goa	180.00
Gujarat	357.00
Maharasthra	716.00
Himachal Pradesh	95.00
Jharkhand	2732.00
Jammu and Kashmir	23.00
Karnataka	982.00
Kerala	5.25
Madhya Pradesh	1610.00
Odisha	4453.00

West Bengal	21.00
Rajasthan	2005.00
Tamil Nadu	270.00
UttaraKhand	11.04
Uttar Pradesh	301.00
Total	**18616.49**

Source: www. dmf.orissaminerals.gov.in

The disbursed amount of the fund was increased to Rs 134.09 crore in 2017-18 and to Rs 293.82 crore in 2018-19. Till the midst of June, 2019 of 2019-20, the spent amount was Rs 47.87 crore. But in the inter-district comparison states that Keonjhar holds the top position (Rs2804.57 crore) in collection of DMF Fund with non-utilisation or negligible utilisation of the fund for the affected poor. In connection to collection of Funds, Sundergarh (Rs1232.04 crore) acquired the second position followed by Angul (Rs751.85 crore), Jajpur (Rs694.64 crore) and Koraput (Rs112.21 crore). But out of the total utilisation amount of the State (Rs499.39 crore), Sundergarh district has spent Rs 336.45 crore, followed by Angul (Rs107.95 crore) and Jharsuguda (Rs52.81 crore) for mining project affected persons. With the establishment of large Public Sector Company like NALCO in Koraput where most of the affected poor are tribal with highest percentage of illiteracy, neither the district administration nor the Navaratna Awardee Plant has taken any step for the development of affected poor by utilising the Fund.

Table – 9, Utilisation of DMF Funds in Odisha, 2015-16 to 2019-20

DMF funds collected and utilised in Odisha (in RsCrore)										
Name of the Districts	**2015-16**		**2016-17**		**2017-18**		**2018-19**		**2019-20**	
	C	**U**	**C**	**U**	**C**	**U**	**C**	**U**	**C**	**U**
Angul	63.20	0.00	293.54	13.07	246.65	24.31	120.11	70.57	28.35	0.00
Balasore	0.23	0.00	0.24	0.00						
Baragarh	0.31	0.00	1.78	0.00	1.86	0.00	2.11	0.00	0.46	0.00
Bhadrak	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00		
Bolangir							0.00	0.00	0.00	0.00
Boudh	0.03	0.00	0.04	0.00	0.03	0.00				
Cuttack										
Deogarh			0.03	0.00						
Dhenkanal	0.01	0.00	0.10	0.00	0.02	0.00	0.08	0.00		
Gajapati	0.09	0.00	0.18	0.00	0.14	0.00				
Ganjam	0.18	0.00	2.60	0.00	2.90	0.00	2.45	0.00	0.87	0.00
Jagatsinghpur	0.10	0.00	0.18	0.00	0.10	0.00				
Jajpur	13.42	0.00	144.66	0.03	237.09	0.00	242.06	0.00	57.41	0.00
Jharsuguda	0.03	0.00	1.65	0.78	23.07	8.60	52.30	42.66	14.80	0.17
Kalahandi										
Kandhamal	0.09	0.00	0.02	0.00	0.00	0.00				
Kendrapada			0.18	0.00	0.01	0.00				
Keonjhar	75.34	0.00	525.48	0.00	642.84	0.01	1239.74	0.00	321.17	0.00
Khurda	0.03	0.00	0.40	0.12						
Koraput	0.09	0.00	26.07	0.00	37.79	0.00	41.76	0.00	6.50	0.00
Malkangiri										
Mayurbhanj	0.71	0.00	8.49	0.59	8.74	1.69	18.82	0.16	6.50	0.00
Nawarangapur	0.03	0.00	0.06	0.00	0.00	0.00				
Nayagarh	0.02	0.00	0.19	0.00	0.00	0.00				
Nuapada	0.00	0.00	0.07	0.00	0.03	0.00	0.02	0.00	0.00	0.00
Puri	0.03	0.00	0.03	0.00	0.04	0.00				
Rayagada			14.92	0.00	13.05	0.00	25.06	0.00	4.83	0.00
Sambalpur	0.05	0.00	0.25	0.18	0.25	0.00	0.00	0.00	0.00	0.00
Sonepur	0.00	0.00	0.04	0.00	0.01	0.00	0.00	0.00		
Sundargarh	35.04	0.00	228.04	8.84	271.28	99.48	516.02	180.43	181.66	47.70
Odisha	**189.05**	**0.00**	**1249.25**	**23.61**	**1485.91**	**134.09**	**2260.53**	**293.82**	**622.55**	**47.87**

Source: www. dmf.orissaminerals.gov.in

6. Conclusion

The study has attempted to examine the human development aspects of mining led industrialization where it found the deteriorated condition of the mining affected people in terms of low per capita income, loss of land and livelihood, acute shortage of water and polluted water, air and atmosphere

leading to serious health hazards but not availing adequate healthand education facility after mining development in these areas. This implies, mining led industrialization has adversely affected the human development in the local affected areas. On the other hand, the role of DMF is not satisfactory as the contribution in the fund started since 2015.

Since remunerations from mining or mining led industrialization for the mines affected are short term in nature whether it may be cash or job, in the long run what will remain for their successor who have displaced from their land and livelihood and not getting any job? In this circumstance, State intervention is utmost necessary for the betterment of the affected persons. The big Corporate Profit seekers should also try to allocate the profit in an unbiased method so that there may be forward linkage effect on the livelihood of the mining displaced. Moreover, the Corporate Social Responsibility expenditure should not be for receiving awards for the Corporates but should be for the benefits of the local affected people. More emphasis should be given on education and awareness for the local illiterate affected so that they can develop their decision making power for their betterment.

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