A CASE STUDY OF THE ECONOMIC IMPACT OF MINING IN GOA: PERCEPTIONS OF THE RESERVED AND GENERAL POPULATION OF A MINING DEPENDENT LOCALITY

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Abstract

Mining has been an important industry in Goa for years. Operations of the industry were suspended due to orders of the Hon. Supreme Court of India. Much has been documented on the positive and negative effects of mining – the same often done by extreme pro and anti mining activists. The present paper is based on a field-based study involving households of a locality substantially dependent on mining being in close proximity to mining centres. Considering that the locality has a large number of people from 'reserved' backgrounds, the paper attempts to find if there was any significant association between the *economic* issues related to mining and the SC/ST, OBC and General backgrounds of the residents. The study which makes use of *chi-square* analysis, lists *very significant* findings, including those concerning the 'reserved' sections of population, and involving issues related to net economic effect of mining, health problems, government assistance for SC/ST and OBC sections etc.

Keywords: mining, mining-ban, Goa and mining, economic impact of mining, SC/ST and OBC

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Introduction

Goa is the smallest state of India in terms of area and fourth smallest in terms of population. Having about 1.46 million people as its population as per the 2011 Census (*Economic Survey* 2013–14), Goa is known for its pristine beaches, cultural heritage, architecture and relatively high per capita income and literacy rates. Today, notwithstanding the presence of a variety of productive activities dotting the small state, noteworthy areas of occupation include tourism, agriculture and the pharmaceutical industry. It is pertinent to mention that up to a couple of years ago another industry which was in the forefront in the Goan economy was mining.

Mining as an industry has been well documented for its positive contributions as well as for its adverse fallouts. While positives include increased opportunities for employment and self employment, foreign exchange earnings and revenues to central/state governments; the adverse fallouts include environmental degradation, pollution (air, noise and water), health problems, damage to water aquifers and depletion of ground water resources, impact on agriculture, forests and fisheries, non-sustainable depletion of non-renewable resources, fatal accidents involving civilians,[1] damage to flora and fauna, external in-migration, etc (see also Aghor 2011; Jorge et al 2013).

In the not so distant past, iron ore production in Goa was estimated at around 45–50 million tonnes,[2] with the fully export-oriented iron ore mining industry being responsible for 18 percent of the revenue of the state (D'Mello 2015). According to Mr. Shivanand Salgaocar, President, Goa Mineral Ore Exporters' Association (GMOEA), the Goan mining industry contributed approximately 35 percent of the state's GDP, with mining as an industry attracting Rs. 17,000 crores in the form of foreign exchange, and bringing in Rs. 6,000 crores in the form of direct revenues to the State and Central governments (GMOEA 2011).

In the context of Goa, one main point often voiced in favour of mining is its employment potential. Mining is considered an influential contributor towards direct and indirect employment. Notwithstanding the same though, on account of the presence of two strong schools of thought, i.e. the pro-mining stakeholders on one side and the anti-illegal mining environmentalists/others on the other side, there is apparent lack of consensus with regards to employment figures within the mining industry in Goa. Figures pertaining to employment thus often get exaggerated on either side. According to mining stakeholder, Mr. Ambar

Timblo (MD, Fomento Resources) at least 25 percent of the Goan population is dependent on the mining industry (ibid). According to Mr. S. Salgaonkar close to 75,000 people depend on mining and allied activities… with moves to prohibit iron ore exports from Goa being detrimental to these people besides severely hitting close to 18,000 trucks and 360 barge owners connected with the industry (ibid). While NCAER, in a study commissioned by Goa mining industry, estimated mining employment of 30,000 and total indirect employment dependent on mining (trucks and barges) at 45,000; the 2005 Economic Census in Goa showed only 6,573 mining employees.[3]

In the year 2012, operations of the mining industry were suspended in Goa on account of a plethora of cases, irregularities and illegalities, which as claimed led to a notional loss of about Rs 35,000 crores to the state exchequer.[4] Goa's mining operations were first suspended by the Government of Goa on 10th September 2012 after the Justice M. B Shah Commission Report was tabled in the Parliament three days earlier; then, 139 Environmental Clearances were suspended by the Ministry of Environment and Forests (MoEF) on 14th September 2012, followed by the Supreme Court order for ban on mining operations in the State on 5th October 2012, in the context of the Goa Foundation petition 435/2012 (Jorge et al 2013, 7).

About the Present Study

This study is a first-hand field-based attempt to find the *perceptions of the 'general' and 'reserved' categories of population residing at Panchwadi (South Goa) to the broad economic impact of mining*. Unlike the often extreme natured comments made with regards to the pros and cons of mining (often made by politicians, environmentalists and city-based 'absentee' mining stakeholders), what is the perception towards mining though of the actual population living in a locality actually dependent on mining and located in close proximity to mining centres? While the present study attempts to cover the same, it also makes use of *chi-square* analyses wherever appropriate to draw inferences if any significant association was present with regards to the findings and categories of population, i.e. Scheduled Caste (SC), Scheduled Tribe (ST), Other Backward Classes (OBC) and General.[5]

Panchwadi comprises of seven wards with a total population of about 1,200 households and 5,000 people. The present study focuses primarily on four wards where there are large number of people belonging to the SC/ST, OBC and General communities. Panchwadi has

been selected for the present study for two prime reasons: (i) it is in close proximity to mining centres and to Curchorem / Sanvordem, where the major economic activity is mining; and (ii) it consists of people belonging to a cross-section of categories: SC, ST, OBC and General.[6]

The present study is a one of a kind. While there have been numerous studies and reports on the various economic and non-economic issues of mining, including environmental degradation, impact on agriculture, pollution, illegalities *et al*, this study is a pioneering attempt to find the actual perceptions of the people of a mining dependent locality on the basis of their background in terms of General, SC/ST and OBC nature. This being a rare attempt at exploring the economic natured concerns related to mining on the people on the basis of their background, related literature for review is by and large unavailable. Falleiro (2015a; 2015b), incidentally provides insights on the perceptions of residents to related issues of mining on the basis of their religion and gender.

For the purpose of the present study, excluding unoccupied/closed dwellings,[7] all inhabited dwellings with at least one adult member (>18 years) were considered part of the study. The data was collected with a specially designed schedule in October/November 2014.

About the Study Sample

The study involves a total sample of 204 households. The sample constitutes about 35 percent households located in the pre-selected four wards. It needs to be mentioned that this percentage figure will be much higher than that indicated on account of the fact that a number of dwellings were closed for a substantial period of time with the status of present/future occupancy being unknown primarily on account of migration.

Table 1 lists the broad profile of the sample households. A total of 140 households were male-headed and 64 female-headed. In terms of religion, about three-fourth respondents were Hindus, with the remaining being Catholic. Of the total sample, 62 households belonged to General category, with 89 and 53 households belonging to SC/ST and OBC backgrounds respectively. Incidentally, the mean age of the sample household heads was 56.47 years (SD: 12.36), with the minimum and maximum age being 28 years and 95 years respectively.

Table 1 Distribution of sample on the basis of category of population, gender and religion

	General	SC/ST	OBC	Total
Gender of household heads				
Male	39	62	39	**140**
Female	23	27	14	**64**
Religion of household heads				
Catholic	48	2	7	**57**
Hindu	14	87	46	**147**
TOTAL	**62**	**89**	**53**	**204**

Source: Fieldwork

Table 2 highlights that the overwhelming majority of the sample household heads at almost 88 percent resided in the locality since birth. The Table also shows that while a large number of household heads at 67 were illiterate; including the same, the vast majority of household heads had qualifications up to 10^{th} standard only. Notwithstanding the low level qualifications and high illiteracy rates among the household heads, are the superior educational qualifications of other members of the households. As **Table 2** indicates, while illiteracy is very low if one considers other household members, the numbers of those who have got qualifications beyond the 10^{th} standard (to include HSSC, graduation, post-graduation and even professional degrees) were relatively much higher.

Table 2 Distribution of sample on the basis of educational qualifications of household heads, highest educational qualifications in households and duration of residence in area*

	General	SC/ST	OBC	Total
Educational qualifications of the household heads				
Illiterate	16	38	13	**67**
Up to 4^{th}	10	11	13	**34**
5^{th} - 10^{th}	26	31	21	**78**
HSSC (11^{th} – 12^{th})	5	8	4	**17**
Graduate	1	0	2	**3**

Post-Graduate	1	0	0	**1**
Diploma	1	0	0	**1**
Professional	1	0	0	**1**
Highest educational qualification in the households				
Illiterate	3	3	1	**7**
Up to 4th	0	3	0	**3**
5th - 10th	19	36	19	**74**
HSSC (11th- 12th)	18	28	20	**66**
Graduate	13	11	6	**30**
Post-Graduate	4	2	1	**7**
Diploma	0	2	0	**2**
Professional	2	1	4	**7**
Duration of residence in area				
Since birth	57	74	48	**179**
Over 15 years	4	11	3	**18**
Less than 15 years	1	3	2	**6**

Source: Fieldwork

**Excludes households which did not provide the relevant information.*

Study Findings

Over 52 percent of the responding sample households indicated that household members were associated with the mining industry in the last 10 years, with the SC/ST households being the only ones where the majority were not associated (in terms of category of population, 55 percent of the General population were associated with mining, with the figures being 60 percent and 45 percent in case of OBC and SC/ST populations respectively). Majority of those associated with mining were so as labourers, owners of trucks or as truck drivers. Close to 65 percent of the responding households indicated that ban on mining had led to unemployment in the household. The response was similar across all sections of households: SC/ST, OBC and General. Chi-square analysis found no significant association between unemployment and category of households (χ^2=3.856; p>0.1). On a related issue of earnings, over 75 percent of the responding households indicated that ban on mining had affected their employment in a way that it led to a fall in household earnings. Like in case of employment chi-square analysis showed no significant association (χ^2=0.910; p>0.1) between

fall in earnings and category of the sample population; fall in income was thus independent of the category/background of the population.

Related to the issues of employment and income, the study showed that advent of mining in a big way in the locality years ago and the suspension of mining operations thereafter had contributed substantially to a change in the occupational structure of the locals (see **Table 3**). While the mining ban led to a fall in mining related jobs and in the transport sector (mining trucks in particular), the suspension of mining operations contributed to a rise in self employment, government service, private service, employment abroad and 'any other' jobs. Incidentally, farming which was followed by a large number of responding households earlier (about 15–20 years ago), has not attracted many post mining ban.

Table 3 Past and present occupational patterns of household heads*

	Occupation of household head 15–20 years back (actual nos.)	Percentage figures	Recent / last occupation of household head (actual nos.)	Percentage figures
Self-employed	8	4.2	12	6.4
Fishing	1	0.5	1	0.5
Farming	73	38.6	31	16.5
Transport	7	3.7	2	1.1
Government service	14	7.4	18	9.6
Private service	19	10.1	25	13.3
Distillery(cashew)	4	2.1	5	2.7
Mining related	36	19.0	16	8.5
Employment abroad	9	4.8	11	5.9
Any other	18	9.5	68	36.0

Source: Fieldwork

**Figures of responding households only.*

Close to 59 percent of the responding households indicated that mining had no positive economic effect on the locality. It needs to be clarified that absence of positive effect does not necessarily always mean experience or perception of a negative effect; absence of positive effect can also stand for neutrality, i.e. absence of positive value addition. Statistical analysis showed no significant association between the said response and category of the households (χ^2=0.329; p>0.1); absence of positive impact of mining was thus perceived/experienced by all sections of households, namely, SC/ST, OBC and General households. Of the remaining (41 percent) who averred that mining did have a positive impact, about 71 percent indicated that the main positive was improved income and standard of living (the remaining cited benefits like availability of more/better schools and infrastructure).

As in the case of the majority of the households indicating absence of positive economic impact, likewise the responding majority (though at a marginally lower figure of just over 55 percent) indicated that mining had adverse economic effect on the locality. However, notwithstanding the similarity between the said responses, is the fact that unlike absence of significant association in case of the positive effect, in case of the negative effect of mining there was a very significant association found at the 0.01 level (χ^2=11.028; p=0.004) between the negative effect of mining and the category of the responding population. Figures indicate that while the negative effects of mining were very strongly reported by the OBC population (72 percent) followed by the General population (58 percent), majority of the SC/ST respondents on the contrary indicated that there were no negative economic effects of mining (only 39 percent of the SC/ST respondents indicated that mining had negative economic implications). Among the negative economic effects of mining cited were fall in price of land, in-migration of 'outsiders', non-availability of labour, rise in food prices, migration away from the locality,[8] extinction of traditional occupations, non-availability of employment etc. Incidentally, cutting across all categories of the responding sample elements, the most prominent negative effect of mining cited was the 'migration away' from the locality by the original/native residents.

Having seen the positive and negative economic effects of mining as perceived by the residents separately, to put things in perspective the economic impact of mining faced by the locals, one can turn to the responses of the respondents to the 'overall/net effect' of mining.

With reference to the overall/net effect of mining whether: (a) good was equal to bad, (b) good was greater than bad, or (c) bad was greater than good, corresponding substantially to the earlier finding, the OBC households showed much aversion to mining on account of its adverse effects. Chi-square showed a very significant association at the 0.01 level (χ^2=23.489; p=0.000) between the negative perception to the overall/net effect of mining and the category of the responding households. Figures showed majority of the OBC households (62 percent) indicating that the bad effects of mining outweighed the good. Like in case of negative effects of mining as reported earlier, SC/ST households had the least aversion towards mining, with only 21 percent indicating that the bad effects outweighed the good. As per the above findings in a very loose sense one could thus say (though conceding that it may not yet be appropriate to say so conclusively without further research) that SC/ST households in the locality appear to be more 'pro' mining as compared to others, especially the OBC households, which are by and large 'against' mining. Incidentally, the stated responses towards mining have been such as described in spite of there being relatively more OBC households associated with mining than the SC/ST households as mentioned earlier.

It would be an interesting exercise in the future to study the reasons for the significant difference in perceptions between the SC/ST and OBC households with regards to the overall/net effect and negative economic effects of mining. Though searching the possible explanations for the same did not fall under the purview of the present study on account of its limited focus, perhaps one reason, as revealed by the present study itself could be the one related to health, i.e. health problems faced by household members on account of mining. Although the present study found three-fourths of the responding households (majority of the households from each category) indicating that no household member suffered health problems due to mining, there was nevertheless a very significant association found at the 0.01 level (χ^2=13.483; p=0.001) between whether any household member was sick due to mining and background/category of the household, with figures showing that it was the OBC households which had significantly more health problems (43 percent households) as opposed to the General and SC/ST households (17 percent and 18 percent respectively).

Governments in general, Central and State, have over the years provided a lot of facilities, schemes, reservations etc. to reserved sections of population like the SCs, STs and OBCs with the avowed declaration of their upliftment. In the context of Panchwadi, particularly on

account of the hardships borne by a substantial number of people including those from the SC/ST and OBC backgrounds on account of mining (and its ongoing ban), to find if they received adequate assistance from the government, about two-thirds (64 percent) of the SC/ST and OBC responding households replied in the negative. Interestingly, though both sections had negative perception, it was primarily the OBC households which were stronger in their opinion. Statistical analysis found very significant association at the 0.01 level between the nature of reserved category of households and whether government assistance was adequate (χ^2=13.277; p=0.000). Data showed that while 83 percent OBC households felt that assistance provided was insufficient, in the case of SC/ST households the figure was relatively low at 52 percent. Insufficient assistance as cited was particularly in terms of education, employment and health.

Conclusion

The study has objectively shown the extent and nature of economic influence that mining had on the residents of a village where majority of the households were associated with mining. The study has clearly revealed that ban on mining has contributed to loss of employment as well as household earnings. It is another matter altogether that of those who lost jobs most found alternate jobs in other sectors. A noteworthy finding of the study was that though the majority of the households were associated with mining, the majority were nonetheless of the perception that mining had no positive economic effect and that instead mining had adverse negative economic effect on the locality.

While various findings pertaining to mining were independent of the category of population (i.e. whether SC/ST, OBC or General), in the case of three major areas though very significant association was found (these areas are worthy of further research to know the finer nuances for the purpose of adequate and appropriate redressal). The areas where such significant association was found were: (a) unlike SC/ST households (and even General households), OBC households were by land large very strong in their perception of the negative economic effects of mining on their locality; (b) unlike SC/ST households which had a totally contrary view, OBC households were very strong in their perception about the adverse (negative) overall/net effect of mining; and (c) though majority of the responding households across all categories indicated that there were no mining related health concerns faced by household members, it was the OBC households which had significantly faced more

health problems (attributable to mining) which the others including the SC/ST households did not.

In addition to the above, the study brought to fore four important issues, namely: (i) while the OBC households by and large can be perceived as relatively more 'against' mining, the SC/ST households by and large are more 'pro' mining; (ii) there has been a shift of jobs ever since mining and the ban thereafter came into place, though farming/agriculture yet does not seem to have attracted much attention at present as an alternative; (iii) not only because of the adverse impact that mining has had on the households in general in terms of employment and earnings, but also because the reserved categories of households (particularly the OBCs) who to a large and significant extent feel that they do not get adequate government assistance, the government has to provide sufficient, regular and sustainable assistance to the people without delay or bureaucratic hurdles, and (iv) even a locality which substantially depends on mining is not always unequivocally pro-mining on account of its serious adverse fallouts.[9, 10]

Needless to say, there is need for further research on the matter dwelt on particularly with reference to issues where reserved categories of population were having significantly diverse views and experiences related to mining. Further research will also be needed since inferences drawn in this paper may not hold good for other mining dependent areas since the same may be locality specific.

Notes

1. Due to the advent of large numbers of mining trucks often alleged to be travelling at breakneck speeds (in villages and population hubs) on account of making more trips, as income earned is directly dependent on the number of trips.

2. *The Indian Express*, April 22, 2014. Retrieved from: http://indianexpress.com/article/business/business-others/goa-mining-ban-removal-to-breathe-new-life-into-sector/

3. Bhushan shows SC how Goa govt & miners lied about mining ban unemployment figures (November 1, 2013). Retrieved from: http://www.targetgoa.com/goabuzzdet.php?bzid=5525&&id=3D3=)

4. *The Indian Express*, April 22, 2014; Retrieved from http://epaper.indianexpress.com/261296/Indian-Express-Mumbai/22-April-2014#page/1/2)

and http://indianexpress.com/article/business/business-others/goa-mining-ban-removal-to-breathe-new-life-into-sector/

5. Contextually, India's population is classified and sub-classified on the basis of various parameters, with one being in terms of SC, ST, OBC and General. The population of Goa too is likewise segregated. While the SC population in the state stands at 25,449, the ST population stood at 1,49,275 in the year 2011 (*Economic Survey* 2013-14, p. 15), with the OBC population being about 3 lakhs (August 29, 2013; Retrieved from: http://www.goacom.com/goa-scan/12767-obc-population-stands-at-3-lakh)

6. For the purpose of this study on account of a relatively smaller size of SC households in the locality, SC households have been merged with ST households.

7. These were large in number on account of a variety of reasons including temporary/permanent out-migration.

8. For reasons like pollution, ill health and accidents, directly/indirectly attributable to mining.

9. According to Jorge et al (2013, 41), though 'mining dependents' in the form of truck drivers, barge owners, contractors, mine owners, employees and other ancillary industries who 'claimed' losses, there is a section of the public benefitting economically from the stoppage of mining activity, indicated by improvement in agricultural yield and others exploring new options.

10. On resumption of mining activities therefore post lifting of the ban, mining has to be systematically carried out with mechanisms and checks securely placed and enforced so that the net effect of mining changes to positive for all sections.

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