

The cost of mining on local community, Talcher Coalfield

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ABSTRACT

Mining activity has various impact on the local community. It has negative impact towards the health and environment of the local community. It has mixed impact towards the society. And in most of the cases it is noticed that mining has positive impact with respect to economy of the local community. If we consider economy in the broader sense, like per capita income, purchasing power parity, standard of living, infrastructural development, employment, industrial development, urban amenities then it has positive impact on the local community. Because with the introduction of mines, large number of industries immediately move to the mining area. Though it is a primary activity many secondary, tertiary and quaternary activities are associated with mining like mining extraction, transportation, manufacturing industries and depending on the industries, it promotes employment generation. Along with it other service sectors like hoteling, banking associated with mines developed in that area. In this article we have focused on the economic impact of mining on the local community a case study of Talcher Coalfield, Angul district of Odisha.

Objective

The present study is an attempt to assess the economic impact of coal mining, as a bliss or misery on the local community of Talcher Coalfield Angul district, Odisha.

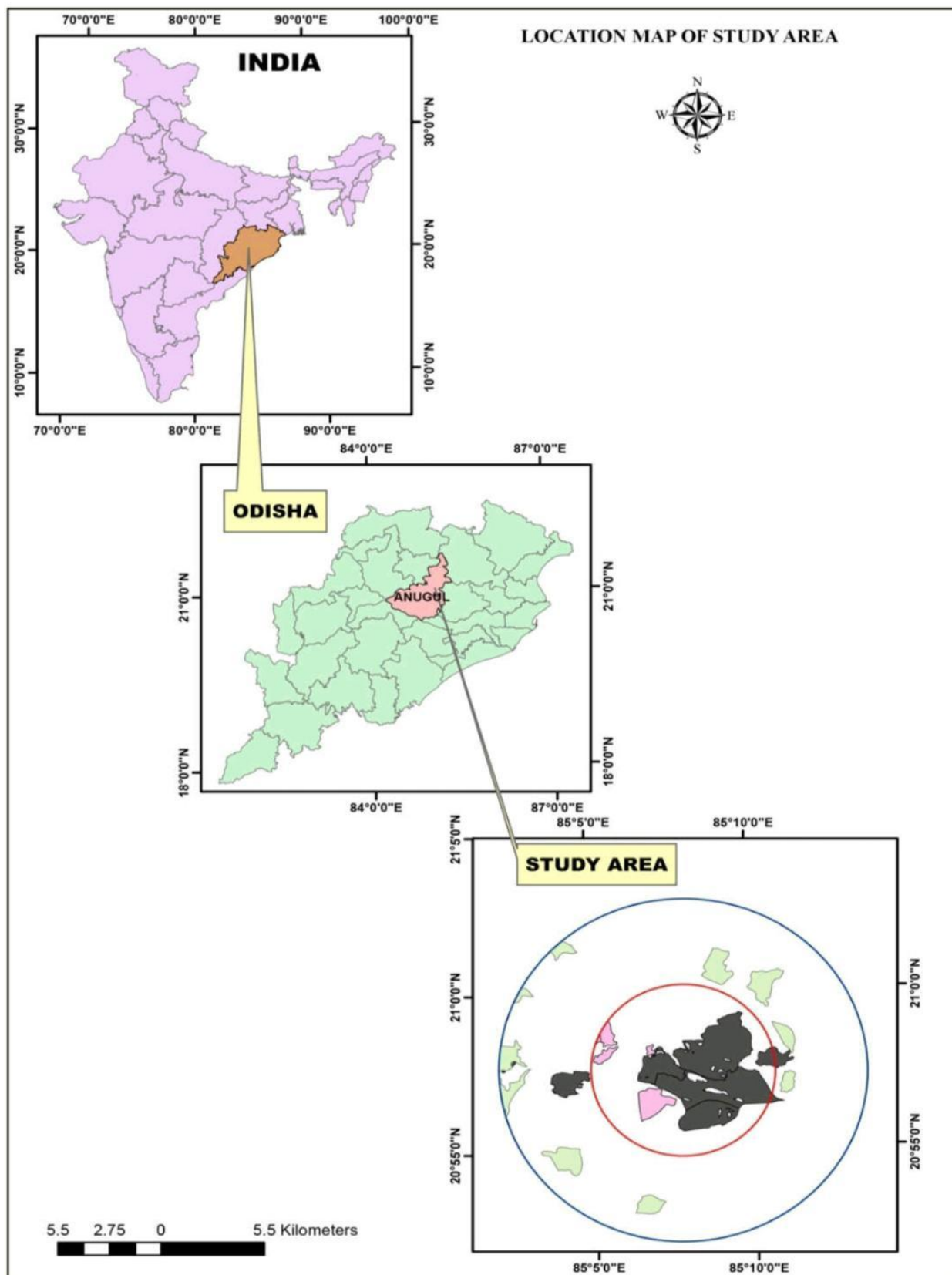
Database and methodology

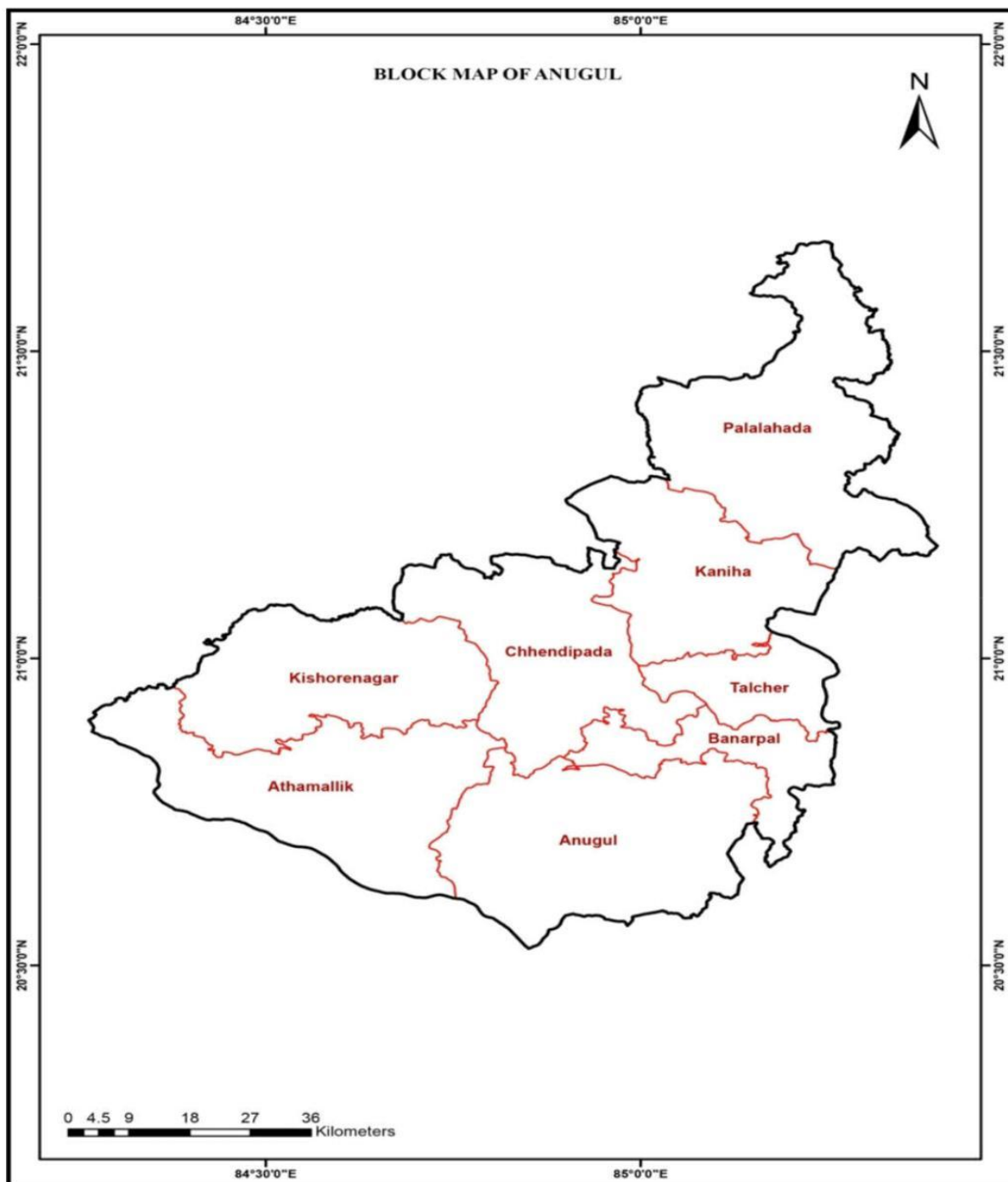
Data for this research work obtained from both the primary and secondary sources. Much of the data required for this research are obtained from primary sources, particularly through survey in the mining area, by questionnaire method, group discussion, sample survey, personal interview and PRA method. The secondary data has been collected from successive census enumeration, mining office, MCL, CIL, OMC, from district commissioner's office, mining office, land and revenue office and different journal books and publications. Village level data i.e. mining.

Study Area

The study site is a 10km radius area covering the mining agglomeration of Talcher coalfield. It covers the four important coal mining lease area of Talcher coalfield i.e. Ananta, Jagannath, Bharatpur and Balanda. The study area is located in the Brahmani river valley area of Talcher Tahsil. The coal mining project of Talcher coalfield comes under Mahanadi Coalfield Limited. The study area extends from latitude 20.8673 to 21.2548 and longitude 85.0337 to 85.2275 in Angul district of Odisha. It is surrounded by Khandabareni reserve forest at north vast cropland at south Talcher town at east and Hingula II coal mines at west. The site is connected with the near most town i.e. Talcher by both all-weather road and railway. Distance between the study area and nearby town is 07 km. the railway line i.e. Talcher-Sambalpur (east coast railway) pass within 1.0 km of the buffer zone of the study area. The national highways i.e. NH-42, NH-23 pass through 5 km south and 6 km east from the study area respectively. The site comes in a survey of India toposheet no. 73 H/, at about 92mt. lowest elevation and 124mt. highest elevation above the mean sea level.

Map-1 : Location map of the study area





Map- 2 Block map of Angul district

Research findings

Workforce of the study

area As our study area is a mining area so the healthy working force is found here. In the study area population is 67472 i.e. 33% of the total population. Out of the total workforce 29180 i.e. 43% staying in 5km core and 38292 i.e.57% staying in 10km core out of the total working population 56739 i.e. 84% male whereas only 10733 i.e.16%female out of the total working population 52460 i.e. 77% men worker and 15013 (23%) only marginal worker. In the study out of the total population 136323 i.e. (67%) people are non-working out of which 59895 i.e. (44%) are staying within 5 km core and 76428 i.e. (56%) staying in 10 km buffer. Out of the total non-working population 50483 i.e. (36%) male and 85840 (63%) female. The workforce of the study area signifies that the male working population is much more than female working population.

Table 1 : Workforce of the study area

Workforce of the study area			
	Core	Buffer	Total
Population	89495	114300	203795
Total working population	29180	38292	67472
% of the working population	32.61	33.50	33.11
Total working male	24638	32101	56739
Total female	4542	6191	10733
Total main worker	23061	29399	52460
Total marginal worker	6120	8892	15013
Total nonworking population	59895	76428	136323
% of the nonworking population	66.93	66.87	66.89

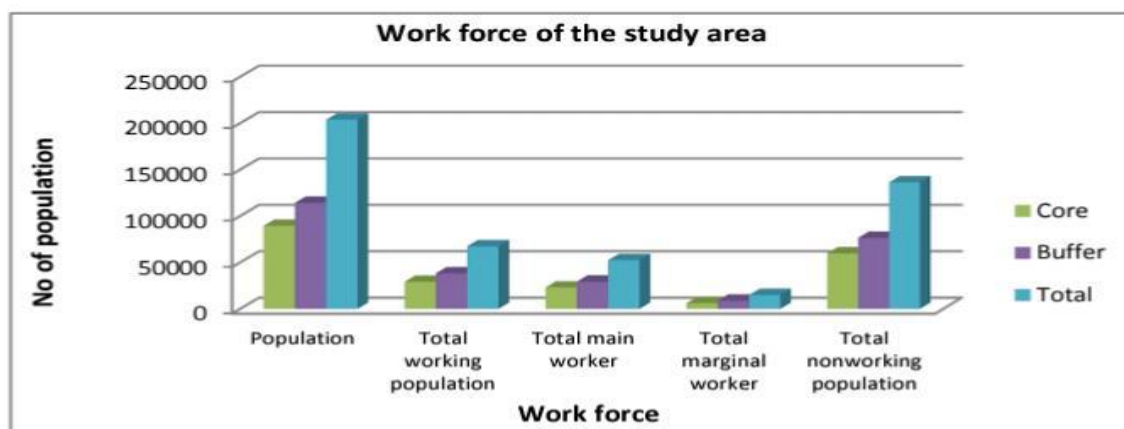


Fig. 1 : Workforce of the study area

Occupation composition of sample villages

If the occupational structure of the local population is observed, then the work participation has increased slightly within a decade i.e., 33.82% in 2001 census has increased to 36.19% in the 2011 census. In the total decadal increase of working population i.e., 19.54%, the increase is very high in core zone i.e., 34.75% which is very less in buffer zone i.e., 5.38%. Due to the agglomeration of mines and mining activity work participation is more in core region i.e., 43.62% whereas it is 30.68% in the buffer. If the gender-wise work participation is observed it is very high in case of male i.e., 54.54% whereas work participation of a female is very poor i.e., 16.24%. Different villages have registered dynamic growth rate in the working population. 4 villages have registered negative growth rate i.e., JAMUBAHALI (-22%), KHIRKHOLIPASI (-7%), BADAHARAN (-25%), GOPALAPRASAD (-22%) And the rest of the villages have registered positive growth rate in working population i.e., BHAJANIPUR (100%), CHANDRASEKHARPUR (75%), BADAJHARAN (82%) and BRAJANATHPUR (69%).

If the total working population of the sampling villages is taken into consideration, as of **2011 Census**, then

Cultivator $14.06\% + 4.12\% = 18.18\%$

Agricultural labourer $6.28\% + 15.34\% = 21.62\%$

Household industry worker $1.69\% + 0.44\% = 2.13\%$

Other workers $51.20\% + 6.85\% = 58.05\%$

Total worker $73.24\% + 26.75\% = 100\%$

It is clear that the majority % of working people in the sampling villages are engaged in non-agricultural activity i.e., 58.05% of people are doing other work i.e., job, service, working in MCL and mining business. Only 18.18% are cultivator, 21.62% agricultural labourer and the least percentage i.e., 2.13% of people are involved in household works.

Non-worker

If the non-working population of the sampling villages of the study area taken into consideration it is noticed that according to 2011 census Total % of the non-working population is 63.81% out of that 69.32% in the buffer and 57.38% in the core zone.

Table 2 : Occupational distribution in the region

Sl. No.	Name of the Village	Working for the population in the year 2001						Working for the population in the year 2011						%age of increase/ decrease of Working Population		
		Total	Male	Female	% of Workers To population	% of Male Workers To Male Population	% of Female Workers To Female Population	Total	Male	Female	% of Workers To population	% of Male Workers To Male Population	% of Female Workers To Female Population	Total	Male	Female
A	CORE															
1	Dasarathipur	10	10	0	25.64	50.00	0.00	15	11	4	39.47	68.75	18.18	50.00	10.00	0.00
2	Telepasi	63	62	1	27.75	54.87	0.88	65	61	4	26.42	48.41	3.33	3.17	-1.61	300.00
3	Jamubahali	475	422	53	36.51	56.95	9.46	369	324	45	30.45	51.76	7.68	-22.32	-23.22	-15.09
4	Solada	1095	767	328	34.85	47.11	21.66	1765	1176	589	47.72	61.15	33.16	61.19	53.32	79.57
TOTAL		1643	1261	382	34.89	50.40	17.31	2214	1572	642	42.62	58.42	25.64	34.75	24.66	68.06
B	BUFFER															
1	Bhajanipur	6	6	0	100.00	100.00	0.00	12	12	0	26.67	50.00	0.00	100.00	100.00	0.00
2	Chandrasekharpur	16	16	0	29.63	53.33	0.00	28	24	4	28.28	42.11	9.52	75.00	50.00	0.00
3	Badajharan	35	32	3	29.41	51.61	5.26	64	44	20	38.10	53.01	23.53	82.86	37.50	566.67
4	Khirkolipasi	79	49	30	42.25	55.68	30.30	73	58	15	32.88	54.21	13.04	-7.59	18.37	-50.00
5	Madanmohanpur	94	89	5	25.41	48.63	2.67	119	103	16	29.60	48.13	8.51	26.60	15.73	220.00
6	Badahar	250	127	123	71.43	71.35	71.51	186	136	50	44.60	64.45	24.27	-25.60	7.09	-59.35
7	Mallibandha	117	107	10	30.23	55.73	5.13	159	146	13	29.39	52.90	4.91	35.90	36.45	30.00
8	HariharpurRayati	202	189	13	24.25	43.55	3.26	254	228	26	34.05	56.44	7.60	25.74	20.63	100.00
9	Brajanathapur	232	223	9	21.54	39.40	1.76	394	366	28	31.32	54.79	4.75	69.83	64.13	211.11
10	Gopalprasad	734	509	225	37.00	49.51	23.54	571	509	62	26.37	45.08	5.98	-22.21	0.00	-72.44
TOTAL		1765	1347	418	32.89	48.68	16.08	1860	1626	234	30.68	51.24	8.10	5.38	20.71	-44.02
GRAND TOTAL		3408	2608	800	33.82	49.50	16.64	4074	3198	876	36.19	54.54	16.24	19.54	22.62	9.50

Source of income and indebtedness

It is observed from Table-3 that 28.52 % of the households reported earning income from service followed by same proportion earning income through business. 16.11 % reported earning income through wage labourer and only 9.26 % earned income through agriculture.

Table 3 :Source of income of sample households (village wise)

Sl. No.	Source of income	Cultivator		Wage labourer		Service		Business		Other		Total	
		% of HHs	% of value	% of HHs	% of value	% of HHs	% of value	% of HHs	% of value	% of HHs	% of value	No of HHs	Value
A	CORE												
1	Dasarathipur	10.00	0.99	20.00	2.44	30.00	57.11	20.00	32.71	20.00	6.75	100	100
2	Telepasi	11.54	1.38	19.23	2.85	26.92	46.73	34.62	45.88	7.69	3.16	100	100
3	Jamubahali	12.37	2.06	26.80	5.51	23.71	57.01	20.62	28.39	16.49	7.03	100	100
4	Solada	6.76	0.87	25.00	4.00	34.12	60.51	25.00	31.50	9.12	3.12	100	100
	TOTAL	8.25	1.10	24.95	4.13	31.71	58.99	24.74	31.91	10.36	3.87	100	100
B	BUFFER												
1	Bhajanipur	4.35	0.70	13.04	2.61	21.74	50.86	26.09	31.07	34.78	14.76	100	100
2	Chandrasekharpur	9.52	1.15	19.05	2.85	33.33	58.30	23.81	31.80	14.29	5.91	100	100
3	Badajharan	16.67	1.87	25.00	3.47	41.67	67.62	16.67	20.65	0.00	6.39	100	100
4	Khirkolipasi	6.25	0.64	25.00	3.16	31.25	64.64	12.50	14.10	25.00	17.46	100	100
5	Madanmohanpur	12.50	1.25	12.50	2.32	21.88	63.35	28.13	13.82	25.00	19.25	100	100
6	Badahar	14.71	5.57	11.76	5.51	26.47	48.39	32.35	24.64	14.71	15.89	100	100
7	Mallibandha	7.14	0.64	14.29	2.38	32.14	60.22	30.36	31.84	16.07	4.93	100	100
8	HariharpurRayati	9.43	1.26	18.87	2.68	28.30	47.05	33.96	45.91	9.43	3.09	100	100
9	Brajanathapur	7.76	1.41	11.21	2.62	31.90	40.94	26.72	39.08	22.41	15.94	100	100
10	Gopalprasad	9.60	1.12	19.21	1.85	25.99	41.39	29.38	46.72	15.82	8.93	100	100
	TOTAL	9.26	1.20	16.11	2.52	28.52	50.97	28.33	36.42	17.78	8.90	100	100
	GRAND TOTAL	9.26	1.20	16.11	2.52	28.52	50.97	28.33	36.42	17.78	8.90	100	100

About 17.78 % of the respondents revealed earning income through other sources. It is however interesting to notice.

Household monthly income of caste group

The interrelationship between caste and occupation with income pattern can be examined from Table-4 and Table-5. It is interesting to observe that lowest per household monthly income is earned by SC & ST and highest household income registered by General caste, followed by OBC in both the zones. The overall situation follows the same pattern. It is found that in general the incomes of different caste groups are higher in the core zone compared to buffer zone except in case of SC households.

Table-4 : Monthly income of caste group of sample households in rupees

Caste	Core zone	Buffer zone	Total
SC	12000	14000	26000
ST	10000	18000	28000
OBC	20000	22000	42000
GEN	28000	32000	60000
Other	0	0	0
TOTAL	70000	86000	156000
GRAND TOTAL	140000	86000	312000

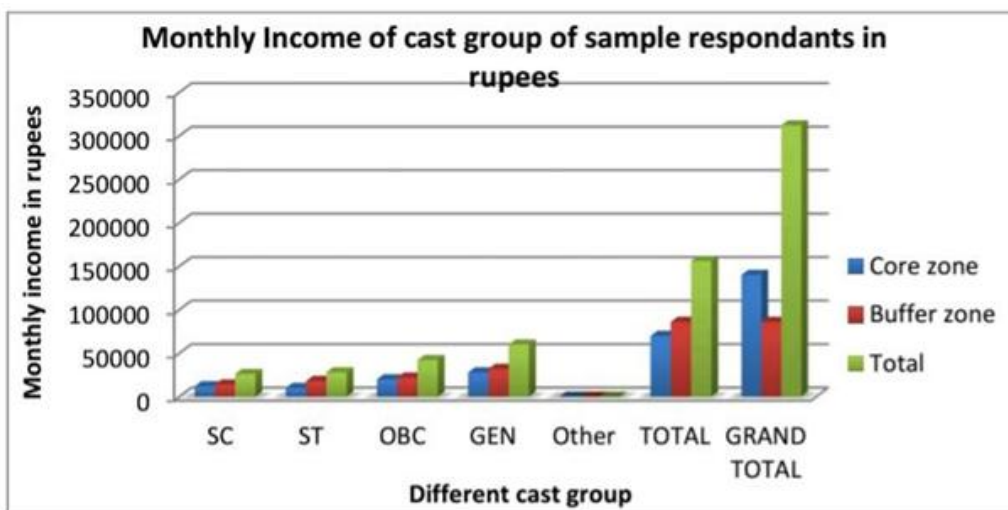


Fig. 2 : Monthly income of caste groups of sample households

Household monthly income of occupational group

Occupation wise it is found that the highest per household monthly income is recorded by Service class followed by Business group and the lowest income is found in case of cultivator and non-workers. In case of the core zone highest income is registered by service group followed by business holders and the lowest as usual by cultivators. Like the core in the buffer zone also highest income is noted in the case of Service class followed by Business class. It is also interesting to find that the level of income of service holders is relatively higher in the core zone compared to the buffer zone. The wage earners have a significantly higher level of income in the core zone compared to the buffer zone. The level of income earned from cultivation is found higher in the buffer zone compared to the core zone.

Table-5 : Monthly income of occupation groups of sample households

Occupation	Core zone	Buffer zone	Total
Cultivation	5000	7000	12000
Wage labour	12000	8000	20000
Business	45000	53000	98000
Service	30000	32000	62000
other	15000	17000	32000
Non- Work	2000	4000	6000
TOTAL	109000	121000	230000

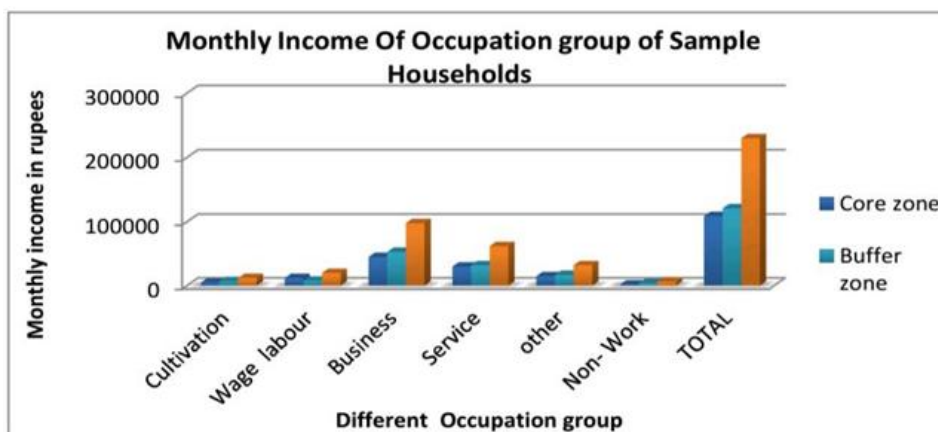


Fig. 3 : Monthly income of occupation groups of sample households

Educational status of sampling respondents

The educational status of sample respondents examined from Table-6 given below. It is observed that 28.6% of the sample respondents are illiterate and rest 76.4% are literate. Out of that 18.4% have undergone primary education, 21.3% completed secondary education and only 13.9% have attended the college and completed the higher study. Zone wise higher level of illiteracy is found in the buffer zone i.e., 29.3% compared to core zone i.e., 15.8%. One interesting thing noticed here is that primary and middle education holder are more in (%) in the buffer zone on the contrary secondary and college education holder are outnumbered in the core zone. The educational status of family members of sample respondents village wise can be examined from Table-6 given below. The level of illiteracy is found to be 21.11% for total respondents and it is marginally higher in the buffer zone i.e., 26.48% compared to core zone i.e., 14.20%. In both zones, female illiteracy is found significantly higher compared to male. The higher level of education is also found marginally higher in core zone compared to the buffer zone.

Table-6 : Educational status of sample respondents

	Illiterate	Primary	Middle	Secondary	College	Total
Total	66	51	59	64	39	280
%	23.6	18.4	21.3	22.8	13.9	100
Core zone	19	16	17	42	26	120
%	15.8	13.4	14.2	35	21.6	100
Buffer zone	47	35	42	22	13	160
%	29.3	21.8	26.5	13.7	8.7	100

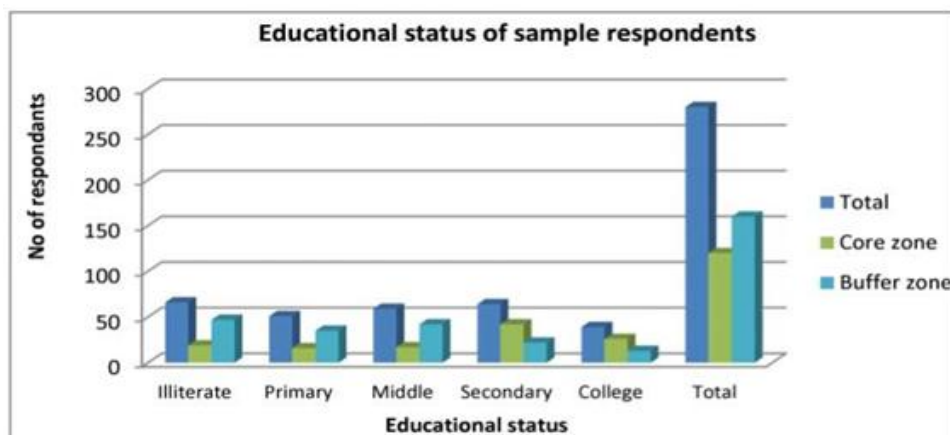


Fig. 4 : Educational status of sample respondents

Transportation and communication

The study area is well connected by both the Roadway and railway. Railway station & bus stand is found at Talcher. Another bus stand is at Gopal Prasad. The Govt & private bus runs from Gopal Prasad to Talcher and Talcher is also well connected to both district HQ Anugul and state capital BBSR by both roadways and railway. Dasarathpur to Padmabatipuris connected by minibus service. No bus service to any other village. People use personal taxi or Auto to come to the nearby bus stand. All the villages are well connected by all weathermetalled road or concrete road under (PMGSY). The (RTO) office is situated at Talcher to deal with road and transportation matter. For the railway facility, the entire sampling village is dependent upon Talcher railway station or Angul railway station which is approximately 10-20 km away from sampling villages.

Table-7 : Communication facility of the study area

Sl No.	Name of the Village	Communication Facilities			Available of Service					
		Nature of Roads	Condition of Roads	The distance of the Villages from nearest surface Road in km	Bus	If not available distance from the village	Railway	If not available distance from the village	Public Carrier/auto/taxi	If not available distance from the village
A	CORE									
1	Dasarathipur	K	B	2	N	a	N	b	N	a
2	Telepasi	P	G	1	N	c	N	c	N	b
3	Jamubahali	P	G	0.5	N	b	N	c	Y	
4	Solada	P	G	2	N	c	N	c	Y	
B	BUFFER									
1	Bhajanipur	K	B	0.5	N	a	N	a	N	a
2	Chandrasekharpur	P	G	3	N	b	N	c	N	c
3	Badajharan	P	G	4	N	b	N	b	N	a
4	Khirkolipasi	P	G	3	N	b	N	b	N	b
5	Madanmohanpur	P	G	1	N	a	N	b	Y	
6	Badahar	P	G	0	Y		N	c	N	c
7	Malibandha	P	G	2	N	c	N	c	Y	
8	HariharpurRayati	P	G	1.5	Y		N	c	N	a
9	Brajanathapur	P	G	1	N	c	N	a	N	a
10	Gopalprasad	P	G	0	Y		N	c	Y	

Market facility in the study area

The study area has a well-developed market facility which fulfils all the daily needs of the local people. Goods and products are coming to market from peripheral village i.e. vegetables, grains, pulses, fish, other grocery items, etc. Sometimes potato, onion, fish, etc. are coming from Malgoddan, Cuttack. The weekly market is the Talcher market which set every Saturday & the largest market of the study area. The Gopalprasad market is set on every Monday. TTPS market is set twice in a week i.e. on every Monday & Thursday except these weekly market there are many daily markets which fulfil local needs i.e. Hatatota daily market, Dera daily market, Bolanda daily market Bharatpur daily market, FCI daily market, etc.

Banking facility of the study area

The study area is well facilitated with banking facility. Due to mining activity the economy of the study area has grown up which has enhanced the banking service of the area. Most of the premier banks have their branches at Talcher municipality i.e. SBI, PNB, ICICI, HDFC, AXIS Bank, UCO Bank, Bandhan bank, etc. Odisha Gramya Bank, Anugul co-operative bank and Samabaya bank providing banking service at the interior area. A branch of Anugul co-operative bank located at Kalamachuin, branch of Odisha Gramya bank is located at Handidhwa, Andhra bank branch located at (TTPS). A branch of SBI located at FCI (Bikarampur). Thus, the banking infrastructure of the study area is quite developed.

PQLI of sample villages of the study area

The Quality of Life Index of different sampling villages is presented in Table-8. It is observed from the following table that the overall quality of life index of the study area is (7.55) which is considered good in the PQLI index. Zone wise also the average quality of life index belongs to the good category. The PQLI of the buffer zone is slightly better than the core zone. All the sampling villages recorded good physical quality of life index (PQLI) except very few. One village in the core zone was found with lowest indices and poor PQLI i.e. Dasarathipur. Total 4 villages where the status is considered fair are Telepasi of core zone and Badahar, Malibandha and Hariharpurayati of the buffer zone. In this analysis, it is noticed big villages like Solada and Gopalprasad recorded higher PQLI than small villages. Another interesting thing is noticed in the research that villages having proximity to mines have better PQLI than remote villages.

Table-8 : PQLI of sample villages of study area

PQLI of sample villages of the study area			
Sl. No.	Name of the Village	INDEX	STATUS
A	CORE		
1	Dasarathipur	4.90	poor
2	Telepasi	7.90	good
3	Jamubahali	6.95	fair
4	Solada	9.25	good
TOTAL		7.25	good
B	BUFFER		
1	Bhajanipur	7.12	good
2	Chandrasekharpur	8.83	good
3	Badajharan	8.35	good
4	Khirkolipasi	7.47	good
5	Madanmohanpur	8.81	good
6	Badahar	6.37	fair
7	Mallibandha	6.31	fair
8	HariharpurRayati	5.87	fair
9	Brajanathapur	8.20	good
10	Gopalprasad	9.50	good
TOTAL		7.68	good
GRAND TOTAL		7.55	good

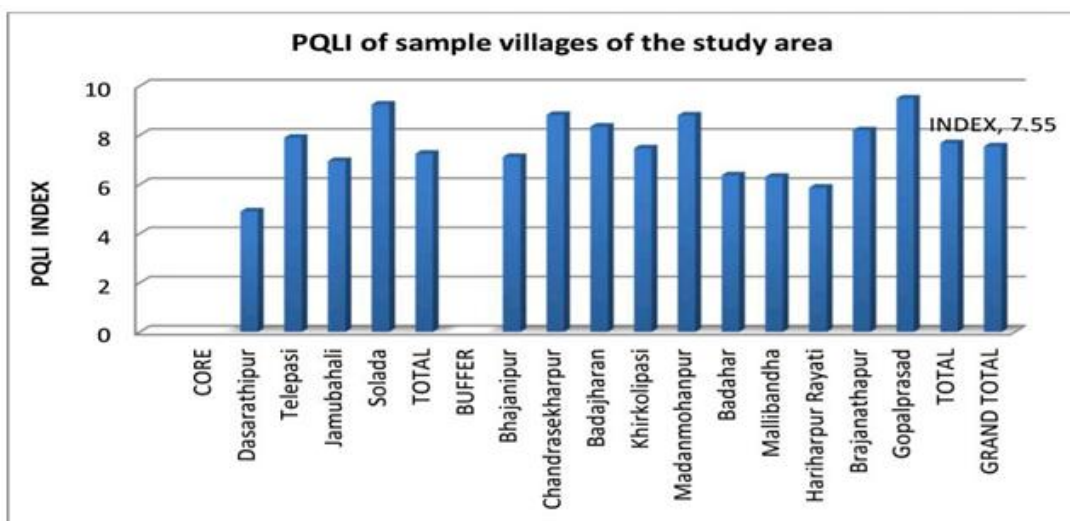


Fig. 5 PQLI of sample villages of study area

Quality of Life Index of different zones Caste-wise

Table-9 : PQLI of different zones Caste-wise.

PQLI of cast group of sample households				
	Core zone		Buffer zone	
Caste	Index	Status	Index	Status
SC	7.02	Good	7.35	Good
ST	5.2	Fair	6.8	Fair
OBC	6.97	Fair	7.1	Good
GEN	7.95	Good	8	Good
TOTAL	7.25	Good	7.68	Good

Caste-wise it is found that in the core zone, the General caste (7.95) registered the highest quality of life index. After the general caste, SC (7.02) comes 2nd in the list followed by OBC (6.97) and ST (5.2). ST score least in the quality of life index. In the buffer zone, the corresponding indices for various caste groups are higher with minor alterations in the value of the indices. The highest index is found in the case of GENERAL (8) followed by SC (7.35) and OBC (7.1). The lowest PQLI is recorded in ST caste i.e. (6.8) in the study area. The overall PQLI of the buffer zone is slightly better than the core zone.

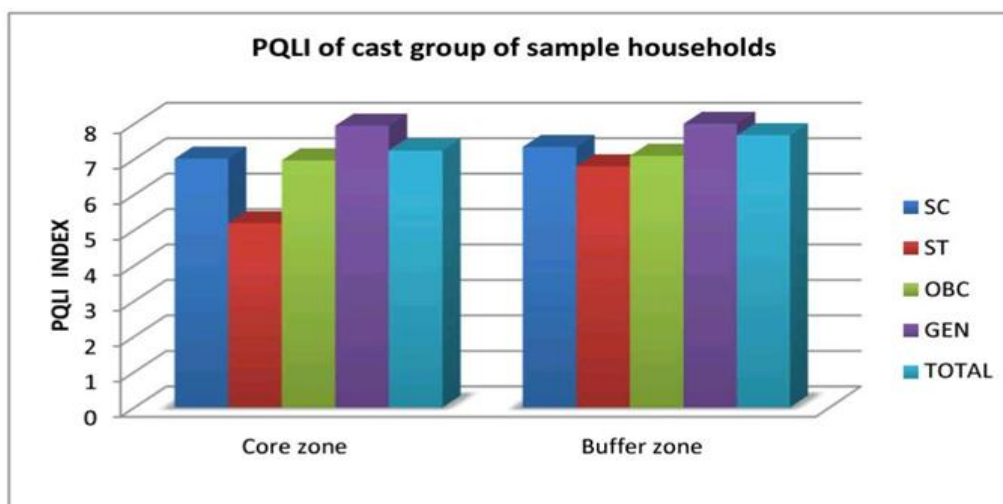


Fig. 6 PQLI of caste group of sample households

Physical Quality of Life Index of different zones Occupation-wise

Table- 10: PQLI of different zones Occupation-wise

PQLI of occupation group of sample households				
	Core zone		Buffer zone	
Occupation	Index	Status	Index	Status
Cultivation	4.05	Poor	5.37	Fair
Wage labor	5.01	Fair	6.55	Fair
Business	8.20	Good	9.02	Good
Service	9.03	Good	9.38	Good
other	6.90	Fair	7.31	Good
Non- Work	3.98	Poor	4.14	Poor
TOTAL	7.25	Good	7.68	Good

Occupation wise when PQLI analysis of the study area is conducted, it is found that in core zone highest quality of life is registered by service sector group i.e. 9.03, followed by business class i.e., 8.20 and cultivator i.e., 4.05. In this analysis, the non-worker score least PQLI i.e., 3.98. The same condition noticed in the buffer zone i.e., good quality of life in service and business class people whereas the poor quality of life in non-workers and cultivators. It indicates a great difference in the quality of life of different occupation groups in the study area. The study of PQLI of the study area brought in to notice that the agricultural activity is severely neglected in the study area.

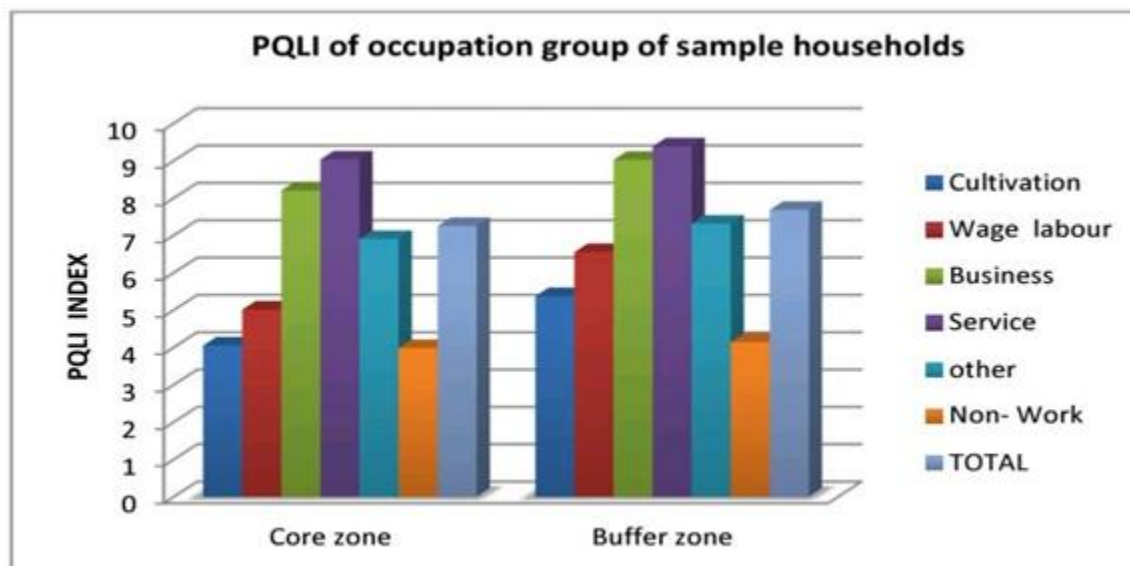


Fig. 7 PQLI of Occupation Group of sample households

CONCLUSION

Mining is a primary activity and is most important activity since time immemorial. Its negative impact cannot be stopped altogether rather can be minimised by applying scientific methods of mining, eco-friendly and sustainable mining technology. Talcher coalfield is so much exploited and there resource exploration is at such a pick that the environment has become very much degraded. So only the economic benefits should not be focused. We should not focus on quantitative economic growth rather the focus should be given on sustainable development and inclusive growth of the local community.

BIBLIOGRAPHY

- [1]. Bambra, C., Gibson, M., Sowden, A., Wright, K., Whitehead, M. and Petticrew, M., 2010. Tackling the wider social determinants of health and health inequalities: evidence from systematic reviews. *Journal of Epidemiology & Community Health*, 64(4), pp.284-291.
- [2]. Krishnamurthy, K.V., 2004, March. Environmental impacts of coal mining in India. In *National Seminar on Environmental Engineering with special emphasis on Mining Environment (NSEEME)*, Dhanbad.
- [3]. Day, H. and S.G. Jankey. 1996. Lessons from the literature: Towards a holistic model of Quality of Life. Background paper for the World Bank's Annual development Report, 2000. PDF Archives, The Beijing Institute of Economics, Beijing.
- [4]. Desai, A.V. 1980. India's energy economy: Facts and interpretation. Center for Monitoring Indian economy, Bombay: February P.45
- [5]. Echevarria-Usher, C. 1999. Mining and Indigenous Peoples : Contributions to an intercultural and Ecosystem understanding of health and wellbeing, paper presented at the Ecosystem Health Congress, Sacramento.
- [6]. Frisancho, A.R. 1984. New standards of weight and body composition by frame size and height for assessment of nutrition status of adults and the elderly. *American Journal of Clinical Nutrition* 40 : 808-819.
- [7]. Gopalan, C. & Vijaya Raghavan. K. 1971. Nutrition Atlas of India, National Institute of Nutrition Indian Council of Medical Research, Hyderabad.