Need for enhancing capability of women in mining areas - Reporting from the Indian case

Abstract

India has a rich heritage of mining and metallurgy dating back to 4000 B.C. The country has a well-developed mining sector which has vast geological potential with over 20,000 known mineral deposits. It is a leading producer of iron ore, chromites, manganese ore, barytes, titanium, and soap stone and is the largest producer of block mica in the world. Mining activity in India has completely transformed the lives of men/women in all dimensions social, cultural, economic, political and physical. While mining has created opportunities for men in the community, women's options get shrunk as a result of the impact of mining example that on agriculture land, forest etc. Mining has often forced women to shift to new economies and it rarely occurs to the mining industry or the planners that women as a community should be consulted with and development should be weighed with a gender perspective. The need to develop alternative non-land based livelihood opportunities becomes all the more important considering mine closure.

In view of the above, it becomes imperative to examine ways and means to enhance the capability of the mining community and specifically, that of the women community involved in mining directly and indirectly. As rightly propagated by the renowned economist and Nobel laureate Amartya Sen, human capabilities is one of the core issues in the idea of 'development as freedom' where he has stressed that economics should be about developing the capabilities of people by increasing the options available to them.
The paper explores various means to improve the capability sets of women based on the work carried out by TERI in the iron ore mining belt of Goa.

Mining in India

India has a rich heritage of mining and metallurgy dating back to 4000 B.C. For over 3000 years, the country was the only source for diamonds and it is the home of the world's oldest zinc technology. The remains of some of the old mine workings are witness besides a few of these have led to the discovery of a number of significant mineral deposits which are being worked in the present time. These include the lead-zinc deposits at Zawar, copper deposit at Khetri and gold deposits in Karnataka.

India has a well-developed mining sector which has vast geological potential with over 20,000 known mineral deposits. It is a leading producer of iron ore, chromite, manganese ore, barytes, titanium, and soap stone and is the largest producer of block mica in the world. While a number of mineral deposits have been exhausted, India still has a large quantity of known mineral occurrences and tremendous potential to find new deposits. The geological survey of India, State directorates of Mining and Geology, Public sector units such as NMDC, MEC, HCL, BGML etc are some agencies involved in surveying, mapping, assessment of deposits and exploration of new deposits/mines (TERI 2001, Indian Bureau of Mines, http://www.miningindia.com/writeups/798/3.htm)

Since Independence (1947), India's mining industry has shown rapid growth, from production of 20 minerals valued at Rs 70 crore[1] in 1950 to 84 minerals valued at Rs. 51777 crores during the year 1999-00. The total number of mining leases granted in the country for different minerals as on 31-3-00 were 8996 covering an area of about 0.7 million ha. The following ten states together account for more than 90% the total leases granted: Gujarat (16%), Rajasthan (15%), Andhra Pradesh (15%), Madhya Pradesh, Karnataka, Tamil Nadu (7%), Orissa (7%), Bihar (5%), Goa (5%) and Maharashtra (2.5%). In all 3012 mines are reported during the year 2000-01 of which 610 mines belong to fuel minerals and 534 to metallic minerals and 1838 to non metallic minerals. The value of mineral production in the country during the 2000 -01 was Rs 56807 crores of which the fuels constitute 83% share, 7% metallic minerals and 10% by non-metallic and minor minerals.

With the announcement of India's new National Mineral Policy, in 1993, the mining sector was thrown open to private initiative and investment. The policy mouted out the predominant role of the state for exploration and exploitation of 13 basic and strategic minerals: iron ore, manganese ore, chromite, gold, diamonds, copper, lead, zinc, sulfur, molybdenum, nickel, tungsten, and platinum. Since then the share of private sectors has been steadily increasing. However the share of value of mineral production in the private sector (2000-01) is only 17%. Though there is a considerable increase in mineral production, the share of mining in Gross Domestic Product (GDP) has marginally declined over the decade. For instance in 1994-95 the share was 2.5% while in the year 2000-01 it declined to 2.26%.

Iron ore mining in Goa

Mining has played a key role both in the state economy and the local lore. Iron ore, manganese, bauxite, high magnesia limestone and clay are the chief minerals of economic importance found in Goa. The iron ore mines of Goa having an approximate strike length of about 50 kms are mostly in the form of open cast mines. The iron ore is confined to different bands separated by clay and silt layers of large and variable thickness. Villages, fetile agricultural lands, horticultural fields surround iron ore mineral deposits of Goa, forest and water bodies which are situated at low lying areas compared to mines. Around 5 % of land (185 sq.kms) of Goa is likely to be u7nder mining and subsequently the area will be rendered barren, besides about 250 hectares of agricultural lands located close to the mines being adversely affected. The iron ore industry is the main industry and the backbone of Goan economy. In 2000-01 the total mineral ore produced in Goa was 18,140,5471 lakh tonnes, of which iron ore consists 15,862,763 lakh tonnes. The iron ore deposits of Goa consist essentially of hematite and are associated with the ferruginous quartzite and phylites. The deposits containing an average Fe content of 63% by and large are concentrated in the northern and central parts of the territory. Mining in Goa is now highly mechanised employing open-cast method (TERI, 1997).

There are around 25 to 30 operating mines in the state (see Fig.1 for the mining regions in Goa). Four large companies control major share of the ore production. The annual production of iron ore is around 15 million tonnes. Mining of iron ore started in Goa during the 1950s when the state was under Portuguese rule. About 700 mining leases were granted in the territory but only a few were operating and around 2MT of ore was produced by the end of 1950s. During the decade of 1960s some degree of mechanization was adopted in

[1] 1crore = 10 million

the mine and the production reached 7 Mt. The production of iron ore in 2000-01 is 15.86 Mt.

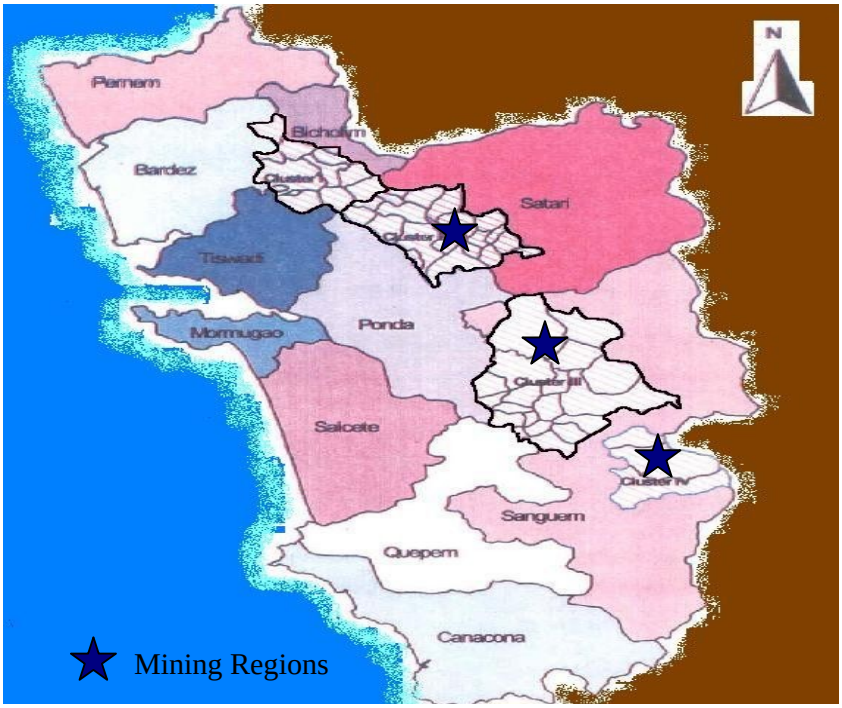

Figure 1 Mining Regions in Goa

All of Goa's iron ore production is exported. The iron ore is mainly exported to Japan, European countries (Egypt, Rumania, Belgium) U.A.E, Abu Dhabi, Pakistan, Kenya, China and South Korea, Oman, France, Italy, Turkey and Germany. In 1961 (at the time of Goa's liberation from the Portuguese rule), iron ore exports accounted for Rs. 18.31 crores and this has been rising steadily. The export of iron ore during 2000-01 was to the tune of 18.01 MT.

Women in mining

Large scale mining can have significant economic, social and environmental impacts at the local, regional and national level. For those living in the mining regions, the benefits of mining has been at the cost their right to healthy environment, access to potable water and livelihood. While any positive impact is well taken, the negative impacts often highlighted needs to be mitigated to the extent that the communities both during and after the life of the mine, are better advantaged. While, mining creates direct and indirect employment to the local population (mainly men), provides small and medium business opportunities, helps in skills transfer and enhancing the capacity of health and education services, provides

improved infrastructure and better access to roads, it has often transformed the lives of women in these areas in all dimensions social, cultural, economic, political and physical. It has at time often forced women to shift to new economies, occupations and very different life-worlds.

Negative impact from mining on women's well being

Mining operations have vastly and disproportionately increased the hardships borne by women - be it in their role as the caretaker of food, water and health of the family or in their roles as wage earners. In most parts of rural India, women have extensive work loads with dual responsibility for farm and household production.

Mining can impinge on women's well-being through the impacts that it has on environmental health as: (i) It degrades the environment – air, water, and forests and therefore increases their burden of living and (ii) it impacts productive assets such as arable land through conversion, or a lowered productivity brought about through a lowering of the water table caused by dewatering of mine-pits and/or run over of reject material into these lands due to run-off.

The increased burden on living arises from the fact that women are the primary providers within the household of clean water for domestic use, food and fuel wood and if these functions become increasingly difficult because of mining, then the amount of time and energy that women have to expend on these activities increase. Mining has an adverse impact on the community health as it results in susceptibility to illness/diseases. Impacts on local community in the mining areas are related to air pollution, degradation of soil and water quality, mining accidents etc. Health problems faced are skin diseases, respiratory diseases like tuberculosis, silicosis, asbestosis, gastro-intestinal diseases, cancers, reproductive diseases like frequent abortions, malformed babies, mental illnesses, AIDS and other sexually transmitted diseases, etc (Victoria Tauli-Corpuz, 1997). In a survey carried out in the mining villages of Goa, women have reported illness such as colds, headaches, fever, dry cough, eye allergy, dust allergy and throat irritation. The percentage of women reporting health problems were also higher (91%) than the percentage of men (85%) reporting these problems. The common reported illnesses were similar for men and women across the surveyed villages. Adverse health impact on women is higher since women generally take care of the sick as well as cope with their own illness.

The ownership of productive assets, such as arable land, is crucially linked to viable livelihoods, to a lower risk of poverty; to access to credit; and to a greater ability to bargain for higher wages. The most crucial form of property and productive asset is arable land. It determines livelihood options, social status and political voice (Agarwal, 2000). The ownership of these productive assets in the study area of interest to us, Goa is vested in both men and women under the existence of an uniform civil code. This is the only state in India that has an uniform civil code that provides for gender equality in law. The Uniform Civil Code as it is applicable to Goa touches all aspects of personal laws. The key aspect of this is its uniformity to both sexes, to all religions and communities irrespective of religious teachings and beliefs. However, while there is this equality before the law, it is hypothesized that this is not an effective equality. This ineffectiveness arises from certain provisions within the law itself which reduces the effective decision-making powers of women. The uniform law potentially enables the women to have a greater say in what happens to land. While land is important for men, it is more important to women as a result of their greater involvement in agriculture, as men work on mines or other related or non-farm jobs. Even if the farm plots are small, these plots provide opportunities of diversified

livelihoods and thereby reduced vulnerability in moments of stress. When mining occurs, mining companies may enter into deals with the males of the household and convert land based on compensation payments. These compensation payments are one time payments which are often used for immediate consumption needs rather than for investment purposes. There are situations in which these are wasted in alcoholic use; the net result is the impoverishment of the family. Thus in some areas the emergence of such social vices such as alcoholism and several harassment towards women is attributed to mining.
In Goa, the impact of mining on land is further aggravated due to the generation of huge amount of rejects. To mine a tonne of ore two to three tonnes of rejects are removed and results about 30 million tonnes of rejects are generated annually (ore to ore burden ratio ranges from 1:2.5 to 3 tonnes). These dumps are partially rehabilitated with unscientific methods as case dump material flows into fertile agricultural lands and streams/nallah as well as in to working mine pit (Claude Alvares, 2002).

Few of these mining regions have displaced the traditional settlements of the inhabitants. The living conditions of women displaced by mining have negative impacts on them. These settlement often lack immediate facilities such as clean water, sanitation, firewood and open spaces for recreation. It is noted that in most of these displaced settlements some of the facilities such as water is provided through water tankers by the mining companies. In some regions of the study area the companies also provide or used to provide transport facilities to these settlements. However this dependency on the companies often poses a serious threat to the inhabitants of whom women are the greatest losers. Migrant women who live in these mining areas also lack of proper economic opportunities. These are women who have migrated with their families into the mining regions. Due to their financial burden of the entire family they are forced to work in other menial jobs.

Various TERI studies in the mining regions of Goa have established that ground water has been greatly affected by mining activities. As a result, wells and springs used by the local community, which are located at a higher level, usually go dry. In rural Goa, village communities are heavily dependent on ground water for household use. Depleting water resources in these regions have impacted women severely in terms of longer walk and more work, as they are the principal collectors of water. Thus, as water has become scarce as a result of mining, the burden of shortages and erratic/irregular supply has also fallen upon women.

Need for building capability sets of women

Drawing from Amartya Sen's theory of development as capabilities expansion, the purpose of development is to improve human lives and this means expanding the range of things that a person could be and do (functioning and capabilities to function such as to be healthy and well nourished to be knowledgeable to participate in the life of a community). That is, development is about removing the obstacles to the things that a person can do in life such as illiteracy, ill health, lack of access to resources or lack of civil and political freedoms (Parr, 2002). Since, mining is also considered a development activity in economic sense it should lead towards the improvement of the lives of people living in the region.

Enhancement of capability sets of women is a must for social and community development. Developing the capability of women, would enable the women to think rationally on issues of concern in the region, motivate them to raise their voice in public, develop their

personality and leadership skills, effectively participate in local governing institutions, build unity among them and help them bargain and negotiate with the mining company.

It has been noted that while mining has created opportunities for men in the community, women's options have shrunk. Mining competes with agriculture which is the source of livelihood for many women in the rural areas. One of the main visible impacts of mining has been on agriculture and forests which have been negatively affected and women working on the agricultural fields or depending on forest produce for livelihoods have lost a productive opportunity. At the same time there are no opportunities for women in the mining sector as this is a male dominated sector. Thus, the situation demands development of other income generating activities for women in the region.
Another argument for enhancing the capability sets of women, is because the dependence of the local communities on mining-related occupations alone makes them extremely vulnerable in the event of mine closure or technology upgradation, both of which situations would make their skills obsolete. In most of the mining regions as is the case of the study region in Goa - India, the shift from traditional economies such as agriculture to a life in mining has led the women in these regions with no alternatives in times of closure.

Some attempts by TERI towards enhancing capability sets of women

The Energy and Resources Institute (TERI), India, has carried out various studies in the mining sector. TERI has worked in various parts of the country, on studies varying from pollution due to mining activity, environmental impacts, health impacts in the mining region as well as Natural Resource accounting of the mining sector. For almost a decade TERI has been working on various mining studies in the state of Goa. In 1997, TERI prepared an Area wide environmental quality management (AEQM) plan for the mining belt of Goa. During the same time TERI was also involved in a study across a couple of mining villages to arrive at the socio-economic status, and needs of the local communities supported by a mining company. TERI was also involved in a study that aimed at designing a framework for Minerals Foundation in the state of Goa. This study which was an initiative of 'Goa Mineral Ore Exporters Association' (GMOEA) suggested and designed a framework of a Foundation to support environmental and social programmes in the Mining belt of Goa. The Minerals foundation of Goa was registered on 12th December 2000.

Since 1998, TERI has been carrying out the study on Environmental/social performance indicators (ESPIs) and sustainability markers in minerals development: reporting progress towards improved health and human well-being supported by the IDRC. The third phase of the project started in 2003 is currently ongoing. TERI is also conducting a DFID sponsored project on Planning of sustainable regeneration in mining areas using tri-sector partnerships.

Having worked extensively with stakeholders on environmental remediation and community development TERI has consolidated experience and expertise in effective stakeholder engagement, networking and partnership development. Two projects currently carried out by TERI aims at working on regenerating mined region with support from the DFID (Department fro International Development), UK and improving community health and well being in the region with the support from International Development Research Centre, Canada.

I. Workshops/ awareness programmes

TERI has carried out various multistakeholder workshops including members from community, NGOs, government and industry. A variety of participatory techniques for planning and implementation programmes were covered in these workshops.

Based on interaction with the community through research on the studies carried out by TERI in the mining areas, a need to work with farmers groups was perceived to assist them in planning for regeneration of their fields. Several farmers groups are unable to prioritise and plan or visualise the future. As a result their requests for help from companies and government are often piecemeal and remediation measures taken up are unsustainable. Hence TERI has planned capacity building programmes for these farmers that would help them focus on and identify problems and their causes, prioritise their needs, develop vision for agriculture in their village based on ground realities and prepare a comprehensive plan for regeneration that can be presented to other stakeholders and worked on in partnership with them.

TERI is also carrying out Gender awareness programmes and environmental awareness programmes for the community in the region. Women in the mining region have been encouraged to participate in meetings and workshops and make presentations for meetings. This has given them the confidence to participate in the sessions of Gram sabha[4], Gram Kruthi samithi. Women were encouraged to participate in all partnership meetings all support has been provided to make presentations during these meetings.

II. Creation of Self Help Groups and alternate livelihood programmes

TERI has been involved with the formation of Self Help Groups (SHGs) in 9 mining villages and is working with the local communities to develop alternative income and employment opportunities in the mining region. Under the above objective several exploratory workshops, training programmes, career fairs and workshops for self help groups have been organized. The training programmes and exploratory workshops are expected to motivate the local community into exploring an increasingly wide horizon of skills, abilities and employment avenues and provide the local communities with or facilitate the provision of these skills and avenues. TERI hopes to employ the community to formulate micro-plans and seeks alternate livelihoods of their choice. Various socio-economic studies in this region have fed into the planning of capacity building programmes. The main activities of women in the mining areas are household tasks and child rearing, agricultural work on their own fields (wherever and is cultivated) or agricultural/horticultural labour work in paddy fields and cashew plantations. Very few women work in other productive sectors. To identify alternate income generating activities in the region, various techniques were employed. At first, participatory research methods were administered to explore the potential of income generating activities for the women in these villages and their economic, social and institutional feasibility. This was followed by an alternate livelihood fair where men and women were encouraged to choose what they thought was suitable to them from a variety of different skill based programmes. A picnic for all SHGs was also organized to asses how their groups were functioning and during this time an attempt was made to gather information on the working of these SHGs. It was realized that most of these SHGs functioned as mere micro credit institutions were their

[4] Village level governing institution

only activity was to collect the money from all the members. TERI then joined hands with an NGO which helped TERI in the institutional strengthening activities of the SHGs. Thus TERI focused on strengthening the local level institutions as this was considered a better intervention for the development of alternative livelihoods. This was done though a variety of activities and training modules on book keeping, vision building, conducting SHG meetings etc. An exposure visit was conducted for the members of these SHGS to Tamil Nadu where they were exposed to very successful SHGs and as well as attend an intensive training workshop for three days. TERI also provides traning programmes to those groups that make requests. To make TERI's efforts sustainable TERI felt the need to leave within the community the skills to train and nurture a new generation of SHGs. This is to be done through the formation of an SHG federation, and developing of community resource persons who can conduct training programmes on group strengthening. An SHG federation is usually composed of no less than 10 groups. They come together in order to strengthen SHGs by providing a forum for regular interaction and networking, disseminate information to member groups and undertake activities that benefit the SHGs but cannot be taken up by SHGs on their own. This federation is expected to be able to take over roles played by TERI. The federation can take up a variety of activities including regular review of SHG functioning, auditing of SHG accounts, support and strengthening though training, ideas, exposure visits, and support of income generating activities and alternative livelihood etc.

III. Health related Programmes

Women in the mining regions were not only provided women health related information/statistics of Goa and India, TERI also supported health care of these women through free health check ups and medication by mining companies of the region.

TERI also conducted specific health workshops. Since air pollution is one of the major problems in the study region and various studies has identified the existence of respiratory illness in the region, capacity building programmes forcussing on this topic in the study area was carried out. With primary school teachers as the target audience, these health related programme focuses on early identification of symptoms of chronic diseases such as TB and acute respiratory infections. The health workshops will also include capacity building for women on nutrition and hygiene, and early identification of communicable diseases, specifically gastrointestinal and respiratory diseases that were commonly reported in focus group discussions and surveys prior carried out by TERI in the region. The information provided at these programmes will be applicable to adults and children, while the programmes for teachers will focus on child health

Conclusion

Since, examining ways and means to enhance the capability of the mining community and specifically, women is extremely important, it is recommended that, right from the initiation phase of a mine, due scope for enhancement of capability sets of women in the region is planned for. The following policy suggestions can be considered towards this direction.

1. It should be mandatory that before the grant of any mine lease, all baseline information on livelihood opportunities available (especially to women) in the

region is collected and note the possible barriers to these opportunities due to the activity.

2. Besides the Environmental Impact Assessments, Alternative livelihood opportunities and new skill development plan should be worked with gender considerations.
3. Any new employment opportunities need to be worked with due gender consideration.
4. All decision making processes should be necessarily participative and should involve due representation of women.
5. The community with good representation of women should be educated on the positive and negative impacts of the new activity.

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