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## **GENDER AND SUSTAINABLE DEVELOPMENT IN MINING SECTOR IN INDIA \***

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### Abstract

The present paper is an attempt to investigate gender issues in the mining sector in India with a view to understand how these issues impact on Sustainable Development imperatives in the mining industry as part of a broader study of the Mining and Minerals for Sustainable Development initiative. Because of the male-dominated nature of the industry, in trying to better understand the gender issues at play, the study focuses not only on women’s experiences but also analyses how they are utterly neglected within the industry. It considers how mining industry contributes to sustainable development by promoting women’s economic advancement and reducing women’s poverty, by ensuring greater involvement of women in the mining sector.

### **INTRODUCTION**

According to UN Millennium Declaration, "Men and women have the right to live their lives and raise their children in dignity, free from hunger and from the fear of violence, oppression or injustice". Sustainable development must be for all, men and women alike. It requires the full and equal participation of women at all levels. Women’s rights are universal human rights and are protected by international human rights conventions (Hemmati and Gardiner, 2002). Yet, women and men do not experience today's challenges in the same way, be they economic development, environmental degradation, threats to bio-diversity or violent conflicts. It is clearly inappropriate to try and address problems, to identify the appropriate strategies, or to implement the solutions if women are not involved in the process. Gender equity is an essential building block in sustainable development. Indeed, none of the pillars of sustainable development can be achieved without finding solution to the problem of gender inequity (Earth Summit, 2002). Sustainable development must extend to all aspects of women’s contribution to development of a nation and its security whether environmental, economic, social, cultural or personal. Sustainable development demands that women's priorities and vision of development goals and approaches be clearly addressed, integrated and promoted, especially in policies related to education, employment, science, culture, communication

and information. It is a question of equality and ultimately of human rights. This is why UNESCO gives lot of importance to women's needs in all its programmes.

There are three pillars of sustainable development such as 'Environmental Protection', 'Social Equity' and 'Economic Well-being' (Hemmati and Gardiner, 2002). *Environmental protection* requires a solid understanding of women's relationship to environmental resources, as well as their rights and roles in resource planning and management. It also requires acknowledgement and incorporation of women's knowledge of environmental matters, and an understanding of the gender specific impacts of environmental degradation and misuse. *Social equity* is fundamentally linked to gender equity. Sexism, racism, discrimination on the grounds of ethnic group, faith, political opinion, social status or sexual orientation is clear indicators of social inequity. No society can survive sustainably, or allow its members to live in dignity, if there is prejudice and discrimination of any social group. The third but most important pillar called *economic well-being* requires gender-sensitive strategies. 70 % of the world's estimated 1.3 billion people living in absolute poverty are women. Economic well-being of a society cannot be achieved if women are massively underprivileged, particularly in the employment sector, compared to their male counterparts. Nor can an economy remain healthy without utilizing the contributions and skills of women in different economic activities including mining.

## **GROWTH OF MINING INDUSTRY IN INDIA**

Minerals which India is eminently endowed with are the back-bone of Indian economy. Mineral wealth and its exploitation have substantially contributed to the growth of national economy. The gross value of mineral production in India which was merely Rs.1800 million in 1961 was increased to Rs.2, 70,000 million in 1995, i.e. by nearly 150 times (Mining Industry in India – An Overview). The amount was further increased to Rs.66, 308 crores in 2003-04 (GOI 2004). Minerals contribute significantly to Indian exports with a share of 18.27% of total exports. The new liberalized industrial policy led to high and accelerated growth in mineral industry to complement and supplement the revival and rapid growth of national economy. It witnessed a massive expansion of exploration activities which included augmentation of mineral inventory as well as addition of a number of mineral reserves to the existing ones. Ambitious programmes

were launched to increase the production of minerals to meet the ever growing demand of the core industries like steel, non-ferrous metals, fertilizers, etc. and also keeping in view the higher exports for much needed foreign exchange. Many public sector organizations were set up to take up exploration and exploitation of minerals and the state assumed direct responsibility for developing mines of important minerals and establishing mineral based industries. Thus there were increases not only of minerals but also in the metal production as well as cement, chemicals, fertilizers and several other mineral based products. In the last few decades, coal, limestone and iron ore mining have witnessed a phenomenal growth in production as shown in Table 1.

**Table 1**  
**Growth of Production of Some Important Minerals in India**

*(Production in Million Tonnes)*

Year	Coal	Limestone	Iron Ore	Bauxite	Copper Ore	Lead & Zinc Ore
1951	34.98	2.96	3.71	0.06	0.37	0.01
1961	55.71	15.73	12.26	0.48	0.42	0.15
1971	75.64	25.26	32.97	1.45	0.68	0.30
1981	127.32	32.56	42.78	1.75	2.01	0.96
1991	237.76	75.02	60.03	3.86	5.05	1.82
2001	313.69	127.34	80.59	7.99	3.49	2.76

Source: Mining Industry in India – An Overview

With the increase in production, employment has also grown phenomenally, particularly in coal, iron ore, lime stone and oil mining (Table 2). According to an estimate the average daily employment in the industry at present is about one million. However, there has been a gross reduction in employment potential in mining of gold, manganese and mica mainly due to two reasons: Firstly, the lack of demand of the minerals due to substitution of the same in the user industry viz. the manganese ore in manufacture of steel and mica as insulating material in electrical industry. Secondly it is due to the rising cost of production of gold from the poor quality of gold ore available in the country vis-à-vis global market.

**Table 2**

## Average Daily Employment in Mines

*(Employment in Thousands)*

Year	Coal	Iron Ore	Lime Stone	Oil	Manga-nese Ore	Copper Ore	Gold Ore	Stone	Mica	Others	Total
1951	351.9	20.2	16.0	N.A.	55.5	3.7	21.9	5.1	25.2	49.5	197.1
1961	411.2	54.5	54.6	N.A.	46.9	4.2	16.3	8.5	29.6	45.1	259.7
1971	382.3	52.8	53.2	13.6	30.4	7.6	12.4	8.8	12.2	57.5	234.9
1981	513.4	44.9	49.8	14.5	26.5	13.4	12.3	7.7	6.7	60.6	221.9
1991	554.1	40.1	43.5	35.5	17.9	12.8	9.3	11.2	2.2	63.2	200.2
1992	552.0	42.0	43.0	35.7	18.4	12.7	9.4	8.9	1.6	67.2	203.2
1993	546.3	39.8	41.6	33.5	18.5	12.2	7.9	9.2	1.5	68.9	199.6
1994	523.7	38.5	39.8	34.3	18.2	11.2	7.4	9.4	1.7	65.2	191.4
1995	513.3	39.6	39.8	34.0	18.1	10.5	7.1	7.5	1.8	64.4	188.8
1996	506.4	39.2	35.7	33.4	18.1	9.9	6.9	5.2	1.2	60.1	176.3
1997	503.4	38.6	33.0	28.6	16.0	10.3	6.8	4.9	1.2	61.6	172.4
1998	491.3	37.3	31.2	29.5	15.9	8.7	6.1	5.3	1.1	59.3	164.9
1999*	486.7	38.7	30.0	25.0	14.8	7.3	6.1	4.9	0.9	63.0	165.7

\*Provisional

Source: Mining Industry in India – An Overview

### SUSTAINABLE DEVELOPMENT IN MINING

According to United Nations, “poverty has a woman’s face”, and that 70% of the world’s poor are women (stated at the 4th World Conference on Women in Beijing in 1995). While data on women’s poverty is not available, the general perception is that women suffer from disproportional levels of poverty compared to men as evident from the employment figures for both the sexes. Poverty is a complex issue, linked not only to lack of income, but also to lack of access to resources, services and opportunities in the economy, in political life and in society in general. All poor people lack access to these assets, but across the world, women and girls are more vulnerable to poverty than men. The Beijing Platform of Action (BPA) set out twelve critical areas of concern identified as barriers to women’s empowerment as a basis for a global platform of action: poverty, education, the economy, power and decision-making, health, violence, armed conflict, institutional mechanisms for the advancement of women, human rights, media,

environment, and the girl-child (Ranchod, 2001). Many of these critical areas of concern have direct relevance to the mining industry. If the mining industry wishes to contribute to sustainable development in the country, then increasing women's participation in the industry, reducing women's poverty, increasing access to educational opportunities and enhancing women's access to power and decision-making have direct bearing on the way the industry currently operates, and points to areas where there is scope to support women's advancement through a proactive recruitment, promotion and skills building policy. A number of arguments can be made for why women should be equitably integrated into the development process. A persuasive argument is found in the UN's rights based approach – which posits women and men's equal human rights, and by extension women's right to be treated equally in access to education, employment, remuneration and promotion. Another popular argument is an efficiency based approach which posits that integrating women into development will lead to greater market efficiency. This argument suggests that keeping women out of the economy means not making use of all of society's productive assets leading to a path of un-sustainable growth of the economy in the long run.

## **WOMEN LABOURER IN MINING**

There is not much recorded involvement of women's participation in the formal mining industry in India. The mining industry has been called the last bastion of exclusive male employment with women's participation in the industry limited to work as above ground staff. While some progress has been made, women working underground are very much a novelty in the country. The historical gendered roles played by men and women have remained by and large quite traditional. While men have entered the mine workplaces, women have remained in the domestic spheres. Men have been bread winners, while women have been responsible for maintaining the family. Moving from such traditional and relatively static gender roles, into a space where women and men can be seen as people of equal worth and dignity, equal workers and earners, is a big step away from the conception of male breadwinner and female household maintainer.

The mining industry in India has been highly a male-dominated patriarchal industry; it has been the most hostile industry towards women. As compared to other industries, integration and participation of women has been very slow in mining. While

women have never been forbidden from working above ground, the number of women employed under and above ground has traditionally been low. Over the years with changes in government policy, discriminatory laws forbidding women to work underground have been repealed, and women are now free to work underground, but very few women are indeed working underground.

The global historical myth that the presence of women in the mine pits leads to collapse of mines and death of miners. Besides myth dresses of women in India also does not suit the so called masculine work in mines. Probably because of these reasons women are not considered fit and are rarely employed in the organized mining sector, whether public or private. If at all they are employed, they are prohibited from entering the underground mines. Most of the jobs of women relate to menial lower rung activities like sweepers, cleaners or attendants in the mining offices. Women mining labourers in the age-group of 15-19 years which forms only 27% of the total women labourers in mining whereas 40% of women labourers belong to the age group of 5-14 years which speaks of a form of exploitation of women (Labour and Women in Mining). Women are mostly absorbed in small, private or unorganized sector where they are easily retrenched. The tragic paradox of women's labour in the organised sector is their highly visible presence as contract labour within the public sector mines. They are employed in thousands in head loading, stone breaking, cleaning and other forms of daily wage labour in the coal and iron ore mines in Maharashtra, Andhra Pradesh, Jharkhand and Orissa where they are entirely at the mercy of petty contractors and have absolutely no work safety or security. Women in the gold mines of Kolar, for an instance, work with mercury and cyanide with their bare hands and are prone to accidents within the dank pools of water. They are forced to work beyond work hours, even in advanced stages of pregnancy, have no leave or crèche facilities, and are always under threat of being thrown out. In the stone crushers, most women have tuberculosis and so are their infants who are brought to the work place and left to fend for themselves in the quarrying sites while their mothers are working. Hence, they are susceptible to serious health hazards which also affect their reproductive health. They are also exposed to sexual exploitation. In some of the quarries in Orissa, women are forced to work at night and are sexually abused so much so that young girls from these regions are branded as 'spoilt' and not respectable for marriage. According to a study undertaken by Fernades and Raj, when NALCO, a large

public sector mining company was established in Orissa, 80% of the displaced families were given jobs of which there were only 8 women beneficiaries (Fernades and Raj, 1992).

According to the *Statistical Profile of Women and Labour* of the Ministry of Labour, in its Fifth Issue (1998), employment of women in open cast mines and above ground works has steadily declined between 1961 and 1993 while the overall employment in these areas has gone up during the period (Labour and Women in Mining). The report says that this is indicative of the fact that female workers have been substituted by the male ones and also that the share of women in the total employment in coal mines has declined from 6.3 percent during 1981 to 4.05 percent in 1992. Similarly, in all the mines put together, the share of women workers was 9.8 percent in 1981 and has slid down to 6.65 percent in 1992. In addition, it also states that the women's participation in all industrial groups has gone up except for Mines and Quarries during the period between 1980 and 1989. Under the Mining and Quarrying sector, the percentage of female workers to the total female population has consistently declined from 1.02 percent in 1901 to 0.05 percent by 2001 (Table 3).

With regard to wages, the Ministry's data reveals that although average wages of mine workers in open cast and above ground mines increased sharply in the last three decades, there is a distinct difference in the increase between wages for men and that of women in the majority of the mines/states. This is attributed to the fact that women were employed mainly in the unskilled or low skilled jobs compared to the men. Technical jobs were never given to women nor were any efforts made to train them for skilled activities. In stead they are prohibited from applying for professional courses in mineral sciences or engineering which are a prerogative of the men alone. Besides, women workers are never employed in Oil mines (*Fifth Occupational Wage Survey: Labour and Women in Mining*).

**Table 3**  
**Percentage of Female Main Workers (PFMW) to Female Population**

Census Year	1901	1911	1921	1931	1951	1961	1971	1981	1991	2001
PFMW in Mining	1.02	1.17	1.17	1.16	0.78	0.56	0.05	0.05	0.05	0.05

Source: Labour and Women in Mining

According to the *Second National Labour Commission Report (1999)* there was hardly 1.6 % of female labour force in the organised sector where they have been the first to be retrenched after mechanization was introduced (Labour and Women in Mining). The large-scale mines, which are shifting to technology dependence, have no scope for women's participation as they are illiterate, lack technical skills and face cultural prejudices. Where women formed 30-40% of the workforce in mining, they have been reduced to less than 7% and in the coal sector alone, to 4%. Schemes like VRS (the golden handshake) have proved a death knell to women.

### **WHAT WOMEN FEEL ABOUT MINING**

Attitudes to women in mining can be best understood if we quote the views of some women who are directly related to mining sector (Ranchod, 1997):

Rita Mittal of the Association of the Zambian Women Miners, formed in 1996 says,

*“We face a lot of rejection and we are not taken seriously by people in the field. There are a lot of traditional obstacles along the way. Chiefs feel undermined when they see women coming to mine in their areas. They are hostile”.*

*“In certain instances, cultural norms say that women are not supposed to go into the mines. There are some myths that if a woman goes underground, the stones (minerals) will disappear”,* Namakau Kaingu, a miner in Zambia opines. She further adds, *“If you go to the Department of Mines of the Government you find that geologists are men, engineers are men, metallurgists are men, surveyors are men and the people in charge of explosives are all men, so these are the imbalances we want to change. Women can actually do all the other works that men are doing”.*

According to Reinoud Boers of the Chamber of Mines in Zambia, *“negative attitudes to women in mining are an important constraint to women’s effective integration in the industry. There is a great deal of male skepticism that needs to be tackled”.*

### **IMPACTS OF MINING ON WOMEN’S HEALTH: SOME EVIDENCES**



Majority of the health problems in mining regions are caused due to unchecked pollution and high levels of toxicity, mine tailings and mine disasters. The health and safety problems vary from one mineral to the other, from the technology used, type of mining- open cast to underground - and the size of operations. The lands, water bodies, air and environment are polluted due to constant release of chemical wastes, dust generated by blasting and excavation, and the dumping of mine wastes and over-burden in the surrounding lands and rivers.

Women who are either working or not working in the mines are constantly exposed to various respiratory illnesses due to inhalation of dust particles and become victims of skin diseases, experience malfunctioning of various sensory organs, which has a long-term impact on their reproductive health. Noise and dust pollution affects the women most during pregnancy. For economic reasons, they have no choice but to expose themselves and their children to severe health risks, which not only threatens their lives, but also that of the fetuses. For example, the most common diseases suffered by people due to the dust from the coal mines are tuberculosis, cough and cold, malaria, skin diseases, diarrhea, staining of teeth, joints pain, arthritis, lethargy, etc.

Another example is mica where dust is the major cause of respiratory problems among mica miners. Diseases such as arthritis, is normally present after the age of 50, but in the mica mining areas in Andhra Pradesh, even 20 year olds complain of arthritis. There is a definite correlation between mica dust and the disorders. The range of health hazards of women in mining varies from simple coughs to thalasemia, silicosis and other fatal ailments. In Andhra Pradesh water contamination in the areas surrounding the mica mines have given rise to several health hazards such as nausea, vomiting, diarrhea and eosinophillia, silicosis and tuberculosis.

Further, the effects of chemicals and radiation from the ores have direct impacts on the women's health. For example, one of the most serious impacts has been the suffering of women living in the proximity of uranium mines in Jaduguda (Jharkhand) where radiation levels are scientifically proved to be above permissible limits and where there is a direct correlation between the reproductive and health problems of women to that of radiation from uranium (Impacts of Mining on Women). Here, despite the depressing situation of miscarriages, giving births to physically and mentally deformed children, deaths and terminal illnesses like leukemia and thalasemia, and despite

international lobbying and publicity on this issue our government chooses to disrespect and continue the abuse of women's health.

In a research undertaken on 'Environmental and Health Impact Assessment due to Coal Mining' in East Parej and North Karanpura coal field of Jharkhand state, by Nitish Priyadarshi, it was found that metals like fluoride, manganese, nickel, and sulphate are high in concentration in drinking water. They were nearer to the toxic levels while Manganese had crossed the toxic level in North Karanpura coalfield. The study assessed that metals like arsenic, mercury, fluoride, nickel and chromium might cause problems to the human beings even if they were present in trace amount in the drinking water. In an article published by Down To Earth, it was found that Damodar River and its tributary were polluted by Arsenic and Mercury, two of the lethal minerals. In Lapan Tandi village of East Parej there were high amounts of Sulphate above the toxic level and wells contain nickel nearer to toxic levels. Iron concentrations were found to be very high in surface water of North Karanpura.

As a result of these toxic wastes in the water and soils, it was found that the longevity of the communities living in the coal mines has reduced drastically. The average longevity of women was found to be 45 and in most of the villages only one or two women had crossed the age of 60! The number of deaths in a period of five years also revealed shocking figures: in Dudhmatia village 6 out of 80 people, in Agariatola village: 12 out of 100 people, in Lapangtandi village: 13 out of 115 people, and in Ulhara village: 9 (of which 7 were children) out of 80 people on an average. Majority of the children were reported to be lethargic as a result of inhalation of toxic dust and consumption of contaminated water.

The Chromites mines in Orissa have caused severe health problems due to the contamination of rivers. A study commissioned by the Regional Research Laboratory (RRL), Bhubaneswar revealed that mine seepage water released into the Domsala River in the Sukhinda valley has severely affected the lives of communities around the river. The Hexavalent chromium present in the water have caused marked irritation of the respiratory tract, nasal septum ulcers, and also caused irritant dermatitis rhinitis, bronchospasm and pneumonia in the area. Children with sores all over the body were a common sight. The study further revealed that chromium has entered the food chain, particularly in meat and fish and especially in the plants such as paddy and mango.

## **SUMMARY AND OBSERVATIONS**

- ❖ Mining is a male dominated industry and is hostile to women's work participation in the mining sector.
- ❖ Most women mine workers are found in small scale mines and informal/unorganized sector mines where mining companies easily escape monitoring, have very poor checks on them in all spheres - whether implementation of labour rules and regulations, mine safety rules, environment protection or waste management all of which have direct impact on women and child labourers working in the mines.
- ❖ Most large-scale private mining industries are highly mechanized and technology intensive which exclude women's participation in the workforce.
- ❖ The income drawn by women as mine workers is economically and physically unsustainable and drags them into deeper indebtedness and bonded labour.
- ❖ Lack of responsibility of mining companies towards protecting and ensuring proper health care for women mine workers has serious consequences on their health, both physical and reproductive which is a serious human rights violation.
- ❖ Privatization has shown negative impacts on women mine workers - it has led to more VRS, retrenchment and more women have been pushed into contract labour which completely lacks work safety and employment security. There has been a steady fall of women's labour participation in the minerals sector.
- ❖ Labour laws need to incorporate and implement the legitimate participation of women in the public and formal sector mining and increase employment opportunities for women at all levels in mining;
- ❖ If mining has to take place, the policy has to seriously ensure improvement on the work safety, security and sustainability issues of women workers in mining.
- ❖ If mining has to take place, women from the affected communities should have equal opportunity for employment as the men since they equally lose their lands and traditional livelihoods when the mines come.
- ❖ Mining projects sanctioned should be should be based on the policy of people-centered approach (which includes gender-centered) rather than market centered approach.

- ❖ The issue of gender and mining in all its facets is under-researched. There is a need for greater research attention to be paid to gender dimensions of the mining industry, the health and safety implications for women working underground, and a need for baseline data on gender and mining at the national and state level.

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